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CONFERENCE PROCEEDINGS

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PROCEEDING

THE 14th IRSA INTERNATIONAL CONFERENCE 2018

Strengthening Regional and Local Economies

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The Role of Nutrition Assistance and Care in the Primary Health Center and Children Double Burden of Malnutrition in Indonesia

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The World Bank report emphasized the increase of double burden from malnutrition in Indonesia (Shrimpton & Rokx, 2013). Double burden of malnutrition leads to numerous health issues particularly stunting (undernutrition) and obesity (over nutrition). The World Bank report shows that the proportion of stunting children under the age of five in Indonesia is 37.2 percent. Stunting lowers the individual's productivity at the young age and escalates the risk of developing non-communicable diseases such as diabetes when older. Meanwhile, obesity increased the risk for chronic disease, reduce productivity, and often lead to mortality. Some studies for example Thomas, Strauss & Henriques (1992); Skoufias (1999), Satriawan & Giles (2010), Sumarto & Silva (2015) underlined the importance of social economy background and mothers' education on lowering malnutrition. However, Thomas, Strauss & Henriques (1991) argued that the role of mother's education on nutrition status of children will be biased if the study neglects the role of community factors such as sanitation and access on health services. Studies by Andriani, Liao, & Kuo (2016) *and Penny et al (2005) found that the access to health facility and the quality of nutrition counselling and services in the health facilities has significant impact in lowering malnutrition. Therefore, recognizing the importance of community services delivered by the Primary Health Center (Puskemas), this study aims to investigate the role of Puskesmas in the presence of double burden of malnutrition in Indonesia. The Indonesian Family Life Survey data of wave 5 and ordinary least square technique are employed to assess the determinants of children height in Indonesia. This study reveals that socio economic status, demography, consumption habit and services offered by Puskesmas have substantial role in lowering stunting in Indonesia.*

Keywords: Double burden of malnutrition, stunting, socio economic, demography, dietary habits, health center

INTRODUCTION

This study is keen to directly observe the important role of dietary habit and community factors of health facilities in delivering nutrition services. It contributes to the literature by further investigating the role of balance diet habit at home and health facilities to prevent and lower double burden of malnutrition in Indonesia. Its contribution is essential particularly in the periods of increasing prevalence of double malnutrition in Indonesia.

The findings of this study is relevant for central, regional and local government particularly in understanding the role of public policy in improving nutritional status of young children. Moreover, this study highlights the policy intervention on health services that suitable to improve health development outcomes.

There are two objectives of the study. First is examining the influence of socio economic, demography, consumption behavior on young child nutritional status across regions in Indonesia. Second objective is examining the role of services and facilities on malnourished prevention in the Primary Health Center on young child nutritional status across regions in Indonesia.

Literature Review

The World Bank report emphasized the increase of double burden from malnutrition in Indonesia (Shrimpton & Rokx, 2013). The report also revealed that general perception on malnourished is inaccurate since it refers merely to undernutrition. Moreover, the report found that the undernutrition figure in Indonesia is decreasing while the over nutrition as a result of imbalance nutrient intakes is increasing (Rachmi, Agho, Li, & Baur, 2016). Double burden of malnutrition leads to numerous health issues particularly stunting (undernutrition) and obesity (over nutrition). The World Bank report shows that the proportion of stunting children under the age of five in Indonesia is 37.2 percent. Stunting lowers the individual's productivity at the young age and escalates the risk of developing non-communicable diseases such as diabetes when older. Meanwhile, obesity increased the risk for chronic disease, reduce productivity, and often lead to mortality.

A study by Skoufias (1999) underlined the significant issue of malnutrition in Indonesia and focused on the undernutrition measured by under weight index. The study found that parental education level particularly mother's education had significant effect in the children's nutrition status. However, Thomas, Strauss, & Henriques (1991) and Skoufias (1999) argued that the role of mother's education on nutrition status of children will be biased if the study neglects the role of community factors such as sanitation and access on health services. But, their papers were not capable to measure the community factors directly rather employing the fixed effect to capture unobservable heterogeneity across children.

The recent literature on Indonesia children nutritional status has adopted the double burden of malnutrition concept in understanding the malnourished issue. Sumarto & Silva (2015) revealed that child stunting was high both in poor and wealthy households. This implies that income growth itself is not effective in tackling double burden of malnutrition. Regarding the community factors, Sumarto & Silva (2015) found evidence that access on health services contributed to lower double burden of malnutrition. Moreover, their study suggested that nutrition-sensitive development is essential to lower double malnutrition. The role of health services delivery in reducing stunting was also acknowledged by Giles & Satriawan (2010) particularly on the capacity of health service center of Puskemas (Primary Health Center) in providing Supplementary Feeding Program (well-known as PMT).

The maternal and child health community services in Indonesia are delivered through the integrated service delivery post (Posyandu) which is facilitated by Puskesmas. One key activities of Posyandu is

providing nutritional counseling to children and mothers. Andriani, Liao, & Kuo (2016) reported that non-availability of Posyandu significantly increased the risk of obesity. This study however, did not assess the quality of services provided. With the variability in the capacity of health centers in delivering services across regions in Indonesia, it is important to assess the quality of services, particularly regarding child nutrition. National mainstream media of Kompas in the past one month has been circulated information that the prevalent of malnutrition in Indonesia is contributed by a diversity of health center capacity in providing community services. Regarding to the prevention on malnutrition, a study by Penny et al., (2005) in Peru revealed that the quality of nutrition counselling and services in the health facilities improved the nutritional status of young children. They argued that education intervention in the health services has important role on child health improvement. Particularly, their study discovered that enhancement of nutrition counselling quality by providing training for manpower in the health centers improved its capacity to deliver services to lower the rate of stunting by more than two-third. Therefore, recognizing the importance of community services delivered by the Primary Health Center (Puskemas), this study aims to investigate the role of Puskesmas in the presence of double burden of malnutrition in Indonesia.

HYPOTHESIS

1. Primary Health Center (Puskemas) better services and facilities on malnourished prevention can improve young children nutrition status across regions in Indonesia
2. Better socio economic status lowers the prevalence of malnourished on young children
3. Demography factors have influence on nutrition status of young children
4. Dietary habit has important effect on improving nutrition status of young children

DATA AND METHODOLOGY

This study will analyze data from the Indonesia Family Life Survey wave 5, a longitudinal survey representing 86 percent of Indonesia population. The dataset provides information on children health, household conditions such as parental education, income and consumption behavior and community facilities data of health facilities including midwife, delivery post, Posyandu, elderly Posyandu and Puskesmas. This study will utilize the information on services provided, manpower capacities, resources and infrastructures, source of funds related to nutritional services in the health facilities across regions in Indonesia. Regarding to the measure of nutrition status, this study refers to Satriawan & Giles (2010) that employed the mean-child standardized height-for-age to measure double burden of malnutrition for young children. Both studies relied on the Indonesia Family Life Survey dataset to collect information on children health status that captured self-reported measures of general health status and biomarker measurement

conducted by a nurse.

This study focuses on the determinants of stunting of young children under five years old in Indonesia. The anthropometry of nutritional status of young children under five years old is employed to assess the malnutrition status. The guideline was introduced by the Ministry of Health in 2010. There are four nutritional status using the height category. First is severely stunted category which refers to children with height lowers than -3 standard deviation of the median of children in their age. The second category is stunted children with height between -3 standard deviation and -2 standard deviation compared to the median height of children in the same age. The third category is normal children with height between -2 standard deviation and +2 standard deviation of the median height of children in their age. Finally, those with height more than +2 standard deviation of the median are categorized as higher than normal child.

According to the IFLS dataset surveyed in 2014-2015, there are about 10 percent of young Indonesian children have severe malnourished problem. There are 536 from 5,118 young children are severely stunted. The prevalence is slightly higher in the rural area compared to urban ones. The second category of nutritional status is stunted and the proportion in Indonesia is quite high. There are 938 from 5,118 young children are categorized as stunted because their height is lower than the normal norm. The proportion of stunted children under 5 y.o is 18.46 per cent from the total sample. Thus, the proportion of stunted children both severely stunted and stunted is close to 30 per cent from the total young children. This number is comparable with previous study by the World Bank that shows the prevalence of stunting in Indonesia is 37.2 per cent. Regarding to the distribution of malnourished problem across urban and rural, the IFLS dataset shows that rural areas have higher proportion of stunted children compared to urban areas.

Table 1. The Prevalence of Stunting of Young Children under 5 y.o in Indonesia 2015

The category of height	Frequency		Sub total	Proportion (%) from total sample	Cumulative percentage (%)
	Urban	Rural			
Severely stunted*	252 (8.52%)	284 (11.68%)	536	9.84	9.84
Stunted**	481 (16.26%)	457 (21.53%)	938	18.46	28.30
Normal***	1,925 (65.06%)	1,267 (59.68%)	3,192	62.81	91.11
Higher than normal child****	301 (10.17%)	151 (7.11%)	452	8.89	100.00
Total	2,959 (100%)	2,123 (100%)	5,118	100.00	

Source: Indonesia Family Life Survey Wave 5 (2015)
Note:
The height category is based on the anthropometry standard guideline published by the Ministry of Health No. 1995/MENKES/SK/XII/2010.

**Children under the severely stunted category is those with height lowers than -3 standard deviation of the median of children in their age.*
***Children under the stunted category is those with height between -3 standard deviation and -2 standard deviation of the median of children in their age.*
***Children under the normal category is those with height between -2 standard deviation and +2 standard deviation *of the median of children in their age.*
****Children under the higher than normal category is those with height more than +2 standard deviation *of the median of children in their age.*

Table 2. The Prevalence of Stunting of Young Children under 5 y.o
in Indonesia 2015, Sub Group Analysis of Male and Female

The category of height	Frequency		Sub total	Proportion (%) from total sample
	Male	Female		
Severely stunted	286 (10.85%)	214 (8.75%)	536	9.84
Stunted	512 (19.42%)	426 (17.42%)	938	28.30
Normal	1,613 (61.19%)	1,579 (64.55%)	3,192	91.11
Higher than normal child	225 (8.54%)	227 (9.28%)	452	100.00
Total	2,636 (100%)	2,446 (100%)	5,118	

Source: Indonesia Family Life Survey Wave 5 (2015)

The prevalence of stunting is more critical especially for male children. Table 2 shows that the proportion of severely stunted male young children is 10.85 percent to total male children compared to 8.75 per cent for the female children. Similarly, the proportion of stunted male young children is 19.42 per cent compared to 17.42 per cent for female children.

The econometric modelling of ordinary least square is utilized to examine the role of socio economic status, demography factors, dietary habit and nutritional services and facilities activities in the health facilities to lower malnourished problem of stunting in Indonesia. The malnourished of stunting is measured by using the Z score of young children under 5 years old representing the distance of height with the median. The Z score formula is presented in below equation.

$$Z\ score = \frac{height - median\ height}{median\ height - standard\ deviation\ minimum} \quad \text{if height<=median height}$$

$$Z\ score = \frac{height - median\ height}{standard\ deviation\ plus - median\ height} \quad \text{if height>=median height}$$

The socio-economic status is measured by the monthly total consumption of the households comprised both food and non-food spending (in logarithm). The dietary habit is observed by using the food consumption dataset comprised the type of food consumed by the children in the past one week. This study is further construct the information to generate the type of foods and the frequency of

consumption. The focus is to create a categorical variable representing the combination of food consumption both basic and unhealthy snack. Basic food is comprised of four components of carbohydrate, vegetables, fruits and protein. Children are supposed to consume all the basic components every day. If children consume all the necessary components in daily basis, they are entitled to be in the category four. Meanwhile, if the children do not consume full set of all four basic components, they will be coded 0, 1, 2 or 3 according to their dietary habit. In addition, this study codes babies under 6 months in the category 5 because they are recommended to fully breastfeeding so they do not consume the solid food yet. Below table of operationalization of the variable provides detail information about the category.

The observation of the dietary habit is also conducted by examining the consumption of unhealthy snack such as instant noodle, fast food, carbonated beverages, fried snack and sweet snack. This study creates three categories of unhealthy snack consumption. The first category is coded as 0 for children consume unhealthy snack less than 7 times a week. The second category is coded 1 for children having the unhealthy snack between 7 to 14 times a week implying consumption patter of unhealthy snack twice of more in daily basis. Finally, the third category is the heaviest consumers of unhealthy snack of more than 14 times a week.

This study controls the demography factors of young children by using the areas of living, gender and mothers' education. Mothers' education is measured by the years of schooling. Finally, in order to assess the role of Primary Health Center in improving nutritional status of young children, this study covers three types of services offered by the center. First service, coded as A, is growth and development monitoring for children under 5 years old. The second service, coded as B, is additional nutrition aside from breast milk distribution for babies between 6 – 24 months. Lastly, the service C refers to treatment for malnutrition for children under 5 years old.

Table 3. Operational Definition of Variables

Variable	Operational definition
DEPENDENT VARIABLE	
Z score of height	The z score is calculated by using the information of children height and their correspondence median and standard deviation of the children under the same age based on anthropometry standard guideline published by the Ministry of Health No. 1995/MENKES/SK/XII/2010. Z score=((height-med)/(med - sd min)) if height<=med Z score=((height-med)/(sd plus - med)) if height>=med *sd stands for standard deviation*
INDEPENDENT VARIABLES	
Households consumption	Log of monthly total consumption
Basic food consumption habit	The value is 0: not having all the necessary 4 components of carbohydrate, vegetables, fruits and protein everyday 1: having at least 1 necessary component of carbohydrate, vegetables, fruits and protein everyday

	2: having at least 2 necessary components of carbohydrate, vegetables, fruits and protein everyday 3: having at least 3 necessary components of carbohydrate, vegetables, fruits and protein everyday 4: having all necessary component of carbohydrate, vegetables, fruits and protein everyday 5: Babies under 6 months that the recommendation is fully breastfeeding
Unhealthy snack consumption habit	The value is 0: having the unhealthy snack less than 7 times a week 1: having the unhealthy snack between 7-14 times a week 2: having the unhealthy snack more than 14 times a week
Urban/ rural	The value is 1 if the child lives in urban area 2 if the child lives in rural area
Sex	The value is 1 if the child is male 2 if the child is female
Mothers' education	The number of years of schooling of mother
Primary Health Center (Puskesmas) services A*	The value is 0: if none of the public health center offers the service in the enumeration area 1: if there is one public health center offers the service in the enumeration area 2: if there are two public health center offers the service in the enumeration area 3: if there are three public health center offers the service in the enumeration area
Primary Health Center (Puskesmas) services B*	
Primary Health Center (Puskesmas) services C*	

Note:
Services A on growth and development monitoring for children under 5 y.o
Services B on additional nutrition aside from breast milk distribution for babies 6 – 24 months
Services C on treatment for malnutrition for children under 5 y.o

EMPIRICAL FINDINGS

The estimation result is available in table 4. In general, most of explanatory variables are proven statistically in influencing the children nutritional status. A better socio-economic status reflecting by the coefficient of log of total consumption is positive and statistically significant in improving the young children height. This implies that wealthier households have better ability in fulfilling the nutrition needs of the children. The dietary habits measuring by the consumption pattern of basic and unhealthy snack are effective in improving children nutritional status. A higher Z score is contributed by better consumption of basic food and lower frequency of unhealthy snack consumption.

Moreover, the demography factors determine the children nutritional status. Children in the rural area is more prone to malnutrition compared to those in urban area. In addition, the mothers' education is a strong predictor of children nutritional status which more educated mothers have better knowledge so they provide more balance dietary habits and other positive influence to their children.

Finally, the services offered by the Primary Health Center is effective in improving nutritional status of young children. The estimation result shows that the higher number of health center that provides

services related to growth and development monitoring for children under the age 5 years old, a better nutrition status of the children lives nearby and this lowers the prevalence of stunting.

CONCLUSION AND RECOMMENDATION

This study reveals that socio-economic status, demography factors, dietary habits and nutrition-related services offered at the primary health centers contribute to improve young children nutritional status across regions in Indonesia. The findings enhance the previous studies that better socio economic status enable families to fulfill the children nutrition needs. Moreover, lowering the prevalence of stunting should be started from home by providing balance nutrition from basic foods and reducing the consumption of unhealthy foods.

There are some policy implications to combating malnourished prevalence in Indonesia. Government across level from local to national are suggested to enhance the socialization program introducing good dietary habits for children and all family members. In addition to the socialization program, government should provide incentives and support for family to feed their children properly. Considering that children in rural areas are exposed to the stunting risk higher than children in urban areas, government may also put intensify the implementation of the programs in rural areas. Finally, the Primary Health Centers have substantial role in lowering stunting by providing effective services such as growth and development monitoring for children under the age 5 years old.

Table 4. Empirical Results

Z score	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Household consumption	0.2214876	0.0423187	5.23	0	0.138519	0.3044561
Basic food consumption habit						
1	0.5569511	0.3171907	1.76	0.079	-0.064921	1.178823
2	0.5351764	0.3071065	1.74	0.081	-0.0669251	1.137278
3	0.5239443	0.3087945	1.7	0.09	-0.0814665	1.129355
4	0.6512845	0.3309866	1.97	0.049	0.0023647	1.300204
5	4.030175	0.3238919	12.44	0	3.395164	4.665185
Unhealthy snack consumption habit						
1	-0.1259962	0.0614435	-2.05	0.04	-0.2464601	-0.0055324
2	-0.1747338	0.1819382	-0.96	0.337	-0.531435	0.1819674
Urban/rural	-0.3121229	0.0616655	-5.06	0	-0.4330219	-0.1912239
Sex	0.0333991	0.0292447	1.14	0.253	-0.0239369	0.0907352
Mothers' education	0.06466	0.0073042	8.85	0	0.0503396	0.0789804
Public health center (Puskesmas) services A						
1 health center	1.096428	0.4620314	2.37	0.018	0.1905865	2.002269
2 health center	1.168087	0.4638657	2.52	0.012	0.2586493	2.077524
3 health center	1.237996	0.4639276	2.67	0.008	0.328437	2.147555
Public health center (Puskesmas) services B						
1 health center	-0.0132854	0.1850009	-0.07	0.943	-0.3759911	0.3494203
2 health center	-0.0307413	0.1757446	-0.17	0.861	-0.3752995	0.3138169
3 health center	-0.0954011	0.1784127	-0.53	0.593	-0.4451904	0.2543882
Public health center (Puskesmas) services C						
1 health center	-0.1843973	0.259354	-0.71	0.477	-0.692877	0.3240823
2 health center	-0.187169	0.2588589	-0.72	0.47	-0.6946779	0.32034
3 health center	-0.0240172	0.2638406	-0.09	0.927	-0.5412931	0.4932587
_cons	-6.114272	0.7708866	-7.93	0	-7.625643	-4.6029
Observation	3,987					
F (20, 3966)	59.57					
Prob. > F	0.000					
R-Square	0.2310					

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Innovation from The District of Banyuwangi: Accountability and Public Participation in Managing Village-Fund through E-Village Budgeting.

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Innovation of government is a form of public service which relates to technology. Decentralization in Indonesia stimulates various governmental innovations both in city and district sector. TOP 99 has been an award which urges the government to revive during their tenure. District of Banyuwangi is prominent in emerging innovations which in turns adopted by other regions. Furthermore, the innovations thereof are shortlisted in TOP 99 Inovasi of 2017, during past few years. Electronic Village budgeting is an innovation offered by the government of district of Banyuwangi to the public in managing the village budget. The program has been implemented since 2015 to embrace Law 6/2014 about Village, where in a huge budget for villages was allocated. A good governance might optimize the budget on behalf of public interest. The e-Village Budgeting (e-VB) application is financial budgeting system which is used as an information system of village budget, for instance of which in district level; however, this one is applied in village level; straightly connected to Development Planning Body of District. It is hoped that budgeting of the village could be supervised by publics, aw well as by the government. Transparency is an indicator of implementation of the e-VB program, if the other districts do not have access to monitor the village's finance, e-VB of Banyuwangi does. The method used is descriptive quantitative as a form of analysis data gathered through observation.. The data collecting were comprised of: observation, literature review, interview, and documentation. The result showed the role of technology in the form of e-VB to support the governance of Banyuwangi district. The benefit of e-VB is reflected from synergy of financial management of the village which might be supervised by the government of the district, so that might result in transparency and accountability toward the people.

Keywords: Accountability, E-village budgeting, Innovation, Transparency

Introduction

Concerning about the government around the world, decentralization plays an important role which is not separated from the thought of decentralization itself (World Bank 2003a). The comprehension of decentralization is a concept that signals the delegation of the authority from the central government to the lower government to manage their own region. Decentralization is aimed to increase the efficiency and effectiveness of the function of government service to the citizens (Pollitt et al., 1998; Kaplan and Atkinson, 1998; Dillinger and Fay, 1999; World Bank/ International Bank for Reconstruction and Development, 1999). Decentralization can also reduce the risk the political violence such as separatism and ethnic conflict by increasing the local autonomy upon the allocation

decision, protecting minority right, improving the supply of social service, and distributing the fiscal resource to the suburbs to solve the complaints (e.g., Brass, 1991; Gurr, 2000; Hechter, 2000; Horowitz, 1991). In another side, decentralization can strengthen the conflict risk by reinforcing the ethnic identity (Hechter, 2000; Kymlicka, 1998). It means that decentralization shows the vertical building of the shape of state authority. The decentralization in Indonesia is realized through the policy of regional autonomy.

Nowadays, the autonomy policy is still being discussed. The policy of regional autonomy gives a wide authority to the region especially the city and regency. The implementation of regional autonomy to take back the dignity and prestige of a region gives several benefits such as; the opportunity of politic education to improve the quality of democracy in a region, the improvement of public service efficiency, and the upgrading of regional building. It is also expected to create good governance based on the law in Indonesia.

The history of regional autonomy (since 2001) has opened the space to the regional government to be responsible in managing their own business. It becomes an alternative solution to solve the problems because of the imbalance building between the central and regional government and the regency and city. The imbalance is caused by the unequal development which creates the poverty in Indonesia. Based on the data of BPS (September, 2015), the poverty in urban area is 8,22% and in the village is 14,09%. The government's strategy to solve the imbalance of national building is through focusing on building the region or village.

One of the solutions as the government's attention is arranging the law number 6 of 2014 about village. This law brings a big change for the village's position and relation towards the region and government on several aspects such as authority, planning, building, finance and village democracy. Through this law, the position of village is stronger. The law states that village and traditional village have the same treatment from the government and regional government. In this case, the village is given the autonomy to manage and organize the social interest based on the right of origin, custom, and the value of social and culture and to decide and manage the village institution. To realize it, the village government needs fund support. The fund is obtained from the source of village income such as *PADESA* (Village income), allocation of *APBN*(the state budget), part of PDRD of regency/ city, *ADD* (allocation of funds village), the financial assistance from *APBD*(local government budget) of province/ regency/ city, bequest and donation from the third side and other legal income. It is aimed that the government can give a good service by empowering the society to participate in the development program in both physic and non-physic sector to achieve the development and increasing the prosperity in society.

Since 2015, the government has given the village fundwhich is provided from the state budget transferred through the local government budget of regency/ city. The village has a right to manage the authority and funds. Nevertheless, as a part of the unitary state of the republic of Indonesia, the village government needs to have supervision from the upper government. In the future, the number of funds given to the village will be bigger meanwhile the capacity and capability of human resource in managing the funds has not been adequate. Moreover, the society involvement to plan and supervise the funds is still low. Therefore, it will be a big task for all elements of government (central, regency, village government) and the citizens to build the village in collective.

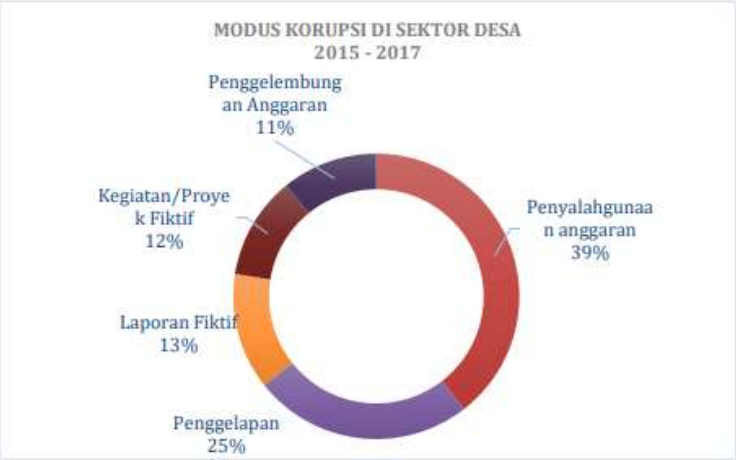
The village fund is basically aimed to increase the prosperity and the balance distribution to increase the public service and economy, reduce the building gap among the villages and strengthen

the citizens as the object and subject of development (Republic of Indonesia, 2014b). Based on the government regulation number 60/ 2014, the priority of the utilization of village funds is to develop and empower the villagers. Village ministry, the building of underdeveloped regions and transmigration decide the priority on the activity of villagers' development and empowerment (Republic of Indonesia, 2014c). In 2015, the government has provided the village funds for Rp20,766 trillion and in 2016 is about Rp46,9 trillion for all village in Indonesia.

The implementation of law creates a consequence to village government to get the big amount of funds. In another side, the big amount of funds must be responsibly managed. Therefore, the government has prepared several regulations related to support the accountability of village funds. The government regulation number 60/ 2014 discusses the village funds (fund source of state budget) which is renewed into the government regulation number 22/ 2015 and the regulation of domestic ministry number 113/ 2014 (Republic of Indonesia, 2014a, 2015). The several regulations above are not meant to complicate the village government to manage the funds but it is expected to be used for the village building that can be responsibly justified. However, the limitation of human resource becomes an obstacle for the government to manage the funds based on the regulation and purpose of village funds. The policy of village funds is still new and there have not been many researches to know the implementation. Meanwhile, a new policy needs to be evaluated. Therefore, the preparation and use of village funds becomes an interesting thing to research. This research focused on the matter of the accountability of fund management based on its calculation and realization.

Recently, the violation and corruption is found in the implementation of village funds. *ICW (Indonesian Corruption Watch)* has been supervising the corruption in the village. Based on the observation, the case of corruption increased in 2015-2017. In 2015, the corruption reached 17 cases and increased into 41 cases in 2016. The double increasing also happened in 2017 with 96 cases. The total corruption was about 154 cases (Antikorupsi.org). Based on the increasing of this case, the head of village was mostly involved in the case. The head of village becomes the main actor behind the case. There were 112 people who were involved in the case. The number of corruptor increases year by year. In 2015, there was found 15 corruptors, in 2016 was 32, and in 2017 was 65. Not all the corruptors were the head of village. 32 people were the village workers and 3 others were the family of village chief (Antikorupsi.org). Other cases were also found in several cases such as on budget with 51 cases, blackout with 17 cases, fictive project with 15 cases and budget distension with 14 cases. For the detailed information, it can be seen below;

Picture.1.Modus of corruption in thevillage



Source: Indonesian Corruption Watch

Based on the many cases of corruption, the regional government especially in regency starts to prepare a strategy to solve it. One of the regencies which start to prevent the corruption is Banyuwangi, east Java. The government of Banyuwangi has several strategies to implement the village funds. Through the advance of technology synergized with the service, the government of Banyuwangi has a system of funds management called *Electronic Village Budgeting*. The system is aimed to supervise and report the village government in the administrative area of Banyuwangi. *System Information Technology* (SIT) becomes an important asset for organization development. The use of *SIT* will help the organization more effective in achieving the aim of organization. Besides that, the implementation of *SIT* can also be used as a tool of planning, controlling and assisting in taking the decision. For public organization, the use of *SIT* will help to realize a transparent and accountable public service (banyuwangikab.go.id). In another word, *SIT* cannot be separated from the organization activity especially on public sector. It is expected to be more transparent in order that the society can supervise it easily.

The government of Banyuwangi provides *SIT* as a main pillar to support the public service in Banyuwangi, from the regional to village government. The first step to realize it is conducting cooperation with *PT. TELKOM* to assembly 1000 points of *free wifi* around Banyuwangi regency. The innovation of public service as the parts of the government in Banyuwangi is as follows; Program of smart village, management transparency of regional budget, accountability system of government work and *E-village Budgeting* (banyuwangikab.go.id).

According to the law number 6 of 2014 about village, the village has an obligation to use information system. The obligation to use information system is based on several things. Firstly, the big amount of fund allocation from central to village government. Secondly, the government demands each village to make and manage the transparent budget planning that can be accountable, for example; the report of village funds. Thirdly, the obligation to use information system is expected to increase the participation of society in creating better governance. The characteristic of the use of information system in village government is *mandatory* (law number 6 of 2014). Therefore, all villages must use the system of technology information in managing village funds. Based on the obligation to use theinformation system, the actualization of the system use is determined by the users' attitude towards the system (Hartono, 2007).

The government of Banyuwangi implements the system of *E-Village Budgeting* (EVB). Banyuwangi becomes a pioneer with the system of online finance. The purpose of the implementation of EVB is to create a transparent budget, supervise the building to the isolated village and synergize the finance and development among the level of villages and regencies. Besides that, the implementation of EVB is as the prevention media for the village workers to use and allocate the funds effectively and based on its regulation (banyuwangikab.go.id). This research will discuss the innovation ofBanyuwangi government in managing the village finance based on technology to achieve a strategy in creating a transparent and accountable report.

Theory

Idea of public sector innovation

The orientation of innovation implementation in public sector is very different with the private sector. The innovation of public sector is based on the public enthusiasm than the profit. The public is as the customer that must be served equally. This idea is strengthened by Deshpandé, Farley, and Webster (in Salge and Vera, 2012). They stated that customer orientation must be the basic value of public sector. The customers' necessity and satisfaction is the main priority of public organization in giving the service. Based on the idea above, it can be concluded that the implementation of

innovation is very important to be conducted by the public organization to achieve the main purpose of organization in filling the customers' necessity and satisfaction.

The system change from centralization into decentralization encourages the stronger regional autonomy. The region is given the authority to manage and hold their own business. Many regions conduct innovation in holding their own business. Commonly, the innovation is conducted with the purpose to increase the regional competence and attempt to complete the various problems among the demands in society. *Innovate* means *make change, introduce new things* and *bring in novelties or bring changes.* Innovation means to change a thing into a new one. The core of innovation is a change into new things (Muluk, 2008:44). Ancok (2012:35) defines innovation as "a process of thinking and implementing the idea to produce a new thing in the form of product, service, business process, new way, policy and etc."

Separated from the comprehension difference from the experts on the definition of innovation, Yogi in Noor (2013:87) concludes that innovation is not separated from these following;

Table.1 Definition of innovation

No	Dimension	Definition
1	New knowledge	An innovation is presented as a new knowledge for the society in a certain social system. The new knowledge is an important factor that determines the social change in society.
2	New way .	Innovation is also a new way for individual or group to fill the necessity or answer certain problem. This new way is the substitute of the previous way.
3	New object	An innovation is new object for its users both *tangible* and *intangible*.
4	New technology .	Innovation is identical with the advance of technology. There are many examples of innovation as the product of technology advance. The advance indicator of technology product can be directly known from the features on the products.
5	New discovery	Most of the innovation is the result of new discovery. It is often found that the case of innovation is accidental. Innovation is a product of a process that fully works with awareness and purpose.

Source : Noor (2013)

Theodore Levitt in Noor (2013:94) states that innovation is the combination of five components as follows;

Table.2. Components of innovation

No	Dimension	Definition
1	*Strategy and Customers*	The government must know *when, where* and *how* the innovation is conducted.
2	*Measures and Performance*	It must be known how to measure the success of innovation conducted.
3	*Process (and infrastructure)*	It must be known whether innovation that will be conducted is temporary or cannot be separated from the organization.

4	*People*	How the culture of organization understands the innovation itself.
5	*Technology*	How the utilization of "tool" in the innovation itself.

Source: Noor (2013)

Typology of innovation

According to Mulgan and Albury in Muluk (2008:44), "*Successful innovation is the creation and implementation of new process, products, services, and methods of delivery which result in significant improvements in outcomes efficiency, effectiveness or quality."*

Mulgan and Albury shows that innovation has been developing, not only innovation in the product (*products and service*) and process. Muluk (2008:45) explains that typology of public sector innovation is as follows;

Table.3. Typology of innovation

No	Typology of innovation
1	Innovation of product/ service is from the change of form and product/ service design;
2	Innovation of process is from the continuous movement of quality renewal and refers to the change combination of organization, procedure, and policy which are needed to innovate.
3	Innovation of service method is a new change in interacting with the customers or a new way in giving the service.
4	Innovation of strategy/ policy refers to the vision, mission, purpose, new strategy and its reasons of the reality.
5	Innovation of system includes a new/ renewed way in interacting with other actors. In another word, there is a change in governance.

Source :Muluk 2008

Another aspect in the study of innovation is related with the level of innovation which reflects the big variations of effects of the happening innovation. Category of innovation level is explained by Mulgan and Albury in Muluk (2008:46):

Table.4. Types of innovation

No	Types	Definition
1	Incremental innovation	The happening innovation brings small changes to the process or service. Nevertheless, incremental innovation plays important roles in the renewal of public sector because it can create small changes that can be continuously implemented. It also supports the responsive service to the local and personal necessity and contributes value for money.
2	Radical innovation	Radical innovation is a basic change in public service or an introduction of new ways in the process of organization or service. Radical innovation is required to bring the real betterment in the work of public service. It is also to fill the users' expectation that has been ignored for a long time.
3	Transformative innovation	The system brings the change in the structure of work and organization by transforming all sectors and changes the relation of organization. This type of organization needs a longer time to achieve the expected result and requires basic change in the structure of social, culture and organization.

Source: Muluk 2008

Transparency and accountability in the management of village finance

Innovation is not separated from a public service. The discussion of public service will relate to the government and society. Nowadays, good governance is mostly discussed in which the government must give the best service to the society. Wiranto (2012) in Auditya and Lismawati (2013) states that *good governance* is the authority implementation of politic, economy and administration in the management process of various public business in a state. *Good governance* has several indicators such as effective, participative, transparent, accountable, productive and equal and can promote law enforcement. With the public accountability and finance management transparency, the government has trust and support from several sides and will work more serious and disciplined.

This research explains the principles needed to realize *good governance* (accountability and transparency). The relation between accountability and transparency in this research focuses on budgeting. It is limited with the appropriate information of budget that can be accessed by the citizens, the suitability of regulation, the government responsibility and the direct and indirect citizens' participation. Therefore, it needs elements and roles in implementing *good governance.*

In attempting the implementation of accountability and transparency in budgeting, the government uses the technology development as the instrument of opened public information. The concept is called *e-government.* The use of information technology can encourage better public responsibility and transparency. Besides that, the transparency of electronic budget is expected to raise the participation of society in supervising the regional finance.

According to state administrative institution (2007:57), there are several indicators that can be used to measure the accountability; a) accountable budget management issued; b). work responsibility; c) deviation intensity; d) follow up effort of deviation.

Accountability is a concept related to mechanism of responsibility from a side to another side. According to Sulistyorini in Sopanah (2005), an accountable government has the following characteristics; (1) can present the information of the government implementation openly, fast, and precisely to the society, (2) can give satisfying service to the public, (3) can give a space to the society to involve in the process of development and government, (4) can explain and justify every public policy proportionally, (5) the suitability of public media to value the achievement of government's program and activity. Process of planning and implementing the budget is more participative and the mechanism of supervision from internal and external sector is free from the practice of corruption, collusion and nepotism. Besides that, the increase of public accountability and transparency will create better *good corporate governance* year by year (Rofiqoh, 2006).

The principle of accountability has been implemented in public sector to create good management. The space of accountability is not only on the financial sector but also on law, program, process and result. Besides that, the accountability is not only related to process, work, and management, but it also relates to the financial management and output quality. Financial accountability can be measured from fewer deviations in government financial management. However, this research does not only refer to the accountability, but also to the budget transparency.

Budget transparency refers to how far the public can obtain the information on the activity of government finance and its comprehensive, accurate and punctual implications (Andrianto, 2007: 21). Budget transparency can be measured through several aspects. The easiness of information access and mechanism of citizens' access in delivering the opinion must also be observed. The openness refers to

the opened opportunity for the society to propose the response and critic toward the government that is not supposed to be transparent (Widodo,2001:28).

The principle of transparency has two aspects in realizing the opened government on the information of policy by the regional government. Those aspects consist of public communication by the government and citizens' right towards the information access. Both will be difficult to conduct if the government does not work well. Good work management is the first point of transparency. Transparency must be balance with the secret institution and information that will influence the right of individual privacy. The regional government must prepare clear policy about the way to get the information (Krina, 2003).

Accountability and transparency in regional finance management through *e-government* will run well. The budget responsibility and regional activity can also be known by the public and concerned sides. Therefore, this research will discuss the realization of responsibility and electronic budget transparency as the realization of *good governance.*

Strategic planning

The phrase of "strategic planning" is the combination of two words; *planning* and *strategy.* According to Siagian (2008: 15), the term of *strategy* was derived from the military field and it was stated as a trick to win a battle by the general. Nowadays, the term of *strategy* has been used by all kinds of organization and main idea of the definition is still defended. However, the application is matched with the kind of organization itself. Hunger (2001: 16) states that company strategy is a comprehensive planning formula on how the company will reach their vision and mission. David (2010 : 18) adds *strategy* is a media with long term purpose. Handoko (2009 : 86) explains that *strategy* gives the cohesive direction for the organization and its purposes and put up the guidance of resource utilization to reach the mission. Strategy relates the human resource with other resources with the challenge and risk that must be conquered out of the company.

Strategic planning is a long-term comprehensive planning and gives the formula of organization direction and procedure of resource allocation to reach the mission in certain time in various possibly situation and environment. Strategic planning is a process to select the aim of organization, strategy determiner, policies and strategy programs to complete the mission. Strategic planning is a process to decide the programs that will be conducted by the organization and its number estimation of resource that will be allocated in each long-term program for several years ahead. The result of strategic planning process is a document which contains the information about the future programs (Badrudin, 2013 : 96). The definition of strategic planning is also stated by Handoko (2009 : 92). He stated that *strategic planning* is a process to select the purpose of organization; strategy determiner, policy and strategic programs to reach its purposes; and determination of method to ensure that strategy and policy have been implemented. Shortly, strategic planning is a process of long-term planning that is arranged and used to decide and reach the purpose of organization. Based on the above explanation, *strategic planning* is a long-term planning that has broad and comprehensive range. This research sees and reads the innovation of *electronic village budgeting* as an innovation of financial management that becomes the planning of Banyuwangi government in implementing the transparency and accountability of village financial report.

Methodology

This research is a descriptive research with qualitative approach. The research focused on the management of village finance through the innovation of *Electronic Village Budgeting.* The location

of the research was in Banyuwangi. The site of research was *community empowerment agency* and village government of Banyuwangi. In collecting data, the researcher used the technique of observation, interview and documentation. Method of data analysis used qualitative data analysis of Miles, Huberman and Saldana (2014:33).

Discussion

Nowadays, village government is mostly discussed in society. As the lowest hierarchical type of Indonesian government, village has an interesting thing to research. Decentralization and implementation of village regional autonomy becomes a serious attention for the central and regional government. Village funds must be implemented to the public to build the village. However, the funds become a problem because of the corruption conducted by several people.

ICW (Indonesian Corruption Watch) has been supervising the corruption in the village. Based on the observation, the case of corruption increased in 2015-2017. In 2015, the corruption reached 17 cases and increased into 41 cases in 2016. The double increasing also happened in 2017 with 96 cases. The total corruption was about 154 cases (Antikorupsi.org). Due to these cases, the government obligates the village finance report through information system. The mandate from central government gets the response from several regional governments, included Banyuwangi regency. Banyuwangi government as the initiator of innovation in east Java responded the mandate by designing new innovation to manage the finance through system of *electronic village budgeting* (head of division of village finance management of Banyuwangi government).

The government of Banyuwangi implements the system of *E-Village Budgeting* (EVB). Banyuwangi becomes a pioneer with the system of online finance. The purpose of the implementation of EVB is to create a transparent budget, supervise the building to the isolated village and synergize the finance and development among the level of villages and regencies. Besides that, the implementation of EVB is as the prevention media for the village workers to use and allocate the funds effectively and based on its regulation (banyuwangikab.go.id). This program matched with the program of village ministry concerning with the openness of information. The openness of information is an effort to increase the skill, initiation, willingness and public participation to support village building. The program of village ministry targeted the building of information system in each village which consisted of management information system of *village-owned enterprise* (*BUMDes)*, *online* village portal, transparency of village finance, village service and village monitoring (kemendesa.go.id).

This system creates transparency and accountability in Banyuwangi regency. According to Sulistyorini in Sopanah (2005), an accountable government has the following characteristics; (1) can present the information of the government implementation openly, fast, and precisely to the society, (2) can give satisfying service to the public, (3) can give a space to the society to involve in the process of development and government, (4) can explain and justify every public policy proportionally, (5) the suitability of public media to value the achievement of government's program and activity. Besides supporting accountability, transparency is also implemented in system of *electronic village budgeting.*

Public can obtain the information from the government related to the village finance through system of *Eletronic Village Budgeting*. Budget transparency refers to how far the public can obtain the information on the activity of government finance and its comprehensive, accurate and punctual implications (Andrianto, 2007: 21). Budget transparency can be measured through several aspects.

The easiness of information access and mechanism of citizens' access in delivering the opinion must also be observed. The openness refers to the opened opportunity for the society to propose the response and critic toward the government that is not supposed to be transparent (Widodo,2001:28). Therefore, transparency and accountability is implemented by the government through system of *EVB.*

The system of financial management becomes one of the strategic planning in Banyuwangi into smart village. One of the indicators and dimensions of smart village is the implementation of *electronic village budgeting* as the pilot project in Banyuwangi. The definition of strategic planning is also stated by Handoko (2009 : 92). He stated that *strategic planning* is a process to select the purpose of organization; strategy determiner, policy and strategic programs to reach its purposes; and determination of method to ensure that strategy and policy have been implemented. Shortly, strategic planning is a process of long-term planning that is arranged and used to decide and reach the purpose of organization.

System of *electronic Village Budgeting* is a strategy conducted by Banyuwangi government to implement the village finance that has been the mandate of central government. The implementation must be transparent and accountable. The utilization of technology becomes a strategy to manage the funds based on *good governance*. Besides that, the strategy of EVB is used as a pilot project to implement smart village in Banyuwangi regency. EVB is one of the innovations which fills the five components from Theodore Levitt; *Strategy and Customers, Measures and Performance, Process (and infrastructure), People, Technology (*Noor (2013:94). According to Mulgan and Albury, EVB is transformative innovation because it brings the change in the structure of work and organization by transforming all sectors and changes the relation of organization. This type of organization needs a longer time to achieve the expected result and requires basic change in the structure of social, culture and organization.

Conclusion

Decentralization opens an opportunity in the region to develop their governance. In managing the funds, Banyuwangi government has a strategy to implement the transparent and accountable funds. The strategy is through synergizing the technology and governance with the creation of *electronic village budgeting.* System of financial management is a transformative innovation to create a new and interesting idea to realize *good governance.*

The factor in creating this innovation is based on the many cases of corruption in financial management in several regions. The success of Banyuwangi government to create *good governance* with EVB becomes a new strategy to create smart village in Banyuwangi. This policy can be a reference for another government to realize transparency and accountability because public can supervise and utilize the technology. Technology in government management can be used as a strategy to manage the village funds. This strategy is as the realization of transparency and accountability and creates Banyuwangi as smart village.

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"Bela Beli Kulon Progo"
(Study on Implementation of Regional Regulation of Kulon Progo Regency Number 5 year 2016 about Local Products Protection)

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ABSTRACT

Kulon Progo, a district in the Special Region of Yogyakarta that is less 'highlighted' by the world because it has not been able to radiate its potential to the fullest. The abundance of natural and human resources is not linear with the condition of the economy and the welfare of its inhabitants. Compared to other districts in the Special Region of Yogyakarta, Gross Regional Domestic Product (GRDP) and Local Own Revenue Kulon Progo is the lowest, while the percentage of poor people is the highest. Responding to this condition Regent Kulon Progo dr. H. Hasto Wardoyo, Sp.OG (K) with his deputy Drs. H. Sutedjo sparked the program 'Bela Beli Kulon Progo' by the spirit of seizing the market in their own country. This program is a community movement to consume by buying local products original Kulon Progo. To strengthen this program is issued Regional Regulation of Kulon Progo Number 5 year 2016 about Local Products Protection. By using observation method, document study and interview, this paper aims to know the implementation of Regional Regulation of Kulon Progo Regency Number 5 year 2016 which is analyzed using MSN Model (mentality, systems, networking) Approach. It is concluded that the Regional Regulation of Kulon Progo Regency Number 5 year 2016 about Local Products Protection as the legal basis of the 'Bela Beli Kulon Progo' Program is implemented synergistically between the Regional Government, the business community and the community. Operational policies include: 1) Establishment of 'Gapoktan' (Association of Farmer Groups) with original superior products of 'Menor' rice (Melati Menoreh); 2) Production of bottled drinking water under the label 'AirKu'; 3) Batik typical Kulon Progo motif 'Geblek Renteng'; 4) 'ToMiRa' (Toko Milik Rakyat) as a cooperative business unit; 5) Infrastructure projects are required to use local Kulon Progo original raw materials; 6) The Company is required to conduct Corporate Social Responsibility (CSR) in the form of 'one village one sister company' program. 'Bela Beli Kulon Progo' program is considered successful because it is able to drive the wheels of the economy and automatically improve the welfare of the Kulon Progo people. This program can be best practice for other areas that have similar conditions.

Keywords: implementation, regional regulations, Bela Beli Kulon Progo

BACKGROUND

Kulon Progo is one of five regencies in the Special Region of Yogyakarta which was established since October 15, 1951, is about 25 km southwest of downtown Yogyakarta and Wates as a capital city. Geographically Kulon Progo is in a strategic area because it is divided into three parts, namely the plateau in the north, the hills in the middle and lowlands in the

south. This condition causes Kulon Progo abundant with natural resources and the land is very suitable to develop the agricultural sector and plantations so that in accordance with the brand 'The Jewel of Java'.

Kulon Progo Regency should be able to grow more rapidly because it is the main route south of Java which became the node of the distribution of goods and services. However, the fact is that at the provincial level, the Gross Regional Domestic Product (GRDP) of Kulon Progo Regency is the lowest, while the percentage of the poor is the highest (BPS-Statistics, 2017). The ninth Regent of Kulon Progo dr. H. Hasto Wardoyo, Sp.OG (K) together with his deputy Drs. H. Sutedjo finally sparked the 'Bela Beli Kulon Progo' Program which was launched on March 25, 2013. The 'Bela Beli Kulon Progo' program is an innovative step to optimize natural and human resources in Kulon Progo Regency that has not been well managed. To support the success of this program is followed up with the enacted Regional Regulation of Kulon Progo Number 5 year 2016 about Local Products Protection.

MAIN QUESTION

Regional Regulation of Kulon Progo Regency Number 5 year 2016 about Local Product Protection which is the legal basis of the implementation of 'Bela Beli Kulon Progo' Program has been included in the third year of implementation. Program 'Bela Beli Kulon Progo' is able to make progress Kulon Progo Regency with various awards for its success. Interesting to review Regional Regulation of Kulon Progo Regency Number 5 year 2016. Therefore the question to be answered in this research is how the implementation of Regional Regulation of Kulon Progo Regency Number 5 year 2016 about Local Products Protection?

METHODOLOGY

This is a qualitative research using primary and secondary data collected by observation method, document study and interview. Observations are made to obtain data and facts naturally without any manipulated. Document studies are needed to compare the conditions in the time before and after implementation of the program so that it can be seen progress. Interviews are intended to confirm the findings of observations and document studies as well as to explore more detailed information. Triangulation of this method aims to validate data from various sources for the conclusion basis. Implementation of Regional Regulation of Kulon Progo Regency Number 5 year 2016 was analyzed using MSN (mentality, systems, networking) Approach by Kadji (2008). This model confirms that any policy that is ready to be implemented, ascertained leads or tangent to the three dimensions of policy of stakeholders or parties concerned with the policy are: Government, Private Sector, and Civil Society (Kadji, 2008). The three sectors concerned with the public policy can be illustrated in the following figure:

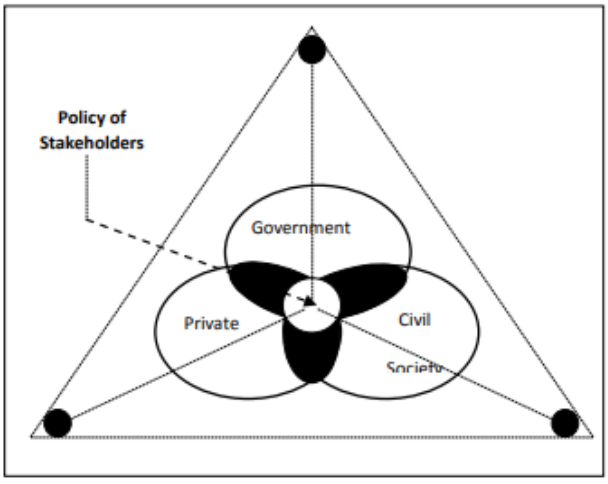

Figure 1. Three sectors with an interest in public policy implementation

The study took place from March to June 2018 starting from the preparation of proposals, data collection, data analysis to the preparation of research results.

RESULTS

'Bela Beli Kulon Progo' is a program that applies the principle of populist economy for Kulon Progo Regency to be economically independent. This concept is inspired by a similar movement of 'Buy Indonesia' initiated by Ir. Heppy Trenggono in 2010 was later modified to 'Bela Beli Kulon Progo'. The addition of the word 'Bela' is not merely giving the aesthetic element but also the meaning of patriotism. Basically the two movements have the same principle that is to build the economy by giving understanding to the public about the importance of defending its own products which will then form a pattern of behavior to buy products belonging to the region. Regent Hasto remembers the condition of his people in facing the phenomenon of MEA (ASEAN Economic Community). The concept of 'Bela Beli Kulon Progo' imparts an ideology to the entire Kulon Progo community to as much as possible to use local products and play an active role as producers as well as consumers so that the people who become the ruler of local markets in Kulon Progo. By buying the original product of the region then the money will rotate in the area and can be used as development capital, then predicate as one of the districts with high poverty rate in Indonesia can be removed.

In order to strengthen the program, coordination is done in the framework of drafting local regulations on the protection of local products that are not limited to food products but including non-food products to services and labor. In the drafting of this regional regulation takes a long time because there is no direct rule on it or the previous regional rules so difficult to obtain reference. By involving various parties including the executive, legislative and experts finally in April 2016 established Regional Regulationof of Kulon Progo Regency Number 5 year 2016 about Local Products Protection. Since then the government is increasingly concerned in promoting the utilization of local products.

As the implementation of the provision of Article 7 paragraph (4) of Regional Regulation of Kulon Progo Regency Number 5 year 2016 about Local Product Protection, in 2017 the Regent of Kulon Progo issued a Decree No. 320 / A / 2017 about Local Product Type in Kulon Progo Regency. The decree describes the types of local products in Kulon Progo Regency that includes: a) Agricultural Commodities, b) Processed Food Products, c) Other Non-Food Products, d) Culture, e) Services / Others. Regional Regulation of Kulon Progo Regency Number 5 year 2016 states that the form and program of local product protection is implemented in a focused, integrated and sustainable manner by the Regional Government, business community and society (Article 4). Further on Article 21 it is explained that there needs to be coordination among the Regional Device Organizations, local business entrepreneurs, related business actors, non-governmental organizations and observers in the coordination forums. This is in accordance with MSN Approach Model Policy Implementation theory which states that any policy that is ready to be implemented is confirmed or directly related to the three dimensions of policy of stakeholders, namely: Government, Private Sector, and Civil Society. Government in its existence as the policy maker and as policy implementer. Private sector as a party with an interest in policy products is at the forefront of supporting the implementation of policies that favor public interest. Civil Society as the party that should realize that its role is not just the object but also the subject of the policy.

Some operational policies are issued as the implementation of Regional Regulation of Kulon Progo Regency Number 5 year 2016 with synergy between government, private sector and community. Kulon Progo District Government facilitates the formation of 'Gapoktan' (association of farmer groups) including providing facilities in the form of rice milling machines. Farmers are invited to not only sell the harvest in the form of grain but can

process it into rice and pack it attractively so that it is not inferior to the rice sold in the supermarket. The Government of Kulon Progo Regency cooperates through MoU (Memorandum of Understanding) with Bulog (Logistic Affairs Agency), a state-owned general company engaged in food logistics as a supplier of 'raskin' (poor rice) in Kulon Progo Regency called 'rasda' (regional rice). Hasto Regent also requires civil servants in Kulon Progo Regency Government to buy rice from 'Gapoktan' at least 10 kg every month. Currently Kulon progo has local varieties of premium quality rice, Menor (Melati Menoreh), which is a typical product of Kulon Progo since it has never been cultivated in bulk. The rice surplus in Kulon Progo Regency is expected to meet the need of rice in the surrounding areas such as Yogyakarta City which no longer has paddy field.

Another Kulon Progo local product that continues to be encouraged is bottled water. The advantage of purchasing bottled drinking water runs out Kulon Progo while Kulon Progo has an abundant and still pristine source of water in the Clereng area of Sendangsari Village, Pengasih Subdistrict. PDAM (Regional Water Company) Tirta Binangun Kulon Progo Regency finally produces drinking water in 'AirKu' brand packaging launched in October 2013. The name 'AirKu' means Air Kulon Progo because it is taken from Clereng springs and processed at a nearby factory Clereng. On August 19, 2016 inaugurated the new operational building and machinery in Mrunggi Hamlet Sendangsari Village Pengasih Subdistrict as a sign that 'AirKu' will continue to grow and compete with similar companies that have been in the market. The presence of the 'AirKu' factory has opened up new jobs for employing local residents. In early launch, PD Aneka Usaha is the sole distributor of 'AirKu' product, but now PDAM Tirta Binangun opens opportunity for Kulon Progo community to partner as 'AirKu' distributor. Currently 'AirKu' already has Certificate of Indonesian National Standard (SNI) no. 01-3553-2006 and Certificate of Quality Standard ISO 9001: 2008. With three variants of

glass packaging, 600ml bottle packaging and packing gallon 'AirKu' able to compete in local and regional markets.

Around the 1980s to the 1990s many of the productive age population of Kulon Progo Regency worked in Yogyakarta City, hundreds of them laborers in batik companies. When the batik industry receded they returned to the village working on agricultural land, but some remain a batik at home and the results are deposited to batik entrepreneurs in the city. Seeing the economic potential of the batik sector, Regent Hasto through the 'Bela Beli Kulon Progo' Program promotes to wear locally made batik fabrics and requires civil servants and students in Kulon Progo Regency to wear Kulon Progo uniforms of 'geblek renteng' motif. This motif is produced from batik motif design contest to find the unique motif that became the identity of Kulon Progo. Geblek is a traditional food of Kulon Progo is made from basic ingredients tapioca flour, shaped like a number eight, using garlic and salt spice so it has a tasty taste. 'Geblek Renteng' is an original motif and has an Industrial Design Rights Certificate from the Minister of Justice and Human Rights No. IDD 0000035113 dated December 11, 2013 so it should not be produced outside Kulon Progo Regency. Batik production increased sharply from an average of 2 thousand yards to 40 thousand yards per month and will continue to rise because orders not only from Kulon Progo but has penetrated from outside the region and even outside the island.

Today modern stores are increasingly scattered everywhere including in Kulon Progo Regency which has established a number of minimarkets Indomaret and Alfamart. As a movement with the basic principles of popular economy, the 'Bela Beli Kulon Progo' Program highlights the importance of the existence of cooperatives as a regional economic institution. All Indomaret and Alfamart outlets within a one kilometer radius of the traditional market are facilitated by Kulon Progo Regency Government to be purchased by

the cooperative. The booth has been bought into a cooperative business unit and its name is changed to ToMiRa (Toko Milik Rakyat) which belongs to the People's Store. Along with the change of status from a corporation to a cooperative owned enterprise, ToMiRa is under the supervision of the cooperative and the ToMiRa employees become cooperative employees. Nevertheless, until now the cooperative is still cooperating with Indomaret and Alfamart as management companion, main distributor and employee training center. ToMiRa is required to provide special spot for local products of Kulon Progo with minimum allocation of 20% so that quality local products can be lifted in modern market share.

The 'Bela Beli Kulon Progo' program is also included in infrastructure projects. The winner of the tender or project implementer must purchase local raw materials in Kulon Progo. The winner of the tender for a road project must buy asphalt at PT Selo Adikarto, one of the Regional Owned Enterprise (BUMD) of Kulon Progo Regency. The construction of the sidewalk is also required to use andesite from Kulon Progo Regency. As corporate social responsibility or CSR (Corporate Social Responsibility), every company in Kulon Progo Regency is required to set aside 5% profit for the village in Kulon Progo. The CSR funds are used to finance the 'One Village One Sister Company' program. Each company has at least one target village and the company's needs can be fulfilled by local villagers.

CONCLUSIONS

Regional Regulation of Kulon Progo Regency Number 5 year 2016 about Local Products Protection as the legal basis of the 'Bela Beli Kulon Progo' Program is implemented synergistically between the Regional Government, the business community and the community. The operational follow-up of this policy include: 1) Facilitating the formation of ‘Gapoktan’ (Association of Farmer Groups) with original superior products of Menor 'rice

(Melati Menoreh); 2) Producing bottled drinking water under the label 'AirKu'; 3) Lifting batik typical Kulon Progo motif 'Geblek Renteng'; 4) Facilitating 'ToMiRa' (Toko Milik Rakyat) as a cooperative business unit by buying networked retail stores; 5) Require the winner of an infrastructure project tender to use local Kulon Progo original raw materials such as andesite and asphalt; 6) Require companies to perform Corporate Social Responsibility (CSR) in the form of Program 'one village one sister company'. Program 'Bela Beli Kulon Progo' is considered successful because it is able to move the wheels of the people's economy and automatically improve the welfare of the people Kulon Progo.

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Democracy, Effective Leadership and Public Services Delivery

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Abstract

This study investigates the association between transfer fund received by villages from district, province and national level with the political connection. Applying data of potensi desa (podes) year 2005, 2011 and 2014; this study evaluate whether villages that are connected politically in 2005 received higher transfer fund in survey podes in 2011 and 2014. Estimation with ordinary least square (OLS) and instrumental variable i.e. availability and quality of TV and telephone connection; this study find as follows. Firstly, villages that have political connection in 2004 general election are significantly having more transfer fund from higher level of government. Secondly, villages significantly receive higher transfer from district and national government if they are politically connected but the evidence is mixed with transfer from Province level. Thirdly, leader characteristic does not matter in terms of public services delivery. This implies that effectiveness in leadership should be prioritized.

Key words: political connection, podes, transfer fund

Introduction

Fiscal decentralization has been implemented in Indonesia for more than ten years. By the same time, Indonesia has been adopting democracy to enhanced development process. Democratic general election for electing legislative and judicative bodies has been initiated since 1999. General election is implemented every five years. The second democratic general election is conducted in 2004. In this election, new rules and conditions were applied (Ekawati, 2017; KPU, 2018). Firstly, 14 *amandemen* for *Undang-Undang Dasar 1945* are introduced for 2004 election process. One of these *amandemen* regulate the composition of Indonesia legislative body. According the *amandemen*, since 2004 *Majelis Permusyawaratan Rakyat* (MPR) consists of central legislative body or *Dewan Perwakilan Rakyat* (DPR) and *Dewan Perwakilan Rakyat Daerah* (DPRD). Secondly, direct election will be applied for electing MPR and DPR members. Therefore, since 2004 military representative has been excluded from the legislative body, i.e. MPR. Thirdly, direct election also applied for electing executive body, president and vise

president. Due to this process, it is said that Indonesia become one of the most democratic countries in terms of implementation of general election.

The elected president for the period 2004-2014 is Susilo Bambang Yudhoyono or SBY. He is the top leader of Democrat party. SBY leads Indonesia for two periods, 2004-2009 and 2009-2014 (www.kpu.go.id.). As one of new democracy countries and also implement fiscal decentralization, it is interesting to investigate how does fiscal decentralization and democracy taking place? Is there a kind of political connection between the winning parties and local government in terms of allocating transfer funds for supporting regional development? Theoretical and empirical finding indicate there is evidence of political cycle for majority of new democratic countries around the world. Government budget fluctuated significantly before and after general election taking places. Mixes evidence are reported for cross sectional studies as single countries.

Applying 42 developing countries that adopting new democracy, Vergne (2009) reporting that capital and infrastructure expenditure rose one and two year before election taking place, but these expenditures drop significantly during election and after election period. Enkelmann and Leibrecht (2013) investigate various types of government expenditures one and two years before election. Their study focuses in 32 OECD countries. This study found that government expenditure for environment rose more than 25 percent if a country predetermined or formally scheduling for election. However, when disaggregating data for non-predetermined election no specific expenditure were recorded increase. Wallner (2012) investigates 96 developing countries, focusing on macro-economic performance, namely inflation and unemployment one and two years before election date. This study report that both inflation and unemployment rate decrease about 0.02-0.01 before election but the rate rose after the election. This study focuses on the 1996-2010. Study by Ebeke and Olcer (2013) applied 63 low income countries for periods 1990-2010. This study noted that significant budget deficit were experienced by low income countries before the election date, and the deficit must be eliminated after the election. This study found that various IMF adjustment programs were adopted to redistribute budget for infrastructure programs.

Studies that focused on single country reporting mixed evidence. Focusing on the economy of China, Jin and Zhang (2017) report that government subsidies for industries rose significantly during pre-election date. Subsidies were mainly directed to firms and industries which are politically connected. Firms are said politically connected if one of the owner or CEO of the firms and industries are part of state parliamentary or one of China ministry. Litsching and Morrison (2010) investigated cash transfer program in Brazil by applying quasy experimental study. Cash transfer programs were significantly reach higher beneficiary in targeted area compared to non-targeted areas. Targeted areas are regions where potential winning are gain by incumbent party.

For the study in Indonesia, as far as authors 'concern there are several studies in this area. Some studies concern on this topic are: Skoufis.E. et al. (2014); Pal and Roy (2010), Setiawan and Rizkiah (2018). The study of Skoufis et al. (2014) focusing on effects of government spending on infrastructure and human investment in district with direct election and indirect election during 1999, 2004 and 2009. This study concluded that there is no evidence higher investment on infrastructure as well as human capital investment in districts that applying direct election compares to districts that not. The study of Pal and Roy (2010) comparing the impacts of election on development in district level. Regions where exist elite capture or election is implemented in free and fair election have significantly better economic performance compare to districts that are not. Furthermore, the study of Setiawan and Rizkiah (2018) investigate the budget cycle of local government in Indonesia and relating it with election in 2004, 2009 and 2014. This study focus on various expenditures such as: total expenditures, social expenditure, social expenditure, financial assistance, balance budget and many others. Applying panel regression, this study reporting social assistance and total expenditure at districts level increase in the year and one year of election date.

This study will investigate the impact of political connection on the allocation of transfer fund from government at district and province level as well as central government on villages level in Indonesia. This study differ with the three studies previously in Indonesia in the several terms. Firstly, this study focus at villages level, while all previous study in Indonesia investigate condition at districts level. This study apply micro data known as potensi desa or podes. Secondly, this study investigate whether villages where national top five winning parties gain significant high vote compare to villages where national top five winner party do not gain significant vote. In other words, whether villages that are politically connected in terms of voters and have representative agent gain significant higher transfer fund from government at district, province and national level?. Thirdly, this study only focus on investigating the potential of political connection in one presidential regime, namely SBY regime. President Susilo Bambang Yudhoyono or SBY was elected in 2004 for leading in period 2004-2009 and reelected in 2009 for the official date in 2009-2014.

Podes 2005 provide us with the information whether the top five winning party at village equal to the winning party at national level. The top five winning party generally deserve for reserve in legislative body (DPR and DPRD). Data regarding politic and election only available in podes 2005. However, as the elected president for the periods 2004-2009 and 2009-2014 are similar, even though the winning party are results of coalitions between several parties. This can reduce the strength of the connection level if the elected president is differ. This study will investigate the association of political connection in the 2004 election with transfer fund in 2011 and 2014. Podes survey is conducted every three years, which relating to this study are: 2005, 2008, 2011 and 2014. Our study only utilize podes data in 2005, 2011 and 2014. General elections related with this survey are 2004, 2009 and 2014. Therefore, this study can investigate only the political connection in the second period of SBY. Data in 2011 podes provides

information of villages for the second year after re-election (2009), while data podes in 2014 provides information about the last year of SBY.

Our study runs pool cross section regression. Podes 2005 survey about 69.957 villages; podes 2011 survey about 77.961 villages and podes 2014 survey about 82.190 villages. However, not all 69.957 villages in 2005 survey are matched with survey in 2011 and 2014. Only matched villages are included in the analysis. In the following section we will describe data and empirical model. The last section is Discussion.

Data and Empirical Model

This study utilizes village level data known as potensi desa or podes for the periods 2005, 2011 and 2014. Ordinary Least Square (OLS) regression and instrumental variable regression (IV) are applied in pool cross section data. The empirical model can be expressed as the following equation.

$$y_i = \alpha_i VC + \beta_i HVC + \gamma_i PC + \varepsilon_i \qquad \ldots(1)$$

Y_{ij} transfer fund to village level from the higher government level, namely district level, province level and national level. We also include transfer fund from foreign countries, private sector and other type of transfer. VC_i is village's characteristic including village size and location. HVC_i is head of villages or leader characteristics, which include leader's: age, sex and educational attainment. Finally PC is political connection. We define the winning party as proxy of political connection is defined as whether the the top first, second, until five legislative winnging party at villages level are belong to the party that belong to Democrat party or party that coalition with Democrat.

Results

Estimation results for equation (1) can be found in the attachment. Fund transfer from district, province and national level are summarize in table 1,2 and 3. Political connection variable is proxied by: (1) sum of dummy winning top five party at national level. If the first top five winning party (PDIP, Golkar, PKB, PKS and PPP) similar with the winning at villages level, the value is one for each. Therefore the value will range from 1 to 5. (2) sum of the availability of representative agent at village level, representing from the top five winning party at national level .

Estimation result indicate that transfer fund from district and national level positively related with indicator of political connection, however it does not clear for transfer fund at province level. Transfer fund from province level less clear might be related with Province does not directly coordinate the development process at village level.

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Attachment

Tabel 1: Political Connection and Transfer from District Level

Independent variables	Dependent variable is Transfer Fund from District		
	OLS	IV Tr_District 11	IV Tr_District14
Constant	-34.98***	-928.3**	-1,448***
	(7.310)	(412.3)	(549.5)
Village Characteristics			
Population	0.00516***	-0.00518	-0.0115**
	(0.000731)	(0.00382)	(0.00514)
Village Size	0.00224***	0.00189***	-0.00149**
	(0.000291)	(0.000597)	(0.000616)
Rural/Urban	124.6***	205.5***	230.7***
	(4.200)	(37.76)	(50.75)
Non-Coastal Areas	6.322*	25.01***	24.52**
	(3.768)	(7.930)	(11.06)
Forest Area	0.132	34.06*	58.20**
	(2.930)	(20.49)	(27.03)
Road Quality	-16.31***	-51.84**	-49.68*
	(4.100)	(20.57)	(27.56)
Transport	-9.402**	-93.13**	-130.8**
	(4.787)	(40.68)	(54.52)
Electricity (non_PLN)	0.105***	0.00580	-0.124*
Electricity (PLN)	0.0165***	-0.0202	-0.0291
	(0.00355)	(0.0167)	(0.0224)
	(0.0128)	(0.0501)	(0.0651)
Instrumental Variabel (Availability and Quality of TV broadcasting)			
TVRI	-5.392		
	(3.550)		
Trans	-9.906**		
	(5.033)		
TPI	-0.621		
	(4.630)		
RCTI	-0.0712		
	(5.555)		
SCTV	75.45***		
	(6.091)		
Indosiar	-27.46***		
	(5.666)		
TV7	26.32***		
	(5.060)		
Global	-22.41***		
	(4.276)		
ANTV	-27.96***		
	(5.008)		
LaTV	-1.309		
	(5.181)		
Metro	-5.525		
	(4.093)		

TV International	44.61***		
	(6.763)		
TV Local	-3.383		
	(3.283)		
Quality of MP connection	3.071		
	(3.458)		
# HH with fixed telephone	-0.0466***		
	(0.00388)		
Wartel	1.159***		
	(0.350)		
Political Connection			
Warnet	-4.962**		
	(2.527)		
winlegisl2004	**-7.078*** **	**273.3***	**427.6****
	(1.512)	**(150.2)**	**(200.3)**
nlegislative	**3.011*** **	**168.2****	**262.4*** **
	(0.648)	**(67.70)**	**(90.35)**
o.winlegisl2004	-		
Observations	53,264	53,264	53,264
R-squared	0.036	-1.814	-7.483
Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1			

Tabel 2: Political Connection and Transfer from Province Level

Independent variables	Dependent Variable: Fund Transfer from Province		
	OLS	IV Tr_Prov11	IV Tr_Prov14
Constant	-4.687	-11.00	-219.3***
	(3.764)	(14.17)	(52.06)
Village Characteristics			
Population	0.000182	0.000317	-0.000604
	(0.000376)	(0.000322)	(0.000648)
Village Size	0.000150	0.000295**	0.000177
	(0.000150)	(0.000127)	(0.000137)
Rural/Urban	32.10***	35.24***	76.79***
	(2.163)	(1.748)	(5.307)
Non-Coastal Areas	1.074	-1.803	-1.062
	(1.940)	(1.815)	(3.421)
Forest Area	0.517	2.345	10.43***
	(1.509)	(1.620)	(3.107)
Road Quality	4.426**	3.628**	-4.184
	(2.111)	(1.836)	(3.706)
Transport	-2.594	-2.460	-14.43***
	(2.465)	(2.738)	(5.587)
Electricity (PLN)	0.00452**	-2.68e-05	-0.00287
	(0.00183)	(0.00156)	(0.00292)
Electricity (non_PLN)	0.00331	0.00463	-0.0185**
	(0.00660)	(0.00452)	(0.00891)
Instrumental Variabel (Availability and Quality of TV broadcasting)			
TVRI	-1.770		

	(1.828)		
Trans	-1.047		
	(2.591)		
TPI	4.856**		
	(2.384)		
RCTI	13.02***		
	(2.861)		
SCTV	-8.992***		
	(3.137)		
Indosiar	-8.707***		
	(2.917)		
TV7	-3.097		
	(2.606)		
Global	-3.680*		
	(2.202)		
ANTV	0.547		
	(2.579)		
LaTV	5.765**		
	(2.668)		
Metro	3.276		
	(2.108)		
TV International	5.194		
	(3.483)		
TV Local	-3.164*		
	(1.691)		
Quality of MP connection	0.513		
	(1.781)		
# HH with of fixed telephone	-0.00652***		
	(0.00200)		
Wartel	0.0415		
	(0.180)		
Warnet	(1.301)		
	(2.527)		
Political Connection			
winlegisl2004	**4.274*** **	**17.33*** **	**75.60*** **
	(0.779)	**(5.545)**	**(19.72)**
nlegislative	**-2.168*** **	**-5.757** **	**30.40*** **
	(0.334)	**(2.475)**	**(8.628)**
Observations	53,264	53,264	53,264
R-squared	0.036	-1.814	-7.483

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Tabel 3: Political Connection and Transfer from National Level

Independent variables	Dependent Variable: Fund Transfer from National Level		
	OLS	IV Tr_Natl11	IV Tr_Natl14
Constant	-16.14***	-152.6***	-298.0***
	(5.239)	(29.17)	(47.59)
Village Characteristics			
Population	0.00526***	0.00320***	-3.94e-05
	(0.000524)	(0.000585)	(0.000721)
Village Size	0.000165	-0.000335*	-2.76e-05
	(0.000209)	(0.000190)	(0.000170)
Rural/Urban	60.69***	74.75***	72.69***
	(3.010)	(3.237)	(4.951)
Non-Coastal Areas	-8.071***	0.957	3.601
	(2.701)	(3.496)	(2.975)
Forest Area	2.559	3.191	14.53***
	(2.100)	(2.612)	(3.258)
Road Quality	4.768	2.779	-6.862*
	(2.939)	(3.543)	(3.588)
Transport	-3.711	-13.39***	-26.53***
	(3.431)	(5.004)	(5.833)
Electricity (PLN)	-0.0116***	-0.0164***	-0.0165***
	(0.00254)	(0.00279)	(0.00301)
Electricity (non_PLN)	0.00813	-0.0124	-0.0478***
	(0.00919)	(0.00811)	(0.00936)
Instrumental Variabel (Availability and Quality of TV broadcasting)			
TVRI	1.829		
	(2.544)		
Trans	-0.877		
	(3.607)		
TPI	3.064		
	(3.318)		
RCTI	-7.618*		
	(3.981)		
SCTV	7.069		
	(4.365)		
Indosiar	2.597		
	(4.061)		
TV7	-11.31***		
	(3.627)		
Global	4.213		
	(3.064)		
ANTV	18.39***		
	(3.589)		
LaTV	2.655		
	(3.713)		
Metro	-3.536		
	(2.934)		
TV International	4.912		

	(4.847)		
TV Local	0.0209		
	(2.353)		
Quality of MP connection	3.212		
	(2.478)		
# HH with of fixed telephone	-0.0161***		
	(0.00278)		
Wartel	-0.0659		
	(0.251)		
Warnet	0.212		
	(1.811)		
Political Connection			
winlegisl2004	**-3.931*** **	**25.20** **	**90.62*** **
	(1.084)	**(12.20)**	**(18.02)**
nlegislative	**1.529*** **	**32.21*** **	**51.93*** **
	(0.464)	**(4.977)**	**(7.975)**
Observations	53,264	53,264	53,264
R-squared	0.036	-1.814	-7.483

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

LOCAL ECONOMIC ACTIVATION ON THE DAIRY PRODUCTION IN PASURUAN REGENCY

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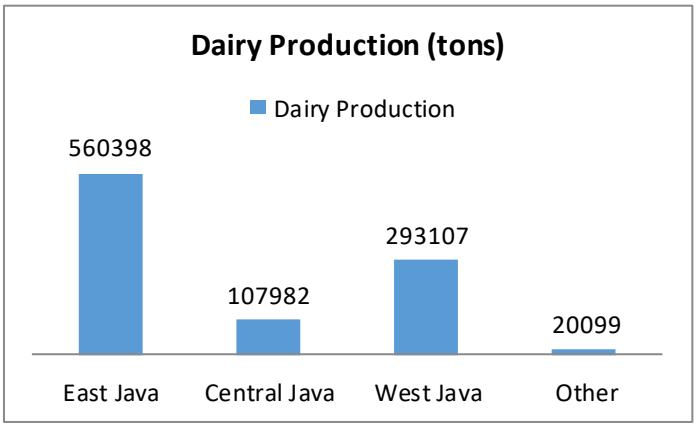
ABSTRACT

Pasuruan Regency in East Java has potentially natural resource that one of them is in the dairy farming. The dairy cows' population increased significantly from 92,174 to 100,843 in 2014 and it is ranking first of population in East Java. Improvement in dairy farming has an influence on the increase of dairy production. However, the number of poor households is still high, at 10.57% in Pasuruan Regency. The methods used to find the local economic activation strategy for the dairy farming are Root-Cause Analysis to know the problem of development on the dairy production. Then Supply-Chain-Market analysis in order to know the value chain of dairy production from breeders, producers, cooperatives, and final consumers. In this study, the method for determining the Local Activation strategy is to mapping the status of economic activation that has been implemented by the community. The results of the analysis, first, there is a need to empower the community through improving the human resources quality from upstream to downstream of the dairy production process, especially in the field of management processes. Second, the integration among breeders, government, and private sector –stakeholders are needed that has an impact to improve the dairy production in the quality and quantity of products. Third, dairy farmer's income can be improved from the innovation of derived dairy product to add value of products, therefore, it can enhance the competitiveness in the market. *Finally, the importance of identifying and seizing the business opportunities, supporting entrepreneurial initiatives, facilitating market access and creating a conducive business climate in Pasuruan Regency, especially in the dairy production.*

Keywords: local economic activation, dairy production, value chain, community empowerment

Introduction

Each region in Indonesia has the potential of different natural resources that can be developed to increase its economic growth. In 2010, There were almost 500,000 dairy cows in Indonesia producing about 930,000 tons of milk with 57,3% located in East Java Provinces (IFC, 2011). Pasuruan is one of the region in East Java that has various potentials in husbandry sector shown from the increased number of dairy

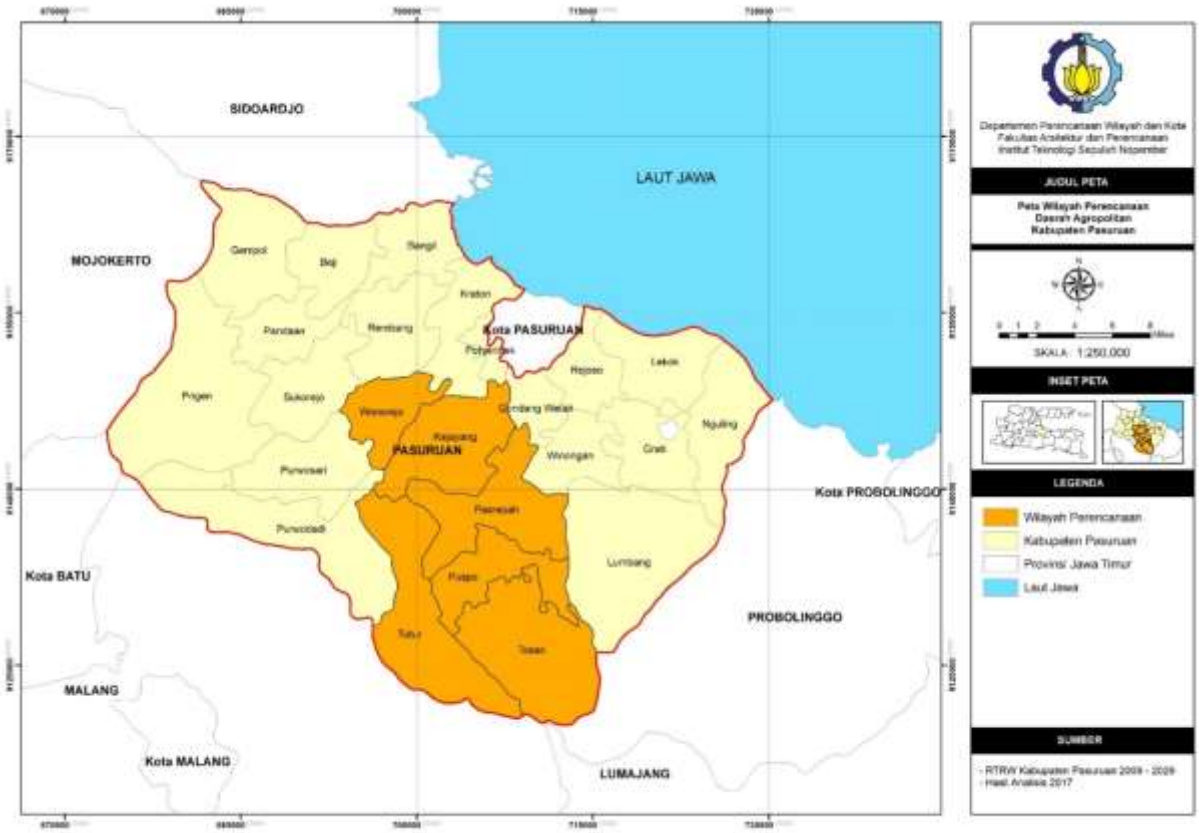


Figures 1 Dairy production in Indonesia
Source: Livestock Statistic, 2013

cows population growth of 92,174 to 100,843 in 2014 (Pasuruan Statistic, 2016). Then, Pasuruan in East Java is the largest milk producer with 64,394 cows and contribute to produce 26,250 tons of milk every day.

Dairy farming should provide economic and social benefit to farmers and their wider communities (FAO, 2011). Nevertheless, economic growth of Pasuruan decreasing every year, from 7.50 in 2012 to 5.44 in 2016 (Pasuruan Statistic, 2017) Afterwards, the number of poor households still relatively high at 10.57% in 2016. The concentration of poor families is mostly from the agricultural sector, whereas 30% of the population in Pasuruan work in dairy farming. That high number shows that there are still many households that have not been able to earn benefit from dairy farming (Master plan of Pasuruan, 2005-2025). This contrary to the Final Report of FAO which says that managing the farm's human resources is critical to the small and medium enterprises because it can be the effect the financially viable to have a long-term future. FAO (2011) suggested a good dairy farming practices for the socio-economic management of dairy farms are: (1) implement effective and responsible management of human resources; (2) ensure farm tasks are carried out safely and competently, and; (3) manage the enterprise to ensure its financial viability.

Hence, the aim of this study are to find problems of processing dairy products in the local level, value chain between dairy farmer and consumer, and finally, provide few suggestions for activate local economic to improve dairy farmer's income.



Figures 2 Map of Pasuruan

Data and Empirical Methods

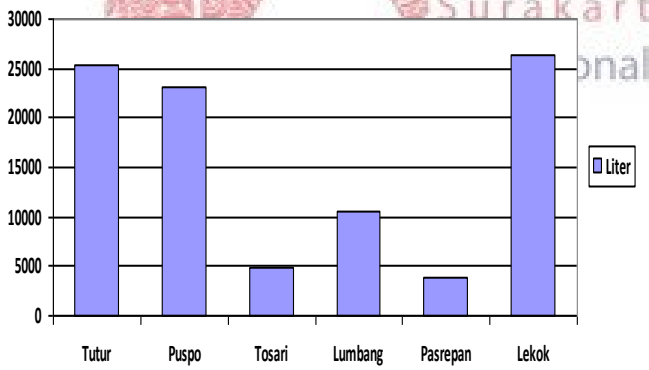
Dairy production has a long tradition in East Java (Widodo, *et al*, 1994) especially in Pasuruan where this study took place. The primary survey focused on 5 district that has highest milk producers: Pasrepan, Wonorejo, Puspo, Tosari and Tutur. Face-to-face deep-interviews were conducted with key-stakeholders in milk production based in purposive sampling, they were: two dairy farmers; a representative of Tutur District; manager of KUD Puspo; Puspo farm-extension and head of Livestock Community. This study highlighted to the problem of post-milk-harvest for dairy farmers.

There are three qualitative and quantitative analysis methods to find the local economic activation strategy for the dairy production. First, Root-Cause Analysis to know the problem of development on the dairy farming, especially dairy production in Pasuruan. The Supply-Chain-Market analysis in order to know the value chain of dairy production from breeders, producers, and final consumers. Then, few suggestion for activated the local economy based on content analysis that can improve dairy farmer's income.

Results and Discussion

Supply-chain in Dairy Production

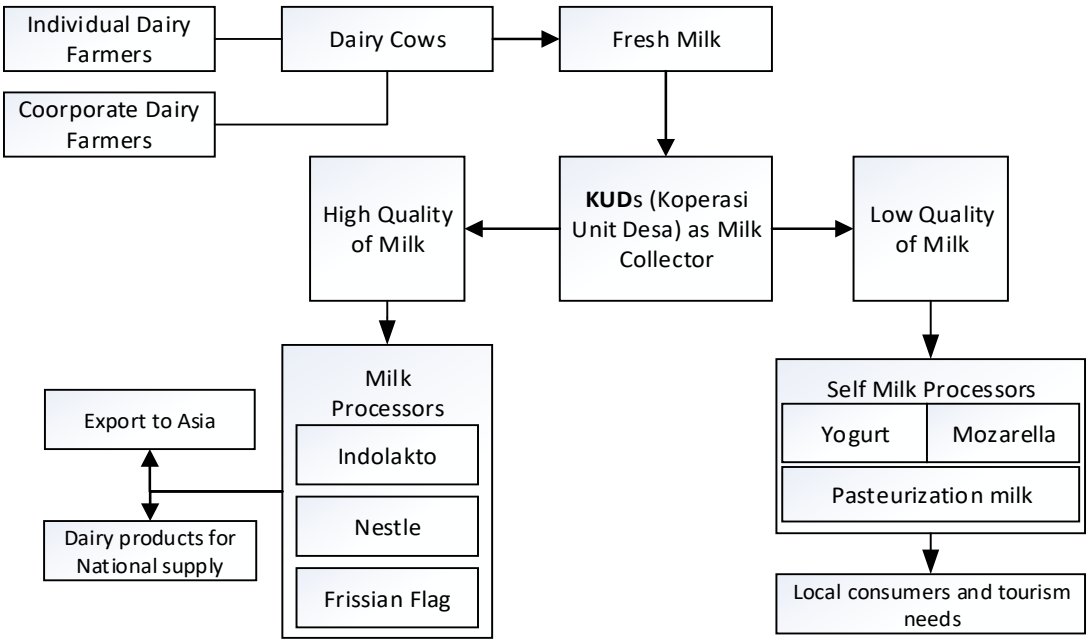
Dairy products are one of the main commodity in Pasuruan because dairy farmers in 2016 can produce 99,417.75 tons liter of milk (Pasuruan Statistic, 2017). Dairy cows with type Holstein Fresian has a high milk production of 7-10 liters per day per cow. Some of them can reach 24 per day per cow. The largest production of fresh milk is in Tutur District that reach 63,050 liters per day. Here's the table of dairy production by district in Pasuruan:



Figures 3 Dairy Production by District

Dairy farmers accommodated in Dairy Farms Cooperative (KPSP) located in several districts, including KPSP Setia Kawan in Nongkojajar Village Tutur District, Village Unit Cooperative or Koperasi Unit Desa (KUD) Dadi Jaya in Pucangsari Village Purwosari District, and KUD Sembada located in the village Puspo which store milk before it is sent to a dairy industry. Dairy processors industry in Pasuruan are PT. Nestle, PT. Indolakto, and PT. Frissian Flag.

Here is a supply chain on dairy production:



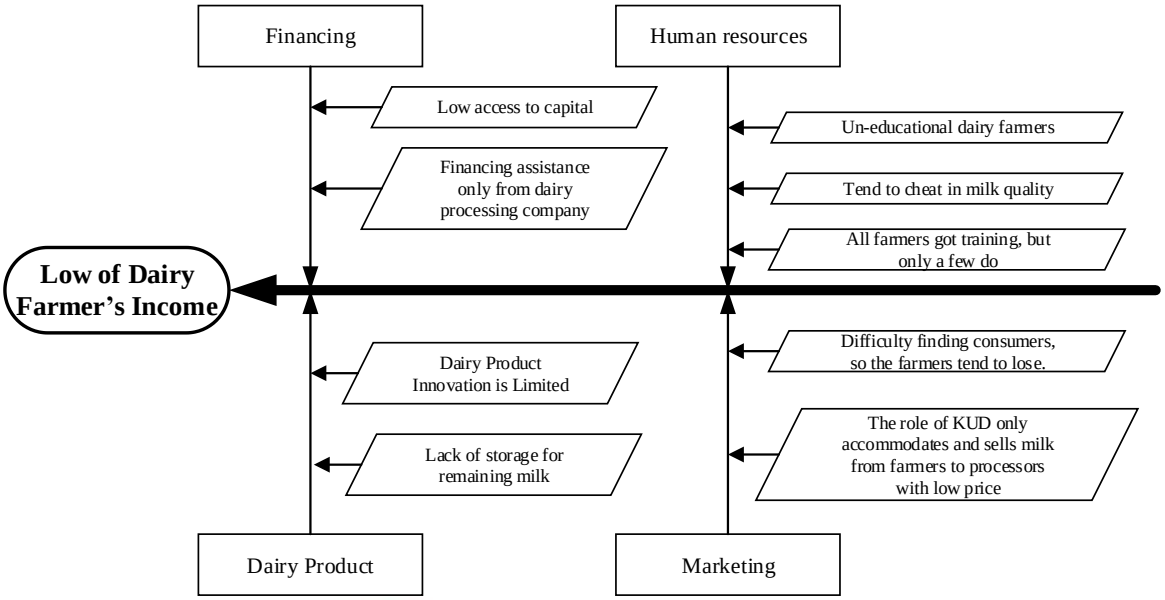
Figures 3 Flow of Production and Distribution

Food supply chains encompasses all activities associated with the flow and transformation of product from raw materials stage, through the end user, as well as the associated information flows (Seuring & Mu, 2008). It is also able to play a significant role in the process of agrarian based rural development, it is important because it can identify and analyze the patterns in their development (Marsden, Banks, & Bristow, 2000). Figure 3 shows that KUD play important role for dairy production in Pasuruan. KUD collect, collect, and sort the quality of milk. They also mediate between dairy farmers and milk processing factories. In terms of training, from the interviews, farmers get training from agricultural training centers of Pasuruan Regency. So that the role of KUD in Pasuruan is only limited as an intermediary and determinant of milk price based on quality. Dairy processing factories in Pasuruan get the input from the KUDs in each district and individual farmers, but the problem is KUD sets the low price to farmers. The price actually varies across milk processing companies, districts, and milk quality. From interview and EFC data (2011), there can be up to six grades of milk quality based on total plate count (TPC), fat level per liter, and total solids (TS) in the milk. There just 30% of milk produced by farmers identified as best quality (grade 1) and the rest (around 60%) vary from grade 2 to 6 (worst quality) (EFC, 2011). The rest will be self-produced to yogurt, cheese, or pasteurization milk for local consumption.

Problems of local dairy farmers to increase their income

As mentioned in introduction that poor household still high even Pasuruan is the highest dairy producer in Indonesia. Small income at the farm level is due to the following factors: financing, human resources, diversity of milk derived product, and marketing. Dairy farmers who want to develop a business limited to capital. While the capital obtained only from KUD and sell cattle when the farmers need money quickly. In addition, farmers also get loan or cattle from companies who want to control the quality of the product. Company will pay a higher price for the product in order to reward ("lock in") the

farmer for supplying to that channel and thus reduce its risk of inconsistent supply and in search costs for new suppliers (Reardon, Barrett, & Berdegue, 2009).

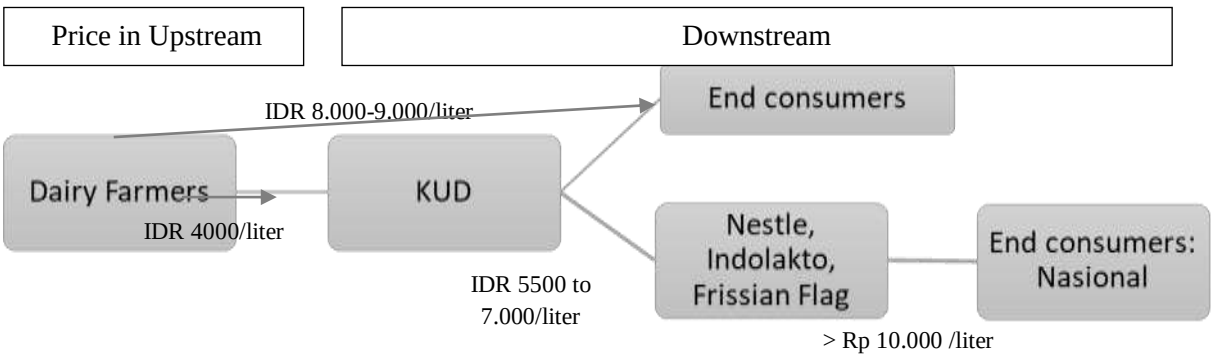


Figures 4 Fish bone diagram for root of the problems in increasing dairy farmers' income

There also problems of low human resources to manage the milk production. Human Development Index (HDI) classified as low as 65.04% below the average of East Java Province 68.95% (Pasuruan Statistics, 2016). It shows that not all the farmers get formal education, even there is training about agricultural, but less than 10% do what is taught in training. Beside, dairy industries have standard of quality and milk that does not meet the standards, the milk will be discarded. Whereas if discarded milk processed into various derived products, it can increase the value of dairy products that can increase the income of farmers. In addition, the cooperation that has been done with one of the university in East Java stalled due to the limited access to the capital and market.

Dairy Value Chain

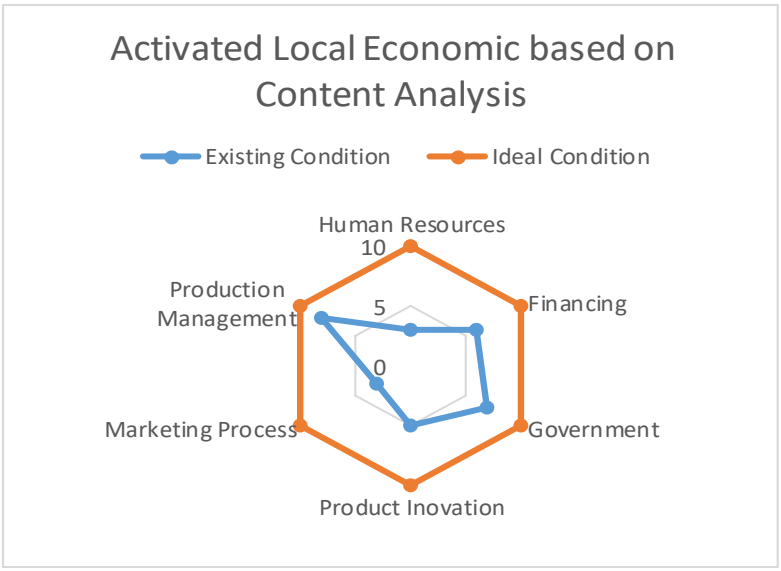
Value chain approaches play an important role in characterizing the complex network, relationships, and incentives that exist livestock systems (Rich, Ross, Baker, & Negassa, 2011). In this cases, the analysis found the value gap between the dairy farmers and the end consumers. In figure 4 we can see the low price in dairy producers before the milk determined whether it will be a good quality or not. The good quality will be going to the industry, but the dairy farmers confuse what to do with 60% milk in middle and low quality. Actually there already many stakeholders that want to provide farmers with the ability to add value to the milk, such as self-produced pasteurization milk, yogurt, and even mozzarella cheese. However, the farmers always face lack of finance and they confused how to sell their product. Further, this provide an information with side of actor pro-poor dairy farmers.



Figures 5 Value Chain Analysis

Through value chain analysis, it can be seen that dairy commodity has a selling price of Rp 4,000/liter in KUD. From KUD, dairy milk can be marketed to two parties, the first directly sold to consumers at a price of Rp 8,000-9.000/liter and the second sold to dairy company with the price of Rp 5,500-7.000 / liter. Figure above shows the high price gap between dairy farmers and the end consumer. KUD gives the dairy farmers low price and sell to the company much higher. As a comparison, one small and medium enterprises called "Bhakti Alam" can sell 3 times higher (IDR 8,000 to 9,000/liter) with self-production pasteurized milk, yogurt and cheese. They also engage with small dairy farmers around that place.

Based on the analysis above, stakeholders giving opinion about how to activate the local economic through dairy production. Diagram below shows that the biggest problem to solve first is about human resources to improve understanding of the importance of added value of a product so they can have more income. According to Schulze, Wocken, & Spiller (2006) there is findings that farmer knowledge with dairy process and perception of dairy farm management competence by the farmer are more important before price satisfaction. Thus, understanding farmers' problems as well as better communication with other stakeholders are more relevant than perceived price. Increased knowledge of farmers can be done with training or workshop and maintained until it has the expected derived product quality. To support that, there is also a need to empower the community so dairy quality from upstream to downstream of the dairy production process can be improved. Then, dairy farmer's income can be improved from the innovation of derived dairy product to add value of products, therefore, it can enhance the competitiveness in the market. Finally, the importance role of



Figures 6 Content Analysis

government and KUD in identifying and seizing the business opportunities, supporting entrepreneurial initiatives, facilitating market access and creating a conducive business climate in Pasuruan Regency, especially in the dairy production.

Conclusion

Pasuruan with high potential in dairy products faced with several problems, such as decreasing economic growth, high number of poor household, and small income in small-farmer level. Small income at the farm level from analysis due to the following factors: low access to finance the, low human resources, lack diversity of milk derived product, and marketing beside sell the dairy product to the industries. Dairy farmers who want to develop a business limited to capital and innovation of derived product. Government in Pasuruan just provide workshop without maintain and role of KUD limited. The aim of this study is to a activated local economic in dairy production through analysis the problem and giving few suggestion to improve farmers income.

Few suggestion to activate local economic in Pasuruan: first, increasing knowledge of farmers with training or workshop through empower the community in farmer's level. Second, the communication among breeders, government, and private sector – stakeholders are needed that has an impact to improve the dairy production in the quality and quantity of products. Third, ameliorate the innovation of dairy production is through derived product so it can be add some value to the product. Finally, the importance role of government and KUD in identifying and seizing the business opportunities, supporting entrepreneurial initiatives, facilitating market access and creating a conducive business climate in Pasuruan Regency

Finally, generalization of the conclusions drawn from this study is limited by the stakeholder samples. Further research should try to sharpen the method and increase the respondents in farmer level to reduce redundancies.

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The Role of Bank Loans for Micro and Small Scale Enterprises Performance in West Sumatera: An Approach for Choosing Financial Policy Scheme.

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ABSTRACT

We test two competing theories on the roles of bank loans for MSE's financial performance in West Sumatera. Free cash flow theory expect an increase in leverage might increase company performance, since the MSE could expand their business and market scale. On the other hand, agency theory shows that high leverage might as well lead to a poorer company performance. The main finding of this study are, there is a nonlinear significant relationship between bank loans with the probability of a company being included into group of high net profit margin and high return on asset (first quadrant). For SME's with the same characteristics, there is positive relationship between bank loans in their capital structure with the probability of being in the first quadrant, when the proportion of bank loans in their capital structure is lower than 56 percent, otherwise it has a negative relationship. In West Sumatera micro and small enterprises, agency theory dominates free cash flow theory in explaining the effect of high leverage on MSE's performance.

Keywords: Micro Small Enterprises Performance, Bank Loans, Capital Structure

Introduction

Policy efforts targeted at SMEs have often been justified by arguments that (1) SMEs are an engine of innovation and growth and (2) they help reduce poverty because they are labor-intensive and thus stimulate job growth, but (3) they are constrained by institutional and market failures. Cross-country, country-level, and microeconomic studies, however, confirm only the last one of these three claims, while there is at best mixed evidence on the first two, Beck (2013). Based on these findings, it is important to investigate the role of banks loans for micro and small enterprises performance.

We test two competing theories on the roles of bank loans for MSE's financial performance in West Sumatera. Free cash flow theory expect an increase in leverage might increase company performance, since the MSE could expand their business and market scale. On the other hand,agency theory shows that high leverage might as well lead to a poorer company performance. These two theoretical hypothesis in this lead to different policy implications, if the bank loans has a negative effect on MSE's performance, its means there is agency problem and the appropriate policies are credit guarantee scheme and MSE's empowerment.

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If it is positive, than the interest rate subsidy and expanding the financial services outreach are the best policies option.

Using West Sumatera Micro and Small Industries survey data conducted by BPS in 2014, the sample grouped into four categories based on two digit Indonesia industrial standard classification, namely food, textile, apparel, and handicraft and furniture. Instead of directly using company financial performance indicators as the dependent variable, this study maps sample within groups of industries into four categories of their combined net profit margin and return on asset performance, high-high, high-low, low-high and low-low. This mapping strategy enables us to estimate the probability of a company to be categorized in high net profit margin and high return on asset group with logistic regression model. We employ bank credit, vector of company and industry characteristics, and vector of owner characteristic as independent variables.

The main finding of this study are, there is a nonlinear significant relationship between bank loans with the probability of a company being included into group of high net profit margin and high return on asset (first quadrant). For SME's with the same characteristics, there is positive relationship between bank loans with the probability of being in the firstquadrant, when the proportion of bank loans in their capital structure is lower than 56.4 percent, otherwise it has a negative relationship. In West Sumatera micro and small enterprises, agency theory dominates free cash flow theory in explaining the effect of high leverage on company performance. This finding implies the best access to finance policy option for West Sumatera MSE is credit guarantee scheme and empowerment in order to stay away from the possibility of adverse selection problem for banks in lending their funds to MSE.

Capital Structure and Company Performance: Theory

Access to finance (or rather the lack thereof) seems to emerge consistently as one of the most important and robust underlying factors that constrain firmsperformance and growth (Ayyagari, Demirgüç-Kunt and Maksimovic, 2008). There is evidence that financial development helps reduce the effect of financing obstacles on firm growth, with a disproportionally beneficial effect for small and medium-sized enterprises and financial development exerts a disproportionately large positive effect on the growth of industries that are naturally composed of more small firms (Beck, Demirgüç-Kunt and Maksimovic, 2005; Beck *et al.*, 2008). On the other hand, the micro and small enterprises in Indonesia which are more likely informal and family business with unpaid labor usually have lack of expertise in managing their financial obligation. These kind of micro business (households) have no financial resilience (Satria, Marta and Riani, 2015). Their income depends on their day to day business activity, and an unpredicted shock on their production and/or family expenses could makes them lose all their income and make their default probability to pay their debt higher. Given the condition of MSE's in Indonesia, the positive effect as noted by Beck et.al (2005, 2008) could be turn into negative effect for Indonesian financial sector. The theoretical background of the positive effect of external finance to firms are based on the free cash flow theory, and the negative effect is based on agency problem theory from the firm capital structure theory.

The analysis of capital structure theory attempts to explain how companies choose a mix of securities and financing sources to finance their investments, has been an important area of research within a field of finance. Various imperfections, such as taxes, bankruptcy costs, agency conflicts, issues of asymmetric information and adverse selection, have been pointed out as explanations for the use of debt financing and synthesized into the trade-off and pecking order theories of capital structure.Both the trade-off theory and the pecking order theory assume that the interests of firm's management and its stockholders are perfectly aligned. However, theoretically and practically perfect alignment is impossible.

Studies of the relationship between leverage and firm performance can be divided into two groups. The first one is based on the information asymmetries and signaling. Ross (1977) came up with a model that explained the choice of debt-to-equity ratio by a willingness of a firm to send signals about its quality. The core idea of Ross (1977) is that it is too costly for a low-quality firm to abuse the market and signal about its high quality by issuing more debt. As a result, low quality firms have low amount of debt, and the leverage increases with the value of a firm. A similar model was developed by Leland and Pyle (1977): the higher is the quality of the project manager wants to invest in, the higher is the willingness of the manager to attract financing. That is why a risky firm will end up with lower debt. The second group of studies explains the relationship between capital structure and firm performance through the agency costs theory, developed by Jensen and Meckling (1976) and Myers (1977). Jensen &Meckling (1976) argue that there are unavoidable agency costs in corporate finance, which arise due to two types of conflicts: a conflict between firm's management and its shareholders and a conflict between shareholders and debt holders. In case of MSE, managers are also shareholders of a firm. Therefore, an issue of a conflict of interest between management and shareholders is not of much concern for MSE. However, the agency conflict between equity holders and debt holders may be an acute problem for MSE.

An agency problem between equity holders and debt holders. This type of a problem is rooted in the conceptual difference between equity holders and debt holders. The former take more risks and demand higher return, whereas the latter take less risk and agree with lower return. Hence, shareholders may want to take projects with higher risk than debt holders would prefer. In the case of success of these projects equity holders will earn extra return, while in the case of failure all losses will be between debt holders and equity holders (Jensen and Meckling, 1976). As a consequence, more indebted firms take lower-risk projects. On the other side, Myers (1977) showed that discrepancies in goals between debt holders and shareholders could lead to underinvestment. As a result, higher leverage might as well lead to poorer corporate performance.

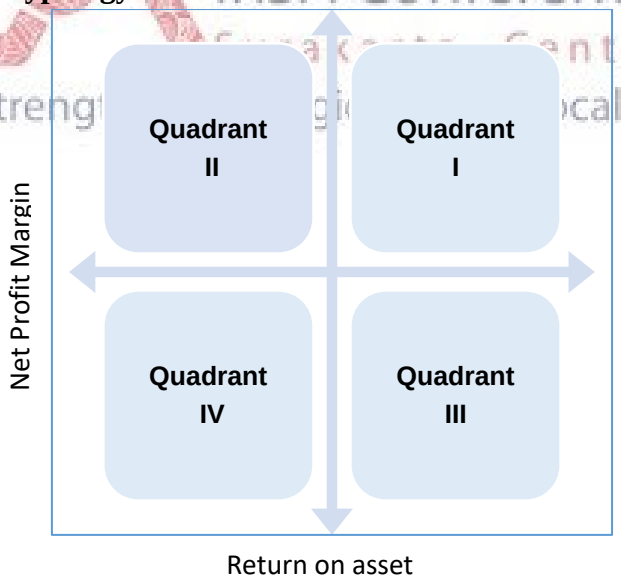
Empirical Method

Accounting measures of performance have been the traditional quantitative approach to company performance (Otley, 2002). However, it is still a challenging task to measure the MSE performance from all the available methods of these quantitative measures. Based on data availability, we can identify return on asset and net profit margin as the quantitative measures of MSE performance. To place both of these quantitative measures in a perspective, we begin with a unifying framework for thinking about MSE performance. We drew above a

distinction between the “return on assets” and “net profit margin” measures,the first focusing on the ratio of the return to assets that was invested by the MSE, and the second on the ratio between the profit (total revenue minus total cost) to operating revenue of the MSE’s. Both of these measurements are different in their time perspective, the first is structural and long run view as a measure of company performance. The second is shorter run and grounded from the operational revenue or day to day company activity. They also closely related, the long run fundamentals will ensure the short stability and on the other side, the stability in the short run will strengthen the long run fundamentals of company. Instead of using two separate analysis for both of these performance indicators, we maps the MSE performance by the combination of these two indicators within groups of industries.

We can visualized these possibilities within four quadrant in a scatter plot diagram for each industry, namely food and beverages industry, apparel industry, textile industry and wood, handicraft and furniture industry.[4] The first quadrant are MSE’s with the best performance measure relative to others within the same industry, they have higher net profit margin and higher return on assets than industry group average. The second quadrant are MSE’s with higher net profit margin but lower return on assets relative to their respective industry average. The third quadrant is MSE’s with higher return on assets and lower profit margin relative to their respective industry average and finally in the fourth quadrant are the MSE’s with the worst performance, they have lower profit margin and lower return on asset relative to other MSE’s within respective industry.

Diagram 1
Typology of MSE Performance Within Industry



This performance measurement strategy enables us to explore the role of bank loans proportion in the capital structure of MSE for the whole sample. Using the dummy dependent variable regression model, we could estimate the probability of a MSE being in the first quadrant (the best performance relative to others within their respective industry) conditional

[4]We classified the industries with 2 digits ISIC code, the detail explanation for the classification and data set available upon request to us.

on their bank loans in their capital structure and use MSE characteristics as the relevant control variables. We use standard logistic regression model and estimate the model with maximum likelihood estimator. Mathematically the logistic regression function can be written as;

$$\frac{p_i}{1-p_i} = e^Z \quad (1)$$

Taking logs the equation (1) become;

$$log\left[\frac{p_i}{1-p_i}\right] = \mathbf{Z} \quad (2)$$

Z, is a linier function of vector of MSE characteristics, i.e.: bank loans proportion in their capital structure and other control variables and p_i is the probability of a MSE being located in first quadrant. The left hand side in the equation (2) are the ratio of the probability a MSE being in the first quadrant relative to probability being in the other three quadrant or known as the odd ratio. Given the estimated the log of odd ratio, we could calculate the estimated probability of a MSE being in the first quadrant with estimated equation (2). The empirical model of the equation (2) in this paper is:

$$log\left[\frac{p_i}{1-p_i}\right] = f(prop\_bank, controls) \quad (3)$$

Where:

Dummy dependent variable : if the MSE is in the first quadrant = 1, otherwise = 0
$prop\_bank$: The percentage of bank loans in total SME capital
Controls :Control variables, vector of MSE characteristics

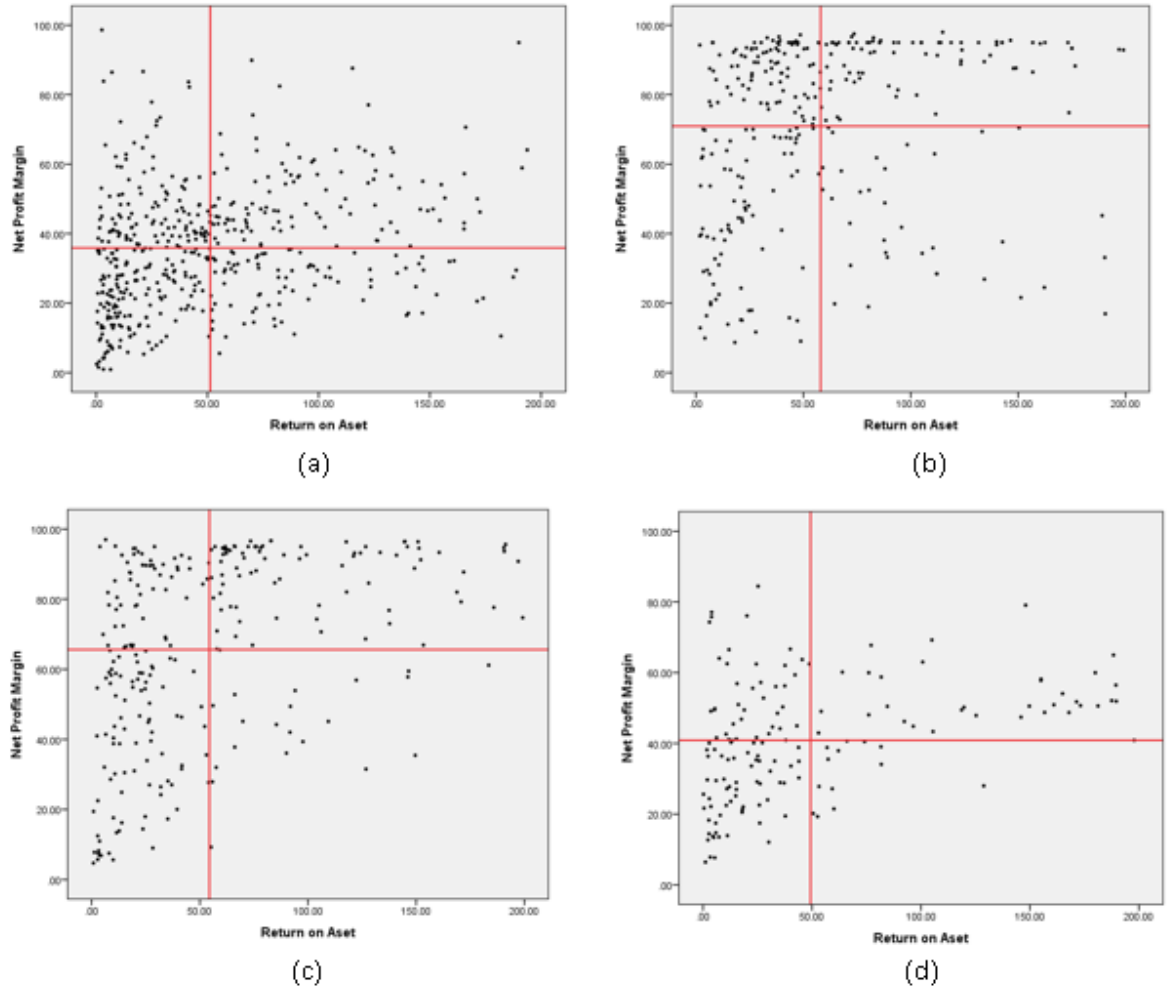
Empirical Result: Data, Estimation and Analysis

The MSE PerformanceMeasure

As explained in the empirical method section, we maps four groups of industry into four quadrants base on their combined performance measures. The descriptive analysis of these findings for each group of industry are reported below.

Only 22.8 percent of 486 samples in food industry are in the first quadrant and almost 35 percent of them are in the fourth quadrant. From the industry level perspectives this condition indicates a poor performance of this industry. Relative to return on asset, the higher than average net profit margin group within food industry is 47.7 (quadrant 1 and 2) percent and 40 percent are above the industry average in return on asset. Textile industry is slightly better than food industry with 27.2 percent of 290 sample in this group classified as the first quadrant and the highest proportion of this industry are in the second quadrant. This implies that almost 60 percent of the company within this industry are among the above average profit margin, otherwise only 39 percent are among the above average of return on asset, this finding indicates in both of industries many firms are structurally have lower performance.

Diagram 2: MSE Performance



quadrant	*Manufacturing Classification*								*Total*	
	A		*b*		*c*		*d*			
	freq.	*percent*	*freq.*	*percent*	*freq.*	*percent*	*freq.*	*percent*	*freq.*	*Percent*
1	111	22.84	79	27.24	83	33.07	33	22.45	306	26.06
2	121	24.9	94	32.41	58	23.11	38	25.85	311	26.49
3	84	17.28	34	11.72	21	8.37	14	9.52	153	13.03
4	170	34.98	83	28.62	89	35.46	62	42.18	404	34.41
Total	486	100	290	100	251	100	147	100	1,174	100

(a). Manufacture of food products, (b). Manufacture of textiles, (c). Manufacture of wearing apparel, (d). Manufacture of wood and products of wood and Manufacture of furniture

Source: Authors Calculation

Appareland Wood base arepromising industries as sources of economic growth, both not only have high value added but also labor intensive and have broad potential export market. Apparel industry performance is concentrated in the first and fourth quadrant, 68.5 percent of 251 sample within this group are classified in the highest or lowest performance category. The same performance pattern are found in the sub group (sub industry) level with the exception in the sub industry perlengkapanpakaiandaritekstil. Wood base industry SME performance measuring 42 percentof 147 firms in the sample are classified as the low

performance group in the fourth quadrant and only 22.5 percent firms are in the first quadrant.These two highly potential industries as the sources of economic growth for West Sumatera have poor performance, the potentials of these industries are not being exploited as the sources of West Sumatera economic growth.

Bank Loans and SME's Performance

Descriptive statistics of the explanatory variables are reported in table 1, our main variable of interest, the average of bank loans percentage is 4.34 percent, with 16.82 standard deviation value. This implies that many observation included in the sample have zero value, the highest value of this variable is 100 percent means all of the capital are from bank loans. Control variables are firm age, gender of the owner (gender) is dummy variables taking value of 1 if the owner is male and 0 otherwise,age of firm owner(owner age) measured in years with the average is 44.4 years. Firm ownereducation level (education) is dummy variable taking value of 1 if the owner is high school graduate or above and 0 otherwise. Firm legal statusis dummy variable taking a value of 1 if SME have formally legalized as *perseroanterbatas* and 0 otherwise. We generate three dummy variables to control industry specific effect from the four group of industry, with the base industry is food and beverage industry. To control on the external intervention effect we employ two dummy variables, partnership with external institution (partnership) and empowerment. The last control variable is firm market outreach, measured by percentage of retail sales to their end customer (market_1) percentage of MSE output distributed within district they are located (market_2).

Table 1: Descriptive Statistics of Explanatory Variables

Variables	Obs	Mean	Std. Dev.	Min	Max
Firm age	1174	14.12266	10.56157	2	72
Gender	1174	.3083475	.4620077	0	1
Owner age	1174	44.39097	11.53458	15	83
Education	1174	.3202726	.4667801	0	1
Legal status	1174	.0621806	.2415862	0	1
Bank loan	1174	4.342206	16.81895	0	100
Partnership	1174	.0945486	.2927151	0	1
Empowerment	1174	.0843271	.2779961	0	1
Market_1	1174	31.94889	42.73377	0	100
Market_2	1174	64.20443	43.19463	0	100
Industry dummy					
D1	1174	.2470187	.4314615	0	1
D2	1174	.213799	.4101613	0	1
D3	1174	.1252129	.3311013	0	1

Source: Authors calculation

Based on the empirical logistic regression model in equation (3), the estimated result of this model is reported in table 6. We choose the quadratic non linier effect of bank loans percentage in the capital structure of MSE as the best fit model in our specifications. We also test the robustness of this quadratic effect, and we found it is robust in any specified model (the robustness test are available upon request due to limited space).

This research found a quadratic relationship between the bank loans percentage in the capital structure of MSE in West Sumatera with the odd ratio of a MSE being classified in the first quadrant of the performance measure. This finding is robust to other models specification and

control variables. We calculate bank loansproportion effect is still positive on the odd ratio up to 56.4 percent and turn to negative at the higher level percentage of bank loans in SME capital structure. This finding implies that high leverage MSE in west Sumatra relatively tends to have lower performance within their respective industry. Otherwise the free cash flow theory works for the lower than 56 percent bank loans in their capital structure.

Table2: Estimated Logistic Model

Dummy DepVar: Firm Performance	***Coef.***	***Z***	***dy/dx***[a]
Firm age	0.0660	2.89***	0.0122
Firm age square	-0.0016	-2.8***	-0.0003
Gender	-0.6672	-3.75***	-0.1154
Owner age	-0.0025	-0.34	-0.0005
Education	-0.3028	-1.95*	-0.0545
Legal status	-0.7769	-2.24**	-0.1189
Bank Loan	0.0298	1.86*	0.0055
Bank loan square	-0.0005	-2.24**	-0.0001
Partnership	0.3666	1.28	0.0733
Empowerment	0.3354	1.37	0.0664
Market_1	-0.0026	-1.45	-0.0005
Market_2	0.0025	1.35	0.0005
D1	-0.0270	-0.14	-0.0050
D2	0.5349	2.84***	0.1064
D3	0.4585	1.65***	0.0920
Cons	-1.3598	-3.4***	
Number of obs.	1174		
LR chi2(15)	58.24***		
Pseudo R2	0.0432		

[a.]Marginal effects after logit
***p value < 0.01; **p value < 0.05; *p value < 0.10
Source: Authors calculations

The finding have important implications for access to finance policy on SME, the non-linearity of bank loans effect to MSE performance implied a policy mix base on the bank loan scale within MSE capital structure.Ayyagary et.al (2008) and Beck (2013) point out that access to finance is the robust and important factor for SME growth and performance in a country.Base on the stylized fact from the survey data, a large proportion of MSE in West Sumatera are not using bank loans, but states that they have problems with lack of working capital, this implies that access to finance is solution for MSE growth and performance. This finding indicates there are issues on the demand side to be addressed, such as; financial literacy, financial capability of the MSE and the empowerment of MSE to expand their business.High leverage MSE tend to have low performance indicating the existence of agency problem between debt holder and equity holder, this implies banks monitoring tools could harm the bankable MSE performance.The conclusions of this research are the free cash flow theory is empirically true for the case of low leverage SME and the agency problem exist for the high leverage SME in West Sumatera.

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ROLE OF BUSINESS ASSOCIATION TO PROMOTE RURAL ENTREPRENEURSHIP IN BANJARNEGARA DISTRICT, CENTRAL JAVA

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ABSTRACT

The promotion of rural entrepreneurship has been regarded as a strategic policy to alleviate poverty in rural areas and to create a more equitable rural-urban growth. However, rural entrepreneurs have been facing obstacles to develop their business. These may include many aspects of business such as operation, human resources, marketing, and finance. Using a case study of business association of food processing enterprises in Banjarnegara district, this paper explores how such group can be formed, the way it works, which benefits its members gain and the challenges ahead. The results show that highly dedicated volunteers are extremely important to form such group. Members collaborate in many aspects such as marketing, human resource development, production, and social concern. The benefits reported by members include more ideas for product and packaging innovation, increased product type, improved knowledge on prices, improved product quality, expansion of marketing areas, increased sales, increased use of production and information technology and improved information on the supply of skilled labor. Despite the benefits, the association has been facing the challenge of capital adequacy, product character, technology utilization, integration with tourism industry, and meeting the increased demand for quality assurance.

Keywords: rural entrepreneurship, small business, business association

INTRODUCTION

Interpersonal and interorganizational relationships are viewed as the media through which a variety of resources held by other actors can be accessed (Hoang & Antoncic, 2003). Developing network relationships are not limited to the actors that perform business transactions only, such as customers and suppliers; rather they encompass a wider set of parties such as government agencies, banks, consultants, business advisors, business associations and competitors (Omar & Ramlan, 2014).

The reliance on networks is not limited to the start-up stage; instead, entrepreneurs continue to rely on networks for business information, advice, problem solving, and reputational content (Hoang & Antoncic, 2003). The flow of information in the networks such as market situations, strategic locations and competitors' position alert firms to embark on the available choices (Omar & Ramlan, 2014). The capability of firms to leverage external network relationships strongly supports the successful new products and services development (Ford, Verreynne, & Steen, 2017), new venture growth (Basu & Virick, 2015) and competitive advantage of SMEs (Wingwon, 2015). International networking capacity positively affect the provision of international business knowledge, which in turn is positively associated with the innovation performance (Bai, Lind, & Johanson, 2016). Pinho

& Sá (2014) find that support from government and from sector associations influence entrepreneurial performance. Li, Zubielqui, & O'Connor (2015) show the interdependent relationships between the shared resources of clusters, especially the role of government and institutional support, the internal capabilities of the firm, particularly the capability to utilise localised and external cluster networking and the relative market performance of a firm.

Although networking provides many benefits, there have been limited research focusing on how networks are formed and how they work to strengthen ties among members. Some authors highlight the need to study the process of network formation and the mechanisms through which ties emerge (Hoang & Antoncic, 2003; Stuart & Sorenson, 2007). In response to the previous studies, this study presents a case study of *Aswapemari*, standing for *Asosiasi Wanita Pengusaha Makanan Ringan*, a business association among food processing entrepreneurs in rural areas of Banjarnegara regency. This paper explores how such association was developed, the way it works, which benefits its members gain and the challenges ahead.

METHOD

We designed our research as a case study. According to Yin (2003), case study research strategy is most likely to be appropriate for 'how' and 'why'research questions. The unit of analysis is typically a system of action rather than an individual or group of individuals. Case study tends to be selective, focusing on one or two issues that are essential to understanding the system being examined (Tellis, 1997). We focused on *Aswapemari*, a business association of food processing industry in Banjarnegara regency. This method seems to be appropriate since this is an exploratory study that aims to develop a better understanding of how small businesses of food processing industry in rural areas utilize business association and how they benefit from participation in the association.

Aswapemari in Banjarnegara regency was purposively selected as a case study for several reasons. First, Banjarnegara regency is agrarian in nature. The contribution of agriculture, forestry and fisheries to the regional gross domestic product of Banjarnegara regency in 2016 is the largest among other sectors, i.e. 31.54 percent (banjarnegaraka.bps.go.id). Second, *Aswapemari* is a business association of small businesses that processes local agricultural resources such as banana, snake fruit, cassava, carica, potato, soybean, maize, and various other agricultural products. Third, the majority of its members are women. In Indonesia, the number of female entrepreneurs is mostly in the micro and small scale. Data from the Ministry of Cooperatives and SMEs in 2015, of about 52 million SMEs throughout Indonesia, 60 percent are owned by women. Based on the aforementioned reasons, the case of *Aswapemari* becomes interesting because it can be a model for network utilization for local economic development as well as women empowerment.

Data was collected by in-depth interviews with the board of the association and semi-structured questionnaire to 21 small business owners who are members of *Aswapemari*. The interview focused on the history of the association, its activities, and the challenges facing the association ahead. Hand-written notes were taken by the interviewer. Once the transcript of the interview was available for review, it was checked for accuracy and carefully examined by the researchers. The questionnaire was designed to collect data about the brief history of the business enterprises, the effect of participation in *Aswapemari*

on their business, and the supporting and inhibiting factors to develop *Aswapemari*. The summary of the questionnaire are then presented descriptively.

RESULTS AND DISCUSSION

History of *Aswapemari*

With the rise of locally processed food products and the increasing market demand, on 5 November 2012, the *Aswapemari*, standing for *Asosiasi Wanita Pengusaha Makanan Ringan* (association of snack businesswomen) was established. Interestingly, despite being named 'association of businesswoman', the association does not restrict male membership. Members of the association consist of 21 entrepreneurs which spread across all districts in Banjarnegara regency. Some enterprises belong to individuals, and some are group-based enterprises, where 10-20 members invest and work together to operate business in cooperative-style management.

Aswapemari serves as a forum for entrepreneurs especially women who desire to jointly advance their economic condition and to develop various kinds of typical food products and drinks of the regency. Its mission is to become a business association which pioneers the development of products that can compete and penetrate the modern market by consistently developing innovation, creativity, and involving the participation of women in economic development. The goals of the association are: 1) to produce a wide variety of competitive food and beverage products typical to Banjarnegara regency, 2) to develop various kinds of marketing strategy to attract customers by creating good image and improving quality, 3) to promote creativity in the development of typical food and beverage products based on the empowerment of women as a trigger for the movement of the economy, and 4) to provide trainings in food and beverage processing to new ventures.

The establishment of *Aswapemari* was initiated by informal discussion of few entrepreneurs who were participating in a trade exhibition. They were not satisfied with the existing collaboration among entrepreneurs, which lacked professionalism and mutual care among members. The dreamed of establishing a professional association whose members support each other in many business aspects and free from the influence of political parties But the realization of their idea was delayed for several months. Finally on 5 November 2012 the board of the association were appointed comprising a chairperson, a vice chairperson, secretary (2 persons) and treasurer (2 persons).

The board surveyed food processing SMEs directly to various districts in Banjarnegara regency with their own funds. The list of SMEs was obtained from the agricultural field extension workers. After collecting data on the various aspects of business such as the history of the company, number of employees/members, product, and marketing, the owners were offered to join the association. But some refused because they were not sure about the benefits to be gained.

Activities of *Aswapemari*

The monthly activity of *Aswapemari* members is a regular meeting with the agenda such as saving rotation, exposure of the association's financial statements, and sharing opinions for the progress of the association. The meetings are held in members' homes in turns so that they know each other personally. Board meetings are much more frequent, up to five times a month. The board members do not get payment, it is a voluntary work.

One of *Aswapemari*'s activities is joint marketing in the form of participation in trade exhibitions, joint outlets, mutual reselling and co-branding. All members products are displayed in exhibitions, even though not all members attend them. During exhibitions, *Aswapemari* usually gets support for stand rental and sometimes transportation and accommodation costs from the local government. The rest of the costs are borne by the association from the profits of the sale of products and dues of the board. In addition to participation in trade exhibitions, the association has three outlets. Members sell the products at the outlets with consignment contract and are paid every two weeks. They also support each other by reselling other members' product (mutual reselling) with either barter contract or in cash. This helps expand the marketing areas as members of *Aswapemari* are spread across all districts in Banjarnegara regency. Some members also sell their products and other members' products to other regencies and provinces. Therefore, the advantage of joining the association is even greater. Co-branding is another area of marketing co-operation. Some members of *Aswapemari* have been advanced but some lag behind, for example they do not have a brand yet. In this case, members who do not have a brand, but the product is quite good, may cooperate with members who already have a reputable brand by delivering unbranded products to the reputable members and and are then sold with the reputable brand.

Another aspect of *Aswapemari*'s activities is improving the quality of human resources through a variety of trainings such as entrepreneurship, production techniques, packaging, quality assurance and marketing organized by various government agencies such as The Food Security Agency, The Agency of Industry, Trade, Cooperative and SMEs and The Center of Integrated Services for SMEsCo. These institutions simply send a letter to *Aswapemari* and it then distributes information to all members. Thus, the existence of the association simplifies the tasks of local government and other parties who concern to promote SMEs. In addition to improving the quality of internal resources, *Aswapemari* also contributes externally. Advanced members of *Aswapemari* are often invited as trainers in Banjarnegara and neighboring regencies. *Aswapemari* has set its mission to be a center of excellence, as a reference to other food processing SMEs.

In addition to marketing and improvement of human resources quality, *Aswapemari* members also cooperate in production aspect. For example, some members supply raw materials to other members because of supply differences between districts. Some members of *Aswapemari* are women farmer groups so that not only do they process agricultural raw materials, but also grow crops such as cassava and bananas. To save transportation costs, delivery is usually done for several members. In addition to the supply of raw materials between members, they also buy packaging from each other when their packaging inventory runs out.

Although this association primarily cooperates in the economic sector, it does not neglect the social sphere. When a member is sick, other members visit and provide psychological as well as financial assistance. Likewise, when a member carries on family celebration such as having their children married, other members will provide support. The same case when one member proposed for being a village head, all members also provide support. All of these make the ties among the members become stronger. Sharafizad & Coetzer (2016) conclude that strength of ties impact participants' network interactions. Therefore, Payan, Padín, Ferro, & Svensson (2018) implies that in order to improve outcomes, cooperation (spirit of willingness to work together), or intangible social concerns of a

relationship, should be prioritized over tangible concrete joint activities such as coordination.

The board claimed that the factors that encourage *Aswapemari*'s progress are the support of spouses, values of kinship and local government support. Since business in rural areas is generally family business, support from spouses is absolutely important. Therefore, the board always seeks family harmony. Rotating monthly meetings, among others, are meant for all members to know each other's families that will encourage mutual understanding. Although they are competing against each other as they do the same business, the board seeks to find spaces to work together and create fairness. For example in trade exhibitions, although only three entrepreneurs can participate for example, all other members' products remain on display. Moreover, when there is a grant of production equipment, equality in distribution is always sought. The board also stated that the support from the government has been very good, especially in improving the quality of human resources, promotion and development of business network.

Challenges Ahead

The board reported that the challlenges ahead include capital adequacy, product character, utilization of appropriate technology, integration with tourism industry, and quality assurance that meets national as well as international standards. In order to expand marketing, *Aswapemari* members require substantial capital because the products are usually sold with a consignment system. Therefore, the more widespread the marketing areas, the greater the required capital. Due to capital shortage, some members' marketing areas are constrained to nearby stalls and shops in their villages.

Product character is another challenge. With the increasingly widespread agribusiness industry in various regions, each region is required to define the uniqueness of its products so as to win a strategic positioning in the market. Among the strategies is to utilize local raw materials typical to Banjarnegara regency such as snake fruit, carica, *rajalawe* banana, and *sulawi* cassava.

Another challenge ahead is the limited utilization of appropriate technology that helps business activities. Some existing products are perishable with shelf life of no more than one week. In addition, product diversification and standardization, and packaging improvements also require technology. Therefore, the use of appropriate technology is necessary to extend shelf life, to standardize and diversify products and to upgrade packaging. Despite the enormous advantages, investment in technology is relatively expensive. Therefore, *Aswapemari* always strives to build cooperation with relevant parties such as government institutions, universities and large corporations through corporate social responsibility projects.

The culinary business is closely related to tourism. Because *Aswapemari* members produce snacks, it is very suitable to be souvenirs for tourists. Although its products have been widely available in tourism centers in Banjarnegara regency, but members dream of greater integration that is being included in the tourism map of Banjarnegara regency. To accommodate tourist buses and big number of visitors, there is still a lot of homework, among others, to raise money to build production and marketing center for tourism purposes because now all outlets are rented and relatively small.

Quality assurance becomes a very important challenge because food products are related to human health and safety. Currently those already fulfilled are Home Food Industry Certificate, brand certificate and *halal* certificate. However, *Aswapemari* still has to

strive for higher standardization such as Good Manufacturing Practices (GMP), Hazard Analysis & Critical Control Points (HACCP) and Indonesian National Standard. Network of SME might be a suitable target for interventions such as quality assurance. In doing so, the study of Limborg, Grøn, & Jensen (2014) on the improvement of health and safety conditions provides a valuable insight. They conclude that both external pressures (labour inspectors, professional support) and internal motivations (shared identity, mutual trust, workers involved in 'button up' process, exclusion criteria, pact on openness, and shared commitment to new standards) must be present to drive SMEs to the improved performance.

Benefits of Joining *Aswapemari*

Members reported the following ten benefit they gained since joining *Aswapemari*:

1. Ideas for product innovation
   All member reported that by joining *Aswapemari*, they got ideas for product innovation. Most of their innovations include improved recipes and production techniques.
2. Increased product type
   Of the 21 members, 10 stated that by joining *Aswapemari*, they were inspired and managed to realize the increase in product types. Increasing the number of product types is not necessarily accompanied by the addition of raw materials because new products can be created from the same raw materials. For example snake fruit can be processed into a variety of products such as confection, chips, syrup, sweets, and crackers.
3. Greater ideas on packaging innovation
   All members are inspired to take initiative on the packaging innovation. This is mainly driven by the trainings organized by the government agencies, mutual reselling among members, and passion to improve the appearance of the product for display in stores and booths at trade exhibitions.
4. Improved knowledge on prices
   All but two members stated that they obtained additional information about prices. Two of them reported no extra knowledge because their marketing has been quite extensive, so that their knowledge of prices before joining the *Aswapemari* has been good.
5. Improved product quality
   All but one member reported that the quality of their products has been better due to greater insight through comparative studies with other members, counseling, and training.
6. Expansion of marketing areas
   All but one group acknowledged that *Aswapemari* has expanded their areas of marketing.
7. Increased sales
   Twenty members indicated that sales has increased. This is consistent with their recognition of the expanded area of marketing, increased quality and higher number of product innovation.
8. Increased use of production technology
   Eleven members revealed that the production technology used in their business has increased as they received grants of modern production technology such as vacuum fryer, confection mixer, slicer, grater, and disk mill.

9. Increased use of information technology
   Only 3 members reported no increased use of information technology. The rest claim that they have been increasingly using information technology for business purposes, for example the use of the internet for product development and promotion.
10. Acquiring skilled labour
    Six members proclaimed that through *Aswapemari*, they acquire skilled workforce. This is due to the increasingly widespread business networks that facilitate them to obtain information on the supply of skilled labour.

The above results confirm Omar & Ramlan (2014) who explain that members of associations gain numerous advantages such as updates on events, help and supports, and that the voice of associations is usually being heard as compared to an individual voice, leading to innovation, market reach and marketing (Kraus, Klimas, Gast, & Stephan, 2018).. The findings also support O'Donnell (2014) who summarizes that networking contributes to small firm marketing in the following aspects: customer knowledge, competitor knowledge, industry knowledge, supplier knowledge, expectation of continued business, acquisition of new business, product offering ideas, word-of-mouth recommendations, improved supplies, reputation enhancement, cost savings, time savings, exchange of raw materials, marketing knowledge, marketing and general business advice, contact names and recommendations.

The Supporting and Inhibiting Factors to the Development of *Aswapemari*

The following table presents the members' responses on the supporting and inhibiting factors on the progress of *Aswapemari*. Members were asked to mention these factors in an open ended question.

Table 1. The supporting and inhibiting factors to develop *Aswapemari*

No.	Supporters/inhibitors	Frequency	Percentage
	Supporting factors		
1.	Cohesiveness of members	16	76.2
2.	Trainings	15	71.4
3.	Grant of production tools/machineries	11	52.4
4.	Sustainable assistance	9	42.9
5.	Collaboration with external parties	8	38.1
6.	Routine meetings	6	28.6
7.	Shared mission and goals	4	19.0
8.	Information transparency	2	9.5
	Inhibiting factors		
1.	Difficulty in individual time management	12	57.1
2.	Price competition	12	57.1
3.	Lack of cohesiveness	5	23.8
4.	Lack of government support	8	38.1
5.	Lack of information	4	19.0

The table shows that more supporting factors are mentioned by members than inhibiting factors. Interestingly, there is a factor that some members call a supporting factor, but some other members assume an inhibiting factor, for example cohesiveness of members. Fortunately more members perceive the cohesiveness of members as a supporting factor. Nevertheless, the board still has to keep on improving cohesion because

23.8 percent of members perceive insufficient cohesion among members. Likewise, the transparency of information to members is perceived as a supporting as well as inhibiting factor. With the development of information technology today, transparency can be further enhanced through social media.

One of the reported inhibiting factors is lack of government support. In fact, many members reported that trainings and grant of production tools/machineries are supporting factors. Both of these are partly provided by the government. This may indicate that there are unmet members' expectations, especially for the grant of production equipment. The most commonly reported inhibiting factors are difficulty in individual time management and price competition.

Joining an association requires them to take time for meetings and participation in trade exhibitions. Since most members are also involved in the production process, and cannot fully delegate jobs to employees or members in the case of group enterprises, they find it difficult to allocate time for the association. Price competition is inevitable as they compete in the same business. Thus members must continue to seek product differentiation so as to make price a minor consideration in consumers' purchase decision.

Aswapemari is type of coopetition scheme because the members are competitors but they cooperate. Usually in a coopetition scheme, cooperation occurs in upstream activities that are far from the consumer. But in *Aswapemari*, cooperation is not only in upstream activities, but also in activities close to consumers. This supports the findings of Lindström & Polsa (2015) who show that cooperation occurs in branding, marketing, joint customers, and delivery of services; whereas companies compete in local services, marketing campaigns, and pricing. They further conclude that the success factors of coopetition mostly mentioned by respondents are activeness, commitment to cooperation, strategic fit, geographical distance, and personnel resources. Kraus, Klimas, Gast, & Stephan (2018) find that mutual benefit, trust, commitment, and sympathy are the crucial drivers for coopetition.

CONCLUSION

Networking strategy was instrumental in the development of SMEs in rural areas of Banjarnegara regency. *Aswapemari* serves as a network with activities such as joint marketing (participation in trade exhibitions, joint outlets, mutual reselling, co-branding), trainings to improve the quality of human resources, collaboration in production (supply of raw materials and purchase of packaging from other members), and social concern. The association has provided members with a variety of benefits such as more ideas for product and packaging innovation, increased product type, improved knowledge on prices, improved product quality, expansion of marketing areas, increased sales, increased use of production and information technology and improved information on the supply of skilled labor. Inhibiting factors members reported are relatively minor in comparison to the supporting factors. Nevertheless, the inhibiting factors should be taken into account to improve the network performance. Highly dedicated volunteers are extremely important to form such group. The board do not get payment for their contribution to the association, which is based on caring for others. The challenges facing the association ahead include capital adequacy, product character, utilization of appropriate technology, integration with tourism industry, and quality assurance that meets national as well as international standards.

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Rural Poverty Alleviation through Cluster Approach

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ABSTRACT

Cluster approach has been broadly accepted for its merits for promoting competitiveness and growth. Arguably, the strengthening of inter-industry linkages at various territorial levels features the key driver of economic growth dispersion. Regardless of either the best or worst practices of cluster implementation around the world, its contributions to tackling poverty in the rural region are still far away from public attention. Most policymakers and practitioners have been fascinated by cluster success story with competitiveness indicators ranging from economic performance outputs to innovativeness levels. This study attempts to look further at the opportunities of cluster approach for poverty alleviation by focusing on community empowerment issue. The bottom line argument is that the building of self-help organisation during the cluster implementation would impact on rural poverty alleviation. The interconnectedness of actors within the cluster would create organisational social bonding necessary to overcome human deprivation. The study utilises case study approach for understanding social transformation at the rural community level to evaluate its impacts on rural poverty. The case is a rural community in Talunombo Village of Wonosobo Regency who has been managing the infant batik industry cluster recently. The preliminary findings indicate that the existing cluster practice is good for local economic development in the short-term. New job creation and household income increase are among the key indicators in this sense. For the long-term, its contribution to rural poverty alleviation remains questioned due to high dependency of the industry to suppliers and markets in the distance. Also, a typical paternalistic subcontracting pattern is prevailing, making the community empowerment agenda hazy.

Keywords: rural poverty, cluster approach, community empowerment, social transformation, local economic development

INTRODUCTION

Most literature in the cluster approach has weighted much upon its economic rationales for promoting development at various government levels. Agglomeration economies resulted from inter-industry linkages in a cluster is argued to foster the increased productivity and innovation necessary for industrial competitiveness and economic growth. Some associated terms that present in cluster debates including “global value chain”, “production network”, “evolutionary economics”, “knowledge economy”, “institutional perspective”, and “social networking” which are directed to achieve a wide array of

development goals (Cruz & Teixeira, 2010; Hervas-Oliver, Gonzalez, Caja, & Sempere-Ripoll, 2015). Productivity level of the clustered firms is likely to enhance following the enlargement of production scale and scope as well as technological improvement through inter-firm cooperation. Knowledge spillovers among firms in utilising such an open source property of invention and imitation open a broad range of possibilities for firms to innovate more through circular knowledge accumulation. All these expected benefits of clustering refer to the economic outcome measurement (Puig & González-Loureiro, 2017).

In contrast, interests in utilising cluster approach for social developments are often neglected. Only some scholars have paid attention to cluster implementation to poverty alleviation (Fowler, Kleit, & Fowler, 2016; Nadvi & Barrientos, 2004). In the U.S. case, Fowler et al. (2016) found that cluster implementation does matter for lowering poverty rate at the country level. However, if looking closer at subnational or local levels, the results may be different. Alemu (2015) found that there is no significant difference between clustered and dispersed firms on households' economic wellbeing. Instead of promoting stronger linkages between firms, the smaller firms are more vulnerable for accessing resources to run business fairly. According to Nguyễn & Nguyễn (2013), such unequal access to resources is getting worse in rural areas due to the difficult physical environment, restricted market access, and poor governance that have hindered the rural clustered firms from acquiring the benefits of economic growth. Also, the different social system determines how the effects of cluster implementation take place, so that the results of measurement may vary between different places and be unpredictable in the long-term (Giang, Nguyen, & Tran, 2016). Thus, this study aims to identify the opportunities of cluster approach for poverty alleviation by focusing on community empowerment issue.

DATA AND METHODS

This study utilised case study approach for understanding social transformation at the rural community level to evaluate its impacts on rural poverty. Referring to Hancock & Algozzine (2006), Woodside (2010), and Yin (2009), the use of case study approach is justified because the study focused on the working of the social phenomenon within the bounded system which specifies the case. The role of the researcher is an external observer whose involvement within the phenomenon is (nearly) absent. The contextual setting of observation was the community households which have run batik industry recently in Talunombo Village of Wonosobo Regency, Indonesia. The case covered some attributes of social transformation and rural poverty phenomena which are linked with community empowerment variables. Community empowerment is important in encouraging rural households from poverty traps due to the unsustainable agriculture-based economy for supporting rural community livelihood. Pressures on agricultural commodities prices, urban expansion to rural lands, decreasing agricultural employment market, and environmental degradation on the farmlands are some factors that have made the rural households looking for alternatives to improving their livelihood conditions. Lack of human capabilities in fulfilling basic needs and coping with external shocks of struggling for better living standards has posed rural households vulnerable to poverty traps. Transforming rural household's mentality and capability to achieve better living standards, therefore, plays a critical role in overcoming such a latent human deprivation state (Nadvi & Barrientos, 2004; Pyke & Lund-Thomsen, 2016).

Initially, the direct observation found eight batik entrepreneurs in the region who became the pioneers of batik industry emergence in their villages. With exception to Mrs. Yohana (founder of Batik Kembang Keli firm in 2005) and Mrs. Alfiah (founder of Batik Carica

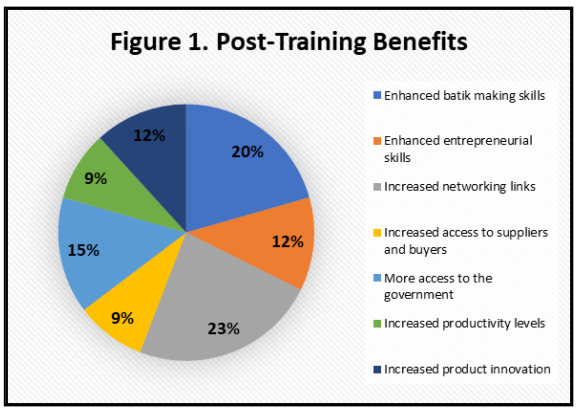
Lestari firm in 2008), they started running batik business between 2015 to 2016 after completing batik training session provided by the local government. Five of them only depend on batik business as the primary job while the rest have secondary jobs, i.e. medical doctor, beauty salon owner, and craftsman. A structured questionnaire survey was done to identify their response towards several issues associated with the local batik industry development, including capacity building, social capital mobilisation, and stakeholder engagement. A specific interview session targeted to some key informants who possess adequate knowledge on the events of social transformation, rural poverty, and community empowerment along the emergence of batik industry development recently. As the study limited to Talunombo village case, the following section will specify the situation in that village even though in reality it cannot be separated in isolation with the broader territorial boundaries.

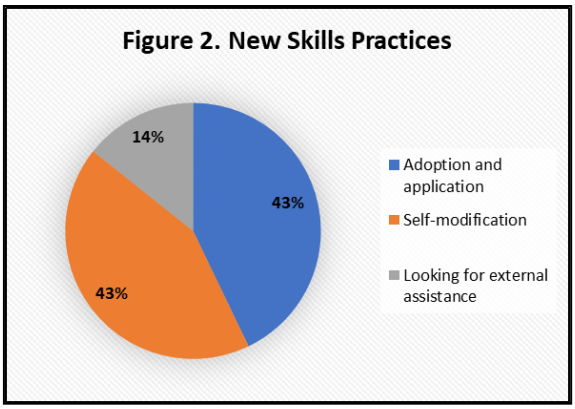
RESULTS AND DISCUSSIONS

The demographic profile of Talunombo Village is composed of agriculture society whose paddy field cultivation features the local socioeconomic background. Based on 2016 data from the Local Statistics Office, the demographic composition of villagers consists of 65% farmers (1,327 inhabitants), 20% private company staff (408 inhabitants), 5% public servants (100 inhabitants), and 10% unemployed/school pupils (204 inhabitants). There are 545 households where nearly 41% of households fell into the poor group. Previously, the most women group performed as housewives and deliberately worked as casual farming assistants. They did not have a stable income source for improving their livelihoods. Since 2008, such socioeconomic condition slightly has changed following the establishment of Batik Carica Lestari firm. The business organisation model of the firm has featured *Kelompok*

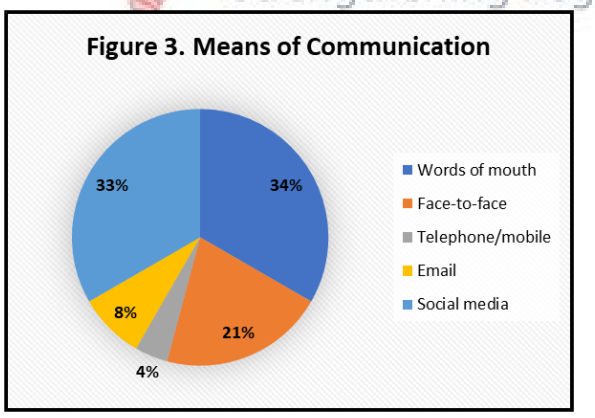
Usaha Bersama form (a community-based collective business group) which provides an alternative income source for the rural households with flexible working hours, particularly for the participating women group. Currently, the firm employs 25 permanent workers and can produce 500 batik fabrics worth of up to IDR 40 million per month (equals to USD 2,900). With the standard wage of batik making up to IDR 60 thousand per piece, a female worker could earn up to IDR 600 thousand per month (equals to USD 43).

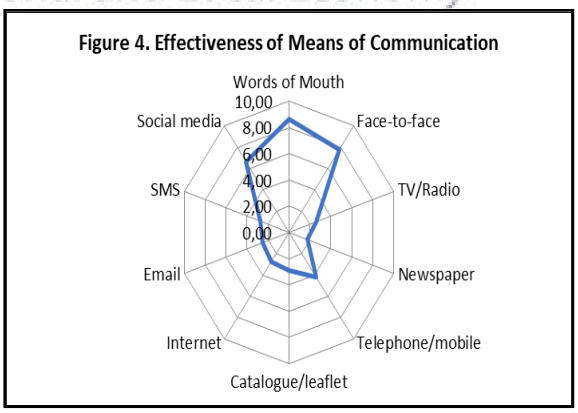
In addition to the monetary benefit, the capabilities of the local community have got enhanced due to the women participation in the rural batik industry. Figure 1 shows several benefits this female working class obtained after completing batik training sessions. There are seven sorts of benefits obtained, i.e. increased networking skills (23%), enhanced batik-making skills (20%), more access to the government (15%), increased entrepreneurial skills (12%), increased product innovation (12%), increased access to suppliers and buyers (9%), and increased productivity levels (9%). Both individual and community-based organisational capacity have increased in directing rural industry development more independently. As shown in Figure 2, these new batik entrepreneurs prefer to implement the acquired skills and knowledge independently by self-learning process through the adoption and application and self-modification of training modules.





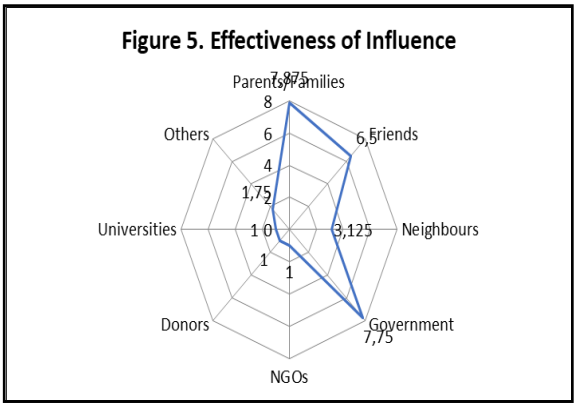
At the community level, the emergence of home-based batik industry in Talunombo Village has encouraged social capital mobilisation. Women participation in the local batik industry comes from family relatives and friends. They got informed to join the industry by using both traditional and modern means of communication, particularly through words of mouth, face-to-face meeting and social media technology. For the rural community, the first two are more preferred as part of maintaining social interactions that have shaped bonding local tradition (Figure 3). Their usage is seen much more effective compared to other means of communication such as telephone/mobile, SMS, email, and internet (Figure 4). Thus, direct contacts have determined not only the closeness degree of social interactions among actors in the industry but also their effectiveness in circulating information and knowledge. In this case, the consistent preference of participating actors in using and experiencing certain means of communication has validated how social capital mobilisation works in Talunombo Village community.

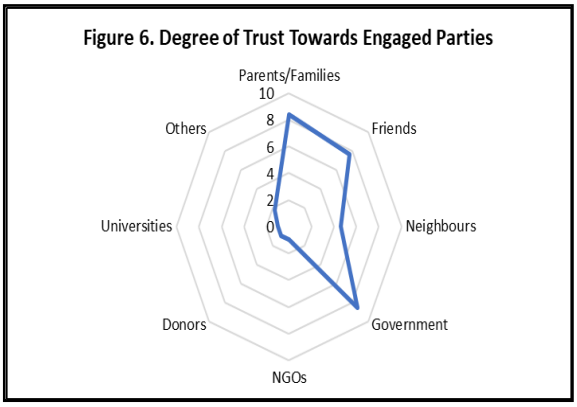




However, the expansion of the local batik industry development is still exclusive and constrained within village boundaries. The most influential actors responsible for batik industry growth in Talunombo Village are parents/families, the government, and friends. By

using Likert scaling method, the measurement taken from the key informant's feedback shows they were scored highest at 7.88, 7.75, and 6.50 consecutively (Figure 5). Slightly different to this figure, they have confirmed that regarding the degree of trust towards engaged parties the government is the most powerful actor to support the local batik industry development (Figure 6). Such circumstance is unavoidable since the excessive role of the local government initiatives to encourage the emergence of batik industry cluster in Wonosobo Regency has intensified since 2015. Referring to *Rencana Pembangunan Jangka Menengah Daerah Tahun 2016-2021* (The Mid-Term Development Plan Year 2016-2021), the local government policy suggests the strengthening of the locally based economic commodities development on agriculture, tourism, cooperative, and small- and medium-enterprises sectors. The proposed local economic development strategy prioritises cluster-based and OVOP (One Village One Product) developments. Through this policy intervention, the local government has expected the formation of inter-sectoral linkages and integration that may lead to local commodities' competitiveness improvement.





In the beginning, the government-led cluster policy implementation attracted much attention from (mostly) female villagers to learn batik making and business. The local

government provides a series of training until now, but only a few have turned to run their batik firm. After the training completion, there are neither financial nor equipment and raw material subsidies from the government; rather, they must acquire all production inputs independently. At this initial stage, the role of parents/families and friends are important to support the batik business establishment related to the provision of capital investment, workshop, equipment, and raw material supplies. These new batik entrepreneurs proceed an in-house learning-by-doing approach to sharing batik-making skills and knowledge to their workers who come from the close neighbourhood. Similarly, parents/families and friends also play a critical role in marketing the final batik fabrics. Some batik entrepreneurs have built batik showroom – commonly the batik showroom occupies the living room of the residential house – but the most effective ways of marketing still depending on social networking of parents/families and friends.

The cluster policy implementation, under a very limited observation on Talunombo Village case, has encouraged the building of self-help organisation between the local batik industry community. It helps improve the capacity of individuals and community to run batik business collectively. Not only did the villagers' capabilities have got enriched, but also their household income has increased as well. Indeed, the interconnectedness of actors within this so-called cluster implementation could create organisational social bonding necessary to overcome human deprivation. By practising collective business organisation this new generation of batik entrepreneurs and workers can mobilise the embedded social capital for generating alternative income source while maintaining the existing agriculture economy. The rise of batik industry in the rural region is useful to providing an economic transition as well as employment shift from agriculture- to industrial-based activities. However, to understand how this process may provide better structural transformation leading to

local/regional competitiveness improvement requires further elaboration. Even though some preliminary findings have indicated a positive correlation between cluster policy implementation and poverty alleviation, it is too early to make a convincing explanation due to very limited observation in a single case study.

CONCLUSION

The implementation of cluster approach to promoting the rise of local batik industry in Talunombo Village seems promising to rural poverty alleviation. Cluster practice in this study does not work for either Marshall's or Porter's theoretical conceptualisation. The local batik industry observed represents an infant industry type where the intersectoral linkages which form particular features of commonalities and complementarities between actors in a cluster organisation have not existed yet. Despite increasing local competitiveness, the presence of collective business organisation supported by self-help initiatives from the village community has not contributed much to reduce batik production costs. The new batik entrepreneurs have been highly dependent on suppliers and markets in the distance, making the local batik commodities less competitive against the competitors. They proceed a top-down paternalistic subcontracting pattern which has created contradicting outcomes for community empowerment agenda. Thus, the contribution of cluster implementation to rural poverty alleviation remains questioned in the long-term regardless of its immediate benefits to the local economic development.

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CULTURAL CREATIVE INDUSTRIES MODELS FOR FINANCIAL INCLUSIVENESS: EVIDENCE FROM SMALL AND MEDIUM ENTERPRISES IN WEST SUMATERA

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ABSTRACT

Creative economic development in Indonesia is still concentrated in Java Island as a developed region with highest investment competitiveness. Whereas, other area outside Java also have potential to develop creative economics which is potential to reduce economic inequality between regions. West Sumatera is one of province in Indonesia which known is not highly dependent on capital intensive investment, but based on micro and small industries that rely on specific socio cultural strength that can be used as starting point of creative economic development. Micro and small industries is one of inclusive development priorities specially to overcome the problems of lack bank access. This research aims to: (1) analyze the inclusiveness of creative industry based on financial inclusion approach related to access and use of bank credit, and (2) analyze the effect of bank credit to creative industries performance. This study uses 1.367 creative industry from Micro Small Industry Survey data by BPS (Indonesia Statistic Bureau) 2014. Data were analyzed by descriptive statistics, simple regression and logistic analysis model. The results showed that 22.02% of creative industries have bank access but only 6.22% participate in credit. There are 78.42% of creative industries managed by women entrepreneurs but statistically they have a lower bank access than man. There are 62.11% of creative industries is located in rural area but only 12.51% have bank access. Financial inclusion related to credit access and utilization are statistically significant influence by firm size, asset, consumer business and location. An implicit contractual based on social relationship were developed to overcome the problems of lack bank access became the uniqueness of creative industry in West Sumatera. To increase the financial inclusion, creative industries should actively cooperate with local credit guarantee company (PPKD) and government should to strengthening infrastructure for creative industries development in rural areas.

Keywords: Creative industries, Financial Inclusion, Logistic analysis, West Sumatera.

INTRODUCTION

The concept of creative industry firstly developed in Indonesia along with the changes of global economic trends that enter the fourth economic wave which is known as the era of creative industries. Today, the basis of economic development is no longer rely on the richness of natural resources but relies on the ideas, creativity, and skills of individuals as an endless and renewable development resource. The creative industry in Indonesia significantly contributes to the economy

and employment. Based on statistical data of 2015, the creative economy contributes 7.1% to the national GDP, even its growth reaches 5.76% or higher than the average of national economic growth 5.74%. From the labor side, this sector is able to absorb 10.7% of the national workforce with 9.7% of total business units. It proves that the creative industry has a great potential to be developed.

Unfortunately, the contribution to GDP is still relatively low compared to other Asian countries such as Thailand (9.5%) and South Korea (8.67%). The findings of Bank Indonesia (2015) found that one of the fundamental issues in the development of creative industries in Indonesia is due to limited access to formal financing sources. Whereas, it is a key driver of innovation and productivity that is important to strengthen the creative industries to face dynamic and high market competition. (Diallo and Al-titi, 2017, Mullineux, 2011). Besides, the creative industries in Indonesia are more concentrated in certain areas such as Java Island, and only a few are located outside Java, one of them is in West Sumatra. Based on the study of Bank Indonesia (2015), this province is one of 10 provinces that become national creative industry development area.

According to the Office of Cooperatives and SMEs of West Sumatra, Small Micro Industry (IMK) in West Sumatra is more dominant than the Large Medium Industry (IBS), even number of the industry is more than 90%. Based on IMK data in 2014 and referring to Presidential Regulation No. 72 Year 2015 on creative industry category, it is found that 75.94% of IMK in West Sumatera is belong to creative industry which spread in several sub-sectors i.e. culinary (35.64%), craft (39.38%) and fashion (23.4%). The existence of creative industries is geographically spread almost in all districts/cities in West Sumatra, however the distribution pattern tend to be uneven. In addition, although one of the characteristic of creative industry is limited access, it has a great potential to absorb labor and redistribution of growth. Based on the results of the Creative Economy Special Survey (2016), one of the fundamental problems faced is the difficulties in banking access. Creative industry entrepreneurs still tend to use their own capital which the amount is very limited.

The importance of financing for business development has been proven empirically in a number of studies. External financing is particularly important for companies since it helps in business expansion, stimulates investment growth and innovation development. Ahmed and Hamid (2011) argue that inadequate finance is a major obstacle to industries growth. Schiffer and Weder (2001) append that small industries typically have greater challenges in getting external financing than firms (firm-financing gaps), one of which is due to the lack of sufficient collateral to borrow.

A World Bank survey shows that most of creative industries use personal capital to finance their working capital and investment (purchasing land, buildings, machinery and production equipment). As for research and innovation activities are more depend on external capital. Limitations to access external sources of finance often cause the creative industries rarely conduct research and innovation activities while these activities are very important to be done to face the increasingly dynamic and competitive competition of the creative economy market. Therefore, financial inclusion in the context of creative industry

development is important to be examined since the purpose of inclusive finance is to expand business access to the formal financial sector particularly to reach a non-bankable business unit. Based on the explanation above, this study is designed with the aim to describe the characteristics of creative industries in West Sumatra and analyze the financial inclusion of creative industries based on entrepreneur, firm and regional characteristics in terms of access to and use credits from formal financial institutions (banks).

The results of this study are expected to provide an in-depth analysis of creative industries characteristics in West Sumatra and its financial inclusion conditions. Thus, the policy of creative industry development in the future is expected to remove the barriers in using formal financial institution services (banks) and set up several conditions to facilitate the entrepreneurs to improve access and use of bank credit.

LITERATURE REVIEW

Financial inclusion by some researchers such as Efobi, Beecroft and Osabuohien (2014); Honohan (2008); Fungacova and Weill (2015) and Chauvet & Jacolin (2017) is defined as an increasing access and utilization of formal financial services measured by using three main indicators: ownership of bank accounts, use of bank credit, and savings on bank account. On the other hand, financial exclusion can also be happened due to the constraints of the company itself such as asset ownership and lack of business guarantee.

Han (2008) argues that the ability to access external financing is strongly influenced by the characteristics of the entrepreneur. Education and experience in managing company have a strong impact on improving access to bank. A similar opinion was also stated by Fungacova and Weill (2015) that education has a positive effect on bank account ownership. Entrepreneurs as managers also have competence and opportunities to build networking with external financing sources. This is in line with the findings of Fatoki and Smit (2011) stated that business information and social networking are important in determining the access to bank credit. Moreover, other factors such as the age of entrepreneur, according to the findings of Nkuah et al (2013) and Nguyen and Luu (2013), also correlate to the ability to access external financing sources. They find that the entrepreneurs in the productive age have greater opportunities to access external financing and minimize loan risk.

In addition, Kunt et al (2015) find that gender also influence financial inclusion that men have better access to (demand) and use of (supply) of financial services than women in India. The characteristics of entrepreneur such as education, age and gender affect the financial inclusiveness in China (Fungacova and Weill, 2015). In Africa, meanwhile, male entrepreneurs who are more established, educated and experienced have better financial inclusion (Zins and Weill, 2016), but gender has no effect on the formal or informal financing institution they chose (Fungacova and Weill, 2015). Based on these studies, the hypotheses of this research are: entrepreneur characteristics such as age, education, gender, partnership, and social network owned by the entrepreneurs influence the financial inclusion of creative industries (Hypothesis 1)

A study by Bencheikh and Taktak (2017) find that inclusive finance is also influenced by firm characteristics such as growth, size and profitability of the company. According to Laeven and Woodruff (2007), firm size and legality are positively correlated to financial access which small industries usually have greater challenges in accessing financing sources from banking institutions than large industries due to firm financing gap. The findings of Bencheikh and Taktak (2017) show that liquidity of collateral such as land, buildings, machinery and equipment can facilitate the company's access to financing sources. Biepke and Abor (2009) stated that the age of the company has an effect on the external financing demand. They argue that the company which has been operating for a long time has an increasing credit demand for its firm development. However, according to Fowowe's (2017) study, financial access can exactly increases a greater growth in the young firm than the older or the mature firm. Comunian, *et al* (2010) argue that beside asset and profitability factors, market is also an important factor affecting the inclusiveness of creative industries in a region. Based on above descriptions, the hypothesis of this research is: firm characteristics such as type, scale, experience, asset, legality, the ability to dominate export market, consumer and profitability influence financial inclusion of creative industries (Hypothesis 2).

According to Granger and Hamilton (2010), creative industries tend to grow in areas that have good infrastructure especially in communication. A prosperous region with low poverty and adequate infrastructure, particularly in information and technology, is a driving force in realizing the growth of an inclusive creative industry. Clare (2013) also adds that creative industries are embedded in place. Financial inclusion by Pearce (2011) is aimed to attract "unbanked population" in formal financial system. However, Chakravarty and Pal (2013) emphasize that financial inclusion is the process to remove the barriers and overcome the inabilities of disadvantaged groups. According to him, it is a multidimensional phenomenon and may vary across countries and sectors. Thus, it reinforces that regional factors (spatial) also affect the financial inclusion of the creative industries. Based on a number of studies above, the hypothesis that can be made is regional characteristics (spatial) i.e. location, GDP / capita, gini ratio and technology (internet) influence the financial inclusion of creative industries in West Sumatera (Hypothesis 3).

METHODOLOGY

The research was conducted by using the data of Small Micro Industry (SIMK) 2014 issued by Central Bureau of Statistics (BPS). SIMK surveyed 1799 small industries in all districts / cities in West Sumatra. The data was then sorted purposively by taking 1367 samples using creative industry criteria according to the Creative Economy Agency (Bekraf) based on president regulation No. 72/2015 on creative industry classification according to KBLI 5 digit (Classification of Indonesian Business Standard).

Results of data processing IMK 2014, shows that there were three sub-sectors of creative industries in West Sumatra, they are culinary (35.64%), craft (39.38%) and fashion (23.4%). The detailed explanations of those sub-sectors are presented on Table 1.

Table 1
Distribution and Scope of Sample Data

Sub Sector	Total	KBLI	Description
Culinary	495 (35.64%)	10792, 10794, 10790, 10799. 10793, 10710, 10733, 10750.	Preparatory activities, processing, presentation of food and beverage products which creativity, aesthetics, tradition, and / or local wisdom as the most important elements in improving the taste and value of the product, to attract purchasing power and provide experience for consumers.
Craft	547 (39.38%)	16291, 16292, 31001, 31004, 32111, 32120, 32202, 32402, 32112, 32909, 13912, 13921, 13922, 13923, 13924, 16292, 16291, 16292, 16293, 16299, 13912, 13921, 32401, 23963, 23951, 13122, 17022, 23959,	It is a part of the applied art which is the meeting point of art and design derived from traditional heritage or contemporary ideas whose results can be works of art, functional products, decorative objects, and can be grouped by material and exploration of the techniques used and the thematic products
Fashion	325 (23.4%)	14111, 14120, 14131, 14302, 15121, 15201	A lifestyle in appearance which reflects self or group identity.
Total	1367		

Source: IMK 2014 and SKEK 2014 (data processed)

There were two response variables: (1) related to business access to bank (relating to access) and (2) related to the use of bank credit as working capital (relating to use). Then, the independent variables were divided into 3 groups: (1) entrepreneur characteristics consisting of 5 variables, i.e. education, gender, age, partnership, and network; (2) firm characteristics consisting of 8 variables, i.e. scale, experience, sub sector, consumer, export share, legality, asset, and profitability; (3) regional characteristics consisting of 4 variables, i.e. location, GDP / capita, gini ratio and information technology (internet).

Previous researches (Efobi et al 2014, Honohan, 2008, Fungacova and Weill, 2015 and Chauvet & Jacolin, 2017) have used three main indicators in measuring financial inclusion: ownership of bank accounts, use of bank credit, and savings on bank account. However, in this research, the researchers only used two indicators: relating to access and relating to use. Credit access was used to measure the penetration of creative industries against formal financial institutions. This variable was measured by using 2 values of 1 and 0. The use of credit was observed by the percentage of working

capital from bank credit. Operational variables of the research and their measurement scale are clearly explained in Table 2.

Table 2
Explanation of Operational Variables

Indicator	Code	Description
(1) Entrepreneur characteristics		
Age of entrepreneurs	AGE	Measured in years
Gender	GENDER	1 = female; 0 others
Education	EDU	Measured from the formal education (years)
Partnership	PARTNER	1 = if the entrepreneur has ever collaborated with other parties; 0 others
Network	NETWORK	1 = if the entrepreneur is incorporated in business association; 0 others
(2) Firm Characteristics		
Sector	SECTOR	sub-sector in creative industry : 1 = culinary, 2 = craft and 3 = fashion
Company experience	BEX	Measured in years, from standing up to the observation (2014)
Firm Size	SIZE	Measured by the amount of labor
Legality	LEGAL	1 = legal business; 0 = other
Export	EXSPORT	Measured by export sales share/ market share
Consumers	CONS	Measured by sales share for business to business
Asset	ASET	Measured by total business assets during the year
Profitability	PROFIT	Measured by the ratio of operating income to the total assets
(3) Regional Characteristics		
Lcation	LOC	1 = if the location of the company in the urban (city) 0 = if the location of the company in rural
GDP/capita	GDP	Measured by the value of GDP / capita at each business
Gini ratio	GINI	Measured by the gini ratio at each business location
Information technology (Internet)	NET	Measured by the percentage of people who access the internet at each business location
(4) Response variable		
Relating to access	Y_{access}	1 = companies that participate in bank credit; and companies that are not interested in borrowing but have the ability to access bank credit; 0 others
Relating to use	Y_{use}	Measured by the percentage of working capital from bank credit

Data analysis used to measure credit access (relating to access) was binary logistic regression approach. Logistic regression is a method of statistical analysis to describe the relationship between dependent and independent variables (Hosmer and Lameshow, 2000). The data then processed by using software Minitab 15. The logit regression model used was as follows:

Model-1: *Relating to access*

$$Y(_{access})=\text{Ln}\left[\frac{\pi i}{1-\pi 1}\right]=\alpha 0+\alpha 1EDU+\alpha 2\,GENDER+\alpha 3\,AGE+\alpha 4\,PARTHNER+\alpha 5\,NETWORK+\alpha 6\,SECTOR+\alpha 7\,BEX+\alpha 8\,SIZE+\alpha 9\,EXSPORT+\alpha 10\,LEGAL+\alpha 11\,CONS+\alpha 12\,ASET+13\,PROFIT+\alpha 14\,LOC+\alpha 15\,GDP+\alpha 16\,GINI+\alpha 17\,NET+\mu$$

To test the goodness of fit, the researchers used Pearson Method, Deviance and Hosmer-Lemeshow. The test was conducted to see the suitability between the entered data in the model and the observed data. To see the significance of the model, it used G and Wald Test. G test is used to find out whether there is an influence of independent variables used in the model at the same time to the response variable. G test was used by comparing the value of α with p-value, if p-value <α then hypothesis H0 was rejected. If H0 was rejected, it means that the model used was statistically significant with significance level of α. Furthermore, Wald test is used to see the significance of each variable (partially). If p-value <α, then the hypothesis H0 was rejected, it means that the variable was statistically significant with significance level of α.

Moreover, odds ratio coefficient was done in order to interpret the logistic regression coefficient. It is an indicator to see the tendency of companies to access the financial institutions (formal). If the value of odds ratio was close to zero, the tendency of the company to access the formal financial institution (bank) was getting smaller.

Data analysis used to measure financial inclusion related to the use of bank credit as working capital was Multiple Linear Regression analysis with OLS (Ordinary Least Square) approach using response variable (Y), the percentage of working capital from bank credit. The regression model used was as follows

Model-2 *Relating to use*

$$Y(_{use})=\alpha 0+\alpha 1EDU+\alpha 2\,GENDER+\alpha 3\,AGE+\alpha 4\,PARTHNER+\alpha 5\,NETWORK+\alpha 6\,SECTOR+\alpha 7\,BEX+\alpha 8\,SIZE+\alpha 9\,EXSPORT+\alpha 10\,LEGAL+\alpha 11\,CONS+\alpha 12\,ASET+13\,PROFIT+\alpha 14\,LOC+\alpha 15\,GDP+\alpha 16\,GINI+\alpha 17\,NET+\mu$$

To see the significance of the model, it was tested by using F and t test. F test was done by comparing the value of $F_{observed}$ with F_{table}. If $F_{observed} > F_{table}$, then hypothesis H_0 was rejected. It means that X variable was simultaneously and statistically significant to Y with a significance level of α. Moreover, t test was used to see the significance of each X variable to Y. When $t_{observed} < t_{table}$, the hypothesis H_0 was rejected. Thus, in partially, X variable was statistically significant to Y with a significance level of α.

FINDINGS AND DISCUSSION

The creative industry basically has characteristics which are different from the common industry, so Cunningham (2002) calls it "not just another business". According to DCMS (1998) the fundamental difference lies in the main production inputs used. The creative industry places intellectual capital as the primary production input which creativity and talent in human capital become important inputs rather than the other. That is what makes it different from conventional industries which relatively capital-intensive.

Clare (2013) says that creative industries are embedded in place. Each region tends to have unique characteristics that distinguish it from other regions. In West Sumatra, creative industry entrepreneurs 78.42% are women. This is in line with the Carter et al findings (2013) that the production activities which related to crafts and fashions or other production activities closely related to the arts, aesthetics and other cultural activities, are more managed by women, thus, it is also able to promote gender balance. The creative industries in West Sumatra are proved to be able to facilitate greater absorption of female labor. It can be seen from the average ratio of women labor absorption in the creative industry reaches 78.43%. However, if it is viewed from the quality of human resources, 39.14% of the entrepreneurs in West Sumatra have a low level education, i.e. elementary school. This condition is certainly not favorable considering the development of creative industries requires the human resources who is capable in mastering current knowledge and technology which is generally identical with higher education level (Florida, 2012 and Howkins, 2001)). Nevertheless, a number of studies (Rutkauskas et al 2014; Dornberger, 2012) reveal that creative industries based on cultural and social values generally have a lower dependence on high-educated labor than non-cultural-based creative industries.

Table 3
Categorizing Creative Industries in West Sumatera

Sub sector	Total (%)	KBLI 2015	Main industry in sub sector
Craft	547 (40, 02%)	29 KBLI	"sulam and embroidery" industries 292 industries (21.36%)
Culinary	495 (36,21%)	8 KBLI	"*kerupuk, keripik, peyek* and related industries", 265 industries (19.39%)
Fashion	325 (23, 77%)	6 KBLI	Fashion made by order, 157 industries (11.49%)

Source: SIMK 2014 (data processed)

The structure of creative industry in West Sumatra tends to resemble the national creative economy structure which is dominated by three main sub-sectors: culinary, craft and fashion. According to Fahmi et al (2016), creative industries that grow in developing areas tend to be a traditional cultural industry which based on unique traditional values compared to the creative industries which based on innovation and intellectual capital such as film, audio visual, and graphic design sub-sectors.

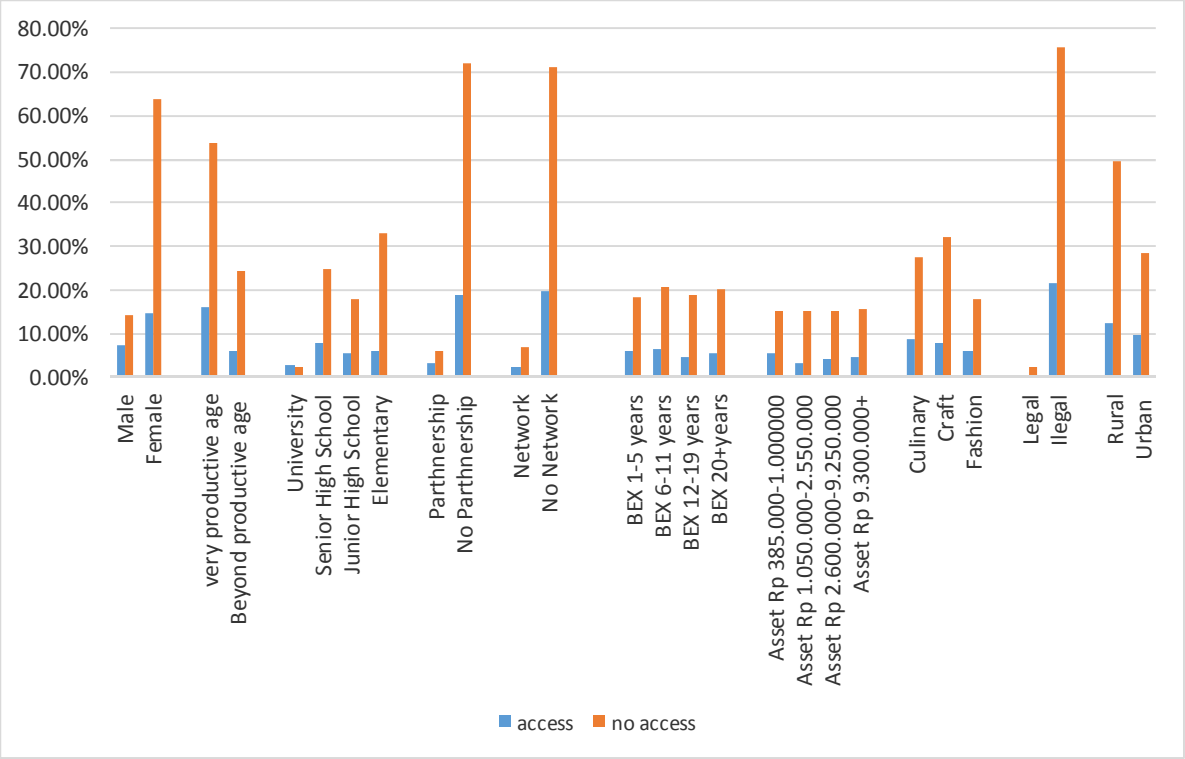

Figure 1. General Characteristics of Creative Industies in West Sumatera

Based on its firm characteristics, the percentage of start-up industry in West Sumatera (operational experience of the company 1-5 years) reaches 24.29%. It indicates that product and firm competitiveness in this province have a good prospect. Nevertheless, export-oriented creative industries only reach 1.90%. It means that the effort to encourage the growth of start-up industry also should be followed by the innovation ability of established companies in order to increase export opportunities. The percentage of business to business market of creative industries in West Sumatera has now reached 68.18%. Therefore, it is expected to provide spillover effect in encouraging the growth of other economic sectors. In addition, 62.11% of the creative industries of West Sumatra are geographically located in the district, and 45.21% are in urban areas.

Table 4

Comparative Analysis of Creative Industry Related to Credit Access

Variable	Creative Industries that have bank access	Creative industries that do not have bank access	Difference	P-value
Edu	10,39 (3,71)	8,92 (2,98)	1,467	0,000***
Gender	0.658 (0,475)	0,820 (0,384)	-0,1621	0.000***
Age	43,4 (10,8)	43,6 (11,7)	-0,182	0,801
Partner	0,140 (0,347)	0,074 (0,262)	0,0654	0,003***
Network	0,113 (0,317)	0,086 (0.281)	0,0267	0,188
Sector	1,874 (0,798)	1,876 (0,755)	-0,0024	0,963
BEX	13,1 (10,0)	14,2 (10,7)	-1,145	0.085
Size	3,02 (3,10)	1,69 (1,51)	1,330	0,000****
Exsport	0,09 (1,11)	0,014 (0,144)	0,0715	0,267
Legal	0,020 (0,140)	0,027 (0,163)	-0,00727	0,444
Cons	54,8 (45,1)	64,5 (45,2)	-9,71	0, 001***
Aset	12456027 (55045048)	9192488 (28673547)	3263539	0,322
Profit	0.013 (10.128)	0.044 (0.732)	-0.0305	0.295
Loc	56.5 (26.4)	53.8 (26.3)	2.72	0.056*
GDP/capita	33863 (8596)	33276 (8383)	587	0,93
Gini rasio	0,2969 (0,0388)	0,301 (0,395)	-0,0036	0,772
Net	17,84 (8,59)	17,21 (8,62)	0,636	0,258

Noted: ( ) = St Dev
*Significant effect on the real level of 10%; ** (5%); and *** (1%)

Based on the legal status, only 2.56% of the creative industries in West Sumatera are already incorporated. This condition obviously can render difficulties to the industries in marketing and capital access since legal aspect is one of the considerations for the bank to provide financing. Although it has a good prospect in business development, the absence of firm legality makes the industry is not bankable to get capital loan.

Based on comparative analysis, there are six significant different variable between creative industries that have bank access and no bank access. Creative industries that have bank access is more educated enterpreneur, dominated by man, have a good parthnership, larged firm-size, dominated by household consumers and located in urban area. According to Howkins (2001) higher education level and partnership seem to be associated with higher probability to bank access. In India, Kunt et al (2015) find that men have better access to (demand) and use of (supply) of financial services than women.

Table 5
Description of Bank Credit Access on Creative Industry in West Sumatra

Criteria		Frequency	Percentage	Description
Participate in credit (receive credit)		85	6.218	*Accessible*
Not participating in credit		1282		
Reason				
a.	do not know the procedure	61	4.462	*Non accessible*
b.	difficult procedure	98	7.169	*Non accessible*
c.	no collateral	243	17.776	*Non accessible*
d.	high interest rates	165	12.070	*Non accessible*
e.	rejected proposal	19	1.389	*Non accessible*
f.	uninterested			
	uninterested but have the ability to access credit	216	15.801	*Accessible*
	uninterested and do not have the ability to access credit	480	35.113	*Non accessible*

Source: Data processed

The table 5 above shows that 22,019% of creative industries in West Sumatra have access to bank credit, but those which participate in credit are only 6,218%. 50,914% of the respondents state that they are not interested in applying the credit, although, based on the condition of owned asset, only 15.801% has the ability to apply for credit. No collateral and price factors (high interest rate) also become the biggest obstacle in accessing credit to formal financial institutions. The ability of the creative industry to access banking credit shows diversed conditions. This diversity is related to the characteristics of entrepreneur, firm, and region. Another alternative funding source used is cooperative (2.27%). Interestingly, after the personal capital, the second largest source of capital comes from the other party (9.80%) i.e. third parties who have social closeness with the entrepreneurs. According to Ambrosius and Cuecuecha (2015) informal financial services have a statistically significant effect in encouraging household lending in Mexico rather than traditional banks. A study by Ngalawa and Viegi (2013) also find that the formal and informal financial sector can be complementary in aggregate. The tendency of creative entrepreneurs to use loans from other parties with emotional closeness based on trust shows the important role of social capital in the capital system of creative industries in West Sumatra. Besides, the lack of access of creative industries to use bank credit shows the inability of formal financial sector (bank) in handling the financial needs of businesses, especially small-micro scale.

Table 6
Main Sources of Capital on Creative Industry in West Sumatra

The main source of capital	Frequency	Percentage
Personal capital	1.015	74,25
Bank	85	6,22
Cooperative	31	2,27
Non-bank financial institution	13	0,95
Partners	27	1,98
Individual	45	3,29
Family	17	1,24
Other parties	134	9,80
Total	1.367	100

Source: Data processed

The estimation result of logistic regression model related to access credit and multiple regression analysis related to use credit are shown in Table 7. The analysis result of Model-1 by involving all independent variables is 631,879 value of Log-likelihood with G statistic value 177,467 and p value 0.000. Because the p value is below the real level (α = 5%), then it can be concluded that Ho is rejected or H1 is accepted.

The Goodness of Fit using Pearson, Deviance and Hosmer-Lemeshow methods shows the p-value are 0.108, 0.950 and 0.266, which are above the real level (α = 5%). Thus, Ho is accepted which means logit model is feasible to use. From the size of the association between the response variables and their independent variables, this model also shows the strong relationship and the ability of prediction of the model can be seen from the big value of Concordant and the small value of Discordant and Ties. In this research, concordant value of logit model is 74.1%, it means that 74.1% of companies with category Y = 1 (having ability to access bank credit) are expected to have greater opportunity than category Y = 0 (no ability to access bank credit). The discordant value is 25.4% which means 25.4% companies that do not access bank credit (Y = 0) have greater opportunity than Y = 1 (having ability to access bank credit). Ties value 0.5% indicates that the percentage of companies that have ability to access bank credit is equal to the opportunity of companies that do not have the ability to access bank credit with the amount 0.5%.

Partially, based on the result of Wald test shown by z coefficient, there are six variables significantly influence to bank access. They are entrepreneur characteristics (education and gender), firm characteristics (scale, asset, and consumer) and regional characteristics (business location). If we observe the variant value of the observed variable characteristics, then the most influence factor is the firm size since it has the

largest Z statistic value of 6.61. Meanwhile, other variables such as entrepreneur age, partnership, company experience, sub sector, legality, profitability, GDP export / capita, gini ratio and information technology (internet) have no significant effect on Y-access.

Table 7
Financial Inclusion Analysis of Creative Industry Related to Credit Access and Utilization

Variable	*Model-1: Relating to access*			*Model-2: Relating to use*		
	Coeff. (p-value)	z	odds	Coeff.	t	p-value
Entrepreneurs Characteristics						
EDU	0.116***(0.000)	5.17	1.12	-0.0019	-1.54	0.123
AGE	-0.0028 (0.719)	-0.36	1.00	-0.002	-0.51	0.613
GENDER	-0.558***(0.001)	-3.30	0.57	-0.0097	-1.05	0.295
PARTNERSHIP	0.333(0.166)	1.39	1.40	0.0127	0.99	0.323
NETWORK	0.237(0.319)	1.00	0.319	-0.0149	-1.19	0.232
Firm Characteristics						
SIZE	0.269***(0.000)	6.61	1.31	0.0034*	1.84	0.067
BEX	-0.003(0.711)	-0.37	1.00	-0.0005	-1.13	0.260
D_FASHION	-0.021(0.918)	-0.10	0.98	-0.1297***	-12.12	0.000
D_CRAFT	-0.188(0.322)	-0.99	0.83	-0.1278***	-13.32	0.000
ASSET	0.006**(0.030)	2.17	1.00	-0.000**	-2.04	0.042
LEGAL	-0.730(0.157)	-1.42	0.48	0.0028	0.12	0.901
PROFITABILITY	-0.0004(0.276)	-1.09	1.00	-0.0000096	-0.73	0.466
CONSUMER	-0.007***(0.000)	-4.29	0.99	-0.00014*	-1.69	0.091
EXSPORT	0.652(0.120)	1.56	1.92	-0.00286	-0.43	0.668
Regional Characterictics						
LOCATION	0.786**(0.047)	1.99	2.19	-0.20007***	-9.37	0.000
GDP/CAPITA	-0.00002(0.260)	-1.13	1.00	0.0000025**	2.23	0.026
GINI RATIO	-0.185(0.656)	-0.45	0.83	-0.00777	-0.730	0.463
INTERNET	-0.004 (0.811)	-0.24	1.00	0.00546***	6.00	0.000
Constant	-1.37229(0.057)	-1.90	1.12	0.06109	1.62	0.106
Number of observations			1367			1.367
Concordant			74.1		R-Sq (adj)	17.3

*Significant effect on the real level of 10%; ** (5%); and *** (1%),
Source: Data processed

The analysis result in Table 7 shows that there is a negative relationship between access to credit and gender factors. On the other words, creative industries led by women entrepreneurs have a lower probability in accessing credit. From the coefficient of Odds ratio value 0.57, it can be concluded that the creative industries managed by women entrepreneurs are likely to reduce the access by 0.57 times compared to creative industries managed by men entrepreneurs. This is in line with the results of Kunt et al's (2015) study that men have better access to (demand) and use (supply) of

financial services than women in India, as well as in Africa, more educated and experienced men entrepreneurs proven have better access to credit than women entrepreneurs (Zins and Weill, 2016). However, gender does not affect the formal and informal institutions they choose (Fungacova and Weill, 2015). Formal education factor owned by the entrepreneurs also influences the ability to access bank credit. High educated entrepreneurs have a better chance to access credit than low / middle educated entrepreneurs. Therefore, education of the entrepreneur has a strong impact on improving access to bank. The result of this study reinforce the findings of Han (2008) and Fungacova and Weill (2015) that educated entrepreneurs tend to have better access to formal financial institutions.

The results of this study also indicate that firm characteristics such as business scale, assets and consumers have statistically significant effect on Y-access. Companies which have larger business scales tend to have better access to credit. It is because large companies generally have sufficient asset ability that can be used as collateral in making loans to banks. Besides, the large percentage of business consumers (industrial markets and trade sectors) served by the creative industry can actually reduce the opportunities to access bank credit. A study by Biepke and Abor (2009) show that firm financing gaps often occur due to collateral problem which large-scale company have a greater chance to access credit due to sufficient collateral as a loan requirement. However, small-scale company generally has greater challenges and constraints in accessing bank credit due to the weak assets and lack of collateral. Bencheikh and Taktak (2017) said that building liquidity such as land, buildings, machinery and equipment can facilitate the company's access to formal financing sources. In this case, sub-sector does not have significant effect since the p-value> 0.05. It means that the credit access ability among the 3 sub-sectors do not differ significantly.

Geographically, creative industries in West Sumatra are spread almost in all districts / cities, but the spread pattern tends to be uneven. 62.11% of the creative industries are located in the districts (rural areas). According to McCann (2007), industries in urban areas with more adequate infrastructure tend to have better financial inclusion than industries in rural areas with limited infrastructure. Creative industry in West Sumatra is generally belongs to traditional cultural industry which is more widely located in rural areas. There are 62.11% of creative industries located in rural areas, but only 12.51% have access to formal financial institutions. It indicates that the financial access of creative industries in the rural area is still low. Basically, micro-small scale creative industry access to banks is more often based on soft information that is not easy to be well understood by all business actors especially if the business location is in the rural areas and away from the bank office. According to Alessandrini et al (2009), the problem arises related to asymmetric information, agency

and uncertainty in the relationship between business actors with the bank. Industries in rural areas tend to have difficulties in obtaining information intensively about bank lending procedures. Although it cannot be denied that technological developments which create digital finance can reduce the information cost, in some research results (Klagge and Martin, 2005, Haas and Doren, 2013) it is proven that it is not easy to get soft information for business actors, especially small micro company which lack of infrastructure facilities.

The analysis result of Model-2 shows that the use of bank credit as working capital in creative industry is not significantly influenced by entrepreneur characteristic, but only influenced by firm characteristic (business scale, sub-sector, asset and consumer) and regional characteristic (location, GDP / capita and internet). The positive relationship between the firm scale and the use of credit in working capital shows that the increasing firm scale requires a greater increase to the external capital needs, especially the needs for innovation and market expansion. Conversely, if the company already has an established asset, the ability of internal capital tends to increase so that the proportion to the use of external capital will decrease. The significance of dummy variables (sub sectors) used in model-2, i.e. culinary sub-sector as a basis, shows a significant negative relationship. It means that the percentage of credit used as working capital in craft and fashion sub-sectors is smaller than the culinary sub-sector. In other words, the percentage of credit used as working capital in culinary is greater than in craft and fashion sub-sectors.

Regional characteristics have a significant influence on the use of credit as working capital in creative industry. The use of information technology (especially internet) proved to have a positive effect. It confirms that using internet through financial banking can increase financial inclusion of creative industries in West Sumatra. According to the Creative Economy Agency (2016), internet penetration in creative industry in West Sumatera has reached 87.83% which nationally become the second highest percentage after D.I Yogyakarta (92.11%).

The analysis results of model-1 and model-2 in overall indicates that there are many factors influencing the financial inclusion of creative industries in West Sumatra, they come from the diverse characteristics of entrepreneur, firm, and region. Informal financing seems to be an alternative capital source that is more demanded by the creative industries in West Sumatra. It indicates that the informal financing built from social capital of local communities, especially trust, can strengthen the development of creative industries. The development of implicit contractual relations in informal financing system that is commonly used by creative industry actors in West Sumatra can be an alternative way to overcome the lack of access particularly for start-up companies. Nevertheless, the source of informal financing is sometimes limited in

terms of volume and coverage of the loan. In the future, creative industries in West Sumatra should be encouraged to improve access and utilization of credit from formal financial institutions (banks). Hopefully, the increased financial inclusion of creative industries can accelerate the productivity and innovation improvement that is crucial for strengthening the development of creative industries in this province, especially to face market competition which is more dynamic and competitive.

CONCLUSION AND SUGGESTION

The characteristics of creative industries in West Sumatra are seen in the ability to absorb the female labor (promoting gender balance), production activities based on the exploration of local values by utilizing arts, aesthetics and traditional Minangkabau culture (strengthening cultural identity), micro small-scale industries and tend to be limited access to capital but high growth potential with the emergence of start-up industry, has a wide spread but tends to be concentrated in rural areas, and serving the largest market for business to business so it is expected to bring spillover effect to the growth of other economic sectors.

The access of creative industries to formal financial institutions (banks) is still very limited as well as the use of bank credit as working capital. The diverse characteristics of entrepreneur (education and gender), firm (business scale, type, asset, and consumer) and region (location, GDP / capita, and internet) are statistically significant in influencing access and utilization of bank services by the creative industries. Strong social relationship and the role of informal financing in local communities becomes an alternative way to overcome the lack of access faced by creative industry actors especially for Start-up Company in starting its business.

In the future, the creative industries in West Sumatra need hard work to increase the competitiveness and innovation, especially to enlarge the export market. Increasing financial inclusion to encourage the utilization of bank services should be supported since informal financing widely used by creative industries nowadays is limited in terms of volume and coverage. For that reason, banks as a formal financial institution need to cooperate with Regional Credit Guarantee Company (PPKD) of West Sumatra in order to overcome the problem of weak collateral availability and the need of government effort to strengthen financial inclusion especially for creative industries in rural areas with limited infrastructure of information technology.

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STUDY ON INFORMAL SECTOR CONDITION IN BALI PROVINCE AND POLICY DIRECTIONS

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ABSTRACT

This paper aims to make a descriptive analysis study of the informal sector in Bali Province, the role of the informal sector on the economic aspects, and to analyze the future policy direction towards the empowerment of the informal sector. The existence of the informal sector in Bali Province is closely related to the existence of the tourism sector as the leading sector of the Balinese economy. The tourism sector has led to the emergence of informal sector sketches as a complement to and support of tourism activities and industries. Based on data from BPS in February 2017, mentioned that most of the population of Bali is 53.07 percent working in the informal sector and the remaining 46.93 percent work in the informal sector. The workers in the informal sector is dominated by workers who are trying to be assisted by unskilled workers. The number of workers in the informal sector has been growing steadily over the past five years until 2016. The existence of the informal sector also has an impact on reducing poverty through job creation as it reduces unemployment and increases people's incomes. This is due to the requirements to enter the informal sector very easily, making it possible for anyone to enter without having skill, education, or capital requirements. Nevertheless, the informal sector has some challenges and weaknesses that hamper its development, both from the internal / external factors of the business and its employees. Based on this, the existence of the informal sector should be more empowered as a partisanship to the community especially as a form of local policy. The empowerment of the informal sector can be done through the exploration of potential and creative economic opportunity in informal sector in Bali Province which is of course based on tourism, so that it can increase the creativity of the community in the work of course to support the tourism sector which in the end can create new job field in the informal sector, and the informal sector can be transformed into a formal sector.

Keywords: Informal Sector, Bali Tourism, Poverty in Bali Province, Creative Economy.

INTRODUCTION

The existence of the informal sector is very important in developing countries such as Indonesia. The informal sector is able to make a meaningful contribution. This has been demonstrated by its ability to sustain the country's economy during the multidimensional crisis of 1998 and its ability to absorb labor. The number of workers in the informal sector in Indonesia continues to increase. In February 2017 informal sector workers reached 58.35 percent, while workers absorbed by the formal sector only 41.65 percent (BPS, 2017). Absorption of the higher number of workers in the informal sector goes to the trade and social services sectors, where the sector is growing by 0.83 percent and 0.39 percent. Followed by 0.19 percent industry and electricity, gas and water 0.04 percent. This is also reflected in the type of work according to the main occupational status, which is the family worker group increased by 0.84 percent,

the self-employed group by 0.65 percent and the group tried to be assisted by the non-permanent workers 0.66 percent.

Along with the rapid growth of the informal sector, the informal sector is no longer just an alternative to provision of temporary employment for unacceptable workers in the formal sector, but also a complementary alternative to the formal sector (Setya Ari, 2018). The informal sector is one of the leading drivers of economic development. The movement of the informal sector is vital to create growth and employment. This is in line with the findings of Cathy and Oluwatoyin in Nigeria (2017) which reveal that the informal sector is one of the providers of employment and creates a source of livelihood for the unemployed. The informal sector is quite flexible and can easily adapt to the ups and downs of the market demand. Informal enterprises also create jobs faster than other sectors and are diversified in making important contributions to exports and trade. Therefore, the informal sector is an important aspect for the economic development of a competitive region.

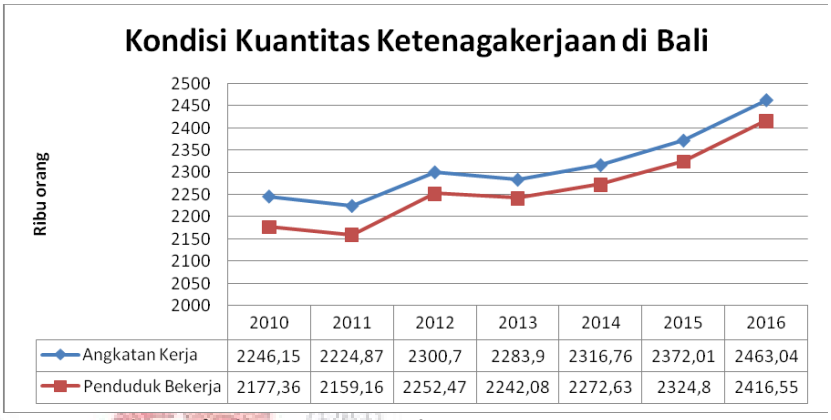
Thus, in developing countries such as Indonesia, the informal sector problem is becoming increasingly important to be resolved and is one of the focuses of government homework at the national level, as well as local governments. Governments in particular local governments need to take strategic steps to empower the informal sector. Until now, the notion of the informal sector is often associated with the main characteristics of the entrepreneurs and informal sector actors, among others: the main business activity on the independence of the people, utilizing simple technology, the workers mainly derived from family labor without wages, local resources, mostly serving the needs of the lower middle class, education and the quality of the resources of the perpetrators are low. This informal sector is often better known as a small business. Most informal sector enterprises formed from the populist economy and their presence in the era of regional autonomy are potentials that must be explored and developed because they can absorb labor in a number of high enough and can improve the welfare of society as the goal of local government.

The phenomenon of the relationship between the informal sector as a complementary alternative to the formal sector occurs very closely in Bali Province. The development of the tourism industry as a leading sector of the Balinese economy led to the possibility of job creation in the informal sector. The informal sector becomes a mainstay to attract tourists as well as increase tourist spending, even the informal sector in Bali as a support provider of the needs of the workers in the tourism sector, thus the development of Bali's tourism industry not only benefits the blood command, but also the Balinese people, and it is undeniable that the informal sector has a very important role in the growth and economic development of Bali. The form of informal sector in Bali is mostly engaged in the fulfillment of basic needs, such as food business, handicraft, lodging, souvenir, kiosk or minimarket and others (Meisthya, 2014).

Given the relatively positive role of the informal sector in national and regional development processes, the existence of the informal sector needs to be empowered. Some policies, whether directly or indirectly, to assist community development through the establishment of informal employers' business activities have been done, but there is a tendency for economic activity in the informal sector and the fate of informal sector workers has not changed much. Without undermining the importance of existing policies, there is a need to prioritize the development of the informal sector and favor the interests of the lower middle class. Based on these matters, this study aims to explain the conditions of employment in the informal sector, the contribution of the informal sector to the economy of Bali Province, and to provide recommendations for the empowerment of the informal sector through the creative economy as a lever of expansion and diversification.

INFORMAL SECTOR ANNOUNCES THE MOST OF EMPLOYEES IN BALI PROVINCE

Potential amount of labor is one indicator to see the development and condition of the economy. Understanding the workforce is everyone who is willing and able to work. The amount of labor is only meaningful and empowering when the workforce has the ingenuity and the intelligence and expertise to perform certain productions in various fields of economic activity. The definition of this workforce is also included in the definition of the labor force. Work force is the number of working age population who are looking for work and are working. Included in this group is the productive age that is looking for work.



	2010	2011	2012	2013	2014	2015	2016
Angkatan Kerja	2246,15	2224,87	2300,7	2283,9	2316,76	2372,01	2463,04
Penduduk Bekerja	2177,36	2159,16	2252,47	2242,08	2272,63	2324,8	2416,55

Figure 1 Condition of Labor Quantity in Bali
Source : BPS Bali, 2017 (diolah)

Figure 1 shows the development of the number of residents in Bali working compared to the total labor force during the period 2011 - 2016. This data illustrates that during the six years the unemployment problem still arises, some of the conditions that are suspected to be the cause are the limited employment opportunities there is. If this reason is the source of the cause then the unemployment problem will always exist and will never approach zero (zero condition). This condition is said to be a passive (potential) work just waiting for employment, while on the other hand the labor qualifications required by the labor market will continue to increase with limited quantity of absorption, this necessitates tighter competition and the enforcement of related contract systems wages (Abel and Bernanke, 2005). Labor quality factors play an important role in the labor market competition Demand for labor from time to time prioritizes to trained or skilled workers. The demand for highly trained workforce increases the wage of labor and on the contrary the demand for untrained labor will decrease followed by the decline in wage rates. Unemployment issues will not be overcome if there is no increased effort from the potential workforce to work. The relevant alternative to this condition is to develop entrepreneurship both individually and collectively. Potential laborers not only stand as job seekers, but create jobs. This can be realized in the form of efforts in the informal sector.

The informal sector plays an important role in Balinese economic development, because according to Judge (2002) the informal sector has advantages such as the ability to create employment and development equity media, the meaning of the development equity media is the informal sector enabling widespread industrial spread. The role of the informal sector that can create these jobs can help reduce unemployment in Bali. The informal sector developing in Bali Province according to BPS of Bali Province covers dry bread pastry traders, coffee processing industry, ice processing industry, salt, soft

drink traders, foodstuff, textile dealers, craftsmen, packaging industry of carton paper, bamboo carving , rattan, wood, agricultural equipment traders, plastic industries, metal craftsmen, silver jewelers, merchants, and others.

Of the six main occupational status categories, the formal worker approach includes the category of endeavor with the assistance of permanent workers and the labor / employee category, the rest including informal workers ie workers who work in self-employment categories, seek the help of temporary workers, free workers and unpaid workers. When viewed from year to year during the last five years (2011-2016) the number of workers in the informal sector in Bali Province experienced an increasing trend while the number of workers in the formal sector megaalami downward trend. This suggests that labor absorption tends to be larger in the informal sector and implies an increase in employment in the informal sector, as shown in Figure 2 below.

Percentage of Workers in Formal and Informal Sectors in Bali Province 2011-2016

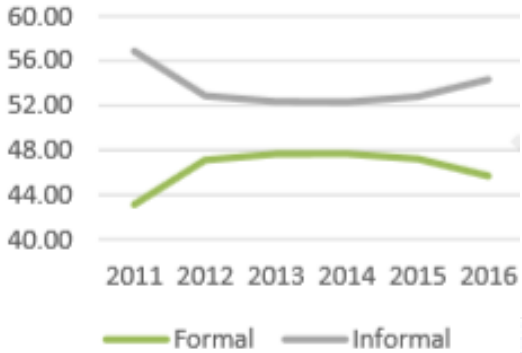


Figure 2 Percentage of Workers in Formal and Informal Sectors in Bali Province 2011-2016
Source : BPS Provinsi Bali, 2017

In 2017 there was a slight change in the number of workers in the informal sector, 1,160,455 people (47.61 per cent) worked on formal activities and 1,277,039 people (52.39 per cent) worked on informal activities (Sakernas, 2017). Despite a slight decrease compared to the conditions in February 2016, the informal sector of 53.07 percent, while the formal sector employed 46.93 percent but still shows that most of the working population of Bali is still dependent on informal activities . Given the increasing number of workers in the formal sector and the decline in the number of workers in the informal sector in Bali in February 2017 indicates that the employment conditions in Bali Province are getting better. The employment situation is said to be improving, if the availability of job security guarantee for workers obtained when working in the formal sector. The number of people working based on employment status is also an indication of the quality of the workforce. Status as a worker / employee for example, is said to be better than the status as a free worker or family worker. In addition to the stable position in a business, workers generally have a higher level of employee / employee productivity and better employment guarantees provided by the companies they work for.

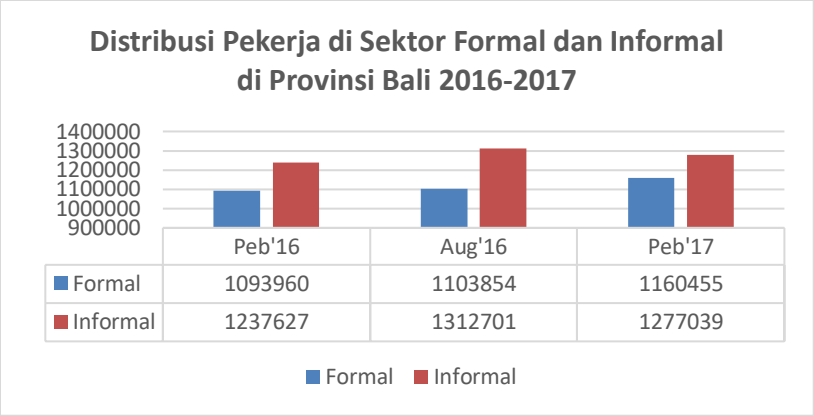


Figure 3 Distribution of Workers in the Formal and Informal Sectors in Bali Province 2011-2016
Source : BPS Provinsi Bali, 2017

Of the population working in the informal sector is dominated by workers who are trying to be assisted by unskilled workers. The percentage working in the formal sector is fewer and most of the workers / laborers are 1,067,448 people (43.79 percent) in February 2017. The number of people working as laborers has increased both in absolute and compositional values the same month in 2016 as many as 1,009,604 people (43.29) percent. The number of people working by status. Main work is presented in Table 1.

Population 15 Years and Over Working by Major Employment Status 2016-2017

Stastus Pekerjaan Utama	2016		2017
	Februari	Agustus	Februari
Berusaha Sendiri	325.000	382.946	379.281
Berusaha Dibantu Buruh Tidak Tetap	452.674	435.670	408.027
Berusaha Dibantu Buruh Tetap	84.896	88.872	93.007
Buruh/Karyawan	1.009.064	1.014.982	1.067.448
Pekerja Bebas	154.760	196.060	158.761
Pekerja Tidak Dibayar	305.193	298.025	330.970
Jumlah	**2.331.587**	**2.416.555**	**2.437.494**

Table 1 Population 15 Years and Over Working by Major Employment Status 2016-2017
Source : Statistik Ketenagakerjaan Provinsi Bali, 2017.

Most of the workforce in the informal sector has working hours between 45 and 59 hours a week and only about 23 percent work under 35 hours a week. In general also the average working hours in the female labor force is relatively lower than the male population and male population dominates work in the informal sector as well as in the formal sector.

IMPACT OF INFORMAL SECTOR ON POVERTY AND THE STRENGHT OF INFORMAL SECTOR IN BALI PROVINCE

The ease of requirements to enter the informal sector, can make it easier for people to develop businesses in this sector. The Balinese who work mostly in the informal sector can easily sell farm produce,

gardens, livestock, forest, canang, religious ceremonies, Balinese food, handicrafts, small retail business and so on. Such business activities require skill or skill should not be done with large capital, require large buildings or sophisticated technology. So that low-income or non-employed people can supplement their income by opening up businesses in the informal sector. With increasing income, it can improve people's ability to meet basic needs and live better, besides the existence of informal sector to prevent all people in droves to find work that aims to earn income. The results of Paramitha and Suresmiathi (2016) showed that the informal sector negatively and significantly influenced partially to poverty in Bali Province in 2004 - 2010. It can be explained that the increasing number of informal sector developments can reduce poverty. According to (Lamba, 2011) the informal sector has rescued employment in big cities and provided additional income for the perpetrators, and provided assistance to the poor in Bali so that not many included in one of the criteria of the poor is less than Rp 600,000 / month according to the 14 BPS criteria.

In 2016, in Bali Province, the lowest percentage of poor people in Badung district is 2.06%, followed by Denpasar by 2.15%, Gianyar Regency 4.44% and Klungkung Regency 6.35% %, while other districts are around 5% (BPS Bali, 2017). In the meantime, for the national period from September 2016 to March 2017, there was a decrease in poverty rate that occurred equally across the island in Indonesia with a range of - 0.01% to - 0.64% (Budimanta, 2017).

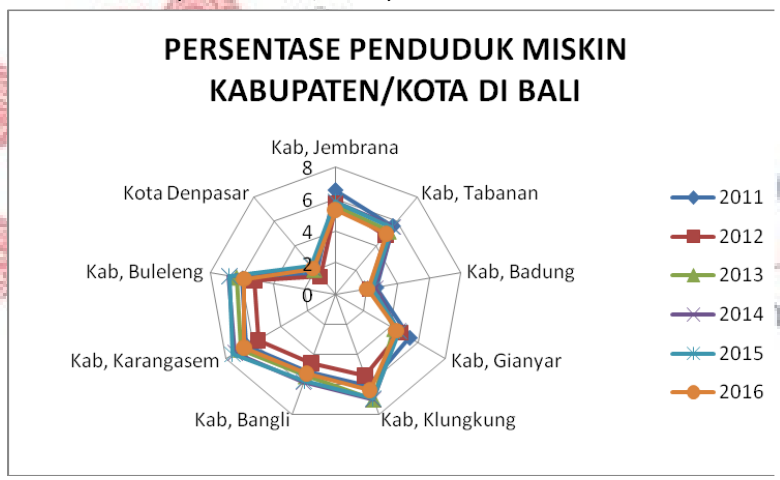


Figure 4 Persentase Penduduk Miskin Kabupaten/Kota di Bali
Source : BPS Bali, 2017

Looking at the Figure 4 it is apparent that over the past six years there have been fairly good conditions regarding poverty alleviation problems in the districts / cities in Bali that show a declining trend from year to year, but the apparent problem of this condition is the imbalance of poverty reduction. Conditions that occur is a significant decrease in poverty only in the regency of Badung and Denpasar City. Indeed when viewed from the angle of income in these two areas is ranked first and second in Bali, but regardless of it empirical facts indicate the need for comprehensive efforts in improving people's welfare. In addition to the policy of empowering the poor, one of the efforts that can be done is to design the policy of Small / SME development no longer partially but synergies between regencies / cities in Bali with attention to local wisdom in the form of social capital in Bali.

The informal sector is very influential on the life of Balinese people, especially the middle to lower society. Even during the crisis it has been proven that the informal sector can not only survive but also

thrive. This is due to changes in demand and supply side. In terms of demand will tend to increase because of the crisis that causes a declining public economy will make people change their demand on goods, especially the basic needs with lower prices. On the supply side, a crisis that causes formal workers to be laid off causes them to move to the informal sector, because the informal sector is relatively easy to enter in a short time where they need income for their survival, for example in Bali due to the crisis of hotel employees in layoffs switch jobs in the agricultural sector to suppliers of vegetables to hotels and some are switching to open a laundry business.

The development and growth of the informal sector in Bali is generally not supported by the special skills or educational level of the workforce, but rather on generations transmitted from generation to generation, such as silver craftsmen in Sukawati, wood carvers, traders of upakara tools and others - other. The viscosity of Balinese culture inherited downhill is characteristic of the growing informal sector in Bali and its existence complements the needs in the formal sector. Most informal sector entrepreneurs in Bali use their own savings or loans from non-bank financial institutions to run their businesses, although many small entrepreneurs use credit from government programs as well. But in general the required capital is relatively smaller than the capital required in the formal sector.

WEAKNESSES AND PROBLEMS OF INFORMAL SECTOR BALI PROVINCE

The existence of the informal sector that only requires simple requirements is often the inhibiting factor to develop, such as 1) Lack of Capital and Limited Access to Financing Is a major obstacle in the development of the informal sector in Bali Province. The majority of employers use their own capital in running their business. 2) Human Resource Education (HR) is limited. Most businesses in the informal sector are small and medium-sized businesses that are traditionally grown and are family businesses that have been hereditary. Limitations of small business human resources both in terms of formal education and knowledge and skills are very influential on the management of business management, so that the business is difficult to develop optimally. In addition, with limited human resources and capital, making the business unit relatively difficult to adopt new technological developments to improve the competitiveness of the products it produces. 3) The weakness of the business network (Net working) and market penetration ability (Marketing) which is generally a family business unit, has a very limited business network and low market penetration ability, because the product innovation is very limited and has a quality less competitive. In addition, the entrepreneur mentality, namely entrepreneurship spirit of entrepreneurs itself is still lacking. The spirit is meant here, among others the willingness to continue to innovate, tenacious without surrender, willing to sacrifice and the spirit wants to take risks.

The rural atmosphere that becomes the background of Balinese society, often also has a share in shaping performance. For example, the rhythm of work in the area runs in a relaxed and less active so often the cause of the loss of opportunities that exist. Lack of transparency between the early generations of the builders towards the next generation, so this poses difficulties for future generations in developing their business. In addition, the weakness of the informal sector often experienced by workers is the absence of job benefits, no health benefits, and economic uncertainty due to uncertainty of income (Losby et al., 2003). With cash paid per day, causing workers to have no opportunity to have loans and no

enforcement of labor law or compensation related to informal employment. Thus workers in the informal sector are often considered less prosperous than workers in the formal sector.

EMPOWERMENT OF INFORMAL SECTOR THROUGH CREATIVE ECONOMY AS EXPANSION AND DIVERSIFICATION RECOVERY TO SUPPORT PROVINCIAL SECTOR OF BALI

The existence of the informal sector in Bali Province is very important especially in providing employment and absorbing labor. The informal sector is a cornerstone for most of the people of Bali, even to support the activities of the formal sector of the tourism sector. Activities in the emerging informal sector provide benefits to providers and consumers in the tourism sector, for example in terms of providing cheaper transportation alternatives, cheaper food, cheaper accommodation, entertainment and so on that are an alternative for tourists.

In the era of communication and creative process in development, there are many opportunities to improve the quality of life to get out of poverty. On the other hand, there is a danger of widening gaps between individuals in society and between countries. This situation provides a clear message that the focus of development should be aimed at improving the quality of human resources through human development. Success or not seize the opportunity to be successful both for individuals and countries lies in the success of human resource development in a sustainable manner.

Small business empowerment / Small and Medium Enterprises (SME) is a synergic movement between various parties, but it seems that the synergistic element is not fully as expected, need more integrative steps between stakeholders in effort to develop SMEs. Local governments, both provincial and district / city still hold the biggest role in efforts to empower SMEs in the region in accordance with the mandate of Law no. 20 Year 2008 about SME which contains among others principles and objectives of empowerment, business climate growth, business development, financing, and coordination of empowerment.

Small and Medium Enterprises is a business entity that reinforce each other between business divisions. Its development should not be partial, must be integrated as the economic support capacity of the region. The dangers of partial SME development are the absence of synchronization and mutual benefit among business actors, even further conditions that can occur are the resilience of the weak business world facing economic shocks and the danger of "cannibalism" between businesses. SME development is a business axis consisting of various types of business with non-negotiable characteristics, therefore necessary linking between these business divisions. The linking between the business divisions can be upstream upstream business, order abatement, input / output suppliers, market share expansion, technology utilization, and production orientation as well as business management to strengthen the competitiveness of the export market.

Efforts made in the development of SMEs in the utilization of technology in the production process and marketing. This is related to improving the quality of human resources that can be fostered by the local government through various skills training and business management. The strengthening of SMEs is not only seen from the increase of working capital only, but more emphasized on the aspect of business orientation and market share. In addition, the aspect of business sustainability is a major concern in the direction of SME development policy. The business process based on the creative industry can be one of

the efforts to maintain the sustainability of SMEs, so that the synergistic, integrative, and creative process is supported by the ease of access to capital by involving various stakeholders and the utilization of social capital owned to maintain the sustainability of SMEs in Bali, digital era is not closed the possibility of introducing information technology, especially in the system of transactions or payments to informal sector players. This in addition to improving the quality of management of the informal sector will also be able to accelerate the leap towards the movement of business towards the formal sector.

The direction of sustainable SME development policy in Bali is carried out by involving various stakeholders including social institutions, as well as in integrative and synergic work among the district / city governments and between actors in the business line. Important factors to consider are the economic and social potential of the region, regulation, production orientation, availability of input support capacity, and quality of human resources as well as in line with the national priority policy in the field of cooperatives and SMEs covering poverty alleviation, business development, regional development, and improvement of human resources (Muharram, 2017).

Based on this, the existence of the informal sector should be more empowered as a partisanship to the community especially as a form of local policy. The empowerment of the informal sector can be done through the exploration of potential and creative economic opportunities in the informal sector in Bali Province, which is of course based on tourism, so as to increase the creativity of the people in working to support the tourism sector which in turn can create new jobs in the informal sector, and the informal sector can be transformed into a formal sector.

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ALLOCATION EFFICIENCY OF PRODUCTION FACTORS USING ON COFFEE PLANTATIONS IN TANGGAMUS REGION (COFFEE FARMERS STUDY, PULAU PANGGUNG)

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ABSTRACT

This research aims to analyze the efficiency allocation of the production factor on the coffe farm at Pulau Panggung district. This research needs to use prime data; the data that is obtained through quesioners and interviews with farmers. The research model uses Cobb-Douglas production function and data analysis used OLS (Ordinary Least Square) method with E-Views 8 program and calculation of allocation efficiency formula. The results of this study indicate that all independent variables, Land Area (X1), Seed (X2), Fertilizer (X3), and Labor (X4) have positive and significant effect on dependent variable that is Total Production (Y). There is an inefficiency in the variable of Land Area (X1), Fertilizer (X3), and Labor (X4), while Seeds (X2) is not efficient.

Keywords: Allocation Efficiency, Cobb-Douglas, Coffee, OLS, Island Stage

A. BACKGROUND

Agriculture is an important factor in life considering the needs of consumers for food which is very large and most of the livelihood of Indonesian people comes from the agrarian sector. The development of agriculture sector in this globalization era must be done because agricultural commodities not only for consumer goods, but also for industrial commodities either as raw materials or ready goods consumption.

Based on the characteristics of commodities, the agricultural sector is divided into five sub-sectors, such as food crops, plantations, forestry, fisheries, and livestock. The sub-sector to be discussed in this research is plantation. One of the strategic plantation commodities in Indonesia is coffee. It is shown that the development of coffee plantations in Indonesia continues to increase.

It can be seen in Table 1 that in 1980, the area of coffee plantations in Indonesia was only 707,464 Ha with a total production of 294,973 tons. The number doubled in 2010, Indonesia produced 686,921 tons coffee on 1,210,365 Ha areas. On 2015 is the peak of coffee production in Indonesia with total production reaching 739.005 Ton on 1,254,382 Ha areas where from 96,16% of which is result of people plantation (PR), while the rest is result of cultivated plantation (PBS) about 1.82% and large state-owned plantations (PBN) about 2.02%. (Directorate General of Plantation, 2015).

Table 1. Area and Coffee Production in Indonesia by Status of Enterprises Year 2010 - 2015

Year	Area (Ha)				Production(Ton)			
	PR	PBN	PBS	amount	PR	PBN	PBS	amount
2010	1.162.810	22681	24873	1.210.365	657909	14,065	14.947	686.921
2011	1.184.967	22572	26.159	1,233,698	616429	9,099	13118	638646
2012	1.187.669	22565	25.056	1.235.289	661.827	13,577	15759	691.163
2013	1.194.081	22556	25.076	1.241.712	645346	13,945	16591`	75.881
2014 *)	1.198.962	22581	25.266	1.246.810	654.034	14.106	16949	685.089
2015 **)	1.206.243	22599	25540	1.254.382	706,770	14,690	17.545	739.005

Source: Publication of Directorate General of Plantation 2015

Information :

PR : Plantation People

PBN : Large State Plantations

PBS : Large Plantation Private

*) : Number While

**) : Estimated Numbers

Coffee production center in Indonesia in 2013 is Lampung Province, South Sumatera, Bengkulu, East Java, and Sumatra West. Lampung Province is the most contributive province in producing coffee. 21.46% of the coffee production is from Lampung province with an average production about 142,111 tons, while South Sumatra Province is the second largest contributor, which contributes about 20.18% or 133,645 tons from whole coffee production in Indonesia.

Lampung Province has several districts that excel in producing coffee and the majority of coffee plantation business is owned by the people. There are at least five districts that produce the largest coffee production in Lampung Province. Tanggamus Regency is the second largest contributor of coffee production in Lampung Province after West Lampung regency. In 2013, Tanggamus Regency can produce 30,702 tons of coffee with coffee plantation area of 43.916 Ha and 62.737 farmers. On table 2 is shown some districts that become centers of Robusta coffee production in Lampung Province.

Table 2. Regency Sentra Robusta Coffee Production Plantation in Lampung, 2013

District / City	Area (Ha)	Number of Farmers (KK)	Production (Ton)	Productivity (Kg / Ha)
Kab. West Lampung	60494	86.420	52.573	948
Kab. Tanggamus	43.916	62.737	30702	827
Kab. Way Kanan	22563	32.233	17.450	878
Kab. North Lampung	17146	24494	12.254	783
Kab. Pringsewu	7856	11.223	7,985	1,095
Lampung	**161.091**	**230.130**	**127.057**	**886**

Source: Directorate of Jendeal Perkebunan, Pusdatin 2015

In 2013, Tanggamus Regency produces 30,702 tons of coffee, while at in 2014, coffee production in Tanggamus district is 27,581.43 tons, where the largest contributor is Pulau Panggung sub-district. Besides Pulau Panggung is the second largest of coffee plantation area about 7,339 Ha after Ulu Belu sub-district with coffee plantation area about 7,549 Ha. This is inversely proportional to the production of coffee produced by the two sub-districts. Although Pulau Panggung sub-district has fewer areas than Ulu Belu subdistrict, the production and productivity that is produced exceeds Ulu Belu sub-district .

Pulau Panggung sub-district is one of coffee plantation centers in Tanggamus Regency, it can certainly be an example for other areas that have the potential of coffee plantation business. As areas of coffee production centers, Pulau Panggung sub-district should be more productive and effective in producing coffee every period.

This study aims to analyze the factors of production that affect the production of coffee plantation business in Kecamatan Pulau Panggung as well as measure the efficiency of allocation in the use of factors of production.

B. LITERATURE REVIEW

1. The Study of Production Theory

Miller and Meiners in Ahmad Ridhani Anandra (2010: 28) states that the production is defined as the use or utilization of resources by transforming a commodity into other commodities which completely different, both in terms of what, where or when these commodities are allocated, as well as in terms of what the consumer can do with the commodity. Thus, production is not limited to manufacture but also storage, distribution, transportation, retailing, repackaging, efforts to anticipate regulatory agencies or seek legal in order to obtain tax breaks or otherwise.

2. Production Function

The production function is the physical relationship between the dependent variable (Y) and the independent variable (X). The dependent variable is usually outputs and the independent variable is something that can be done by consumers to the commodity. Thus, production is not limited to manufacture but also storage, distribution, transport, retailing, repackaging, efforts to anticipate regulatory agencies or seek legal in order to obtain tax breaks or otherwise.

Inputs are factors of production consisting of labor, land, capital, and skill of the entrepreneur. In economic theory, to analyze the production, always assume that three factors of production (land, capital and craftsmanship) are fixed in number. Only labor is seen as a factor of change in production. In the form of formula, the production function is declared:

$Q = f (K, L, R, T)$

3. Cobb-Douglass Production Function

Systematically, the function of Cobb- Douglas can be written as the following equation:

$Y = a X^{b1}_1 X^{b2}_2 \ldots\ldots\ldots\ldots X^{bi}_i \ldots\ldots\ldots\ldots X^{bn}_n e^{Et}$

The Cobb-Douglas function is a *non-linear* function , so to make the function a *linear* function , the Cobb-Douglas function can be expressed in the following equation :

$$\text{Ln } Y = \text{Ln } a + b_1 \text{ln} X_1 + b_2 \text{ln} X_2 + \ldots\ldots\ldots + b_n \text{ln} X_n + e^{Et}$$

In the above equation it is seen that the values of b_1, b_2, b_3,…b_n are fixed although the variables involved have been logged. This is because b_1, b_2, b_3,…b_n in the Cobb-Douglass function show X's elasticity to Y, and the amount of elasticity is a *return to scale* .

Return To Scale

Return to scale (RTS) or scale of business need to analyze to know the combination of production factor use. There are 3 possibilities in *return to scale*, as follows:

a. *Decreasing Return toScale (DRS)*
   If (b1 + b2 + ... + bn) < 1, it can be interpreted that the proportion of additional production factors exceeds the addition of production.
b. *Constant Return to Scale (CRS)* ,
   If (b1 + b2 + ... + bn) = 1, it can be interpreted that the proportion of additional production factors will be proportional to the addition of production.
c. *Increasing Return to Scale (IRS)* ,
   If (b1 + b2 + ... + bn) > 1, it can be interpreted that the proportion of additional factor production will produce additional of production which proportionally larger.

4. Efficiency

The concept of efficiency is based on the assumption that resources to satisfy human wants are in a limited state, so they are encouraged to produce an output as large as possible with the smallest possible inputs or inputs. Soekartawi (2003: 43) states that efficiency is the number of physical production that can be obtained from the unity of input or production factor. This situation will happen if the farmer is able to make an effort to make the marginal product value (NPM) for an input equal to the input price (P) or can be written as follows:

$NPM_x = P_x$; atau $NPM_x / P_x = 1$

In many instances NPM_x does not always equal to P_x, and what often happens as following:

1. $(NPM_x / P_x) > 1$; It means that the use of input x is less efficient. To achieve the level of efficiency then the input should be added.
2. $(NPM_x / P_x) < 1$;It means the use of input x is not efficient, to achieve or become efficient then the input should be reduced.

5. Allocation Efficiency

Allocation efficiency (price) shows the relationship of cost and output. Allocation efficiency can be achieved if it can maximize the advantages by equating the marginal product of every production factor with its price. In the allocation efficiency analysis, there are two main objectives, such as profit maximization and input and output prices are in perfectly competitive markets, it can be written as follows :

$\Pi = TVP - TFC$

$\Pi = Y \,.\, Py - (Pxi \,.\, Xi + C^0)$

$\Pi = f(Xi) \cdot Py - (Pxi \cdot Xi + C^0)$

Π maximum $\frac{d\pi}{dxi} = 0$

$\frac{d\pi}{dxi} = f'(Xi) \cdot Py - Pxi = 0$

Thus, $f'(Xi) \cdot Y = Pxi$

$MPPxi \cdot Y = Pxi$

$Ki = \frac{MPPxi}{Pxi} = 1$ (Π is maximum / efficient)

$Ki < 1$ (not efficient)

$Ki > 1$ (Less efficient)

Price efficiency is achieved when the ratio between the marginal productivity value of each input (NPM_{xi}) and the input price (P_{xi}) equals to 1. This condition needs NPM_x equal to the price of factor X or can be written as follows:

$NPM = P_{xi}$

$MPPxi \cdot Py = Pxi$

$(A \cdot bX^{b-1}) \cdot Py = Pxi$

$\frac{A.bX^b}{X} \cdot Py = Pxi$

$\frac{b(A.X^b)}{X} \cdot Py = Pxi$

$\frac{b.Y}{X} \cdot Py = Pxi$

$Ki = \frac{b.Y.Py}{X.Pxi} \cdot = 1$ (efficient)

Px = Price of production factor, X. In practice, the value of Y, Py, X, Px is the average value, and in actual fact the equation is not equal to 1, so that:

- Ki = 1, meaning the use of production factor has efficient
- Ki > 1, meaning the use of production factor is less efficient so need to add input
- Ki <1, meaning the use of production factors is not efficient. To achieve the efficient level required reducing input use.

D. RESEARCH METHODS

The type of this research is quantitative descriptive analysis. The location of this research is in two villages in Pulau Panggung district, Tanggamus Regency that is Gunung Megang Village and Talang Jawa. The technique used to determine the sample is *purposive* .

The selection of this location is based on the consideration that both villages are center of coffee producer in Pulau Panggung district. To determine how minimal the required sample can be done using the Slovin formula method. With a population of 303 farmers, the required sample is 75 farmers. The variables used in this study include the dependent variable and the independent variables as follows:

Table 7. Operational Definition of Variables

Variable	Code	Definition	Variable Restrictions	Measurement Scale
Dependent	Y	Production	Fourth year after planting	Kg
Independent	X1	Land area	Area of land used for Farming	Ha
	X2	Number of Trees	The amount of trees planted	Trunk
	X3	Fertilizer	The amount of fertilizer Used	Kg
	X4	Labor	Labor used in farming, both from within the family and from outside family	HOK

E. RESULTS AND DISCUSSION

1. Land area

According to the results of significance tests that have been done, variable land area have a positive and significant effect on the amount of coffee production. The value of regression coefficient of land area was 0,493555, it caused the increasing of production at coffee farming business in Pulau Panggung district because according to Mubyarto (1989), the more land owned will affect the level of coffee production.

Land used in the research area was agricultural land that has been used on average more than 15 years, this indicated that the productivity of land used quite well. The calculation of price efficiency index for land area production factor was 5, 8275. This figure indicated that the use of land area in coffee farming was less efficient.

Therefore, to achieve the level of price efficiency, it was necessary to increase the input of land from 2.246667 to 16.93265. The area of land owned by coffee farmers in the research area was quite wide about 1 Ha to 4 Ha and it was self-owned land. The less efficiency is caused because the land was not fully used for coffee commodities, farmers usually grow several other commodities. Besides, limited capital stocks for farmers make them hard to finance the agricultural business. The size of the land used will determine the scale of the business which ultimately affects the level of business efficiency and to achieve the level of price efficiency, so that should be done was the maximum use of land.

2. Number of Seeds

According to the results of significance tests that have been done, the variable number of seeds have a positive and significant effect on the amount of coffee production. Seeds coefficient regression was 0,230081, it caused the increasing of production at coffee farming business in Pulau Panggung district because of the increasing number of seeds planted and it will affect the amount of coffee produced.

The result of price efficiency index for production factor of seed number was 0,096174. This figure indicated that the use of seed quantities in coffee farming was not efficient. Therefore, to achieve the

allocation efficiency, it was necessary to reduce the use of seed production factor from 4198,667 to 76, 91793.

The need for seeds by farmers in the research was usually obtained by buying seeds in the market or getting a seed subsidy from the government. However, the availability of seed in the market can't meet the needs of farmers and the government only gives a few seeds subsidized resulting uneven distribution of seeds throughout the farmers. Because of this, within the last few years, more farmers were seedling their own seed to meet the needs of seeds.

In addition, not only meet the availability of seeds, seedling the seed also can minimize the costs incurred in the production process. The process of seedling the seeds were done alone, of course, affect the quality of the seeds produced. Considering the large number of farmers with low levels of education and inadequate access to information and technology, this has led to inefficient seedlings. Often farmers repeat planting seeds because of the number of seeds that died by pests and disease.

3. Amount Fertilizer

According to the results of significance tests that have been done, the variable amount of fertilizer use has a positive and significant effect on the amount of coffee production. The regression coefficient value of the amount of fertilizer used in coffee farming was 0.355915, thus causing an increase in the amount of coffee production because the more fertilizer used will affect the amount of coffee produced. The result of price efficiency index for production factor of fertilizer amount was 2,964,737. This figure indicated that the use of fertilizer in coffee farming was less efficient. Therefore, to achieve allocation efficiency, required the addition of the use of fertilizer production factor of 545,2 to 2664.537.

The need for urea fertilizer by farmers can be fulfilled through subsidized fertilizer. During this time, farmers' need for urea fertilizer was supplied through farmer groups. So only farmers belonging to farmer groups can buy subsidized urea fertilizer. In fact, farmers often experience a shortage of urea fertilizer. This was because the rations received by farmers were not yet proportional.

4. Labor

According to the results of significance tests that have been done, the variable number of labor usage has a positive and significant effect on the amount of coffee production. Coefficient value of the amount of labor used in coffee farming was 0.328756, thus causing an increase in the number of coffee production because the more labor used will affect the amount of coffee produced.

The majority of residents in Pulau Panggung district work as farmers. In running the farm, most of the labor came from farming families, but for the stage of cultivation, harvest, and transportation usually use additional labor. Labor in farming in the research area generally only has the level of basic education causing the lack of innovation.

The result of price efficiency index calculation for production factor amount of labor was equal to 43, 9877. This figure indicated that the use of labor force in coffee farming was less efficient. Therefore, to achieve the allocation efficiency, it was necessary to add the use of labor force factor from 1701,227 to 9662,645.

E. CONCLUSION

The results showed that all independent variables have a positive relationship to coffee production. The strategic implications of the research can be seen from the results of this study that the use of land area

production factors, the amount of fertilizer, and the number of coffee farming workers were less efficient in price, while the number of seeds used was not efficient in price which will affect the farmers. Although the conclusions of the research have been conducted in accordance with theory, but the number of results was very extreme.

One example was the variable of land area. Land area has a significant positive relationship with dependent variable and its use was less efficient yet. However, the figures obtained were so extreme that the actual use of 2.246667 should be increased to 16,93265. This is due to the absolute optimum value which was one of the weaknesses of the research model used.

Based on the results, the suggestions that can be given on this research such as first, coffee farmers in Pulau Panggung district, Tanggamus regency was expected to be able in using the combination of production factors and technology in order to produce more coffee production. Second, the use of intercropping systems by farmers made the results of the research was less accurate. Farmers were expected to be able to change the system of intercropping agriculture into a monoculture system so that the use of production factors can be maximized. Third, Coffee farmers in Pulau Panggung district, Tanggamus regency were expected to be able to make their farming efforts efficiently allocated. The use of appropriate production factors will result in price efficiency and will lead to more profits from farmers. The level of education and access to technology should be enhanced in order to improve the results of farming. Lastly, the government and related offices are expected to be able to socialize on better intensification processes so that farmers can maximize the profits.

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THE ROLE OF SOCIAL CAPITAL TO EXPAND THE ECONOMIC ACCESS OF TRADERS AT SUKAWATI ART MARKET

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ABSTRACT

This study aims to identify and observe the relationship between social capital and the expansion of economic access for traders at the traditional art market in Sukawati. This study was conducted to find out a solution to the reduced income of the traders in the traditional market due to the increase of modern art markets in some regions. Descriptive analysis technique was applied to the data in order to elaborate the characteristic of the research respondents. This research also adopted one of the social capital measuring methods, namely Integrated Questionnaire for The Measurement of Social Capital (SC-IQ) which is used to explain five indicators in the social capital variable. From the interviews and questionnaires to 89 respondents, the results showed that from those five social capital indicators, the existence of the workgroup/network is considered having a direct role to expand the economic access of the traders through three forms of economic services. They are a loan, cooperation in product marketing, and commodities/goods exchange.
Keywords: *social capital, economic access, traditional market, Sukawati*

INTRODUCTION

The development of modern art market in Bali shows that the economy of the society is getting stronger. This is in line with the growth of the entrepreneurship spirit of the people to enhance the economic potency. However, the existence of the so-called modern art market has also caused a drop in the traditional art market traders' income such as those who trade in Sukawati Art Market (Pasar Seni Sukawati/PSS).

A fall in a turnover or a decrease in sales volume of art products marketed by the traders and craftsmen has become the direct result of the decline of the traders' income in Sukawati Art Market. Based on the research informant, Anak Agung Gede Raka Wibawa Putra, SH (Head of PD PSS – local traditional market management), the decrease was increasingly felt by the traders since the beginning of 2002, when modern art markets and shops started to expand in Gianyar. This has affected the existence of the traditional market. The data of

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Nielsen (2003) demonstrated that modern market has grown by 31.4 percents and traditional market negatively has risen by 8 percents. In relation to the development of technology and economy, the presence of the modern art markets in various tourist destinations has rivalled the traditional ones.

Zahratain dan Lukytawati (2014) mentioned that over the past decade, modern stores have come with the advantages that are not offered by the traditional markets such as cleanliness, comfort, safety, good quality, and adequate facilities. The empirical study carried out by Reardon and Hopkins (2006) explained that the competition in retail business between traditional markets and modern stores has occurred almost in all countries for years especially in terms of price, amenity, product quality, and safety.

Referring to the information and the result of the studies above, the problems encountered by the traders in PSS are hardly likely to be solved by common efforts used to increase the economic competitiveness of the traditional traders as the problems faced are not caused by any commodity scarcity. It is also not due to the managerial and bookkeeping incompetence. The issues also cannot be settled by only increasing access to capital. It is more about how to compete with modern markets or stores that sell the same commodity as the traders in PSS and how to survive the onslaught of the modern markets or stores that offer more advantages and comforts to the art commodity consumers.

Traders who trade in a traditional market like in PSS are groups of merchants who have a strong sense of empathy and brotherhood among themselves. And when they are from the same tribe or ethnic group they usually have a stronger relationship between traders. In this kind of condition, the social power of traders will emerge and can be their main capital to keep their business existence. Such power is referred to as social capital.

According to Schiff (in Yustika, 2008), social capital is a set of elements from the social structure that affects the human relationship and also the input or argument for the function of the production and/or the utility. Social capital is a representation of social organization such as network, norm, and social belief, that facilitates mutual coordination and cooperation. The utilization of this social capital power can be used by the traders in PSS as the basic component to conduct some joint improvements and economic access expansions. Therefore, it is expected that the traders in Sukawati Art Market can survive in the midst of competition and crush of the modern art market.

Utilizing the social capital is one of the methods that can be used by the traders in PSS to improve their economic access. The power of this social capital can become the identity and the characteristic of the traders in traditional markets that might not be owned by entrepreneurs of modern art markets or

stores. Therefore, it is really essential to elaborate on the social capital of the traders in PSS and how the implementation of this social capital is in order to improve the economic access of the traders in PSS.

Social Capital and Economic Access Expansion of Traders in Traditional Market

Social capital is part of the society. Apart from social capital, there are other forms of capitals in the society such as human capital, natural capital, and financial/built/produced economic capital. The main elements that support the social capital are affected by an internal and external factor. The internal factor covers the social organization pattern that grows within the cultural setting of society, for instance, the social order associated with traditional beliefs, patterns of power-sharing in the society, the production and reproduction system as well as the value and the norm itself. The wider factor that is classified as the external factor such as the influence of religion, globalization, urbanization, government policy, law and regulation, education expansion, politic, government, and universal values like democracy, equality, freedom, and civilization are collection of determinants that affect each other with the essential elements of social capital (Hasbullah, 2006).

More details, Hasbullah (2006) describes that social capital is generated by essential elements comprise (1) participation in a network; (2) reciprocity; (3) trust; (4) social norm; (5) value; and (6) proactive action. Social capital is not built by only an individual. However, it is a tendency that grows in a group and interacts as an important part of the inherent values. Social capital will rely on the capacity within the society to built a number of associations including its network. On the one hand, a social group that is traditionally established based on lineage, repeated social experiences, and similarity in religious beliefs tend to have high cohesivity. However, the range of the built network and trust are really narrow. On the other hand, the group that is built on the basis of common orientation and goal and with a more modern organizational management feature will have a better level of member participation and a wider range of network. Such social capital will have more positive effects on the group's progress and will contribute to the development of the society at large.

Economic access is the ability of the economic agent to gain access to economic services. One of the economic services in the traditional market is transaction process. Social capital in transaction activity can be the basis of economic resource. In the broadest sense, according to Yustika (2008), social capital can be the most likely alternative to efficiently allocate the economic activity if the market is unable to do so.

In more detail, other types of the economic services in the context of social capital utilization can be described as follows: (i) lending services; (ii) the deposit/fund storage service; (iii) product sales/marketing services; (iv) raw material or technology to assist daily livelihoods; (v) others, for instance, for immediate needs serves as a bridge between the economic agent and the government.

Economic activity is always in the form of cooperation (either in terms of competition or mutual assistance) among the agents, whatever the motives that lie behind it (profit, status, self-esteem, preference, and etc.). And such cooperation requires trust, which is in a modern economy it can be replaced by a formal mechanism to prevent fraud such as contracting system.

One of the ways that traders in traditional markets can use to improve their economic access is to utilize their social capital. The power of this social capital can become the identity and the characteristic of the traders in traditional markets that may not be owned by entrepreneurs of modern art markets or stores. Therefore, it is crucial to analyze the social capital of the traders in traditional markets and to find out how the implementation of this social capital can improve their economic access.

Based on the above explanation, the purposes of this study are as follows: (i) to identify and map the condition of the social capital of the traders in Sukawati Art Market; and (ii) to analyze the relationship between the social capital and the expansion of the economic access of the traders in Sukawati Art Market.

DATA AND METHODOLOGY

This research took place at Sukawati Art Market (PSS). PSS is one of six popular art markets among domestic and foreign tourists. The other five markets are Kuta Art Market, Badung Market, Kumbasari Market, Guwang Market, and Ubud Market. PSS was chosen as the research location as in addition to being a proxy of the traditional market that directly feels the impact of the development of modern markets; it is also because PSS is the oldest and largest traditional art market in Bali.

The primary data of this research was obtained through the interview process, questionnaire distribution, and direct observation of the field. Research respondents were traders in PSS, with sample sizes determined through the Slovin approach. With a critical value of 10% and a population of 792 merchants, then the sample size of 89 samples/respondents was obtained.

The data analysis method used in this research is the quantitative approach, which mostly analyzed descriptively. This technique is primarily used to describe the characteristics and conditions of the social capital of the

traders in PSS.

Narayan and Cassidy (2001) explain that at least there are seven models that can be used as methods of measuring social capital that can be adapted to the local conditions of the community (respondents). One of them is the *Integrated Questionnaire for The Measurement of Social Capital (SC-IQ).* This method was developed in 2004 by Christiaan Grootaert, Deepa Narayan, Veronica Nyhan Jones, and Michael Woolcock. It focuses on developing countries and aims to obtain quantitative data on various dimensions of social capital with unit analysis at the household level. This measurement method uses six indicators, namely: (i) group and network; (ii) trust and solidarity; (iii) collective action and cooperation; (iv) information and communication; (v) social cohesion and inclusivity; and (vi) empowerment and political action.

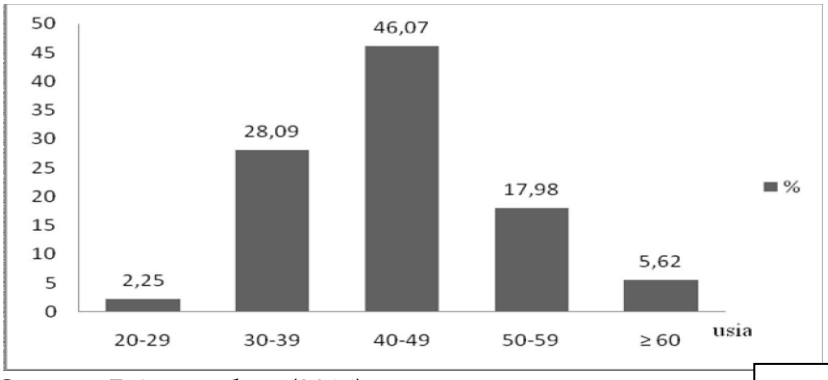
This research later adopted the SC-IQ method especially to explain the social capital variable of the respondents. And of those six indicators, the last indicator which is the empowerment and political action is not discussed herein.

RESULT AND DISCUSSION

Sukawati Art Market is about 18 km away from the capital of Denpasar Bali and around 30 km from Kuta or approximately 90 minutes drive from Ngurah Rai Airport. The beginning of the founding of this art market was on the initiative of a group of street vendors who sold art goods, which then merged into a group of art goods traders. Upon the permission and support of the village leaders in Kecamatan (subdistrict) Sukawati-Gianyar, Sukawati Art Market (PSS) was finally inaugurated by the Governor of Bali in 1983.

Based on the data obtained from the office of PD PSS, there are 792 traders in PSS up to 2015. In terms of gender of the respondents, 65.17% are females, and 34.83% are males. The data shows that females in the households tend to work in an informal sector so that they can have a more flexible time to take care of their family and to follow other social activities within their local community.

In terms of the age of the respondents, all respondents are within the productive age distribution (between 20 - >60 y/o). Figure 1 shows that traders in PSS were dominated (46.07%) by respondents aged between 40-49 years old.

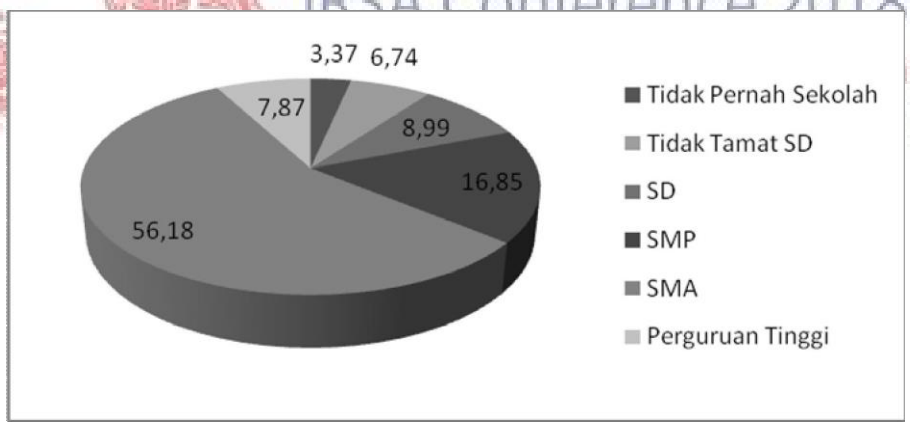


Source : Primary data (2016)

*usia = age

Figure 1. Characteristics of respondents by age (%)

Although they only work as traders in the traditional market, apparently almost all traders in PSS are aware of the importance of education for their lives. As illustrated in Figure 2, approximately 56.18% of respondents had completed their high school education, followed by respondents who graduated from junior high school level as much as 16.85% of respondents. There are also respondents who stated that they had never received a formal education (never attended a school) which is as much as 3.37% of the total respondents.



Source : Primary data (2016)

Figure 2. Characteristics of respondents by level of education (%)
(*Tidak Pernah Sekolah = never attended a school; *Tidak Tamat SD = Elementary School Dropouts; *SD = Primary School; *SMP = Junior High School; *SMA = Senior High School; *Perguruan Tinggi = Higher Education

The description of the characteristics of the respondent is continued by explaining the characteristics of the traders' business in PSS comprising variables of sales volume, business location, operational hours of traders, and information about commodity traded.

Based on the tabulation results in Table 1, it can be explained that almost half of the total research respondents (56.18%) occupies a strategic location in

Sukawati Art Market. The strategic location in this study is the place (stall) occupied by the traders to sell their product that is directly accessible by the consumer (after the consumer dropped by a vehicle that takes them to PSS). The easier the buyer reach a stall of a trader, the more strategic the location is.

The largest commodities traded by the respondents in PSS are Balinese clothing (80.89%), the rests are paintings and souvenirs made of wooden or other main materials. The monthly sales volume of the respondents are between 10-20 million Rupiah (65.17% of the respondents); the other stated less than 10 million Rupiah and more than 20 million Rupiah per month. In order to reach such sales volume, the average operating hours spent on selling in a day is between 6 to 10 hours per day (Table 1).

Table 1. Description of the Respondents by Business Characteristics

Business Characteristic	Respondent's Answer	Frequency	Persentage
Sales Volume (IDR/month)	≤ 10,000,000 IDR	23	25.84
	10,000,000–20,000,000 IDR	58	65.17
	≥ 20,000,000 IDR	8	8.99
	Total	89	100
Business Location	1 (strategic location)	50	56.18
	0 (non strategic location)	39	43.82
	Total	89	100
Operational Hours	6 hours	3	3.37
	7 hours	18	20.22
	8 hours	38	42.70
	9 hours	28	31.46
	10 hours	2	2.25
	Total	89	100
Commodities Traded	Balinese Clothing	72	80.89
	Souvenir	6	6.74
	Painting	11	12.36
	Total	89	100

Source: primary data (2016)

Mapping the Social Capital of Traders Community in Sukawati Art Market

The respondents as part of the community who are members of the traditional trader's organization must have significant involvement in interacting with each other. Such mutual participation has unknowingly applied the theory of social capital.

The social capital indicators in this part will base on the indicators of SC-IQ method. There are five out of six indicators that will be discussed, among others: network, trust, cooperation, communication, and social inclusivity.

a. The Availability of Group and Network

There are not many groups or networks available in the art trader community in PSS. The groups are the religious group, trade group, women's lottery club (arisan group), sports group, and art group. Table 2 below explains those types of groups and their role within the business life of the traders in Sukawati Art Market.

Table 2. Networks that Have Role in the Business Life of the Traders in Sukawati Art Market

No	Type of Group	Participation Percentage
1	Religious group	42%
2	Trade group	100 %
3	Mass organization	-
4	Arisan group	74%
5	Sport group	12%
6	Art group	8%
7	Political group	-

Source: primary data (2016)

Table 2 shows several groups that become the network of the traders in Sukawati Art Market. Among the seven types of groups mentioned, there are two types of groups/networks that do not involve the respondents. The two groups are the mass organization and the political groups. All traders in Sukawati Art Market including the research respondents have interactions with the community and the market leaders within the traditional village of Sukawati. However, it is not considered as activities of the mass organization.

The group that has the most critical role in regards to the continuity of the respondents' business is the trade group (Table 2). The group can be divided as follows:

(i) one big group as the traders' group in PSS, and
(ii) small trade groups created on the basis of the commonality of the commodities traded.

The next is the religious and arisan group. The religious group usually perform a joint activity in the form of conducting worship to various temples (Tirta Yatra – Pilgrimage). Although there were only 42% of respondents who mentioned the benefits of this group, in fact, all the traders will participate in praying at the market temple (Pura Melanting) if it coincides with the day of piodalan (religious ceremony) at the temple and other piodalan days. While for the lottery club, it was followed by about 74% of the research respondents.

b. Trust Among the Traders

To be able to have or be on a shared network, the important thing for the

respondents to have is the trust. Without having trust, it is impossible for the traders to interact with each other in the network. There were a variety of answers when the respondents were given a general question of whether all the traders in Sukawati Art Market can be trusted as outlined in Table 3.

Table 3. The percentage of the Respondents Who Answered the Question **"Can you trust all the traders in PSS in general?"**

No	Trust Among the Traders	Percentage
1	Complete trust	8%
2	Trust	49 %
3	Less trust	31%
4	No trust	12%
	Total	100%

Source: primary data, 2015

Approximately 49% of the respondents expressed their trust to fellow traders in PSS. When the respondents are in the same group or network, the more trust they have for each other. On the contrary, when they are not within the same group/network, they have less trust each other. This lack of trust is due to several things, namely:

(i) Business competition
(ii) Different origin
(iii) The less friendly attitude among the traders.

c. Interaction Or Cooperation And Intergroup Action That Plays The Most Prominent Role In The Business Activities Of Traders In PSS

As described in Table 2 earlier, the group that has the most significant interaction in PSS is the trade group and then followed by the lottery club and the religious group. The form or pattern of interaction conducted by the respondents in the trade group will be described below (summarized from the results of the interview with the respondents).

For trade groups with similar commodities, they usually interact by exchanging their commodities. If there is a buyer who wants to buy one item and wants a specific motive or colour but the trader does not have it, then the trader will "borrow" good of the specific request from other traders who are in the same group and the other traders will happily let their goods borrowed. Once the goods are sold, the traders will divide the profit of the sale in a fair manner.

On a different occasion, every trader will not hesitate to provide recommendations to the buyer. The recommendation here means to

recommend the buyer to shop for traders other than him/herself. The other traders here means traders within the same group.

For the arisan group, there are several different arisan groups followed by the respondents in Sukawati Art Market. The differentiation of this arisan group is based on being in the same selling location or because of the similarity of commodities traded or because they come from the same region.

Although the traders are competing for a similar business in the same area, the respondents are likely to be able to work together in relation to their social life in PSS. Approximately 72.88% of respondents said that they participated actively in the group activities within the last one year. All respondents even stated that they voluntarily followed the activities.

Some of the collective social activities followed by the traders are customary activities (participating in wedding or death ceremonies), religious activities (joint prayer on certain holy days), and other social activities (to co-assist fellow traders who are affected by the misfortune). And, there is no sanction or critique given by other traders to any trader who does not participate in the group.

d. Information And Communication Between The Traders And The Market Management

All respondents stated that there is no problem in terms of communication between traders or between traders and the officials of Sukawati Village (as the market manager). The communication is done directly or through intermediaries. However, in terms of communication between the traders and the consumers during the transaction process, about 55.16% of traders claimed to have a conflict with consumers in relation to the process of bargaining the goods. Tthe following interview quotation explains how the communication issues often occur between traders and consumers:

> "Sometimes buyers bid too high for certain items. Whereas we usually, in giving a price, are very concerned about the type and quality of the goods. For items that are on-trend, buyers usually want to buy them at a very low price. We usually will not sell it at a really low price, and when it happens, the buyers usually start grumbling and being grumpy. Sometimes when I am not in a good mood as well, I scolded the buyer back," explained Ni Made Ut (trader in PSS, female respondent, aged 43 y/o, interview of March 13, 2016).

e. Social Inclusivity Of The Traders In PSS

The composition of traders in PSS tends to be homogeneous, and therefore almost all respondents (94.55%) stated that the social cohesion of traders in PSS

is quite high. Even if there is a difference among traders, then the difference is due to (i) different economic status; and (ii) differences in the status of a social stratum of the Balinese society (lay people call it "caste").

In terms of the attitude of the traders in welcoming newcomers (new traders) in PSS, all respondents said they welcome newcomers provided that the new traders could maintain the sense of solidarity and harmony with other traders. In other words, based on the interview, 99.01% of respondents said they have no negative social prejudices due to economic differences and social status including to newcomers in their business environment.

The Relationship Between the Social Capital and the Expansion of the Economic Access of the Traders in Sukawati Art Market

The economic access for traders can include investment expansion, capital increase to expand the business, facility to access traded commodities, and market availability. Based on the results of the interview with the respondents, when they were asked questions in relation to the form of economic access obtained from their interaction in the market environment, they generally described three forms of economic access/service they could get. The three forms of the economic access include: (i) the facility to get a limited amount of funding; (ii) the mutual product marketing, (iii) exchanging the commodities traded.

This sub-discussion will discuss how social capital assists the expansion of the traders' economic access in PSS. Each indicator of the social capital has a contribution in expanding the economic access of the respondents. The result of the questionnaire data collection shows that from the five social capital indicators, the group/network indicator considered having a direct role on the three forms of the economic access of the respondents.

The summary of the respondents' assessment on the contribution of the respondents' group/network to the three forms of economic accesses is described in Table 4.

Table 4. The Contribution of the Groups to the Economic Expansion of the Respondents

Type of Service	Type of Group	Assessment		
1) Borrowing a certain amount of money/fund	(i) Trade group (ii) Arisan group (iii) Religious group	Yes 45.2	Sometimes 48.1	No 6.7

2) Mutual marketing of product/commodity	(i) Trade group (ii) Arisan group (iii) Market management	Yes 86.4	Sometimes 11	No 2.6
3) Exchanging the product/ the commodity traded	(i) Trade group	Yes 88.2	Sometimes 10.4	No 1.4

Source: primary data (2016)

The groups of trade, arisan and religion have a role in helping the financial issues of the traders. Under certain conditions when a trader needs money, then the members of the group can help him/her by lending some amount of money. Borrowing from these groups is another alternative to borrowing money through a bank or other financial institutions. The commodity exchange usually conducted between traders in the same group only while the joint marketing activities can be performed by two groups namely the groups of trade and arisan. In addition to the two groups, the official institution (administrator/manager of the market) also provides support to the traders.

The Form of the Use of Social Capital in Expanding the Economic Access of Traders in Sukawati Art Market

Referring to the discussion of the social capital indicator including its use in the expansion of the respondents' economic access, a summary of a design of social capital utilization in order to improve the economic capacity of the respondents (traders) in PSS is made. Bearing in mind that currently, the competition among the art commodity traders is really high especially when it deals with modern markets, then the use of the social capital is highly essential for the traditional traders to maintain their business continuity.

Based on the research, the following Table 5 displays the design of the social capital utilization that can be offered to expand the economic access of the traders in PSS.

Table 5. The Use of Social Capital to Expand the Economic Access of the Respondents (Traders) in Sukawati Art Market

Characteristics of Social Capital	Economic Use	Interventions
i. The dominant groups are the trade groups, the	i. The social capital is mostly applied to increase the	i. the social capital needs to be used to elaborate the existing economic

arisan group, and the religious groups ii. The level of participation within the group is high iii. The cooperation is relatively high iv. The communication goes quite well v. The social cohesion is generally quite high	business capacity and sales volume ii. Financial problem within the business is relatively low so that it can often be solved with the help of the traders' group or community in the market iii. Connection with other networks is rarely built iv. It needs to expand the power of the social capital not only in terms of the marketing but also the distribution of the traded commodities as well as the commodities production	potency (expansion in financial and business access) in a more modern way such as using the advancement of the technology and information ii. To improve the capacity of the group or network of the institution by providing managerial and leadership training so that one group can build cooperation with the other group and extend their network in order to expand the economic access of the group members bearing in mind the intense competition for today's art commodities

Source: adopted from research (2016)

CONCLUSION

The social capital mapping of traders in the traditional market especially in Sukawati Art Market (PSS) is explained through two indicators of social capital. Those two indicators that are obviously shown by the respondents of the research are network and trust.

First, in terms of the availability of the network, there are five networks that are actively followed by the respondents, they are trade groups, lottery club groups, religious groups, and art groups. The trade groups have the highest percentage of participation and play a role for the business life of the traders in PSS. The trade groups can be divided into (i) one big group as the traders' group in PSS and (ii) small trade groups created on the basis of the commonality of traded commodities.

Second, in order to be able to own or be on a shared network the

important thing to have by the respondents is trust. Around 49% of the respondents stated that they (the traders in PSS) trust each other. The respondents have more trust in the members of the same group, and on the contrary, they have less trust to members of other groups. There are good interaction and cooperation within each group. It is shown by the percentage in which 72.88% of the respondents say that they actively involved in the joint activities of traders within the last one year. And for the communication and social inclusivity indicators, most of the respondents say that the social cohesion of the traders in PSS is good (94.55%).

The result of the research also shows that the indicator of group or network gives direct impact towards the expansion of the respondent's access in PSS. In terms of contribution of the use of social capital towards the expansion of their economic access, 45.5% of the respondents said that it helps them in borrowing a certain amount of money/fund; 86.4% stated that it assists them to market their products or commodities mutually; and 88.2% answered that it allows them to exchange the commodities traded among the traders.

The recommendation of this research is that the social capital needs to be used to elaborate the economic potency in a more modern way such as using the advancement of the technology and information. The capacity of the group or network institution capacity needs to be improved by providing managerial and leadership training so that one group can build cooperation with the other group and extend their network in order to expand the economic access of the group members bearing in mind the intense competition for today's art commodities.

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Persistences of efficiency and price-cost margin in the Indonesian food and beverages industry

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ABSTRACT

This research investigates the persistences of price-cost margin and technical efficiency of the firms and their relationships in the Indonesian food and beverages industry in the period 1980-2014. This study uses firm-level survey data of the 44 subsectors provided by the Indonesian Bureau of Central Statistics (BPS), classified at the five-digit International Standard Industrial Classification (ISIC) Level. The results show that there are quite high persistences of the price-cost margin and technical efficiency of the firms in the industry. Furthermore, persistence of the price-cost margin affects negatively the persistence of the technical efficiency. Additionally, the negative effect of the persistence of the price cost margin on the persistence of the technical efficiency is larger on the food subsectors than the one on the beverages sectors.

Keywords: persistence of price cost margin, persistence of technical efficiency score, Indonesian food and beverages sector, data envelopment analysis.

1. Introduction

There is a big concern related to the persistence of the technical inefficiency and persistence of the price-cost margin of the firms in the industry. The persistences of the inefficiency and price-cost margin of the firms in the industry will be brought into persistences of high price as well as low quality of the products. Therefore, persistences of the inefficiency and the price-cost margin will cause welfare losses to the whole economy.

Persistences of the inefficiency and the price-cost margin and their possible relations can be explained by theoretical backgrounds. Price-cost margin can be an indicator of the competition in the industries. Standard microeconomics theory suggests that firms operating in the highly competitive market have a little ability to maintain a long term mark up or price-

cost margin because of the low barrier to entry for the potential entrants in the market (see also Mueller, 1977; Roque-bert, Phillips, and Westfall, 1996). Furthemore, structure-conduct-performance paradigm suggests that firms operating in the highly concentrated industry tend to collude giving an ability to the firms to set the mark up of the price over the cost (Setiawan et al., 2013). Thus, there is a possible stable price-cost margin in the industries with high concentration and/or low competition. Regarding the persistence of inefficiency, quiet-life hypothesis suggests that firms operating in the low competition industry do not have incentive to be efficient (Hicks, 1935; Setiawan et al, 2012b). Therefore, the hypothesis may suggest a possibility of persistent inefficiency in the industry with low competition. Another explanation from resource-based view (RBV) suggests that the persistence of the inefficiency of the firms can be caused by the differences of the technology and know how that are difficult to be immitated (see Johnes and Johnes, 2013). Although the RBV views did not state that the persistence of the inefficiency can have an association with the low competition, the imperfect immitability and imperfect mobility of the resources suggested by the RBV can finally create low competition and high price-cost margin in the long run because the unique resources can be controlled by only a few firms. All in all, the persistence of inefficiency can have a relation with the persistence of the price-cost margin.

Previous research has investigated the persistence of inefficiency in the manufacturing and electrical distribution utilities. In spite of this, the research never related the persistence of inefficiency with the persistence of price-cost margin. For example, Johnes and Johnes (2013) investigated the persistence of efficiency in the US manufacturing sector. Galan and Pollit (2014) investigated the Colombian electricity distribution utilities. Also, research related the persistence of inefficiency is still hardly found in Indonesian economy. For example, Setiawan et al. (2012a) investigated only the absolute convergence of the industrial concentration in the Indonesian food and beverages industry suggesting there is a convergence of the industrial concentration to the same value in the long run among the subsectors. Also, Setiawan and Effendi (2016) investigated the conditional convergences of the industrial concentration and price-cost margin of the Indonesian manufacturing industry. Therefore, a research related to the persistence of the inefficiency and its relation with the persistence of price-cost margin in the Indonesian economy will have a contribution to the literature.

Indonesian food and beverages industry is a an important sector for the persistence investigations of the inefficiency and price-cost margin. This sector contributes about 7% to the Indonesian gross domestic products with the share about 24% to the employment

absorption in the manufacturing industry since 2005. Furthermore, more than 50% of the household income are spent on the food and beverages. Also, the Industry was also technically inefficient during the period 1995-2006 (Setiawan et al., 2012b; Setiawan and Oude Lansink, 2018). Therefore, the persistences of inefficiency and price-cost margin will have a great loss to the Indonesian welfare.

Furthermore, Indonesian food and beverages industry is also classified as tight oligopoly structure (Setiawan et al., 2012a, 2016, 2017). Setiawan et al. (2012a,b,c) suggested that firms operating in the such highly concentrated industry tended to have market power enabling them to control the price over the cost. Setiawan et al. (2012a) found that firms operating in the Indonesian food and beverages had high price-cost margin. Also Setiawan et al (2012c) found that the price in the industry was more flexible in going up than going down. The ability of firms to control the price over the cost can influence the the persistence of the price-cost margin in the industry which finally affects the persistence of the inefficiency in the industry which has to be targeted by policy makers. Therefore, the research related to the relationship between the persistence of price-cost margin and persistence of efficiency in the Indonesian food and beverages industry has a policy implication.

The objectives of this paper are threefold. First, this paper estimates the technical efficiency using data envelopment analysis (DEA). Second, this paper analyzes the persistence of the technical efficiency and price-cost margin in the Indonesian food and beverages industry. Third, this paper analyzes the relationship between the persistence of technical efficiency and price cost margin.

2. Literature Review

Previous research has investigated the persistence of technical inefficiency in some countries and sectors. Johnes and Johnes (2013) investigated the persistence of the efficiency using a panel of 4280 firms of the 12 developed countries using OSIRIS dataset. The technical efficiency is estimated using the ordinary data envelopment analysis (DEA). The coefficient of beta is estimated using the standard autoregressive model applied on the panel data. They found that the average coefficient of the efficiency persistence reached about 30%. The persistence of efficiency also varied accross countries, industries and over time. Emvalomatis et al. (2011) estimated the persistence of inefficiency in the power generation plant in the US using the dynamic stochastic frontier analysis. They found that the sector had high persistence of inefficiency overtime. Galan and Pollitt (2014) investigated the persistence of the efficiency in the Colombian electricity distribution utilities sector. The research used the

sample of the distributors in the sector using the period from 1998 to 2012. They use a dynamic stochastic frontier analysis to estimate the persistence of the inefficiency. They found that the sector has high inefficiency persistence. However, the research related to the persistence of the inefficiency is hardly found in the Indonesian economy. Therefore, this research will give a contribution to the empirical study in the persistence of inefficiency in the Indonesian economy.

Furthermore, research related to the relation between persistence of inefficiency and persistence of price-cost margin has never been investigated. For example, Johnes and Johnes (2013), Emvalomatis *et al.* (2011), and Galan and Pollitt (2014) only investigated the persistence of inefficiency. Also Setiawan *et al.* (2012b, 2013) investigated only the effect of industrial concentration on the technical efficiency at the level form of variables. Therefore, this research has an empirical contribution.

Regarding the research of persistence in the firm or industry level, many research investigated the persistence of the profit rather than efficiency. For example, Geroski and Jacquemin (1998) estimated the persistence of profit using autoregressive model. They argued that persistence of the profit was influenced by the competitive process. Standard microeconomics theory suggests that firms operating in the market with high competition is difficult to increase the profit in the long run (see Roquebert, Phillips and Westfall, 1996). Also Cable and Jackson (2008) estimated the persistence of profit using a trend-based alternative to standard first autoregressive model. Most of the research is based on the autoregressive model with modifications in the estimations. In spite of this, most of the autoregressive models applied to the dynamic panel data regression model did not take into account the endogeneity problem in the lag dependent variables. Therefore, the research taking into account the endogeneity problem in the autoregressive model applied in the panel data has an empirical contribution.

3. Modelling Approach

This research has three steps of estimation. At first step, this research estimates the technical efficiency using a boostrapped Data Envelopment Analysis (DEA) and calculate the price-cost margin. This research uses the boostrapped DEA estimation which is different from Johnes and Johnes (2013), since the bootsrapped DEA can have a robust estimation of the technical inefficiency (see Setiawan et al., 2012b). If we assume data on N inputs and M outputs for each of I firms represented by the consecutive column vectors x_i and q_i for the i-*th* firm and the data for all I firms is represented by the NxI input matrix, X, and the MxI output

matrix, *Q*, The DEA with the output-orientation[1] can be solved by the mathematical programming problem as follows:

$$\begin{aligned} &\max_{\theta,\lambda} \phi, \\ &\text{st} \quad -\phi q_i + Q\lambda \geq 0, \\ &\qquad \mathrm{x}_i - X\lambda \geq 0, \\ &\qquad \mathrm{I1}'\lambda = 1 \\ &\qquad \lambda \geq 0, \end{aligned} \tag{1}$$

Where $1 \leq \phi < \infty$, and $\phi - 1$ can be defined as the proportional increase in outputs that could be achieved by the *i*-th firm given the constant input quantities. λ is an *Ix1* vector of constants and *I1'λ=1* is convexity constraint with *I1* as an *Ix1* vector of ones. This research uses a Farrel measure of technical efficiency (Farrel, 1957) which is applied to get an efficiency score which varies from 1 to infinity (see Setiawan *et al.*, 2012b). The method avoids of getting a negative efficiency score because of the wide variability of input and output. Parameter of $1/\phi$ ($\hat{\delta}(x,y)$) is used as the technical efficiency score assuming values in the unit interval.

Regarding the DEA estimation, this research also uses the technique of Simar and Wilson (1998) to get bootstrapped estimates of the efficiency scores. The bootstraping method is a repeated simulation of the data generating process which uses a resampling method and applying it to the original estimator to the simulated sample. Thus, the simulated estimates can be similar to the sampling distribution of the original estimator. This research uses the biased-corrected efficiency score as the robust measure of the efficiency with the formula:

$$\begin{aligned} \hat{\hat{\delta}}(x,y) &= \hat{\delta}(x,y) - \text{bias}_B\left[\hat{\delta}(x,y)\right] \\ &= 2\hat{\delta}(x,y) - B^{-1}\sum_{b=1}^{B}\hat{\delta}_b^*(x,y) \end{aligned} \tag{2}$$

with the condition of sample variance $\hat{\delta}_b^*(x,y) < \frac{1}{3}\left(\hat{bias}_B\left[\hat{\delta}(x,y)\right]\right)^2$ (3)

The parameters of $\hat{\delta}(x,y)$ and $\hat{\hat{\delta}}(x,y)$ represents the original and biased-corrected efficiency score, respectively. The $\hat{\delta}_b^*(x,y)$ is bootstrap estimates of the efficiency score with B samples, b=1,…,B.

[1] This research uses the DEA with output orientation to identify technical inefficiency as a proportional increase in output production given input levels held fixed. This assumption can be relevant because the access to expand the inputs is not easy in the Indonesian economy, especially with respect to the funding access.

Price-cost margins is formulated using Domowitz, Hubbard, and Petersen (1986), Prince and Thurik (1992) and Setiawan et al. (2012a, 2013). This formula allows for changes in inventories (ΔInventories), considering that changes in inventories are important with regard to the fluctuation in the business cycle in the Indonesian economy from 1995-2006:

$$\text{PCM} = \frac{\text{Value Added} - \text{Cost of Labor} + \Delta\text{Inventories}}{\text{Sales} + \Delta\text{Inventories}} \quad (4)$$

Value added is calculated by sales minus intermediate inputs except labor cost.

The second step is related to the estimation of the technical efficiency and mark up persistences using a panel data model, as follows:

$$Y_{it} = \lambda_i + \beta Y_{i,t-1} + e_{it} \quad (4)$$

Where *i* and *t* index firms and period, *Y* represents the technical inefficiency or price cost margin, and β is the parameter of persistence for the TE or PCM. *TE* is the logit trasformation of the technical efficiency as applied by Setiawan *et al.* (2012b). The TE is transformed into the logit form to guarantee that the technical efficiency estimation will be between 0 and 1. β in Eq. (4) will be estimated using instrumental variables approach exploiting the lags of the TE and PCM which fulfill the orthogonality condition and have the correlation with the endogeneous variables in the right side of the equations as suggested by Anderson and Hsiao (1981)[2]. The orthogonality condition will be tested using the Sargan test while the correlation between the instrumental variables and the instrumented endogenous variables will be tested using the F-test. Moreover, the β in eq.(4) is estimated for every subsector of the 44 subsectors in the Indonesian food and beverages industry.

The third step is estimating the relationship betwen the persistence of technical inefficiency and price-cost margin at the subsector level, as follows:

$$\beta_{TEj} = \theta + \gamma_1 \beta_{PCMj} + \gamma_2 \beta_{PCM\,j} * Dfood + v_j \quad (7)$$

where *j* indexes subsectors; β_{TEj} and β_{pcm} are the persistences of TE and PCM for the subsector *j*, respectively; and Dfood is the dummy subsector with the value of 1 for food subsectors and 0 for beverages subsectors. The model is estimated using panel data regression model. Furthemore, the presence of heteroscedasticity will be tested using Breush-Pagan

[2] Besides the complexity in finding the valid instrumental variables for every subsector in the model, this research do not use the Arrelano-Bond estimations because we found inconsistent results of the beta persistence in our data.

heteroscedasticity test. Also the White-correction on standard error is implemented if the heteroscedasticity test confirms the existence of the heteroscedasticity problem.

4. Data

This research used data on the Indonesian food and beverages industry that were collected in the Survey of the Manufacturing Industry, conducted annually by the Indonesian Bureau of Central Statistics. The data cover the period from 1980 to 2014 and correspond to the five-digit level of the International Standard Industrial Classification (ISIC) system[3]. The original dataset covered 75 subsectors; subsectors with fewer than 30 observations were merged into groups of similar products or groups at the four-digit ISIC level, resulting in 44 subsectors[4].

The Indonesian food and beverages industry uses inputs of material, labor and capital in producing the output. Output was measured as the value of gross output produced by a firm (establishment) deflated by the wholesale price index (WPI). Capital was deflated by the WPI of machinery (excluding electrical products), transport equipment, and residential and non-residential buildings. Labour was measured in labour efficiency units, following Setiawan *et al*. (2012b)[5]. Raw materials was measured as the total cost of materials[6] and was deflated by the WPI of raw materials published by the Indonesian Bureau of Central Statistics. Investment was defined as purchases of additional fixed assets minus sales of fixed assets.

Table 1 provides the descriptives statistics for the variables used in the analysis. From Table 1 it is seen that all variables varied significantly between firms in the 44 subsectors during the period 1980-2014. For example, output, material, labor efficiency, and fixed asset had coefficients of variation of 1.949, 2.167, 2.063, and 12.061, respectively. Price-cost margin had coefficient of variation of 1.150. Fixed asset was a variable with largest coefficient of variation.

[3] The actual codes used come from the Klasifikasi Baku Lapangan Usaha Indonesia (KBLI), which are comparable to the ISIC codes. This research uses the most recent KBLI of 2009.

[4] For example, the subsectors with the ISIC codes of 10215 (fermented fish), 10216 (extracted fish), 10217 (pulverized fish), 10218 (iced fish) and 10219 (other fish process) were grouped into a new subsector classified with a new ISIC code of 10220.

[5] We use the formula for labour efficiency units as used by Setiawan et al. (2012b):

$$L = \text{number of production workers} + \text{number of other workers} * \left(\frac{\text{salary of other worker}}{\text{salary of production worker}}\right)$$

[6] Raw materials also include other costs related to production, such as electricity and fuel costs.

Table 1. Descriptive statistics of the variables used in the analysis, Indonesian food and beverages industry (44 subsectors), 1980-2014

Variable	Mean	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Output	$2.34*10^8$	$4.56*10^8$	1.949	14062.500	$5.90*10^9$
Material	275399.400	596917.800	2.167	1026.800	$1.500*10^7$
Labor efficiency	276.812	571.139	2.063	6.998	8716.123
Fixed asset	639895.300	7717700.000	12.061	1333.333	$2.79*10^8$
Price-cost margin	0.217	0.242	1.150	-2.996	2.993

Notes: Unbalanced panel data with N=1394.
Source: Indonesian Bureau of Central Statistics and authors' calculation

5. Results

Table 2 shows the trends of technical efficiency and price-cost margin in the Indonesian food and beverages industry. From Table 2 it is seen that there was a dynamic changes of the price-cost margin and technical efficiency score at the firm level in the Indonesian food and beverages industry during the period 1980-2014. In spite of this, the changes were still in the interval with no substantial differences.

Table 2. Average price-cost margin and technical efficiency score for firms in the Indonesian food and beverages industry by sub-period, 1980-2014

Period	PCM	Technical Efficiency Score
1980-1984	0.169	0.650
1985-1989	0.170	0.622
1990-1994	0.178	0.577
1995-1999	0.190	0.526
2000-2004	0.196	0.486
2005-2009	0.203	0.508
2010-2014	0.192	0.475
1980-2014	0.186	0.549

Notes: PCM = Price-cost margin.
Unbalanced panel data with N=13918 firms.
Source: Authors' calculation.

Table 3 (see Appendices) shows the persistence coefficients of technical efficiency and price-cost margin during the period 1980-2014 for every subsectors in the Indonesian food and beverages industry. All the estimations of the beta persistences of the technical efficiency and price-cost margin fullfilled both orthogonality condition and F-test[7]. The average persistence coefficients of price-cost margin and technical efficiency for the 44 subsectors reached to 0.743 and 0.759, respectively. This indicated that the price-cost margin and technical efficiency dissipated about 25.7% (1-0.743) and 24.1% (1-0.759) between succesive periods in the industry, on average. The coefficients of the persistence for the price-cost margin and technical efficiency suggest that there were quiet high persistences of the price-cost margin and technical efficiency in the Indonesian food and beverages industry. The persistence coefficients were not too far from the coefficients estimated in Johnes and Johnes (2013) where the persistence coefficients for the food and beverage manufacturing reached to 0.855 and 0.812, respectively.

Furthermore, the ten subsectors with highest persistence of mark up included subsectors of preserved fish; soybean and other fruit and vegetable based processing; cacao, confectionary, chocolate, dried fruit and vegetables; liquors, beers and wines; edible coconut oil and other coconut processing; other food from soybean (not fermented soybean); other food from coconut, salt and other food nec; other processing of aquatic biota; pulverised fruit, vegetable; and food seasoning. The ten subsectors with lowest persistence of mark up included subsectors of other fruit, vegetable based processing; canned water biota; wheat and other flour; other fish processing; animal feed concentrate; other edible oil, vegetable and animal fat; tapioca; cakes; crude cooking oil and processed food and beverages.The ten subsectors with highest and lowest persistence coefficients of mark up had average persistence coefficients of technical efficiency of 0.947 and 0.800, respectively. Although the persistence coefficients of price-cost margin and technical efficiency were quite high in the Indonesian food and beverages industry, the persistence of price-cost margin tended to reduce the persistence of the technical efficiency in the most of the subsectors. This indicate that the persistent market power gives the room for the dominat firms to adjust the technical efficiency at the level where they can gain high performance.

[7] By applying the method of Anderson and Hsiao (1981), this research can fit the valid instrumental variables for each beta estimation by using the previous lags of the respected endogenous variables that varied depending on validity test of the Hansen-J Statistics. For example, subsectors of 10140, 10210 and 10213 applied lag 3 and lag 4 of the PCM and TE variables for the instrumental variables of the PCM_{t-1} and TE_{t-1}, respectively.

Table 5 provides the regression estimations of the relationship between the persistence of the price-cost margin and persistence of technical efficiency with and without the interaction variable between the persistence of the price-cost margin and dummy for food sector (β_{PCM}*Dfood). From Table 4 it is seen that the parameter of the persistence of the price cost margin for the model without the variable of β_{PCM}*Dfood was -1.894 and the marginal effect for the variable was -0.292. This indicates that every one unit increase in the persistence coefficient of the price cost margin, decreased the persistence coefficient of the technical efficiency by 0.292 unit, ceteris paribus. This suggests that the persistence of the market power enables the firms to re-setting the transformation of input into the output.

Table 5. Regression of the persistence of technical efficiency score on the persistence of price-cost margin

Independent Variable	Dependent Variable: β_{TE}	
	Coefficient	Coefficient
Intercept	2.980***	3.099***
	(0.101)	(0.081)
β_{PCM}	-1.894***	-0.334***
	(0.080)	(0.113)
β_{PCM}*Dfood		-1.860***
		(0.042)
P-value Fstatistic	0.000	0.000
N	13918 firms	13918 Firms

Notes: * denotes test statistic significance at the 10% level Standard error in the parentheses
** denotes test statistic significance at the 5% level
*** denotes test statistic significance at the 1% level

Furthermore, Table 5 also shows the differences of the parameters of the persistence coefficients for the price-cost margin between food subsectors and beverages subsectors. The negative effect of the persistence coefficient of the price cost margin on the persistence coefficient of the technical efficiency score is larger for the food subsectors compared to the beverages subsectors. The parameters of the persistence coefficient of the price-cost margin for the food and beverages subsectors reached to -2.194 and -0.334, respectively. The marginal effects of the parameters for both subsectors were -0.316 and -0.061, respectively.

This indicates that every one unit increase in persistence coefficient of the price cost margin, decreased the persistence coefficients of the technical efficiency by 0.316 and 0.061 unit for the respective subsectors, ceteris paribus. The results indicate that the technical efficiency could dissipate more quickly in the food sector than the technical efficiency in the beverages sector.

The results indicate that the firms operating in the low competition tend to have the ability to control the adjustment of the technical efficiency at the level where the firms can gain the high performance. The problem in the Indonesian food and beverages industry is its low technical efficiency (see Setiawan et al, 2012b). Therefore, the condition should be the concern fo the policy maker to increase the technical efficiency in the industry which the firms enable to adjust it.

6. Conclusions

This research investigates the persistence coefficients of the price cost margin and technical inefficiency as well as their relationship in the Indonesian food and beverages industry. This research uses firm level data of the 44 subsectors in the industry. This research applies the data envelopment analysis with bootstrapping approach to estimate the technical efficiency. Furthemore, the instrumental variables approach estimation is applied to the autoregressive model with panel data.

This research finds that the firms in the Indonesian food and beverages industry have relatively high persistence of the price-cost margin and technical efficiency score. This suggests that the price-cost margin and technical efficiency score can dissipate slowly between succesive periods. Furthemore, the persistence of the price cost margin has a negative effect on the persistence of the technical efficiency. This suggests that the higher market power enables the firms in the industry to control the transformation input and output to get more higher performances.

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Appendices

Table 3. Average persistence coefficients of technical efficiency and price-cost margin for the Indonesian food and beverages industry by ISIC, 1980-2014

ISIC	Subsector	Persistence coefficients of technical efficiency	Persistence coefficients of PCM
10140	Poultry and non-poultry slaughtering, meat processing	0.712	0.758
10210	Salted, dried fish, smoked fish	0.425	0.797
10213	Frozen fish	0.947	0.788
10214	Preserved fish	0.876	0.990
10220	Other fish processing	0.873	0.544
10223	Canned water biota	0.782	0.478
10293	Salted, dried aquatic biota	0.871	0.704
10296	Other processing of aquatic biota	0.644	0.833
10299	Other processing of other aquatic biota	0.712	0.786
10312	Pulverised fruit, vegetable	0.712	0.824
10315	Other fruit, vegetable based processing	0.631	0.451
10390	Soybean and other fruit and vegetable based processing	0.758	0.930
10410	Edible oil, vegetable and animal fat	0.732	0.792
10425	Edible coconut oil and other coconut processing	0.847	0.874
10431	Crude cooking oil	0.884	0.633
10432	Other edible oil, vegetable and animal fat	0.893	0.586
10550	Milk and processed products from milk	0.699	0.790
10619	Rice and seed, coffee and cocoa milling and cleaning.	0.614	0.764
10620	Seeds, beans and roots cleaning	0.024	0.670
10621	Tapioca	0.916	0.624
10624	Wheat and other flour	0.645	0.541
10625	Other palm starch, glucose and other	0.906	0.672

ISIC	Subsector	Persistence coefficients of technical efficiency	Persistence coefficients of PCM
	starch processing		
10631	Rice milling and hulling rice	0.765	0.782
10635	Corn milling and cleaning, rice and corn flour and starch	0.374	0.810
10710	Bakery products	0.797	0.820
10721	Granulated sugar	0.955	0.793
10722	Brown sugar	0.728	0.790
10725	Syrup and other sugar processing	0.968	0.736
10730	Cacao, confectionary, chocolate, dried fruit and vegetables	0.887	0.891
10740	Macaroni and noodles	0.626	0.686
10750	Processed food and beverages	0.619	0.670
10760	Processed coffee, tea and herbs	0.767	0.741
10770	Other food from coconut, salt and other food nec	0.596	0.856
10771	Fermented soybean	0.893	0.746
10772	Food seasoning	0.828	0.821
10790	Baby's food and other food	0.676	0.807
10792	Cakes	0.757	0.631
10793	Other food from soybean (not fermented soybean)	0.590	0.860
10794	Crackers	0.922	0.707
10801	Animal feed	0.983	0.719
10802	Animal feed concentrate	0.865	0.558
11011	Liquors, beers and wines	0.721	0.891
11050	Other beverages	0.979	0.754
11070	Softdrinks and mineral water	0.880	0.781
Average persistence coefficient		0.759	0.743

Notes: PCM = Price-cost margin.
Unbalanced panel data with N=13918.
Source: Authors' calculation.

MARITIME TRADE CONNECTIVITY INTER-REGIONS IN INDONESIA

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Abstract

The study is conducted to measure the connectivity of maritime trade network inter-regions in Indonesia. The data of trade distribution of fish obtained from quarantine agency of marine ministery and fishery is used as an object of the sample to analyze the trade connectivity between ports and central of fish distributions by employing the method of degree, betweenness, and accessibility index. The results show that Tanjung Priok, Tanjung Perak, and Makassar are hubs that have strategic lanes and strongest connectivity in the network of maritime trade in Indonesia which is described in a high degree and betweenness index. It is also indicated by accessibility index in which the traffic level of maritime trade passes throughout the three ports has a large dominant compared with other districts.

Keywords : **Connectivity, maritime trade, degree index, betweenness index, accessibility index.**

1. Introduction

As an archipelagic country, Indonesia has the potential area involves hinterland regions linked by a road transport network to the port and a marine transportation system consists of seaport, shipping, and potential ship movement. Besides, as the widest sea area and the second longest coastline in the world, Indonesia has strategic shipping lanes that can be utilized as the basis for the development of geopolitical, economic and maritime culture so that the improving of connectivity becomes very important to support the economic accessibility inter-regions.

The study of maritime and port connectivity has been explored a lot (Mohamed et al, 2016; Calatayud et al, 2017; Rodrigue, 1997; Alamá-Sabater et al, 2013; Clark et al, 2004; Lam & Yap, 2011; Jiang et al, 2015; Hu & Zhu, 2009). In Indonesia, studies on connectivity have also been researched, including the connectivity of ports in eastern Indonesia (Zaman, Vanany, & Awaluddin, 2015), study the efficiency of marine transport networks by using container ships (Fahmiasari & Parikesit, 2017; Raga et al, 2014; Mappangara, 2015). Overall the studies generally investigated the potential and maritime problems associated with logistics and sea transport owned by each country. Especially in Indonesia, the effort to explore the great maritime potential especially in the transportation sector has not been optimal to connect all islands and serve the domestic and international logistics in sea transport that cross the path of the Indonesian archipelago. So it's needed a policy to reduce the accessibility gap inter-regions through the development of infrastructure of land, sea, and air transportation network connectivity. More specifically the policy focuses on the development of inter-regional connectivity that serves the areas as the source of raw materials with other regions as the market. This is very important considering the distribution of inter-regional trade in Indonesia is dominated by sea transportation so that maritime trade policy

should be based on the potential origin of commodity goods and its final market in order to indicate the effectiveness of the maritime trade supply chain inter-regions pass throughout seaports. So this research is conducted to measure the fish port connectivity in maritime network system inter-regions in Indonesia.

2. Inter-regional linkage theory

The word of a region is used to describe a set of places that have certain characteristics located within the same region or can also be assumed it is a set of regions that include parts of some geographical regions consisting of a large number of places into basic spatial units.The term region is also defined to represent a bundle of places such that any two places belonging to the same region are, in an away or another, similar (Behrens, 2007). According to Losch (1938), a region is a system of various areas, an organism rather than just an organ in which many commodities are produced and traded outside of any system. Ulman (1956) classified the characteristics of functional relations among regions into three categories include complementarity, intervening opportunity, and transferability inter-regions.

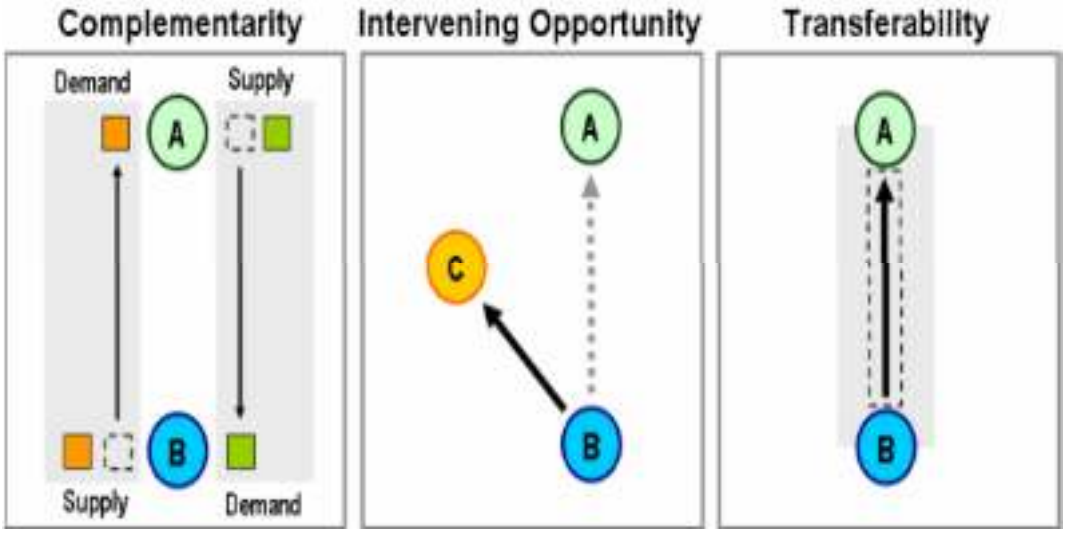

Figure 1. Characteristics of inter-regional connections (Source: Ulman, 1956)

Complementarity process is a relationship among two regions as a result of a process of complement each other where the one region to supply the demand from other regions. The process of intervening opportunity is the interaction that occurs between one region and another region as a result of a bid that is more profitable than other regions. The process of transferability is a connection among two regions as a result of the infrastructure that connects the two areas. Furthermore, Rondineli (1985) explained that functional of inter-regional linkages can be categorized into 7 criteria related to the spatial development such as physical, economic, population movement, technology, social interaction, service, political and administrative interaction. More details shown in the following table.

Table 1. Linkage of Spatial Development Function

Id	Type	Elements
1	Physical Linkages	• Road network

		• River and water transport network • Railroad networks • Ecological interdependencies
2	Economic Linkages	• Market Petterns • Raw materials and Intermediate Goods flows • Production Linkage-Backward, forward and lateral • Consumption and shopping Patterns • Income flows • Sectoral and Interregional Commodity Flows cross linkages
3	Population Movement Linkages	• Migration temporary and permanent journey to work
4	Technological Linkages	• Technology Interpendencies • Migration system • Telecommunication System
5	Social Interaction Linkages	• Visiting Patterns • Kinship Patterns • Rites, Rituals and Religious Activities • Social Group Interaction
6	Service Delivery Linkages	• Energy Flows and Networks • Credit and Financial Networks • Education, Training and Extension Linkages • Health Service Delivery System • Professional, Commercial, and Technical Service Patterns • Transport Service System
7	Political, Administrative, and Organizational Linkages	• Structural Relationship • Government Budgetary Flows • Organizational Interpendencies • Informal Political Decisions Chains

Source : Rondinelli (1985)

The concept of Rondinelli above, clearly describes the economic relationship in the pattern of goods flow associated with consumption and production activities. Similarly, the linkage of population movements in the form of resident migration from the origin to its center of growth. The linkage of services is also very important to provide all the services needed for people such as energy, education, health, and transportation.

In the context of maritime trade, Stopford (2009) identified at least there are four factors that can illustrate the different characteristics of maritime trade network wtihin a region. First, the balance of export and import levels. In this case, exports and imports are the major cause of trade between resource-poor regions and resource-rich areas. Second, the level of welfare or the size of the region's economy i.e GDP. Areas which have higher GDP require a great need for material resources and manufactured goods that mostly transported by sea. In addition, the region which has large local natural resources will sometimes still need imports that to be used in its development process and possess strong capabilities to import and export. Third, the physical size of the land area in the form of the physical quantity of local resources such as energy supply, mineral, agricultural production, forest, industry, and other natural resource potentials. Fourth, the population is a factor causing the occurrence of trade

inter-countries or inter-regions through the sea freight service. Territories have large populations certainly require more sea transportation to supply local needs and export their products to other regions.

3. Data dan Methodology

3.1 Data

To measure fisheries trade connectivity, we employ inter-regional fishery traffic data on February, 2018, collected from the fish quarantine agency (BKIPM) of the Ministry of Marine Affairs and Fisheries, Indonesia. A total of 82 points of central fishery distribution nodes spread in Indonesia include KIPM offices, KIPM stations, and fish ports are the object of observation based on delivery of domestic transactions. The selection of the distribution center is adjusted to the availability the number of traffic frequencies data among the nodes since there are several distribution points that are not recorded the frequency of its delivery transactions. The data used in this study is the origin-destination shipping traffic data in which the fishery product as a database transported pass through seaports at each distribution area which has the lowest shipping is about 10 tons.

3.2 Methodology

The analysis of transport networks and the development of indicators for measuring connectivity using the graph theory approach is old issue. However, the connectivity studies between fisheries distribution centers and fish ports are still relatively new in the context of networks using marine transportation modes in Indonesia. Several analytical methods have been conducted to measure interconnection of ports as an approach to find out the structure of the network and to describe the objectives by using the number of nodes, edges, average path length, and network density (Tovar et al, 2015). In addition, the average clustering coefficient (ACC) is also used to denote the presence of areas which have high levels of edges among other areas within a cluster (Watts & Strogatz, 1998).

To measure the centrality of port or fishery distribution centers used a set of methods formulated by Opsahl et al (2010) adopted by Freeman (1978) namely degree and betweenness centrality index while accessibility index using a method employed by Cullinane & Wang (2009). The Degree indicates the number of network connectivity owned by the fish port and becomes a standard approach for measuring the potential linkages of each node in a network that is strongly linked to the port (Tovar et al, 2015). The formula degree index as follows :

$$Deg(i) = \sum_{j} \frac{Aij + Aji}{2}$$

Where A_{ij} is the adjacency matrix in which $A_{ij} = 1$ if the port *i* is related to port *j,* and 0 otherwise.

Betweenness centrality has a role to measure the center of the most powerful influence on connectivity in a network (Freeman, 1978) by calculating how often a node is on the shortest path among two other nodes. The formula of the index of betweenness centrality as follows :

$$Cb(v) = \sum_{S \neq v \neq V} \frac{\sigma st(v)}{\sigma st}$$

Where σst is the number of minimum length paths linking nodes s ∈ V and t ∈ V, and $\sigma st(v)$ is the number of such paths consists of some v ≠ V in lines. The fishery ports with high levels of betweenness are strategically placed close to main lines of maritime transport,

and therefore they are in a privileged, central position in comparison with the rest of their peers (Tovar et al., 2015).

The Connectivity and accessibility are the key elements in the transport network since they are often used to measure the ability in order to achieve one of the nodes or the ability to reach another. Cullinane & Wang (2009) employed a method to measure the economic accessibility based on the maximum transportation capacity (TEUs/day) among ports to assess the accessibility of each element transport within the shipping network. In this case, the maximum transport capacity between each pair of fish ports using the weight of the graph is to assess the graph relationship matrix symbolized L with the following formula :

$$L = Vij = \sum_{k} Tckij \frac{Fk}{365}$$

Where T_{ckij} is the cargo capacity of the vessel in percent of total volume in a ton and F_k is the frequency of delivery traffic between the fish ports i and k.

4. Result and Discussion

In this study, directed strategy and weight of tons in percentage on edge selected in order to denote the relationship between points in each pair of distribution canal. We found a network with n = 82 nodes and m = 246 *edges* which is network density = 0,039 and average clustering coefficient (ACC) is 0,221 which means the network system has a low cluster while the maximum amount of load is 3.482,04 tons. Table 2 shows the results on degree and betweenness from the top 20 rank and the lowest 20 of each fish distribution point in the network system. According to degree and betweenness, Tanjung Priok, Tanjung Perak, and Makassar are the ports that become the largest entrance in the fishery distribution network in Indonesia markets while others such as Manado, Karimun, Benoa Bali, Denpasar, and Medan II are the regions that have an index degree and betweenness in the top 10 ranking of both indicators.

Figure 2 visualizes the distribution network of fish trade through port based on two indicators, degree centrality, and betweenness centrality. This image is generated with the help of gephi software and the "force-directed" algorithm to distribute the nodes. As Tovar *et al*. (2015) mentioned that force-directed algorithms are used to generate a compact display of a network whereby the most relevant nodes are located in the center of the graph, while the less important are left on the periphery. The relative position of each port connected to the degree centrality and betweenness centrality is depicted by the hierarchy of size and color scale.

As intended, the ports of Tanjung Priok, Tanjung Perak, and Makassar are the best hubs that have the most powerful connectivity in the fishery distribution network, Indonesia. At the lower level, there are Benoa Bali, Medan II, Manado, Karimun and Batam which act as gateways for the fishery distribution line from the origin of raw materials, then sent to the region that has the main market share. So the role of the regions is a hub for the transshipment of small vessels to the large load ships.

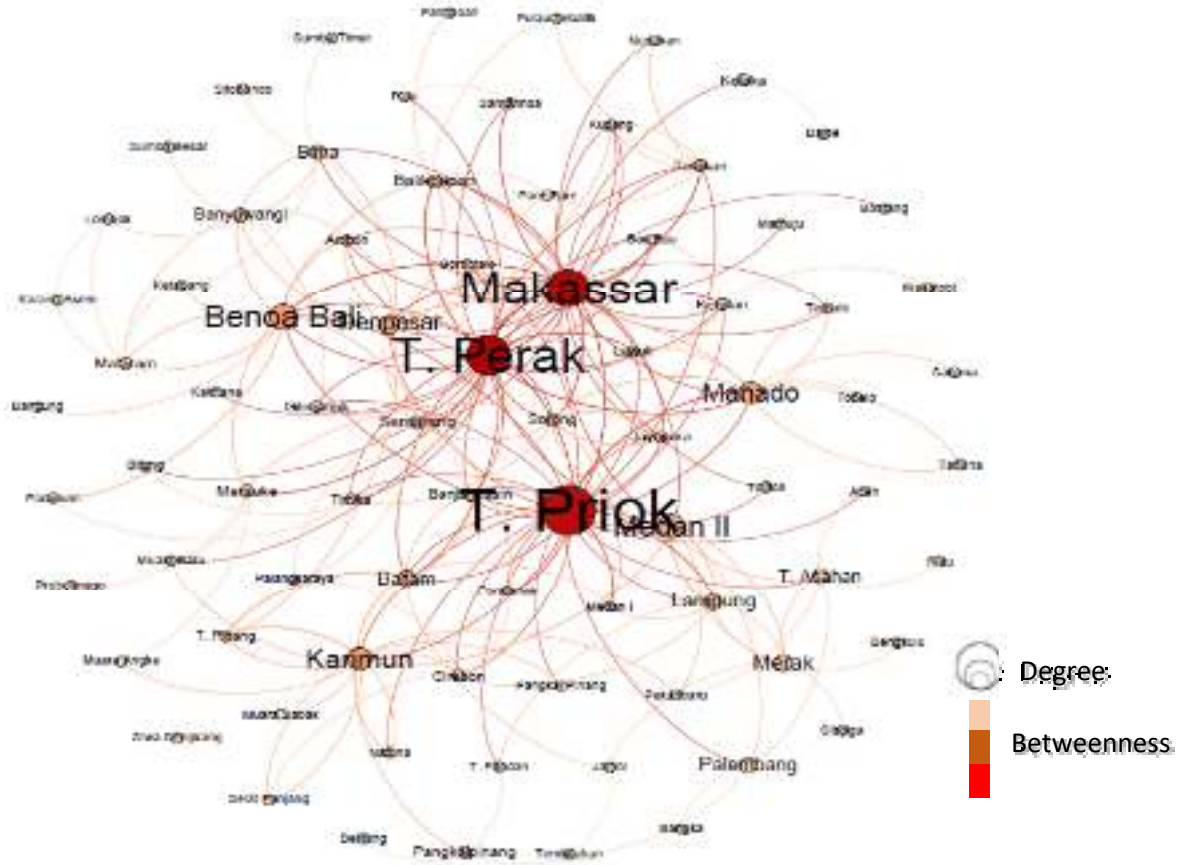

Figure 2. Graph Visualization of the main fishery ports shipping network Indonesia, february, 2018
Source: data elaboration using Gephi and "force-directed" algoritm

Tabel 2. Index Degree and Betweenness

	Top 20				Low 20			
Id	**Port**	**Degree**	**Port**	**Betweenness**	**id**	**Port**	**Degree**	**Port**	**Betweenness**
1	T. Perak	42	T. Priok	1283,12	1	Sibolga	1	Pulau Sebatik	0
2	Makassar	41	T. Perak	965,02	2	Belitung	1	Wakatobi	0
3	T. Priok	40	Makassar	922,64	3	Tembilahan	1	Bandung	0
4	Karimun	18	Benoa Bali	496,7	4	Mamuju	1	Karang Asem	0
5	Benoa Bali	17	Medan II	432,6	5	Tobelo	1	Sumba Besar	0
6	Manado	15	Karimun	394,51	6	Bengkulu	1	Medan I	0
7	Denpasar	14	Manado	351,98	7	Bontang	1	Selat Panjang	0
8	Batam	14	Denpasar	268,84	8	Sanana	1	Tembilahan	0
9	Medan II	13	Merak	221,53	9	Sumba Timur	1	Mamuju	0
10	Sorong	13	Batam	191,91	10	Sitobondo	1	Tobelo	0
11	Tarakan	11	Lampung	180,97	11	Sumba Besar	1	Bengkulu	0
12	Lampung	10	Palembang	162	12	Wakatobi	1	Bontang	0

13	Balikpapan	10	Bima	132,91	13	Bandung	1	Sanana	0
14	Banyuwangi	9	T. Asahan	132,82	14	Muara Sabak	1	Sumba Timur	0
15	Merak	8	Banyuwangi	110,87	15	Pantoloan	1	Sitobondo	0
16	Kendari	8	Semarang	95,16	16	Riau	1	Pekanbaru	0
17	Semarang	8	Balikpapan	88,61	17	Bangka	1	Aceh	0
18	Bima	8	Merauke	66,67	18	Probolinggo	1	Tahuna	0
19	Merauke	7	Pangkalpinang	61,83	19	Kaimana	1	Sibolga	0
20	T. Asahan	7	Sorong	55,52	20	Bajoe	1	Belitung	0

Source : own eloboration

The regions that have the low degree and betweenness index value are a fringe region wihich has a small port status that classified as a low supply area of fish raw materials. The result of the betweenness shows as much as the 20 lowest are the periphery regions in the national fishery commodity distribution network system. It means that these areas are not strategically placed close to the main lines of maritime transport of fishery product. Further the most other important thing is to analyze the ability of economic accessibility among fish ports in the network system. Table 3 represents the results of accessibility in which Manado-T.Priok has the highest index than others lines of shipping. This suggests that the number of cargo capacities and shipping frequencies are the key factors in determining the strong relationship among ports. Another factor is a location which has a high influence on the activity of shipping among regions. The areas which have the high market share and located close to the raw material source have a greater accessibility index than the districts that are far from. The difference in the market share as stated by Stopford (2009) is more due to by differences in the level of GDP. The regions which have higher GDP need for greater material resources and manufactured goods that transported by sea. That is illustrated by accessibility index in which the regions that have a larger GDP such as Jakarta, Surabaya, and Makassar are the main centers of fishery domestic trade.

Table 3. Accessibility Index of Domestic Fishery Trade, February 2018**.**

Source	Target	Ton	Accessibility Index	Rank
Manado	T. Priok	3482,04	0,9061	1
Kolaka	Bajoe	649,43	0,7748	2
Makassar	Kolaka	587,15	0,6233	3
Lampung	T. Priok	571,21	0,4095	4
Tarakan	Tanjung Perak	2378,41	0,3258	5
Banjarmasin	Tanjung Perak	558,34	0,2720	6
Makassar	T. Priok	1466,1	0,2707	7
Benoa Bali	T. Priok	1041,16	0,1156	8
Balikpapan	Pare-Pare	301,02	0,1134	9
Kendari	Tanjung Perak	966,14	0,1067	10
Makassar	Tanjung Perak	865,01	0,1016	11
Sorong	Makassar	142,47	0,0648	12
Manado	Tanjung Perak	920,38	0,0644	13
T. Asahan	T. Priok	581,86	0,0547	14
Makassar	Samarinda	167,2	0,0433	15
Manado	Ternate	150,45	0,0392	16
Bau Bau	Kendari	78	0,0322	17
Denpasar	Tanjung Perak	959,18	0,0302	18

Medan II	T. Priok	505,79	0,0297	19
Makassar	Ambon	158,41	0,0203	20
Balikpapan	Tanjung Perak	205,16	0,0194	21
Ambon	Makassar	43,62	0,0158	22
Kendari	T. Priok	390,74	0,0151	23
Denpasar	Ambon	92	0,0132	24
Merauke	Tanjung Perak	544,14	0,0127	25
Kupang	Tanjung Perak	328,52	0,0121	26
Ternate	Makassar	38,38	0,0107	27
Gorontalo	Denpasar	37,09	0,0104	28
Pontianak	T. Priok	252,12	0,0082	29
Banjarmasin	T. Priok	214,56	0,0082	30
Pangkal Pinang	T. Priok	132,96	0,0061	31
Bau Bau	Tanjung Perak	160,14	0,0044	32
Luwuk Banggai	Tanjung Perak	133,54	0,0035	33
Tanjung Pandan	T. Priok	135,62	0,0031	34
Sorong	T. Priok	65,53	0,0026	35

Source: fish quarantine agency, ministery of marine and fishery, own elaboration.

Another important factor is a location that close to the source of raw materials also influences on the regional trade accessibility. The paths of fish shipping such as Kolaka-Bajoe, Makassar-Kolaka, and Lampung-T.Priok have the higher index than other canals as well as Bau Bau-T.Perak, Luwuk-T.Perak, T.Pandang-T.Priok, and Sorong-T.Priok which have less index due to their positions are far from the source of raw materials. Overall, according to the results of accessibility suggests that port of Tanjung Priok in Jakarta, port of Tanjung Perak in Surabaya, and port of Makassar are dominant destinations of national fishery shipping in Indonesia. It is caused by either they have a strategic location in shipping lines or have a sufficient port facility and infrastructure for export and import activities within international markets.

However, the results also indicate that the supply chain of the national fishery distribution is still inefficient. This inefficiency is evident from the length logistics chain of fish begin from the source of raw materials untill to the final destination of the market. For instance, the canal of Sorong-Tanjung Priok which has the lowest accessibility index (0.0026) indicates that the path is inefficient, mainly related to the logistics costs, as well as the Luwuk-T.Perak, Pontianak-T.Priok and Tanjung Pandang- T.Priok. The differences in logistics costs of fish trade distribution among regions in Indonesia can't be separated from the characteristics of Indonesian territory that consists of islands based on regions. As Stopford (2009) states that profitable of inter-regional trade is extremely influenced by a difference in manufacturing costs and natural resources. Logistics costs are one of the manufacturing costs that become a charge for the stakeholders since a product is transported from the origin till to the end of its market destination. A region that may decrease its manufacturing costs will be an area producing the products at lower prices. In the context of fishery commodities, the areas that have a sufficient port infrastructure and transport as well as cold chain system will become distribution and market centers so they can serve the demand of other regions and obtaine some benefits resulted by the number of trade transactions entering greater.

In particular for developing of national fishery logistics, the government of Indonesia has issued a regulation No.5/Permen-KP/2014 on national fish logistics system (SLIN) which is a system of the supply chain to manage the fish and fishery products, raw materials, and

production equipment as well as information on procurements, storages, and distributions. The SLIN concept is expected to be an integral policy to drive the capacity and stabilization of upstream–downstream fishery production system, control price disparity, and to fulfill the domestic consumption needs. It has been arranged some supporting components namely component procurement, storage, transportation, and distribution. Especially storage components such as cold storage, cold warehouse storage, and freezers should be available in every fish port. Similarly, the transport component includes special transportation in the pattern of ships or aircraft that can transport dead or living fishery products that have adequate fridge facilities such as reefer container. So if the SLIN concept can be implemented well in the area, consumers can benefit the profit in the production side i.e a stable price and the consumption side such as the guarantee of fish stock availability and affordability and then can stimulate the increase of regional income.

5. Conclusion

Tanjung Priok, Tanjung Perak, and Makassar are hubs that have strategic lines and strongest connectivity in the network of maritime trade in Indonesia. Therefore, the developing of fish cold chain requires strong logistic supports such as reefer containers on fishing vessels and unplug reefer at each fish port in which particularly located in strategic canal according to the degree, betweenness, and accessibility results while for other regions which have a role as a raw material supply, good infrastructure facilities need to be improved in order to reduce high logistics costs. Thus the quality and price of fishery products will have high competitiveness in domestic and international markets.

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URBAN INTERACTION IN INDONESIA

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ABSTRACT

Study on urban interaction has been conducted for more than half of the century and has increasingly become more sophisticated. It was started by the interaction between main city and its hinterland modelled from city functions. Since technology grew rapidly in communication and transportation, urban interaction study thrived to take consideration of city to city interaction in domestic, regional, up to global scale To address this phenomenon, urban scholars have adopted network analysis from social science as relevant tool by using various variables such as commodity flow, migration, firms headquarters and the most common one, air passengers flow. In Indonesia, study on urban interaction in domestic scale has not got much attention since lack of appropriate data availability. This study tries to depict the interaction of 25 major Indonesian urban area, consist of 11 metropolitan urban areas and 15 other urban areas in various sizes which have airport with passenger flow data. Urban interaction is defined from economic and transportation perspectives. Economic perspective uses gravity method with GDP and population data to show interaction pattern and employment data to show urban centrality. The economic perspective is then compared with the transportation perspective which uses passenger flow data provided by PT. Angkasa Pura I and II to show the correlation of the two perspectives. Both perspectives show unique urban interaction patterns and hierarchies which also differ from the usual hierarchies that is based on urbans size.

Keywords: Indonesia, urban interaction, urban hierarchies, gravity model, urban flow intensity, air passenger flow

INTRODUCTION

The growth of a city can only be explained as by considering it as a part of larger urban systems (Bourne and Simmon, 1978). In urban system, each city interaction is manifested in various forms, including people movement, trade, and telecommunication. Based on this interaction, each city has a centrality that can not be described in an urban hierarchy system based on its size.

The study of urban interaction alone has been conducted for more than half a century. It first began in 1933 when Christaller introduce the concept of urban functions base of the ability of city to provide goods and services for the surrounding area, theory known as central place model. Empirically, the size of surrounding area has high correlation with the population, so it became usual to define urban functions solely based on population number (Berry and Garrison, 1958). Based on its size, urban hierarchy resembles the distribution of urban population which conform a regularity known as rank size rule.

Along with the development of technology, urban linkages are no longer confined between the main city and the surrounding cities, but include other urban areas on a larger scale. In this condition, the rank size rule is no longer relevant because it unable to capture inter urban interactions (Smith and Timberlake, 1995). As an alternative, Pred (1975) used corporate interaction to illustrate urban

interaction and centrality. The corporate interaction approach was then used by Friedman (1986) and Sassen (1991) to describe the world's urban interaction and centralities. In 1995, Keeling used different approach to illustrate the world's urban interactions by using air transport data. To date, corporate and air transport data have become the most common approach to illustrate the connectivity of urban economy and transportation infrastructure on a global, regional, and domestic scale.

In Indonesia, the discussion of urban interactions has not yet developed and if any, there is still very few. Therefore, this study aims to illustrate urban interaction along with their centrality in Indonesia based on economic and transportation aspects. This study also look at the correlation of both aspects since the relationship between infrastructure and economic development has been widely studied but not in urban interaction perspective (Lao, 2016)

In the discussion, this paper is divided into 5 sections where the first part describes the background and purpose of this study. The second part explains the theory of urban interactions that underlies this research. The third part describes the data and methodology of this study. The fourth and the fifth part describes the results and the conclusion of this study.

LITERATURE REVIEW

The Development of Urban Interaction Theory

The study of intercity linkages was first introduced by Christaller in 1933. Christaller argued that city has a function to provide and services for the surrounding area, a thesis known as the central place model. The function of a city is known by the complexity of goods and services which also reflected in the space of its surrounding area. The high function city is a city that can provide both general and particular goods and services. General goods and services, such as basic necessities, are provided to meet routine demand in surrounding area. While particular goods and services, for example services with special specifications, are intended to meet limited demand that is willing to travel long distances to buy it. On the other side, city with lower functions has small service area because they only has general goods and services provide for routine demand on its surrounding area.

In a growing practice, the size of urban service area is more often identified based on its population. Urban with larger population was assumed to have more complex goods and services to be offered and larger service area (Berry and Garrison, 1958). Based on their size, urban hierarchy conform a regularity where the distribution of urban population approximates a log linear form known as rank size rule. (Batten, 1994). Nevertheless, rank-size rule does not explain how cities interact in a system (Smith and Timberlake, 1995).

The conceptualization of urban interaction in a larger system has a great attention by many scholars in 1960s to the 1980s (Taylor, 1995). The underlying paradigm is the concept of a city's growth that can not be properly explained without seeing a larger system. Although the understanding of urban development was more complex, urban interactions were again modeled in a simple rank size rules since there were not many studies with relevant concepts, analytical methods, and supporting data to assess inter-urban relations (Bourne and Simmon, 1978).

One solution to the challenge was stated by Pred in 1975. Pred pointed out that in such advanced economic conditions, urban interaction can be seen by observing firms' interaction. Pred argued that firms in different location of cities coordinate and exchange information so that it can be represented as inter-city interaction. Based on these argument, Pred examined urban interaction through corporate

linkages in America and able to show a highly complex urban interaction that can not be fully explained by the rank size rule.

This firm interaction approach was also developed by Friedman (1986) and Sassen (1991). Friedman (1986) studied the interaction of cities on global scale by considering the location of multinational companies, financial centers, the growth of manufacture and service industries, transportation hub, and city's population. The similar study was also conducted by Sassen which focused on service and financial firms since they have strong connection with manufacture firms across the world.

In 1995, Keeling developed a global urban interaction study with an alternative approach by using the air traffic data. Air traffic data is considered as a suitable variable to describe urban interaction because of 5 arguments. First, air traffic is one of the few indicators available in inter-city connectivity. Second, air traffic is most evident to describe the world's urban networks. Third, face-to-face interaction is still needed amid the growth of telecommunication technology. Fourth, air transport is favorable for travelers, migrants, and high value and low bulk goods. Fifth, air transport network is an important component for the city to be incorporated as world cities. In practice, air traffic data was used to describe urban interactions on many studies in a global (Smith & Timberlake, 2001; Mahutga, 2004; and Derudder & Witlox, 2005), regional (Bowen, 2000; Liu, 2016), and domestic scale, especially in China and the United States of America (Jin et al. 2004 ; Wang da n Jin, 2007; Xu and Harris, 2008; Neal, 2010 ; Lao, 2016).

Urban Interaction Studies in Indonesia

In Indonesia, the study of urban interactions has not well developed, or if any, very few. However, some studies may at least provide an overview about urban interactions in Indonesia, i.e. research conducted by Resosudarmo (2008), Bowen (2000) and Liu (2016). Resosudarmo (2008) studied economic linkages between the 5 main regions in Indonesia, namely Java-Bali, Sumatra, Kalimantan, Sulawesi, and East Indonesia. This research data is highly reliable to describe the economic linkages because it was based on Indonesian Interregional Input Output (IRIO) data. Yet, it can not explain how urban area interact\.

Two latter studies describe better about the interaction of main cities in Southeast Asia region. Bowen (2000) describes the interaction based on the growth of air transport connectivity in 1977 until 1997 while Liu et al (2017) used another approach that based on the connectivity of transportation infrastructure (land transportation, including road and train, air transportation, and marine transportation). Even though those studies cover some cities in Indonesia, it still not enough to describe urban interaction in Indonesia comprehensively since the scope were too large.

DATA AND METHODOLOGY

In this study, urban interactions in Indonesia is described in economic and transportation aspects. In economic aspect, the analysis is based on socio-economic data such as population size, number of labor and gross regional domestic product (GRDP) in 2015. All data is obtained from the official website Central Bureau of Statistics of each region. In transportation aspect, urban interaction is described by using flight passenger movement data based on origin and destination of flight which are obtained from Air Traffic Statistics 2015 published by PT Angkasa Pura I and PT Angkasa Pura II.

Each urban area to be studied is consist of main city and its surrounding regencies that are connected economically to the main city. Since air traffic data is still limited in Indonesia, the scope of this research is limited urban areas that have airport, particularly airport which have flight movement data. There are 26 airports which meet those criteria distributed in 25 urban areas which include all metropolitan region in Indonesia.

Based on these data, urban interaction in Indonesia is describe by using network analysis. The advantage of network analysis is its ability to describe the complexities of multiple type of interactions simultaneously (Smith and Timberlake, 1995). The main component of the network analysis itself is divided into 2 components which is adapted from graph theory that is node that represents the actor or urban area and edge that represents interaction between actors. Other than that, network analysis can also be used to assess the centrality of nodes in a network (Freeman, 1978). One form of centrality is the degree centrality which is calculated based on the amount of connection with other *nodes*. In an urban network with value on its edge, not just binary type, the calculation of degree centrality needs to be adjusted. Barrat et al (2004) adjusts the degree centrality by summing up all of edge values connected to the node.

In order to achieve the objective of this study, 3 analyses were conducted. First, analysis to depict urban interaction pattern both on economic and transportation pattern. The second analysis was to describe urban centrality based on their interaction. Third, analysis to show the correlation between each aspect which were conducted for both urban interaction pattern and urban centrality.

1. An analysis of interaction patterns

Analysis of urban interactions based on economic aspects

Other than firm's linkage, another method which is commonly used to describe urban interaction in economic aspect is gravity model (Tan et al, 2016; Lao, 2016). The gravity model which initially depicts the attraction between objects in natural phenomena is adapted to describe the intensity of interaction between regions. The gravity model was first developed by Newton to explain the relationship between the two objects in their relative positions. It was then used to describe social phenomena in the late 19th century since science was expected to explain all the natural phenomena that occurred (Roy, 2004).

While describing urban interactions, the gravity model can not be applied as it is because basically, the interaction between objects is different from the human interactions which can choose and decide (Schwind, 1971). A readjustment of the population and distance variables is needed to describe inter-urban interactions more accurate by using coefficients which is obtained through regression analysis using empirical data. However, this data is usually not available and become one of gravity model drawback (Tan et al, 2016). In Indonesia, the study of inter-urban economic interaction using the gravity model is still limited. Therefore, some variable adjustments is refer to the study of urban interactions in China. The gravity model to describe inter-urban interactions in this study is as follows.

$$I_{ij} = K \frac{M_i \times M_j}{D_{ij}^b}$$

Where I_{ij} is the amount of economic linkage between city *i* and *city j*. *M* is the size of the city which defined as the summation of urban population and the urban GDP after normalization. The inter-urban distance, *D, is* calculated based on the absolute distance of each urban centroid. *K* is a constant which in this study is set to 1 for ease of calculation. *b* as the friction coefficient which usually valued as 2. Yet, in this study the friction coefficient is valued as 1 to avoid excessive effect of distance variable.

Analysis of urban interaction based on transportation aspect

Analysis of urban interaction pattern between city *i* and city *j* in transportation aspect is describe by using the air passenger movement from city *i* to city *j*. The greater the inter-urban passenger movement

the greater the intensity of the linkage. Based on air transportation data from PT Angkasa Pura I and PT Angkasa Pura II, there were 227 interactions accoured among 25 urban areas to be studied.

2. Analysis of centrality

Analysis of centrality based on economic aspects

The urban centrality in economic aspect is calculated through its external function. The concept of urban external function itself was originally proposed by Alexander (1954) known as the basic sector, city's economic activity that serve non local demand. As the opposite of basic sector is non-basic sector that serve the local needs. The concept of the urban external function is then used by the China Academy of Urban Planning and Design to define urban centrality in economy aspect known as urban flow intensity (Lao, 2016). The urban flow intensity equation is:

$$F_i = N_i \times E_i$$

Where F_i is urban flow intensity city *i*, N_i is the efficiency of the external function of city *i*, and E_i is the external function of city *i*. Efficiency of external function of city *i* (N_i) defined as the value of GRDP per number of labour or in the equation below, denote by G_i.

$$Ni = \frac{GRDP_i}{G_i}$$

Since its similarity with basic and non basic economic concept, external function of city *i* (E_i) is calculated by using *Location quotient* analysis (*LQ*). *LQ* is an analysis to describe the proportion of an industry or sector of industry in a region compared to same industry in a larger area (reference area). The basic assumptions used in *LQ* analysis are (1) identical worker productivity in each sector of industry, (2) identical labor consumption in each sector of industry, and (3) the same type of production in each sector of industry in each region (Isserman, 1977). Despite that these three assumptions are difficult to prove empirically, *LQ* analysis is still used today since its relatively simple of data usage (Isserman, 1977). In this study, the variables used in *LQ* analysis are labor in three main economic sectors which are primary, secondary, and tertiary sector. The *LQ* equation is as follows:

$$LQ_{ij} = \frac{G_{ij}/G_i}{G_j/G} \ (\mathrm{i} = 1, 2, \ldots \mathrm{m}; \mathrm{j} = 1, 2, \ldots \mathrm{n})$$

G_{ij} is the number of labor in sector *j* in city *i*. G_i is the number of labor of all sectors in city *i*. G_j is the number labor in sector *j* in the reference region. While *G* is the total labor of all sectors in the reference region. Based on the calculation, the value of *LQ* <1 means that the labor in sector *j* in city *i* is smaller than labor sector *j* in the reference area. While the value of *LQ* > 1 means that the labor in sector *j* in city *i* is greater than labor sector *j* in the reference area. The value of *LQ* in determining the intensity of external function of city *i* for sector *j* (E_{ij}) is formulated as follow.

$$E_{ij} = G_{ij} - \left(\frac{G_{ij}}{LQ_{ij}}\right)$$

or

$$E_{ij} = G_{ij} - G_i \left(\frac{G_j}{G}\right)$$

In the equation above, E_{ij} is negative when *LQ* <1 which can be interpreted that city *i* has no external function for sector *j* (*LQ* <1 then E_{ij} < 1 define as E_{ij} = 0). As for the value of *LQ* > 1, then urban *i* has an

external function whose value corresponds to the calculation result. The urban external function *i* of all economic sector can be determined by summing the value of the urban external function in each sector.

$$E_i = \sum_{j=1}^{n} E_{ij}$$

Analysis of urban centrality based on transportation aspect

The urban centrality in transportation aspect is define by summing all of the passengers for all routes, both into and out of the airport.

$$C_i = \sum_{j=1}^{n} a_{ij}$$

C_i is the degree centrality of city i and a_i is the number of passenger between city *i* and city *j*.

3. Comparison analysis

urban interaction patterns comparison

The relationship of urban interaction pattern from both aspect is obtained by comparing matrix data using *quadratic assignment procedure* (QAP) which is done by UCINET.

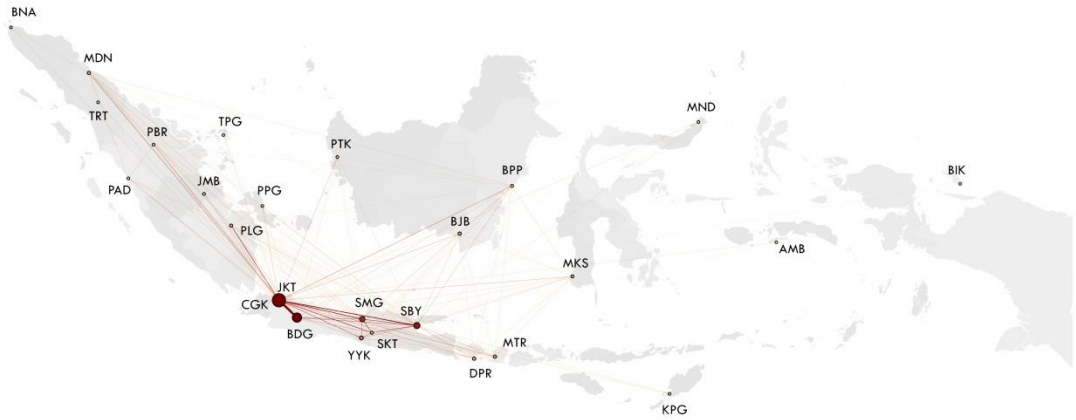
urban hierarchy comparison

urban centrality obtained from equation above result individual value which also mean each urban relative position in an urban hierarchy. Therefore, correlation analysis between aspects is conducted on both urban centrality and urban hierarchy using simple correlation analysis done by SPSS. The component to be considered in the correlation of urban centrality are Pearson coefficient and component to be considered in the correlation of urban hierarchy is Spearman rho coefficient.

FINDINGS

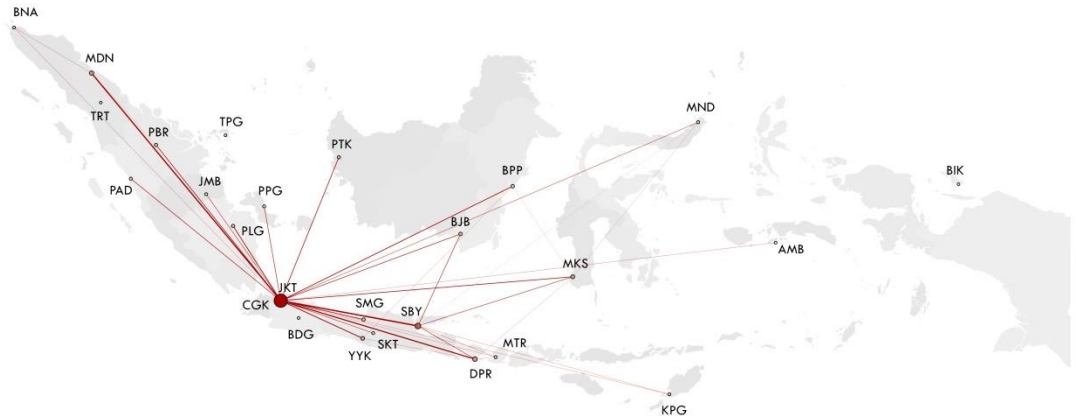
1. Urban interactions

Based on economic aspect, urban interaction pattern that occurs in Indonesia is centered on Metropolitan Jabodetabek (JKT) (figure 1 top). Most of the strongest interaction occurs between Metropolitan Jabodetabek (JKT) and urban areas in Java, among others are Metropolitan Bandung Raya (BDG), Gerbangkertosusila (SBY), Kedungsepur (SMG), and Kartamantul (YYK). The dominance of urban interactions in Java is due to the relatively high population and economic productivity of urban areas in Java which are also supported by their adjacent location. On the opposite, the weakest interactions are occurred between urban area with little population and economic productivity which also separated far apart. Among those are interaction of Biak Numfor (BIK) - Tapanuli Utara (TRT) and Biak Numfor (BIK) - Banda Aceh (BNA).



Rank	Urban Area 1	Urban Area 2	Economic Interaction Value
1	JKT	BDG	73,933
2	JKT	SBY	17,633
3	JKT	SMG	14,966
4	JKT	SKT	11,772
5	SMG	SKT	10,270

Rank	Urban Area 1	Urban Area 2	Economic Interaction Value
296	TRT	AMB	0,003
297	MDN	AMB	0,003
298	TPG	BIK	0,002
299	BNA	BIK	0,002
300	TRT	BIK	0,001



Rank	Urban Area 1	Urban Area 2	Transportation Interaction Value
1	JKT	SBY	194,82
2	JKT	DPR	153,03
3	JKT	MDN	129,84
4	JKT	YYK	112,26
5	JKT	SMG	84,67

Rank	Urban Area 1	Urban Area 2	Transportation Interaction Value
223	MTR	KPG	1,000116
224	AMB	DPR	1,000116
225	SMG	MTR	1,000077
226	MTR	PLG	1,000077
227	YYK	SMG	1

Figure 1 Urban interaction pattern of based on economic gravity (top) and air passenger flow (bottom) in 2015. Both figures are presented along with five strongest and weakest interactions.

On transportation aspect (figure 1 bottom), urban interaction pattern also focused on Metropolitan Jabodetabek (JKT). However, the interaction is not dominated by the relationship between Metropolitan Jabodetabek and urban areas in Java, but includes urban areas outside Java Island such as Metropolitan Sarbagita (DPR), Mebidangro (MDN), Mamminasata (MKS), Palapa (PAD). For urban areas in Java Island that interact strongly with Metropolitan Jabodetabek are Metropolitan Gerbangkertosusila (SBY), Kartamantul (YYK), and Kedungsepur (SMG). The weakest interaction in transportation aspect is accoured between Metropoliltan Kartamantul (YYK) and Kedungsepur (SMG). Unlike economic interaction, the weakest linkage in transportation aspect is occurred between adjacent urban areas where people movement rarely served by air transportation.

As for the comparison between both aspects, urban interaction based on economic has a little correlation with transportation aspects (correlation value 0.232 with significance P <0.025). It occurs since distance variables have different effect on each aspect. In the economic aspect, the intensity of interaction is inversely proportional to distance so interaction is stronger with urban in adjacent location. While in transportation aspect, urban interaction occurs within a relatively longer distance between them.

2. Urban centrality

Urban area which is the most central in economic aspect is Metropolitan Jabodetabek (JKT) with Gerbangkertosusila (SBY) on second place (table 2). In contrast to the interaction pattern, urban areas with high centrality values after the Metropolitan Jabodetabek and Gerbangkertosusila are not dominated by urban areas in Java, but distributed outside Java Island, among others are Metropolitan Mebidangro (MDN), Pekansikawan (PBR), and Mamminasata (MKS). This difference occurs because the value of centrality in the economic aspects is no longer determine by the size of other nearby urban areas. As for the lowest centrality is belong to Biak Numfor (BIK).

Table 1 Urban hierarchy based on population size (left), economic interaction (middle) and transportation interaction (right) in 2015

Rank	Urban Area	Centrality Size based	Rank	Urban Area	Economic Centrality	Rank	Urban Area	Transportation Centrality
1	JKT	100,00	1	JKT	100,00	1	JKT	100,00
2	SBY	30,69	2	SBY	46,03	2	SBY	35,91
3	BDG	30,06	3	MDN	22,52	3	DPR	20,97
4	SMG	20,45	4	PBR	13,01	4	YYK	15,45
5	MDN	20,09	5	MKS	12,34	5	BPP	15,04
6	MTR	16,05	6	BPP	10,65	6	MDN	14,26
7	MKS	11,97	7	PLG	8,14	7	MKS	13,17
8	YYK	11,36	8	BDG	5,63	8	BJB	9,15
9	DPR	9,49	9	PAD	5,18	9	SMG	8,49
10	BJB	9,00	10	PTK	4,98	10	PLG	7,71
11	PLG	8,77	11	SMG	4,71	11	PAD	6,69
12	BPP	8,33	12	DPR	3,98	12	BDG	6,42
13	PBR	7,96	13	MND	3,93	13	PTK	6,00
14	PAD	7,27	14	JMB	3,56	14	MTR	5,57
15	MND	5,13	15	YYK	3,10	15	PBR	5,53
16	PTK	5,10	16	KPG	1,82	16	MND	4,25
17	JMB	3,79	17	BNA	1,79	17	PPG	3,73
18	SKT	3,33	18	AMB	1,53	18	SKT	3,41
19	AMB	3,05	19	TPG	1,28	19	JMB	2,62
20	KPG	2,89	20	SKT	0,92	20	KPG	2,37
21	TRT	2,74	21	PPG	0,87	21	AMB	2,28
22	BNA	2,02	22	TRT	0,69	22	BNA	2,07
23	TPG	1,85	23	MTR	0,66	23	TPG	0,68
24	PPG	1,65	24	BJB	0,35	24	BIK	0,27
25	BIK	1,17	25	BIK	0,34	25	TRT	0,00

In transportation aspect, urban area with the highest centrality is also Metropolitan Jabodetabek (JKT) and Gerbangkertosusila (SBY) under it. Similar to the economic aspect, urban areas with high centrality distributed across all main islands in Indonesia include metropolitan Sarbagita (DPR), Kartamantul (YYK), and Sasamba (BPN). Tapanuli Utara (TRT) and again, Biak Numfor (BIK) are urban areas with the lowest centrality.

The correlation of urban hierarchy between both aspects is quite high which is showed by the correlation value of Pearson coefficient is 0.963 (p <00.1) and Spearman rho coefficient is 0.675 (p <00.1). Still, there are urban areas which have high centrality in one aspect but low in other aspect such as Pekansikawan (PBR) with relatively high economic centrality value compare to transportation centrality value. While the opposite condition happens to Metropolitan Sarbagita (DPR), Kartamantul (YYK), and Gumi Rinjani Raya (MTR).

Table 2 Urban hierarchy by economic sector (secondary and tertiary) and transportation

Rank	Urban Area	Secondary sector	Rank	Urban Area	Tertiary sector	Rank	Urban Area	Transportation Centrality
1	SBY	29.160.135	1	JKT	100.747.791	1	JKT	35.250.084
2	JKT	26.186.316	2	SBY	37.517.289	2	SBY	12.658.398
3	MDN	9.021.966	3	MDN	18.790.658	3	DPR	7.390.664
4	BDG	4.042.179	4	PBR	14.080.023	4	YYK	5.444.666
5	MKS	2.746.174	5	MKS	11.314.005	5	BPP	5.299.852
6	PLG	2.538.094	6	BPP	10.639.253	6	MDN	5.025.482
7	BPP	2.526.970	7	PLG	8.109.292	7	MKS	4.642.283
8	PBR	1.491.424	8	SMG	7.024.185	8	BJB	3.224.657
9	PTK	1.433.380	9	DPR	6.642.963	9	SMG	2.992.297
10	YYK	930.980	10	PAD	4.855.850	10	PLG	2.716.249
11	MND	852.250	11	PTK	4.771.491	11	PAD	2.358.950
12	PAD	677.585	12	JMB	4.021.362	12	BDG	2.263.469
13	JMB	570.242	13	YYK	3.665.392	13	PTK	2.116.765
14	BJB	458.637	14	MND	3.374.674	14	MTR	1.961.691
15	BNA	280.560	15	BDG	2.826.518	15	PBR	1.950.664
16	AMB	156.499	16	KPG	2.134.445	16	MND	1.496.764
17	BIK	19.129	17	BNA	1.892.833	17	PPG	1.315.598
18	MTR	0	18	AMB	1.556.402	18	SKT	1.203.266
19	SMG	0	19	SKT	1.443.011	19	JMB	923.902
20	KPG	0	20	TPG	1.173.704	20	KPG	836.457
21	PPG	0	21	PPG	1.132.874	21	AMB	802.087
22	DPR	0	22	MTR	864.800	22	BNA	729.129
23	SKT	0	23	BIK	208.656	23	TPG	239.261
24	TPG	0	24	BJB	0	24	BIK	96.606
25	TRT	0	25	TRT	0	25	TRT	1.593

*Urban hierarchy based on primary sector is not showed since most of urban areas centrality value are zero (0).

The correlation of urban centrality between both aspects can also be analyzed more specifically by seeing each sector in economic aspect (table 2). The correlation of tertiary sector to transportation aspect is higher (Pearson coefficient is 0.974 (p <00.1) and Spearman rho coefficient is 0.714 (p <00.1)) than to the other two sectors, secondary (Pearson coefficient is 0.819 (p <00.1) and Spearman rho coefficient is 0.599 (p <00.1)) and primary. This result show that air transport is mainly used to support trade and services activity rather than agriculture or manufacture activity.

The urban centrality which are resulted by its interaction can also be analyzed by comparing them to urban centrality based by its size. The correlation of urban centrality between those two approaches is quite high. Yet, there are urban areas with high centrality in one approach but low in another approach. Some of them are Metropolitan Bandung Raya (BDG) and Kedungsepur (SMG) which have relatively high centrality based of their size but low centrality based on its interaction. While Metropolitan

Sarbagita (DPR) is one some urban areas with relatively high centrality based on its interaction compare but low centrality based on its size.

CONCLUSION

So far, urban areas in Indonesia are mostly studied without seeing their interactions among others. Therefore, this research depicts the interactions and centrality of 25 urban areas in Indonesia based on economic and transportation aspect. A comparison between both aspects is also conducted for comprehensive understanding.

Urban interaction pattern in economic aspect is dominated by interactions of urban areas in Java Island. While in transportation aspect, the interaction happens more distributed, between urban areas in Java and Sumatera, Kalimantan, Bali, and Sulawesi. Difference in interaction patterns is due to the nature of the air transport which mainly support inter-urban movement with a relatively long distance. While the economic interaction occurs strongly for urban in adjacent location. Despite its difference, both aspects show Metropolitan Jabodetabek as the center of urban interaction pattern in Indonesia.

As for urban centrality, Metropolitan Jakarta and Gerbangkertosusila always happen to be on top of urban hierarchy where other urban areas have different value based on each aspect. There are urban areas with high centrality based one aspect but low based on another. Overall, the comparison of urban hierarchy between both aspect is quite high. The correlation of transportation aspect is even higher with specifically, tertiary economic sector compare to the other two economic sector.

Urban hierarchy as a result from their interaction also give a alternative perspective in determining urban constellation in Indonesia which commonly determine based on their sizes. Statistically, both approach have high correlation, one of which is showed by the dominance of Metropolitan Jabodetabek and Gerbangkertosusila in Indonesia's urban system. There are also differences which showed by urban areas with different centrality value in each approach. These differences are important to be studied further for better understanding of urban function in Indonesia.

The urban interactions described in this study are not fully represent urban interactions in Indonesia. The first limitation is on the availability of air traffic data so the future research need an additional data which include much more other airports in Indonesia. Second is the limitation of air transport data to illustrate the interactions of nearby urban areas. It need to be support with data which represent the passenger movement among adjacent urban area. The third limitation lies in the assumptions used in the model. It is necessary to improve the model to depict urban interaction in economic aspect more accurately.

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Human Capital and Productivity in East Java: An Application of Mankiew-Romer and Weil Model

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Abstract

Human capital is considered as one of the determinants of productivity. Human capital is a qualitative dimension of human resources, such as skills, which will affect the human productive capabilities. The qualitative dimension is gained through education, training and health. Adopting Mankiew-Romer and Weil Model, this study aims to analyze the effects of human capital on the level of productivity in the city/district in East Java. In this study, the level of education measured by indicator Average School Duration, while the level of health is measured by Life Expectancy. The data used are panel data from 38 districts/cities in East Java. The results show that human capital measured by education level (RLS) and health level (AHH) is significantly effect on productivity variation although the coefficient is smaller than physical capital. Further, the result of the analysis also shows that education has smaller coefficient compared with health.

Keywords: Human capital, Productivity, Education, Health

Background

Human capital is a very important factor in determining the productivity of an economy. Different quality of human capital is believed to cause two economies that have the same amount of labor, physical capital, natural resources and technology to produce different outputs. Schultz (1961) states that human is a form of capital, as well as physical capital and technology. Human capital is a qualitative dimension of human resources. The qualitative dimensions of human resources, such as skills, possessed by a person will affect one's productive ability. Skills and knowledge can be enhanced through good educational processes and well-maintained health conditions.

According to Becker (1994) spending on education and health is an investment because, as well as investments in buildings or land, those expenses will generate returns in the future. Expenditure in education, training and health will improve one's health and knowledge so that the productivity and income of the person will increase in the future.

The theoretical model that explains the relationship between human capital and economic growth is built on the hypothesis that knowledge and skills will increase productivity directly and increase the ability of an economy to develop and adopt new technologies (de la Fuente, 2011). The theoretical model incorporates human capital into the production function. One such model is the Mankiew-Romer and Weil model (MRW Model) developed by Mankiw et al (1992). Mankiw et al (1992) modified the Solow Growth Model (Solow, 1956) by incorporating the accumulation of human capital into production factors. The production function in the MRW Model is formulated as:

$$Y(t) = K(t)^{\alpha} H(t)^{\gamma} \big(A(t)L(t)\big)^{1-\alpha-\gamma} \qquad (1)$$

with K is physical capital, H is the stock of human capital, A is the technological level and L is labor. In the form per effective worker, equation (1) can be written:

$$\tilde{y}(t) = \tilde{k}(t)^{\alpha} \tilde{h}(t)^{\gamma} \qquad (2)$$

Since capital consists of physical capital and human capital, capital accumulation can be written:

$$\tilde{k}(t) = s_k \tilde{y}(t) - (\delta + n_L + n_A)\tilde{k}(t) \qquad (3)$$

$$\tilde{h}(t) = s_h \tilde{y}(t) - (\delta + n_L + n_A)\tilde{h}(t) \qquad (4)$$

with s_k and s_h representing the saving rate for physical capital and human capital, δ is the depreciation rate, n_L is the growth rate of occupation and n_A is the rate of technological growth. Steady state is a condition when no capital accumulation occurs or when $\tilde{k} = 0$ and $\tilde{h} = 0$, so human capital and physical capital in the steady state are formulated:

$$\tilde{h}(t) *= \left(\frac{{S_H}^{1-\alpha} {S_K}^{\alpha}}{\delta + n}\right)^{1/1-\alpha-\gamma} \qquad (5)$$

$$\tilde{k}(t) *= \left(\frac{{S_k}^{1-\alpha} {S_H}^{\alpha}}{\delta + n}\right)^{1/1-\alpha-\gamma} \qquad (6)$$

By entering equations (5) and (6) into equation (2), the per capita output in the steady state is written:

$$\tilde{y}(t) *= \left(\frac{{S_k}^{1-\alpha} {S_H}^{\alpha}}{\delta + n}\right)^{1/1-\alpha-\gamma} \qquad (7)$$

Equation (7) explains that the accumulated rate of physical capital and human capital can affect the level of steady state output per effective worker. The equation also explicitly indicates that output per effective labor is determined by investments in physical capital and human capital.

Empirically, research on the relation between human capital and output per capita has been done and the results are contradictory. Barro (1991) and Mankiew, Romer and Weil (1992), prove that human capital, as measured by educational indicators, positively affects per capita output. However, studies conducted by Kyriacou (1991) and Benhabib and Spiegel (1994) show opposite results. Nevertheless, the results of recent studies show more consistent and expected results (de la Fuente, 2011). According to de la Fuente (2006), the result that the quality of the data used will greatly determine the direction of human capital relations with output per capita.

In the case of Indonesia, some researchers have analyzed the role of human capital, among others; van Leeuwen (2007) and Alisjahbana (2009). Van leeuwen (2007) measures human capital with average years of education. The analysis conducted by time coherent method shows a positive relationship between human capital and economic growth in Indonesia during the 20th century. Alisjahbana (2009) uses average educational attainment per person and shows that the contribution of human capital to economic growth is 30 percent.

Research with provincial data in Indonesia has been done by Vidyattama (2010) and Kataoka (2013). Vidyattama (2010) uses the average working-age school age as an indicator of human capital and finds a positive influence of human capital on provincial economic growth. Just like Vidyattama, Kataoka (2013) also found a positive influence of human capital on output of 26 provinces in Indonesia during 1986 - 2006, though its magnitude is less than physical capital. In that study, human capital was approached by the number of labor with tertiary education (labor with tertiary education).

This study analyzes how the influence of human capital on the productivity of cities or districts in East Java. Human capital is specifically measured by education level and health level. This research is different from other research which discusses the influence of human capital on productivity in East Java in two things namely; 1) this study uses some educational and health indicators and 2) this study compares which measures have larger regression coefficients. Further, to answer the research question, the empirical model is constructed and will be estimated with panel data regression method.

RESEARCH METHODS

Productivity is measured by Gross Regional Domestic Product at Constant Price Base (GRDP). The variable of human capital is measured from education level and health level. The level of education is measured by Average School Duration (RLS). The level of health is measured by Life Expectancy (AHH). The study also included control variables, namely physical capital, as measured by Gross Fixed Capital Formation (PMTB) per worker (million people).

Data were collected from the Central Bureau of Statistics (BPS) website of each city and district in East Java. The data analyzed cover only 38 districts / cities in East Java for 2014-2016. This research uses data panel model with Fixed Effect Method (FEM) approach. The FEM model assumes a constant slope coefficient but intercept units vary. FEM model is chosen because it can show the characteristics of each region clearly. Based on equation (7), the research model is formulated:

$$\log y_{it} = \beta_1 + \beta_2 P_{it} + \beta_3 H_{it} + \beta_4 \log k_{it} + \varepsilon_{it} \qquad (8)$$

with y is productivity, P is the level of education, H is the level of health, k is capital per worker, ε is the disorder / error, i is the unit index and t is the time index. Model estimation will be done in two steps, namely; (1) Granger Causality Analysis to see the direction of relationship of each variable and (2) Panel Regression Analysis by incorporating education, health and capital level simultaneously. The two stages of the regression are performed with the aim of forming the model and knowing the significance of each variable.

RESULTS AND DISCUSSION

East Java's output productivity shows an increasing trend in the last ten years. The measured productivity of the Gross Domestic Product (GDP) at constant prices indicates that output was 990,648.84 (billion rupiah) in 2010 and continues to increase until 2016 to be 1,405,236.11 (billion rupiah). Meanwhile, productivity figures at the kabupaten / kota level show variation, which is between 4,079.25 to 343,625.59 (million rupiah).

Before performing panel data regression, please note the causality relationship using Granger Causality Analysis. From the analysis can be seen the relationship between the output of the Gross Regional Domestic Product (GRDP) with the educational indicators of the variable Average School Duration (RLS). It is known that both have a one-way hubug ie RLS can affect (cause) GRDP. In the capital indicator, the Gross Fixed Capital Formation per worker (PMTD / TK) has a one-way relationship with the output of the Gross Regional Domestic Product (GRDP). In other word, it can be said that PMTD / TK can cause (affect) GRDP. But for health indicator that Life Expectancy Number (AHH) do not have causality relation with output that is PDRB.

Panel regression is done between PDRB variable as variable of dependent and variables AHH, RLS, PMTD / TK as independent variable by forming linear model Fixed Effect. Chow test to test whether the parameters are supposed to remain for each object and time, or in other words whether the model follows the Common Effect or Fixed Effect model. The results show that the appropriate Fixed Effect model is used. After forming the Fixed Effect model, a linear model of Random Effect should be established to anticipate the possibility of other models. Hausman test is used to compare the most appropriate model used, whether the Fixed Effect model or the Random Effect model. The final result of model selection, the most appropriate model used is the Fixed Effect Model.

Regression of each size of the level of education, health and capital levels indicate a sign that matches what is expected. Here is a regression model obtained:

$$\log PDRB\_ADHK = \beta_1 + \beta_2\, AHH_{it} + \beta_3\, RLS_{it} + \beta_4 \log PMTD\_TK_{it} + \varepsilon_{it}$$

$$\log PDRB\_ADHK = 5{,}0070 + 0{,}146\, AHH_{it} + 0{,}1153\, RLS_{it} + 0{,}2397 \log PMTD\_TK_{it} + \varepsilon_{it}$$

Table 1. Individual Effect Value of each Regency / City

Regency	Effect
Pacitan	-0.687687
Ponorogo	-0.507234
Trenggalek	-0.689353
Tulungagung	-0.236088
Blitar	-0.136207
Kediri	0.056147
Malang	0.908323
Lumajang	0.440894
Jember	1.504821
Banyuwangi	0.917078
Bondowoso	0.533697
Situbondo	0.110529
Probolinggo	0.948233
Pasuruan	1.434183
Sidoarjo	0.753224
Mojokerto	0.513829
Jombang	0.017219
Nganjuk	-0.200778
Madiun	-0.423923
Magetan	-0.673992
Ngawi	-0.368776
Bojonegoro	0.998731
Tuban	0.662293
Lamongan	0.025060
Gresik	0.814837
Bangkalan	0.344243
Sampang	0.550288
Pamekasan	0.167541
Sumenep	0.555236
Kediri City	0.106266
Blitar City	-2.200156
Malang City	-0.059114
Probolinggo City	-1.038024
Pasuruan City	-1.571445
Mojokerto City	-2.290084
Madiun City	-1.615344
Surabaya City	1.619832
Batu City	-1.284300

The assumptions applied to the model are the assumptions of multicollinearity and heteroscedasticity. The assumption of multicolliniearity is used by finding the correlation coefficient value between the predictor variables using coefficient correlation pearson. From

the correlation results in can be seen that there are no predictor variables that correlate very strongly with other predictor variables, so the assumption of Non Multicolinearity is fulfilled.

The assumption of heteroscedasticity is done by using the Glesjer test. The concept of the Glesjer test is by way of meregresikan between independent and its residual absolute value. The result of the analysis shows that there is no violation of homoscedasticity assumption. While the assumption of autokoleration and and normality is not necessary. The autocorrelation assumption is only applied to data that is not time series, whereas the normality test is not basically a BLUE (Best Linear Unbias Estimator) requirement and some opinions do not require this requirement as something that must be met.

Regression results indicate that the level of education measured by School Average (RLS), the level of health as measured by Life Harvest Rate (AHH), and capital as measured by Gross Fixed Capital Formation per Work (PMTD / TK) have a probability of significance simultaneously less than alpha value ($\alpha = 0.05$), so it can be concluded jointly have a significant effect on yan productivity measured by Gross Regional Domestic Product (GRDP).

Regression results also show that the level of education, health and capital levels have a sign corresponding to the hypothesis. Besides, it is also known that all variables have a real significance pasrsial. This means that each variable has a partially significant effect on productivity.

The intercept model value of 5.007 is the average of GDP value for each district / city if the predictor variable is constant. Intercept is strongly influenced by the influence of each district / city. Each district / city has a different value of intercept, whose differences are set out in Table 1 in the Individual effect. From the table, we can be see that districts / cities that have the biggest initersep is the city of Surabaya which is 5.007 + 1.6198 = 6.6268. It can be interpreted that the city of Surabaya has the average log value of GRDP is the largest in East Java. While the districts / cities that have the smallest interception value is Mojokerto with intercept value of 5,007 - 2,29 = 2,717. In other word, Mojokerto City has an average log value of PDRB paing small in East Java.

Health size has a positive sign, meaning its GRDP will increase along with AHH. The coefficient of 0.146 so that it can be interpreted that any increase of Life Expectancy Rate for one year will increase the GDP log of 0.146 if other predictor variables are constant. Similar to health measures, the size of education also has a positive sign, meaning its GRDP will increase along with the RLS. The RLS coefficient is 0.1154 so that it can be interpreted that

any increase in the average length of school for one year will raise the GDP log of 0.1154 if the other predictor variable is constant.

In the capital indicator has a contribution value to GRDP when compared with the size of education and health. The capital indicator has a sign of positive coefficient, meaning its GRDP will increase along with PMTD / TK. Coefficient of capital indicator is 0.2397 which can be interpreted that every increase of one Gross Permanent Investment log per Labor can raise GDP log of equal to 0,2397 if other predictor variable is constant.

CONCLUSION

Conclusions generated by this study are the size of education, health and capital together can significantly affect productivity. Similarly, the effect when viewed partially, all measures significantly affect productivity. All three measures have a positive effect on productivity. The effect of capital is greater when compared with the size of education and health measures.

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Budget Transparency in Local Government: Does Local Election Matter?

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Abstract

This simple study aims to explore the initial transparency of local government budgets in Indonesia. The election of regional heads in 2017 and 2018 was chosen as a momentum to evaluate the extent of disclosure of local government budget information on their website. We used the content analysis method to analyze the content of budget information on the website of 542 provincial, municipal and district governments in early 2018. The results of the analysis found the following: first, budget transparency on the local website fulfilled the availability aspect, while accessibility and timeliness were very low. Second, the most uploaded budget documents are planning documents, next to reporting and accountability documents and then, budget execution documents. Third, the level of transparency of the provincial government is higher than the municipal and district governments. Fourth, the transparency of regional budgets that hold regional head elections is higher than those that do not hold election. The findings of this study are a prelude to further exploration of developing other research variables, such as relation of political factors to the level of budget transparency of local government. The implications of this study prove that the behavior of political actors plays an important role in budget transparency, in which incumbent candidate pairs use his discretion to use the website as an instrument of campaign to attract his vote.

Keywords: *Local government, budget transparency, local election*

A. Introduction

Government transparency has been widely discussed in the last decade. Economic and political theorists believe that transparency is a determinant of the quality of democracy (Norris, 2001). A transparent government allows citizens to know what the government is doing, the decision-making process and management of the resources entrusted to public services and improve the quality of life of citizens. Transparency is provided as an instrument to assess government accountability, enabling citizens to detect corruption and increase trust in government (McGee and Gaventa, 2011).

The right to information is a basic human right. This has been mandated in the 1945 Constitution Article 28F paragraph 1, "Everyone shall have the right to communicate and obtain information to develop his personal and social environment, and shall have the right to seek, obtain, possess, store, process and convey information by using all type channels available ". This article

is reinforced in another rule that is in Law No. 14 of 1999 on Human Rights which underlines that every citizen has the right to get information and right to know (right to inform and right to know). Citizen rights are a concern and a measure of the quality of democracy in every country. The Indonesian government has implemented the Freedom of Information (FoI) Law since 2008, by stipulating the Public Information Disclosure Act Number 14 of 2008. The adoption of this law is followed by the technical rules below it and requires all require that each Public Agency has an information channel have high accessibility such as website as a means of displaying information which is rightfully known by the public.

However, these government regulations have not been properly realized. Based on previous research, local government transparency is still low (Hermana, Tarigan, Medyawati and Silfianti, 2012; Sofia and Husen, 2013; Martani, Fitriasari and Annisa, 2014; Trisnawati and Ahmad, 2014; Nofriani, Lilik and Widisatuti, 2015) with the result of low financial transparency, less than 20%. Penabulu (2015) document that out of the 505 local government populations in Indonesia, 434 local governments already have accessible web, and only 123 local government websites provide Local Government Budget Provision (TAPD) menu. And recently, empirical evidence of transparency of local government financial management is still low at 16.84% (Ritonga and Syamsul, 2016).

The study re-evaluates the transparency of local governments in the current era of regional head elections in Indonesia, respectively in 2017 and 2018. Local governments holding 101 local elections (2017) and 171 (2018). The regional head candidates were incumbent of 61 districts (2017) and 138 incumbents ran for re-election (Infopilkada.kpu.go.id). The large number of incumbents that are running again raises the notion that the incumbent will use its discretion for disseminating information for campaign purposes. Using the content of the analysis, we evaluated the content of the information on the local government website, to investigate whether the moment of the election was made as "improvements" to information on the local government website by incumbent.

B. Literature Review

1. Transparency

Kopits and Craig (1998) defined transparency as:

> "openness toward the public at large about government structure and functions, fiscal policy intentions, public sector accounts and projections. It involves ready access to reliable, comprehensive, timely, understandable, and internationally comparable information on government activities so that electorate and financial markets can accurately assess the government's financial position and the true costs and benefits of government activities, including their present and future economic and social implications."

Transparency usually means that the data is held by the government and information about its activities. It can be disclosed upon request of the citizen or another entity (company, civil society organization, etc) (see Héritier, 2003). Mardiasmo (2004) asserts that transparency means the government's openness in providing information related to public resource management activities to those in need of information. Government is obliged to provide financial information

and other information that will be used for decision making by interested parties. Of the two definitions, transparency is basically the first, comprehensive, reliable and understandable information about government structure and function, governance, all legislation, fiscal policy objectives, and all government decision-making process. Reliable social, economic, and political information must be available at all times. Secondly, it is accessible to all, so the government must guarantee access or freedom for everyone to obtain information about the administration, ie information on the policy making process and its implementation and the results achieved. Transparency means open access for all interested parties to any pertinent information-such as various laws and regulations, and government policies for a minimal fee. Reliable and regular social, economic and political information must be available and accessible to the public.

Third, timely, on time. Information should be available and updated as quickly as possible. Material available in electronic or hard copy form must indicate when the information was released or updated. Citizens should also be informed how often information is being updated. However, this requirement of timeliness may conflict with criteria of accuracy and completeness (Hilton, 1981; Ballou and Pazer, 1995). This tension is especially true when the information is used for strategic planning purposes. In many cases, the quality of information utilized for decision and planning is increasingly valid and reliable with the passage of time. The timely release of the preliminary information is based on the available data and a changing environment. However, with the passage of time, the actual cost becomes less relevant for decision making and planning purposes. Thus, public managers need to strike some balance between updated but not-very-accurate or complete information and accurate or complete that is not-that-updated information.

2. *E-government*

At first seen as a means of enhancing transparency and the delivery of public services, e-government is now promoted as 'a tool to achieve better government' (OECD, 2003; West, 2000; cited by Pina et al., 2010). The reasons why transparency (and openness) research closely relates to e-government research lies in the fact that lower levels of development of e-government (see Layne, Lee, 2001) correspond directly to the use of the Internet as a means of providing information and simple communication between public authorities and citizens (online presence, presentation of information, downloadable forms, access and small-scale interaction). Phase is concerned with a full-service function exercised by means of ICT.

3. Government Transparency in Indonesia

The Government of Indonesia has issued Law No. 14 of 2008 on Freedom of Information (FOI). The law requires every Public Agency to convey information related to the activities of the Public Agency, its performance and financial statements, and other information specified in other laws and regulations. Implementation of this regulation is obliged every Public Agency has a channel of information that has high accessibility such as website as a means to display information that is entitled to be known by the public. Following the implementation of Law 14 of 2008, the Government also issued technical regulations such as Government Regulation no. 61 of 2010 on the implementation of Law No. 14 of 2008 where the Public Agency is required to provide information available and accessible easily by the public.

Following FOI Law, the government established Information and Documentation Management Officials (PPID) in each Public Agency to handle public information services. PPID is the Officer responsible for the storage, documentation, supply and information services in the public body. The establishment of this PPID is determined by referring to Article 13 of Law no. 14 of 2008 on Public Information Disclosure and Article 7 of the Minister of Home Affairs Regulation no. 35 of 2010 concerning Guidelines for the Management of Information and Documentation Service within the Ministry of Home Affairs and Regional Government, Provincial Government and District/Municipal Government shall stipulate the PPID through the decree of the regional head. In addition, based on the letter of the Minister of Home Affairs no. 188.2/3435/sj regarding the implementation of Law no. 14 year 2008 on public information disclosure, stipulated that the PPID for the provincial level is in the Public Relations Bureau, while for the district / city, located in the Public Relations Section. Especially for the regions that have the Office of Communications and Information and in which combined unit of public relations work, then the Head of the relevant service appointed and appointed as PPID. From the above description, the Government of Indonesia, at both central and regional levels, is responsible for applying information disclosure.

Given the importance of budgetary transparency, in addition to issuing rules that require transparency in general, the Government issues special rules on budget transparency, namely the Instruction of the Minister of Home Affairs. 188.52/1797/SJ/2012 on Transparency of Local Budget Management (TPAD), mandates local government (regional governments) to prepare a content menu with the name TPAD in the official website of local government. The TPAD menu consists of the Budget Work Plan (RKA), the draft Local Regulation on APBD and APBD Changes, Regional Regulations (APBD-P) and APBD-P, Summary Budget Implementation Document (DPA), Budget Realization Report (LRA), Local Government Financial Report (LKPD) that have been audited and opinions on LKPD.

4. Transparency and Election

Alt, Lassen and Rose (2006) support that budget transparency is influenced by the dynamics of political competition, as well as the dynamics of previous fiscal conditions. The need for fiscal transparency both from the citizens and legislators, strengthened when the political dynamics between the two parties. The government's decision is incumbent to withhold or publish politically inherent information, and is used to influence voters through the use of suffrage, as well as by the characteristics of political parties and political competition (Wehner and de Renzio, 2013).

Caselli, Cunningham, Morelli and de Barreda (2014) argue that politicians' behavior is motivated by subsequent elections, and politicians will choose actions to signal their achievements to voters. The incumbent positive signals are useful for influencing voters, overriding private information and pandering the previous opinion of voters (Morelli and Van Weelden, 2016). Further, Caselli et al. (2014) adds the asymmetry between the incumbent and its competitor in the ability to signal, where voters receive only signals from the incumbent, not from competitors. When the signal is in the form of a policy outcome, only the incumbent has the ability to signal it.

C. Methodology

The research was conducted in 542 local governments, including provincial, district and municipal governments in Indonesia. The reason for the selection of local government as the object of research is based on the Instruction of Minister of Home Affairs. 188.52/1797/SJ/2012. The directive shall be directed to the Governor of the whole of Indonesia in the context of the implementation of the Transparency of the Regional Budget Management (TPAD). The Governor is given the authority to instruct the Regent/Mayor in their respective regions to publish the updating data in the budget management content menu and conduct monitoring and evaluation of the instructions. Regional financial management data is obtained from each official local government website for fiscal year 2017 and fiscal year 2018. The data consists of planning, implementation and reporting data and accountability of APBD implementation. Furthermore, checking and retrieving the data, conducted from 1-31 March 2018 both done to check back availability in the official website of the local government. This is based on researchers' observations from several local governments for the previous year, local financial management documents uploaded at the end of each budget period until the start of the next year's budget.

Transparency of regional financial management is defined as a form of government openness within make budgetary policies (financial) so that it can be known and supervised by the public and other stakeholders. The budget process contains planning, implementation, administration, reporting, accountability, and supervision. This study measures the transparency of financial management regions are based on three main stages of local financial management, namely (1) planning; (2) implementation; and (3) reporting and accountability of APBD implementation. Each stage of regional financial management is measured using 3 (three) criteria *the availability of*, *accessibility*, and *timeliness* of financial management information disclosure area. Availability indicates that the measured local financial management information is available at official government website. Available, meaning that such information is provided publicly on the official website by provincial government. Accessibility indicates that the available information can be downloaded by the public. That is, such information can be easily retrieved by the public without having to go through complicated procedures. While the timeliness of disclosure is defined as information on the management of regional finances presented (provided) on the official website of the local government according to the required timeframe (expected).

Content analysis of budgetary information is based on the stages of local budget management as follows:

Table 1. The Content Menu of Budget Process

Budget Process		Document	Time of Determination Based on Regulation of the Minister of Home Affairs. 13 of 2006
Planning	1	Local Government Work Plan (RKPD)	End of May
	2	General Budget Policy (KUA)	Week 1 of July
	3	Priority and Ceiling Documents Budget (PPA)	End of July
	4	Budget Work Plan (RKA) -SKPD	Week 2 of September
	5	Budget Work Plan (RKA) -PPKD	

	6	The draft of Regional Regulation on Regional Budget (APBD)	End of November
	7	Regional Regulation on Regional Budget (APBD)	At least at the end of December
	8	Summary of Budget Executing Document (DPA) -SKPD	15 working days after APBD determination
	9	Summary of Budget Executing Document (DPA)-PPKD	
Executing Budget	1	Changes in Regional Budget (APBD-P)	Week 1 of August of the current budget year
	2	Regional Regulation on Changes in Regional Budget (APBD-P)	The end of September of the current budget year
	3	Changes to the Budget Work Plan (RKA-P)	Week 3 of August of the current budget year
	4	General Procurement Plan	
	5	Realization of Revenue	
	6	Realization of Expenditures	
	7	Financing Realization	
Reporting and Responsibility	1	Local Regulation on Local Government Accounting Policies	Setup date
	2	Budget Realization Report	6 months after the fiscal year ends
	3	Balance Sheet	6 months after the fiscal year ends
	4	Cash flow statement	6 months after the fiscal year ends
	5	Opinion of the Supreme Audit Agency (BPK)	6 months after the fiscal year ends
	6	Financial Report of Regional Owned Enterprises (BUMD)	6 months after the fiscal year ends
	7	Annual Report of Accountability and Performance Local government (LAKIP)	March 31st (3 months after budget year)

Source: Adapted from Ritonga and Syamsul (2016) and Huwae (2016).

D. Results and Discussion

Local government budget transparency analysis

Our transparency discussion is based on the concept of transparency, namely availability, accessible and timeliness for each stages of local government budget management.

a. Availability

According to concept of availability indicates that the measured local financial management information is available at official government website. Available, meaning that such information is provided publicly on the official website by local government. Table 2 shows the availability of information on planning, implementation and reporting phases and budget accountability.

Table 2. The Availability of Budget Process Documents

Budget Process	Budget Documents	Province (34)		Municipal (97)		District (411)		Total	
Planning	Annual Work Plan-2018	9	26,47%	15	15,46%	50	12,17%	74	13,65%
	General Policy of Budget (KUA)-2018	0	0,00%	2	2,06%	8	1,95%	10	1,85%
	Budget Priority and Plafond (PAS)-2018	0	0,00%	2	2,06%	11	2,68%	13	2,40%

	Work Plan of Budget (RKA) - SKPD 2018	12	35,29%	18	18,56%	60	14,60%	**90**	16,61%
	Work Plan of Budget (RKA) - PPKD 2018	10	29,41%	18	18,56%	50	12,17%	78	14,39%
	Draft Regulation of APBD-2018	12	35,29%	23	23,71%	63	15,33%	**98**	18,08%
	The Regulation of Budget-2018	12	35,29%	13	13,40%	42	10,22%	67	12,36%
	The Explanation of Budget 2018	6	17,65%	16	16,49%	68	16,55%	**90**	16,61%
	Budget Execution Doc.-SKPD 2018	15	44,12%	20	20,62%	70	17,03%	**105**	19,37%
	Budget Execution Doc -PPKD 2018	13	38,24%	15	15,46%	57	13,87%	**85**	15,68%
Executing	Realized Revenue - 2017	1	2,94%	5	5,15%	4	0,97%	10	1,85%
	Realized Expenditure-2017	1	2,94%	10	10,31%	16	3,89%	27	4,98%
	Realized Financing- 2017	2	5,88%	5	5,15%	9	2,19%	16	2,95%
	Draft Regulation of Amendment of Budget -2017	6	17,65%	12	12,37%	20	4,87%	38	7,01%
	The Regulation of Amendment of Budget-2017	3	8,82%	1	1,03%	6	1,46%	10	1,85%
	The Explanation of Amendment of Budget 2017	2	5,88%	3	3,09%	10	2,43%	15	2,77%
	RKA of Budget Amendment - 2017	1	2,94%	0	0,00%	1	0,24%	2	0,37%
	Procurement Plan-2018	2	5,88%	3	3,09%	16	3,89%	21	3,87%
	Decree of Appointment of PPKD	0	0,00%	0	0,00%	0	0,00%	0	0,00%
Reporting & Responsibility	Accounting Policy	0	0,00%	0	0,00%	0	0,00%	0	0,00%
	Statement of CF-2016	6	17,65%	14	14,43%	30	7,30%	50	9,23%
	Budget Realization Statement 2016-SKPD	16	47,06%	20	20,62%	57	13,87%	**93**	17,16%
	Budget Realization Statement 2016-PPKD	12	35,29%	20	20,62%	50	12,17%	**82**	15,13%
	Balance Sheet 2016	7	20,59%	15	15,46%	36	8,76%	58	10,70%
	Notes of Financial Statements 2016	2	5,88%	7	7,22%	17	4,14%	26	4,80%
	Financial Statement of BUMD-2016	8	23,53%	6	6,19%	18	4,38%	32	5,90%
	Accountability Report-LAKIP 2017	7	20,59%	16	16,49%	55	13,38%	**78**	14,39%
	The Law of Budget Responsibility -2017	2	5,88%	3	3,09%	10	2,43%	15	2,77%
	Supreme Audit Opinion-2016	7	20,59%	14	14,43%	41	9,98%	62	11,44%

Table 2 shows the availability of budget information including budget planning, budget execution and reporting and budget accountability. Our results show that the budget planning section is more informed, followed by budget reporting and accountability and the least disclosure is the budget execution document. The next analysis is budget transparency based on the type of government. Provincial governments have greater transparency than city and district governments. This evidence indicates that the type of local government in Indonesia has different levels of budget transparency.

Most documents uploaded and provided on the local government website Summary of Budget Working Plan (RKA), Budgetary Appraisal Document (DPA) SKPD or PPKD, APBD

Decision, Budget Realization Report and LAKIP. While the accounting policy document is not found in the transparency menu of local government.

b. Accessible

The second element of transparency is the accessibility of information by the public. The information available should be freely accessible and there is no cost to get it. The meaning of costless here are no money, less time to obtain for information and effortless. Accessibility indicates that the available information can be downloaded by the public. That is, such information can be easily retrieved by the public without having to go through complicated procedures.

Table 3. The Accessible Budget Documents in Local Website

Budget Process	Budget Documents	Downloadable Documents
Planning	Annual Work Plan-2018	75
	General Policy of Budget (KUA)-2018	10
	Budget Priority and Plafond (PAS)-2018	13
	Work Plan of Budget (RKA) -SKPD 2018	94
	Work Plan of Budget (RKA) -PPKD 2018	81
	Draft Regulation of APBD-2018	101
	The Regulation of Budget-2018	70
	The Explanation of Change of Budget 2018	92
	Budget Execution Document-SKPD 2018	107
	Budget Execution Document -PPKD 2018	87
Executing	Realized Revenue - 2017	11
	Realized Expenditure-2017	27
	Realized Financing- 2017	16
	Draft Regulation of Amendment of Budget -2017	38
	The Regulation of Amendment of Budget-2017	9
	The Explanation of Amendment of Budget 2017	15
	RKA of Budget Amendment - 2017	2
	Procurement Plan-2018	22
	Decree of Appointment of PPKD	0
Reporting & Responsibility	Accounting Policy	0
	Statement of CF-2016	51
	Budget Realization Statement 2016-SKPD	93
	Budget Realization Statement 2016-PPKD	83
	Balance Sheet-2016	59
	Notes of Financial Statements-2016	27
	Financial Statement of BUMD- 2016	35
	Accountability Report-LAKIP 2017	77
	The Law of Budget Responsibility -2017	16
	Supreme Audit Opinion-2016	62

Table 3 shows that the local government as a whole does not provide much access to download freely from budget documents on the website. Referring to the Information Disclosure Act, the information document is a document that is available every time and has high accessibility on the local government website. Documents that provide the most download menus automatically are budget work plan documents, draft budget legislation, budget execution documents and budget realization documents. Local governments tend to inform budget plans and budget realization to the public.

c. Timeliness

The timeliness aspect of budget information on local government websites is very low. Referring to timely criteria based on Ministerial Regulation No. 13 of 2006 (see table 1), that budget planning documents should be disseminated in the year prior to the current financial year. Actually, none of the LGs presented the 2018 budget planning information on the web in the previous year. Only 7 districts featured some 2018 budget planning documents on their website in early 2018. These areas are: Pakpak Bharat District, Tanah Datar District, Kota Bukit Tinggi, Jambi Province, Pekalongan City, Denpasar City and West Nusa Tenggara Province.

d. The Comparison of Availability Information between Local Election Region and Non-Local Election Region

In this section, we compare the transparency of the budget between the regions holding the election of regional heads and regions that do not hold elections. The results (see Table 4) documented that the budget transparency of district with elections is higher than in non-election areas. This evidence is an early milestone for more in-depth exploration of whether elections are instruments used by political actors to increase budget transparency on local government websites.

Table 4. The Comparative Availability between Local Election and Non-Local Election

Budget Process	Budget Documents	Election	Non-Election
Planning	Annual Work Plan-2018	25,15%	11,44%
	General Policy of Budget (KUA)-2018	3,51%	1,48%
	Budget Priority and Plafond (PAS)-2018	3,51%	2,58%
	Work Plan of Budget (RKA) -SKPD 2018	27,49%	15,87%
	Work Plan of Budget (RKA) -PPKD 2018	25,73%	12,55%
	Draft Regulation of APBD-2018	30,99%	16,61%
	The Regulation of Budget-2018	20,47%	11,81%
	The Explanation of Change of Budget 2018	25,73%	16,97%
	Budget Execution Document-SKPD 2018	33,92%	17,34%
	Budget Execution Document -PPKD 2018	29,24%	12,92%
Executing	Realized Revenue - 2017	2,92%	1,85%
	Realized Expenditure-2017	5,26%	6,64%
	Realized Financing- 2017	4,09%	3,32%
	Draft Regulation of Amendment of Budget -2017	12,87%	5,90%

	The Regulation of Amendment of Budget-2017	3,51%	1,48%
	The Explanation of Amendment of Budget 2017	4,68%	2,58%
	RKA of Budget Amendment - 2017	1,17%	0,00%
	Procurement Plan-2018	3,51%	5,54%
	Decree of Appointment of PPKD	0,00%	0,00%
Reporting and Responsibility	Accounting Policy	0,00%	0,00%
	Statement of CF-2016	18,13%	7,01%
	Budget Realization Statement 2016-SKPD	32,75%	13,65%
	Budget Realization Statement 2016-PPKD	29,24%	11,81%
	Balance Sheet 2016	18,13%	9,96%
	Notes of Financial Statements 2016	6,43%	5,54%
	Financial Statement of BUMD- 2016	10,53%	5,17%
	Accountability Report-LAKIP 2017	22,22%	14,76%
	The Law of Budget Responsibility -2017	5,26%	2,21%
	Supreme Audit Opinion-2016	21,05%	9,59%

e. Availability Index

Finally, we developed a transparency index based on the availability of budget information on local government websites. Accessibility and timeliness aspects are not used, as we identify that only 87 regions provide the download access on some budget information. And we also found that none of the local governments met the criteria on time when referring to the Minister of Home Affairs Regulation no. 13 of 2006.

Availability index is developed by identifying budget documents uploaded on the website, consisting of budget planning documents, budget implementation documents and reporting documents and budget accountability. Referring to Table 1, we identified 27 types of budget documents that should be shared to the public. If any information is available, then it is given point 1, otherwise 0. Furthermore, for each local government, all points are summed and divided by 27, to obtain an index of availability.

Table 5. The Availability Rank of Local Government (LG)

No	Description of LG	Type	Election	**Availability Index**
1	Pekalongan	Municipality	Non	71,43%
2	Denpasar	Municipality	Non	67,86%
3	Magelang	District	2018	64,29%
4	Wonogiri	District	Non	64,29%
5	Jombang	District	2018	64,29%
6	Yogyakarta	Municipality	2017	60,71%
7	Purworejo	District	Non	57,14%
8	Probolinggo	Municipality	2018	57,14%
9	Kuningan	District	2018	53,57%

10	Temanggung	District	2018	53,57%
11	Bojonegoro	District	2018	53,57%
12	Surabaya	Municipality	Non	53,57%
13	Pidie Jaya	District	2018	50,00%
14	Tanjung Jabung Timur	District	Non	50,00%
15	Garut	District	2018	50,00%
16	Klaten	District	Non	50,00%
17	Rembang	District	Non	50,00%
18	Trenggalek	District	Non	50,00%
19	Malang	Municipality	2018	50,00%
20	Bandung	Municipality	2018	46,43%
21	Jawa Tengah	Province	2018	46,43%
22	Batang	District	2017	46,43%
23	Bantul	District	Non	46,43%
24	Kulon Progo	District	2017	46,43%
25	Serang	District	Non	46,43%
26	Tangerang	Municipality	2018	46,43%
27	Bali	Province	2018	46,43%
28	Nusa Tenggara Barat	Province	2018	46,43%
29	Mataram	Municipality	Non	46,43%
30	Kalimantan Barat	Province	2018	46,43%
31	Bulukumba	District	Non	46,43%
32	Makassar	Municipality	2018	46,43%
33	Batanghari	District	Non	42,86%
34	Cirebon	District	2018	42,86%
35	Kebumen	District	Non	42,86%
36	Wonosobo	District	Non	42,86%
37	Banten	Province	2017	42,86%
38	Sambas	District	Non	42,86%
39	Barito Timur	District	2018	42,86%
40	Lamandau	District	2018	42,86%

In this paper we present a sequence of 40 local governments, from the highest index numbers to the order of 40. The highest index obtained by Pekalongan City, and ranked 33-40 (because the index score is the same) is Batanghari, Cirebon, Kebumen, Wonosobo, Banten,Sambas, Barito Timur dan Lamandau. Another result is local governments whose websites are inaccessible and also do not provide budget information at all as much as 338 local governments, with details of 9 provinces, 60 cities and 269 districts. Local governments that do not provide budgetary information are mostly local governments in Eastern Indonesia, namely districts and cities in East Nusa Tenggara, Maluku, North Maluku, Southeast Maluku, West Papua and Papua. This result leads to an investigation into whether these areas are experiencing

constraints on the provision of e-government support facilities such as internet access and technology support.

E. Conclusion

This study aims to explore the transparency of the budget during the election of regional heads in Indonesia. Using the content analysis method on the local government website, we identified the following. First, budget transparency on the local website fulfilled the availability aspect, while accessibility and timeliness were very low. Second, the most uploaded budget documents are planning documents, next to reporting and accountability documents and then, budget execution documents. Third, the level of transparency of the provincial government is higher than the municipal and district governments. Fourth, the transparency of regional budgets that hold regional head elections is higher than those that do not hold election.

In summary, budget transparency is thought to provide incentives for the expansion of budget transparency. In addition to political factors, budget transparency is influenced by the type of local government, demographic factors and the supportability of information technology in each region.

This research is still very simple, and has some limitations. First, we focus only on one-time content analysis on local government websites. Secondly, we only focus on the main website of the local government, without extending the search to sub-ordinary websites of local governments.

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BUDGET PROBLEMS IN INDONESIAN LOCAL GOVERNMENTS IN THE DECENTRALIZATION ERA: A CASE OF A DEVELOPING COUNTRY

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Abstract

Budgeting is a substantial economic and political decision-making process for governments. This is because a budget is the life-blood of a government. This study aims to explore budget problems and the causes of those budget problems suffered by three local governments in Indonesia as case studies. Underpinned by a constructivism-interpretivism research paradigm, this study conducted semi-structured interviews as the main data collection method. Thematic analysis was employed for this study to uncover new emerging themes and categories in relation to the research questions. This study finds that the three local governments suffered from interrelated budget problems of budget enactment delays, budget execution delays, and underspending of budget appropriations. The three cases show that politics play the most important role in shaping budget problems. Money politics drove fragmentation and polarization among the budget actors which then caused them to face difficulty reaching agreements in the budget process. In addition, non-political factors also derail the budgeting process. These include rigid and complicated budget administration, uncertainty of budget revenues, fears and worries of corruption cases, and human resource management in the civil service.

Keywords: fiscal decentralization, budget problems, deficits, budget delays, underspending, public finance, money politics, local public finance, fiscal decentralization, Indonesia.

I. INTRODUCTION

A budget is the life-blood of a government (Wildavsky 1961, p. 184), this is because budget authorizes what the government intends to do and expects to do during a certain period (von Hagen & J. Harden 1995, p. 772). Budgeting is argued to be one of the most important political actions for either the legislature and the executive (Klarner, Phillips & Muckler 2012, p. 994). Thus, any persistent budget problem will negatively affect government and its society.

The focus on local government budget problems instead of the national budget has been increasingly important as many central governments around the world, especially developing countries, decentralize their fiscal, political, and administrative powers to lower-level governments (Litvack, Ahmad & Bird 1998, p. 1). Decentralization is expected to improve resource allocation and mobilization, macroeconomic stability, service delivery, equity, and governance (Faguet 2013; Litvack, Ahmad & Bird 1998, p. 1). Nevertheless, budget problems suffered by local governments can potentially lead to serious consequences on economic performance, public service delivery, and governance. For example, Azis (2011) argues that the welfare effect of decentralization in many countries has not always been consistent with its promise. The unrealized promises of decentralization may be due to persistent local budget problems.

The existing literature on budget problems is dominated by studies in the context of developed countries. While, budget problems in developing countries at sub national government level are still understudied. Literature suggests that context matters in shaping budget problems. Typical budget problems and their causes are different between developed countries (Alt & Lowry 1994; Andersen, Lassen & Nielsen 2012; Cummins 2012; Klarner, Phillips & Muckler 2010) and developing countries (Kartiko 2012; King 2000; Lewis & Oosterman 2009). For example, fiscal policy volatility is a typical budget problem in developed countries at sub national government level (Fatás & Mihov 2006; Sacchi & Salotti 2014). Meanwhile, underspending budget appropriation is a typical budget problem in developing countries at sub national government level (Lewis & Oosterman 2009). In addition to politics, economics, and budgetary institutions to drive budget problems, sub national governments in developing countries also suffered from budget problems due to human resource conditions, corruptions and anti-corruption program, as well as the design of fiscal decentralization (Guo 2008; Kartiko 2012; Lewis & Oosterman 2009; Subechan, Hanafi & Haryono 2014; Wu, Feng & Li 2015). In addition, most previous studies on developed countries have employed quantitative methods. Meanwhile, limited studies have employed qualitative methods. This is the reasons why it is important to study budget problems in developing countries at sub national government level.

The purpose of this multiple case study was to understand budget problems and the causes of those budget problems suffered by local governments in Indonesia in particularly, for several case studies. The setting and context of this study is unique and different from most previous studies. Indonesia is a developing country, while most previous studies were undertaken in developed country. As a unitary country with a presidential system, the central government of Indonesia has decentralized its political, fiscal, and administrative powers to sub national government. Decentralization has substantially changed the political conditions, fiscal conditions, and budgetary institutions at the local government level as well as the role of local government. Understanding budget problems suffered by local governments in Indonesia is expected to contribute to body of literature and policy makers. To do so, this study is seeking understanding of budget problems and the causes of those budget problems suffered by three local governments in Indonesia as the case studies.

To achieve the stated research purpose, this study posits two research questions:

a) What budget problems are experienced by the three cases of local governments in Indonesia?
b) What are the causes of those local budget problems?

This study is underpinned by a constructivism-interpretivism research paradigm. In doing so, this study implements qualitative method with data taken from in-depth interviews with the research participants who were purposively selected from bureaucrats and politicians. Those selected participants are the key persons in budgeting in their respective local governments. Thematic analysis is conducted to uncover new emerging themes and categories in relation to the research questions.

This study is implemented by conducting three case studies. A purposive case selection was employed in this study (Yin 2014). In doing so, diverse cases selection method was employed to achieve maximum variations and to, in a minimal sense, represent the variation of the population (Seawright & Gerring 2008, p. 297). This study purposively selected three local governments in Indonesia, namely Blora Regency of the Central Java Province, Bengkalis Regency of the Riau Island Province, and Singkawang City of the West Kalimantan Province. The three local governments selected may not represent the whole population of local governments in Indonesia. Therefore, the scope of this study is only related to these three local

governments due to the paradigm of this research as mentioned above. Nevertheless, some lessons pertaining to budget problems can be drawn from the three cases in this Indonesian context as a developing country. Moreover, as the research is underpinned by a constructivism-interpretivism research paradigm, it is not possible to generalize the results as the overall view of the budget problems in Indonesia.

This study finds that the three local governments suffered from interrelated budget problems of budget enactment delays, budget execution delays, and underspending of budget appropriations. The main budget problem was budget enactment delays which also drive budget executions delays. Budget execution delays were worsened by the procurement problems as well as some intrinsic problems related to the aspiration funds during the budget execution stage. These budget execution problems then caused underspending of budget appropriations and have led to substantial amounts of ending balances while at the same time, caused inability for these local governments to develop their infrastructure. The interrelationship of budget problems may not be a specific issue for these Indonesian local governments, but they have rarely been strongly linked in previous studies.

The three cases show that politics play the most important role in shaping budget problems. Money politics drove fragmentation and polarization among the budget actors which then caused them to face difficulty reaching agreements in the budget process. In addition, non-political factors also derail the budgeting process. These include rigid and complicated budget administration, uncertainty of budget revenues, fears and worries of corruption cases, and human resource management in the civil service.

By looking at budget problems in Indonesian three local governments and their causes, this study adds some information to the limited understanding of sub-national government budget problems in developing countries. It confirms that several typical budget problems such as budget delay and "underspending of budget appropriations" are suffered by sub-national governments in Indonesia. This is also the case with some of the common causes like politics. Nevertheless, some findings of this study also highlight differences between the result of studies in developed countries and developing countries. The way money politics leads to polarization among budget actors, the institutional fragmentation among the local council, the executive leader, and the bureaucracy as well as rigid budget administration are some of the examples of how the causes of budget problems in Indonesian local governments differ compared to the causes found in developed countries.

The rest of this paper proceeds as follow. First, the literature review presents existing studies on typical budget problems and their causes. Second, the methodology discusses research paradigm, research design and analysis this study. Third, the result presents the finding of this study in relation to the two research questions. Fourth, the discussion section connects the findings of this study to the existing literature. Lastly, the conclusion summaries this study.

II. LITERATURE REVIEW

This section reviews existing literature to accumulate previous findings on sub-national budget problems. A budget problem is defined as a matter or situation pertaining to a budget, regarded as unwelcome or harmful and needing to be dealt with and overcome. Any persistent budget problem will negatively affect government and its society. For example, on 18th July 2013, Detroit city of the United States declared bankruptcy (Schindler 2016). Detroit city was experiencing serious debt problems for many years while tax revenues continued to shrink (Schindler 2016).

The existing literature on budget problems is dominated by studies in the context of developed countries. Table 1 shows some typical budget problems suffered by sub national governments, namely budget deficit, budget delays, fiscal policy volatility and underspending budget appropriation. The review also shows many different factors to cause budget problems.

Table 1. Typical budget problems and their causes in developed and developing countries.

Indonesia and Developing Countries	Developed Countries
1. Budget Deficits caused by: a. Politics: administrative overspending due to political concentration. b. Budget indiscipline.	1. Budget Deficits caused by: a. Politics: divided government, number of party in the coalition, fragmented political parties, political leadership, and progressive government. b. Budget institutions: balanced-budget rules.
2. Budget Delays caused by: a. Politics: divided government, political communication. b. Budget institutions: frequent changes in regulations. c. Human resources: lack of competence.	2. Budget Delays caused by: a. Politics: electoral accountability, divided government, political and personal costs, party polarization, and the number of veto points. b. Budget institutions: supermajority rule, and legal clarity of the key budget actors. c. Economics: revenue volatility, shock to fiscal climate, and changes in revenues, expenditure, and debt.
	3. Fiscal Policy Volatility caused by: a. Budget institutions: strict budgetary rules and no-carryover deficit rules. b. Economics: volatility of inter-governmental grants.
3. Underspending Budget caused by: a. Human resource capacity. b. Rigid budget administration. c. Corruptions and anti-corruption efforts. d. Delayed payments of fiscal transfers.	

Budget Deficit

Budget deficit is a typical budget problem for sub national governments in developed and developing countries. Persistent budget deficit can lead to fiscal stress so that sub national governments are forced to increase taxes or undertake deficit financing (Block 1981, p. 1). Persistent budget deficit can also lead to fiscal crisis. Fiscal crisis is "a true emergency situation in which the government is unable to meet obligations such as payroll, bills, and debt repayment" (Honadle 2003, p. 1433). For example, Detroit city of the United States declared bankruptcy in 2013 after suffering from serious debt problem for many years (Schindler 2016).

In developing countries context, political concentration and the design of fiscal decentralization affects budget deficit. Sjahrir, Kis-Katos and Schulze (2014, p. 178) argue that political concentration in the local council in Indonesia leads to weaker electoral accountability. This is because dominant parties supporting the district head have no fear for being penalized for agreeing to excessive administrative spending (Sjahrir, Kis-Katos & Schulze 2014, p. 168).

The administratrative overspending creates local budget pressure and can lead to budget deficits. In China, the design of fiscal decentralization has significant impacts on local budget indiscipline. Following the tax-sharing reform in 1994, the revenues share of the sub national government dropped dramatically while the expenditure share remained constant. Guo (2008, p. 81) argues that vertical fiscal imbalance has led to local budget indiscipline in which local governments always try to increase expenditure while waiting for additional subsidies (fiscal transfers) from the central government. On the other hand, the central government is willing to pay more subsidies (fiscal transfers) in exchange for political stability in highly sensitive areas (Guo 2008, p. 69).

In developed countries context, politics are more often seen as the causes of budget deficits at sub national government level. The political factors include divided government, number of party in the coalition, fragmented political parties, political leadership and progressive government. For example, Alt and Lowry (1994, p. 811) found that state budgets in the USA had deficits due to divided government either split-legislature government or split-branch government. They showed that the divided governments were less able to react to revenue shocks that led to budget deficits. Ashworth, Geys and Heyndels (2005, p. 395) argued that multi-party governments were less able to respond to exogenous shocks. They found that the higher number of parties in the coalition is reported to increase the short-term debt level in Flemish Municipalities of Belgium. This is because the number of partners in a decision-making process affects the timing of a decision (Ashworth, Geys & Heyndels 2005, p. 397). Borge (2005, p. 325) argues that party fragmentation and political leadership affect budget deficit in Norwegian local governments. Party fragmentation is measured by the Herfindahl index, showing the share of each political party in the local council (Borge 2005, p. 330). Political leadership is measured by the power dispersion index, showing the numerical strength of the mayor and deputy mayor's party affiliation (Borge 2005, p. 330). Borge (2005, p. 326) argues that party fragmentation creates a common-pool problem due to the competing interests of fragmented political parties and contributes to larger budget deficits. Borge (2005, p. 326) also argues that a strong political leadership is needed to maintain small deficits because it has an advantage in opposing a common-pool problem. However, undertaking study into Spanish local governments Solé-Ollé (2006, p. 145) found that strong leadership in progressive governments tends to increase spending, taxes and deficits as the electoral margin increases. This is because left wing progressive governments prefer a larger public sector and increased spending and taxes, while right wing conservative governments do the opposite (Solé-Ollé 2006, p. 147).

Budget institutions are also often seen as the causes of budget deficits in developed countries. Bohn and Inman (1996, p. 63) argued that when balanced-budget rules are appropriately constructed and enforced, balanced-budget rules can reduce the tendency to run deficits. This study was undertaken in the USA states. Balanced-budget rules are constitutional or statutory rules restricting the ability of a government to run deficits (Bohn & Inman 1996, p. 13). Balanced-budget rules may be either prospective requirements (beginning-of-fiscal-year) or retrospective requirements (end-of-fiscal-year) (Bohn & Inman 1996, p. 13).

Budget Delays

Budget delays are also a typical budget problem for sub national governments in developed and developing countries. Budget delays affect public services delivery, credit worthiness, and employment of state workers. For example, the California state in 2010 laid off state workers and shut down hundreds of construction projects (Speer 2016). The Tennessee state in 2003 partially shut down all non-essential services; public universities were shut down, driver's

licenses were not issued, state parks were closed, and road constructions were ceased (Yi Lu & Chen 2016). Budget delays had prevented the US state governments to make payments to creditors, thus, state government creditworthiness suffered and led to substantial increase in interest rates of borrowing (Andersen, Lassen & Nielsen 2010, 2014; Cummins 2010).

Politics are seen as the causes of budget delays in Indonesian local governments. Following previous studies in the USA context, Kartiko (2012) confirmed that divided government was the political factor causing budget delays in Indonesian sub national government. It is because local council and the executive have different policy preferences in a divided government (Kartiko 2012, p. 85). According to Kartiko (2012, p. 83), minority coalitions, single minority and majority coalitions are forms of divided government that lead to budget delays, whereas a single majority form of government is unified and therefore more able to reach agreement on budgetary matters. Meanwhile, Subechan, Hanafi and Haryono (2014, p. 6) argue that poor political communication between the executive and the local council was another aspect of politics to cause budget delays in Kudus regency of Indonesia.

Budget institutions are also put forward as causing budget delays in Indonesia. Subechan, Hanafi and Haryono (2014, p. 10) argue that frequent changes in regulations affecting local budgetary systems contribute to local budget delay in Kudus regency of Indonesia. Those regulations include laws, government regulations, and ministerial decrees. More specifically, frequent changes of details guide lining the use of the Specific Grant Funds (*Dana Alokasi Khusus*) and frequent changes of the Ministry of Home Affairs decree on local budget preparation have caused budget delays (Subechan, Hanafi & Haryono 2014, p. 7). Lastly, Subechan, Hanafi and Haryono (2014, p. 10) also argue that the lack of competence of the human resources involved in the local budgeting have caused budget delay.

In developed countries context, politics are more often seen as the causes of budget delays at sub national government level. The political factors include electoral accountability, divided government, political and personal costs, party polarization, and the number of veto points.

Andersen, Lassen and Nielsen (2010) link budget delays for the USA state governments to future electoral accountability. They argue that lack of accountability of politicians for the following general election increases the probability of budget delays. The argument is that since elected officials are punished at the next general election for not passing a budget on-time, elected officials tend to establish budget on-time (Andersen, Lassen & Nielsen 2010, p. 5). In a more recent study, Andersen, Lassen and Nielsen (2012, p. 2; 2014, pp. 29-30) conclude that budget delays are expected to be longer and more frequent during divided government (Andersen, Lassen & Nielsen 2012, p. 11; 2014, p. 30). This is because, more discrepancies on policy preferences among budget actors are more likely to occur during divided government than during unified government (Andersen, Lassen & Nielsen 2012, p. 11). Klarner, Phillips and Muckler (2010, 2012) link institutions and budget delay in the USA state governments with the political and personal costs of the elected officials. A late budget in an election year increases the political costs, thus, during an election year, it is expected that elected officials tend to pass a budget on-time (Klarner, Phillips & Muckler 2010, p. 8; 2012, p. 995). Moreover, length of legislative budget sessions increase personal costs of the elected officials, preventing them from pursuing their private careers and personal lives (Klarner, Phillips & Muckler 2010, p. 16). When the private costs are high, then elected officials tend to pass a budget on-time (Klarner, Phillips & Muckler 2010, p. 16). Studying Californian budget delays, Cummins (2010, p. 1; 2012, p. 35) argues divided government and party polarization prolong budget delays. Divided government means the executive and one or both houses of the legislature are controlled by different parties (Cummins 2010, p. 6; 2012, p. 26). Party polarization means the

ideological spread between parties so that parties occupy different ends of an ideological continuum (Cummins 2010, p. 6; 2012, p. 26). Divided government and high party polarization makes compromise on budget solutions extremely difficult, resulting in the passage of budget delays (Cummins 2010, p. 6). Speer (2016) also undertook a study on Californian budget delays by implementing qualitative method. Speer (2016, p. 14) argues the greater the number of veto points, the greater the chances for budget delays. Veto points theory sees one political decision-making process may consist of a series of sub political decision-making processes at which each sub political decision can be settled or blocked (Speer 2016, p. 19).

Moving to the economic factors, existing studies argue that the macro economic conditions directly affect the state governments' budgets in the USA. It is because state governments collect taxes from the macro economy as the major source of incomes. For example, Cummins (2010, p. 8) argues that revenue volatility creates shock on the budgeting process and increases the probability of budget delays. More specifically, personal income tax is the most volatile of the general funds in California (Cummins 2012, p. 28). Those factors are verified to have driven budget delays in California (Cummins 2010, p. 18; 2012, p. 33). Andersen, Lassen and Nielsen (2012, p. 2; 2014, pp. 29-30) concluded that shock to fiscal climate increases the probability of budget delays of state governments in the USA (Andersen, Lassen & Nielsen 2012, p. 16; 2014, p. 29). They argue that changes in economic conditions, regardless of the direction of the changes, create shocks and deviate the budget from its baseline revenues and spending. Large deviations from the budget baseline increase the expected budget negotiation time until concession is achieved (Andersen, Lassen & Nielsen 2012, p. 10). Fowler and Rudnik (2015, p. 14) found that changes in budget measures (revenue, expenditures, and debt) are the strongest economic variables to cause budget delays in the California state. Fowler and Rudnik (2015, p. 14) argued that when economic conditions become unstable, resource scarcity creates shockwaves in the budgeting process.

Moving to budgetary institutions, Andersen, Lassen and Nielsen (2010, p. 22) argue that the existence of supermajority rule increases the probability of budget delays in the USA state governments. It is because supermajority rules dilute the clarity of responsibility and make it less clear who is responsible for budget delays (Andersen, Lassen & Nielsen 2010, p. 3). Supermajority rule is a two-thirds voting rule for the legislature to pass a budget. Looking at a New York case, Yi Lu and Chen (2016, p. 14) found that legal clarity of the key budget actors contributes to reducing budget lateness because it eliminates the power struggles between the governor and the legislature by clarifying the governor's authority and specifying who does what in the budget process.

Fiscal Policy Volatility

Fiscal volatility is another budget problem for sub national governments in developed countries. Fiscal volatility means the extent of changes in the financial amounts and direction of budgets over time, which is do not represent reaction to economic conditions (Fatás & Mihov 2003, p. 1422). Fatás & Mihov (2006) have shown that the fiscal policy volatility still significantly affects the business cycle and hence, macroeconomic stability.

At the sub national government level, budgetary institutions and economics are argued to cause fiscal policy volatility in the USA and OECD countries. After studying 48 states in the USA, Fatás and Mihov (2006, p. 111) found that strict budgetary rules and no-carryover deficit rules led to lower volatility of discretionary fiscal policy. The underlying argument is that restrictions on government policy eliminate or reduce the possibility of government behavior to meet certain electoral or narrow political goals (Fatás & Mihov 2006, p. 102). Another study by

Sacchi and Salotti (2014) found that volatility of inter-governmental grants from upper levels of government led to spending volatility in OECD countries. Inter-governmental grants are argued to have less accountability than that of local taxes to local voters, thus, local politicians have less "irresponsible" spending behavior when there is not enough accountability of their financing mechanisms to local voters (Sacchi & Salotti 2014, p. 15).

Underspending Budget Appropriations

Underspending budget appropriations is another typical budget problem for sub national governments in developing countries. In particular, Lewis and Oosterman (2009) studied the impact of decentralization on sub national government fiscal slack in Indonesia. Between 2001 and 2007, sub national reserve funds grew at an annual rate of 37 percent and reached about 3 percent of GDP or Rp110 trillion (Lewis & Oosterman 2009, p. 28). This size of sub national fiscal slack is not only suggesting inefficient use of financial resources, but also causing significant concern among central government officials, especially as the central government struggles to cut its own budget deficit (Lewis & Oosterman 2009, p. 28).

In Indonesian local government context, Lewis and Oosterman (2009, p. 44; 2011, p. 158) argued that human resource capacity is the main cause of under spending of budget appropriations in Indonesia. Lewis and Oosterman (2009, p. 44) argued that local government officials have shown a lack of a capacity to plan, design and implement development projects, though it is difficult to provide objective measures of this deficiency. Lewis and Oosterman (2009, p. 43) also argued that very rigid budget administration have caused underspending budget appropriations. Local governments are required by regulations to prepare very detailed budget expenditure proposals by or object and by function to be approved by local councils. In addition, local governments are not allowed to spend more than the limits imposed by budget ceilings or reallocate proposed expenditure without council approval (Lewis & Oosterman 2009, p. 43). Corruption is another factor that can drive the underspending budget appropriations. In seeking to curb corruption in Indonesia, the on-going anti-corruption efforts may also have side effects on budgeting. This is because stiff penalties have been instituted for corruptions and the police are acting in an overzealous manner in seeking out potential corruptors (Lewis & Oosterman 2009, p. 43). Thus, many government officials in Indonesia were unwilling to participate in tender committees responsible for capital expenditure. Nevertheless, corruption also take places in different contexts such as in the New South Wales (NSW), Australia (David 2010; Waldersee 2012). However, the difference from Indonesia is that the NSW government has since undertaken preventive and curative effort to curb corruption. The increased fiscal slack of local governments is also determined to a large degree by delayed payments of fiscal transfers from the central government, especially the revenue sharing funds (Lewis 2005, p. 309; Lewis & Oosterman 2009, p. 43). Such transfers have been made to the sub national governments very late in the fiscal year, so that it is too late for sub national governments to spend in full in the fiscal year (Lewis 2005, p. 309; Lewis & Oosterman 2009, p. 43). Lewis and Oosterman (2009, p. 43) speculate that the central government itself typically does not get access until somewhat late in the year and transfer the revenue sharing funds to sub national governments are subsequently affected.

A limited number of studies shed light on the issue of fiscal slack in other developing countries. Fiscal slack in the Solomon Islands is due to under spending problems related to development budget. According to Coventry (2009, p. 5), the amount of underspending budget appropriations in 2007 was about 40% of development appropriations. Coventry (2009, p. 5) identified three drivers to cause under spending problems, namely lack of human resource capacity, poor development planning, and changes in the development vision. Fiscal slack also

happens in the national government of Philippines due to under spending of budget appropriations. According to Monsod (2016), actual disbursements fell short of planned disbursements by about ten percent per year in 2011 to 2015. It is because the actual disbursements had been increasing at the lower rate than the budgeted disbursements. Meanwhile, the Philippine bureaucracy had simply been unable to keep up with its own ambitions (Monsod 2016, p. 20).

II. THE INDONESIAN LOCAL GOVERNMENT BUDGET CONTEXT

The Indonesian local budget problems need to be analyzed according to the research context of the Indonesian local government and the local budgeting processes. The Indonesian local government system and its budgeting have been affected by the decentralization policy that occurred at the turn of the century. Decentralization also affects political conditions, budgetary institutions, economic conditions, corruption, and human resource conditions that may shape local budget problems in Indonesia.

Decentralization in Indonesia

A discussion of decentralization can shed light on its role in establishing today's local budgetary environment in Indonesia. The World Bank defines decentralization as "the transfer of authority and responsibility for public functions from the central government to intermediate and local governments or quasi-independent government organizations and/or the private sector". Turner and Hulme (1997, p. 152) defines decentralization as a transfer of authority to provide public services from an individual or an agency in the central government to some other individual or agency which is closer to the public being served. Decentralization, in the sense of devolution, is defined as "the transfer of political, fiscal and administrative powers to sub-national governments" (Eckardt 2008, p. 2; Hadiz 2004a, p. 697). The Indonesian decentralization was implemented in 2001. It has been described as 'big bang' decentralization because it was implemented in a rapid period of one and a half years, involving an enormous transfer of authority, fiscal and human resources, and fixed assets (Hofman & Kaiser 2002, p. 1; Turner 2001, p. 80). The needs to improve local service delivery and the reality that centralized governments have often failed to provide such services are some arguments for decentralization (Litvack, Ahmad & Bird 1998, p. 1). Decentralization is also assumed to provide better opportunities for local people to participate in the decision-making. Decentralization is also said to encourage greater accountability of those who govern the local communities (Hadiz 2004a, p. 700). This decentralization also affects political conditions, budgetary institutions, economic conditions, corruption, and human resource conditions at the local level.

Political Conditions

The political liberalization in 1999 increases the number of political parties in the local council. Forty-eight political parties participated in the first post-Soeharto legislative general election in 1999 (Anwar 2010, p. 107; Hadiz 2001, p. 143; Ufen 2008, p. 5). Thus, a multi-party system is started to be in place in Indonesia. Political liberalization brings an optimistic hope on the current Indonesian democracy. However, those political parties are unable to carry out the aggregating and articulating functions (Robison and Hadiz, 2004 in Ufen 2008). The three

political parties of the New Order regime (PPP[1], PDI[2], and Golkar[3]) are just fragmented into many smaller political parties. Those political parties are fragmented due to the implementation of a fully proportional representation system, low party discipline, and the absence of the parliamentary threshold (Tomsa 2014, p. 261), as well as socio-economic heterogeneity (Geys 2006, p. 288). Each political party may have different and conflicting interests in the local budgeting. Thus, it is expected that the increased number of political parties participating in the local budgeting also shapes local budget problems in Indonesia.

Political liberalization that produces a dramatic increase in the number of political parties, as well as a fully-open list electoral system, seems to bring an optimistic hope to the current Indonesian democracy. However, there is a doubt that the function of political parties is primarily to act as a vehicle for individual politicians to access the financial resources and spoils of state power, as Robison and Hadiz state:

> '[…] most of these parties are not "natural" political entities, carrying out "aggregating" and "articulating" functions, but constitute tactical alliances that variously draw on the same pool of predatory interests. Notwithstanding certain ideological schisms within and between parties, their function has primarily been to act as a vehicle to contest access to the spoils of state power.' (Robison and Hadiz, 2004, p 228 quoted in Ufen 2008, p. 25)

Money Politics

This concern is mainly due to politics in Indonesia being driven by the logic of money politics (Hadiz 2001, p. 119; 2003, p. 607; 2004a, p. 711; Hadiz & Robison 2005, p. 231; Ufen 2008, p. 25). For example, the practice of 'money politics' in the election process in North Sumatra and East Java had been a salient feature of the general election (Hadiz 2004b, p. 615). In the early years of political liberalization, each prospective candidate personally needed to allocate Rp150 million for local council, Rp200 to Rp300 million for provincial council, and Rp400 million for national parliament (Hadiz 2004b, p. 626). The most current legislative elections in 2014 were the "money politics" election, described as the most massive, brutal, capitalist, and cannibal (Aspinall & Sukmajati 2016, p. 2). Aspinall and Sukmajati (2016, p. 3) uses the term patronage and clientelism to refer to such practices of money politics. Following Martin Shefter, they defined patronage as "a divisible benefit that politicians distribute to individual voters, campaign workers, or contributors in exchange for political support" (Aspinall & Sukmajati 2016, p. 3). Clientelism is defined as a personalistic relationship of power within which a material benefit is exchanged for political support (Aspinall & Sukmajati 2016, p. 3). Based on a series of case studies in 20 provinces in the 2014 legislative election, several varieties of patronage were identified including vote buying, individual gifts, services and activities, club goods, and pork barrel projects (Aspinall & Sukmajati 2016, p. 3). Vote buying in Central Aceh was Rp200.000 for each vote, in Gayo regency of Aceh province the incentive was ranging from Rp60.000, Rp150.000 or Rp200.000 for each vote, while individual gifts for attending a meeting was between Rp20.000 and Rp50.000 (Sulaiman 2016, pp. 66-7). The

[1] *PPP stands for Partai Persatuan Pembangunan (the United Development Party)*

[2] *PDI stands for Partai Demokrasi Indonesia (the Indonesian Democratic Party)*

[3] *Golkar stands for Golongan Karya (the functional group of Golongan Karya)*

practices of money politics are not only for politicians in the local council but also for the executive leaders (the governor, the regent and the mayor). Sjahrir, Kis-Katos and Schulze (2013) finds significant political budget cycles especially when the incumbent runs for re-election in a direct election in Indonesia local government. Prior to the introduction of direct election for the executive leader (*Pilkada*) in 2005, the practice of money politics was between the candidate and the council members because the council had the sole power to elect the governor, the regent or the mayor (Aspinall & Sukmajati 2016, p. 16; Ufen 2008, p. 26). For example, one legislature's vote for the 2004 governor election in East Java, was valued between Rp1 billion to Rp3 billion (Hadiz 2004b, p. 630).

Budgetary Reforms

The various budgetary reforms in Indonesia also affect local budget problems as it influences how the local budget is perceived in Indonesia. Therefore, it is necessary to look at the various reforms since the beginning of its formulation. The Indonesian local budgeting reform took place in three phases. Up to 1971, the local budget practices (also known as local government financial management) were based on the provisions of the Dutch Colonial legacy, namely *Provincie Ordinance Stbl* No. 78/1924, *Regentschaps Ordinance Stbl* No. 79/1924 and *Stadsgemeente Ordinance Stbl* No. 365/1924. The budgetary reform introduced some new budgetary techniques. The introduction of these new techniques increased the complexity of the local budgeting.

The fundamental reform took place in 2005. This reform started with the enactment of Law No. 17/2003 on State Finance, Law No. 1/2004 on State Treasury, Law No. 32/2004 on Local Government, and Law No. 33/2004 on Fiscal Balance. Based on these laws, the GR No. 58/2005 on local financial management was enacted. In addition to the reform that had already been introduced in the GR No. 105/2000 such as performance-based budgeting (Article 39), unified budgeting (Article 38), and accounting and reporting based on accounting standards (Article 96), the GR No. 58/2005 also introduced the medium-term expenditure framework (Article 36 and 37). This regulation also stipulated that local budgets must be evaluated by the Ministry of Home Affairs, which means an addition process of enacting local budgets. Following the GR No. 58/2005, in 2006, the Ministry of Home Affairs enacted ministerial decree No. 13/2006 as a detail guideline for local governments on financial management. To some extent, this new arrangement may be perceived as a recentralization of power. In addition, the expenditures classification stated in the Ministry of Home Affairs Decree No. 13/2006 was even more complicated. Based on Article 76 of the Decree No. 13/2006, the budget expenditures in the local budget had to be classified based on local government affairs, organizations, programs, activities, and economic. The economic classification consists five level break downs namely accounts, groups, type, object, and sub object. The latest Ministry of Home Affairs Decree No. 21/2011 maintains this classification. Those budget classifications must be followed by local governments.

To understand the local budget process in the local council, it is important to explain some key institutions of the local council. The key institutions of local council are council members, factions *(fraksi)* and the organs of the local council *(alat kelengkapan DPRD)*. All local council members are involved in the local budgeting process, and their agreement is required to pass a budget draft. In addition to that, to pass a budget the executive and the legislature must come to two joint agreements in sequence, namely the agreement on the *KUA-PPAS* and the agreement on the local budget draft. For each agreement, there is the discussion level one and the discussion level two. This budget decision making process is, to some extent, complicated.

The Impact of Macro Economic Condition on Local Budget

Since cities and regencies depend heavily on the fiscal transfers from the central government, this means the national macro-economic conditions may have a more significant effect on the local budgets (regencies and cities) than their local-economic conditions. This impact is transferred to local budget through the fiscal transfer from the central government through revenue sharing, general allocation fund, and specific allocation fund. For example, in August 2016 the Ministry of Finance released the ministerial decree No. 125/2016 to postpone the payment of the general allocation fund for 169 sub-national governments of about Rp19 trillion. The reason was that a global economic downturn was expected to affect the national economy so that the national budget was expected to experience revenue shortfalls. This did not include the many automatic adjustments of the revenue sharing due to unachieved revenue targets in 2015 and 2016.

Corruption

Corruption is a big issue in Indonesia. Referring to the 2017 data from the Corruption Eradication Commission (*Komisi Pemberantasan Korupsi - KPK*), corruption takes place at the central government ministries and agencies, state owned companies, provincial governments, and local governments, as well as law enforcement offices. Existing literature suggests that corruption in Indonesia is driven by economic, political, cultural and religious factors (King 2000; Mietzner 2007; Singgih 2012). King (2000) even questions whether corruption in Indonesia is a curable cancer? There was a hope to see corruption eliminated, or more realistically, greatly reduced, by balancing power through decentralization during the initial stages of the reform era post–Soeharto, but this hope appears to be failing (Singgih 2012, p. 312). Instead of eliminating corruption, the new balance of power arrangement has been misused to promote corruption by the legislative, the executive and the judiciary (Singgih 2012, p. 312). In Hadiz's words, "Decentralization and democratization in Indonesia have been characterized by the emergence of new patterns of highly diffuse and decentralized corruption" (Hadiz 2004a, p. 711).

Human Resource Conditions

The human resource conditions of the local government in Indonesia may be best described as "a forgotten dimension of decentralization" (Turner, Imbaruddin & Sutiyono 2009). There are problems in relation to recruitment, promotion, training, remuneration, and performance management (Turner, Imbaruddin & Sutiyono 2009, pp. 244-5). Typically, human resource conditions in a multi-level governance are problematic and cause several governance problems in developing countries (Olowu 2003). In a decentralized government, the availability and effective management of skilled and highly motivated human resources is critical, even said to be more critical, than financial resources (Olowu 2003). This includes how to distribute, how to compensate, how to educate, how to build professional relationships, and how to maintain common standards (Olowu 2003, p. 516). For example, recruitment produces new staff with a lack of skills required for the specific activities (Turner, Imbaruddin & Sutiyono 2009, p. 237). Training is supply-driven, encouraging rent-seeking practice instead of improving skills (Turner, Imbaruddin & Sutiyono 2009, p. 241). An important aspect of human resources of local governments is the remuneration. It is important because it strongly affects the performance, behavior and job satisfaction of the civil servant (Turner, Imbaruddin & Sutiyono 2009).

III. RESEARCH METHODOLOGY

This research is underpinned by a constructivism-interpretivism research paradigm, as an alternative research paradigm of positivism (Guba 1990, p. 18; Guba & Lincoln 1994, p. 107). Research paradigms respond to three basic questions of research inquiry in terms of ontology, epistemology and the applied methodology. The ontological assumption that underpins this study is relativism (Bryman & Bell 2011, p. 22). The relativism ontological position informs the subjectivism/interpretivism epistemological position (Furlong & Marsh 2010, p. 199), in which the subject and the object are fused into a single entity (Guba 1990, p. 27). Ontological and epistemological stances then inform the researcher how to seek out and discover the intended knowledge. Since the researcher wants to know the subjective meaning of the reality, in-depth interviews with relevant participants is the best fit for this study. The in-depth interviews will collect qualitative data; thus, this study also employs qualitative data analysis.

The design of this study is multiple case studies to enable "an in-depth study of a single unit of a relatively bounded phenomenon" (Gerring 2004, p. 341) in order "to develop a deep understanding of [the] complexity" and to seek a general pattern from the cases (Bryman & Bell 2011, p. 61). The unique strength of the case study as a technique is its ability to use a variety of evidence such as documents, interviews, and observation (Yin 2014, p. 12), thus to a limited extent, this ensures the validity of that data (Yin 2014, p. 45). Following Yin (2014), this study purposively selects three local governments, consist of one city and two municipalities. Cases are selected based on initial data from the Ministry of Finance that showed potential budget problems such as budget delays, excessive budget deficits, excessive personnel expenditure, and volatility of spending patterns. The geographic location between Java and outside Java, between mainland and non-mainland was also considered for investigation as to whether socio-economic, and human resource capacity have any impact on budget problems. The three cases for this study are Blora regency, Bengkalis regency, and Singkawang city.

The unit of analysis of this study is budget processes in each case. This study employs one on one semi-structured interviews and a focus group discussion as the main source of data collection method, complemented with document analysis (Bryman & Bell 2011, p. 574). Thematic analysis was employed for this study to uncover new emerging themes and categories in relation to the research questions. Each individual interview was coded and interpreted to look for themes expressed by research participants. The emerging themes were then triangulated with document analysis when it was possible which includes financial reports, statistic data, minutes of meetings, as well as laws and regulations. Further analysis was to look for differences among different groups of research participants. Thus, research participants were grouped into bureaucratic and political participants to see whether they had different interests, understandings, points of view, and how their backgrounds shaped their interest, understanding, and/or point of view.

Nevertheless, since this study focuses on local government level (regency and city) in Indonesia, thus the findings of this study are subject to this level of government. Since this study concentrate on three local governments, the findings of this study also do not represent the whole population of local government in Indonesia.

IV. RESULTS

This study has found that the three local governments studied suffered from interrelated budget problems of budget enactment delays, budget execution delays, and under spending of budget appropriations which then led to a substantial amount of ending balance. The interrelationship of budget problems may not be a specific issue found in Indonesian local governments, but previous studies have rarely linked those budget problems. The qualitative method of this study enabled the disclosure of the interrelation of those budget problems. Budget enactment delay was the main budget problem. Budget enactment delay was due to the budget preparation process in the executive and budget discussion process in the local council. Budget enactment delays then caused budget execution delays. Budget execution delays were worsened by the procurement problems as well as some intrinsic problems during budget execution of aspiration funds. These budget execution problems then caused under spending of budget appropriations which then led to a substantial amount of ending balances.

While deficit is a typical budget problem in developed countries, this study found that deficit was not perceived as a budget problem by research participants. This is because budget deficits in the three cases being studied were generally financed by previous ending balances resulted from under spending of budget appropriations. This study also found that fiscal policy volatility is not viewed as a budget problem by research participants. Participants saw spending volatility in their budget was reflecting the need to respond to the changing conditions. Thus, spending volatility in the three cases was perceived as a normal condition.

This study also reveals several reasons for those interrelated issues to be recognized as budget problems. This is because those interrelated issues have negative impacts on government activities, internal administration, and the social-economy of the three cases being studied. On government activities, this study finds that budget enactment delays forced the three local governments to postpone the implementation of non-routine but crucial public service activities, such as capital projects and infrastructure developments, into the second semester or even into the last quarter of the fiscal year. The suspension in turn caused time constraint problems that hampered the implementation of hundreds of activities. The limited time to implement hundreds of activities then jeopardized the quality of outputs, produced unfinished outputs and un-implemented activities up until the end of the fiscal year. Thus, persistent budget problems jeopardized public service delivery in the three case studies, which was one of the main arguments for decentralization in Indonesia. On the internal administration, persistent budget problems caused indiscipline, low quality of budget administration, and led bureaucracy to break the law. On social-economy, persistent budget problems lowered employment rates and economic growth rates. Persistent budget problems also caused unimplemented policies and activities of local government related to basic education, health and public infrastructure.

Like previous studies, this study finds that politics plays the most important role in shaping budget problems in the three cases being studied in a similar way, in addition to economics, budgetary institutions, corruption, and human resources condition. This study found that fragmentation and polarization among budget actors caused budget enactment delays. Budget actors were fragmented among individual politicians in the local council, the executive leader, and bureaucracy members. Money politics drove fragmentation and polarization among those budget actors. The high cost of money politics led to questionable behavior of individual politicians in the local council and the executive leader toward local budget resources for personal interests. Money politics in terms of political promises drove politicians and the

executive leader to pursue the preferred projects of their respective constituents to avoid the political costs of not being re-elected in the next general election. This means money politics was the main driver of budget enactment delays in the three cases being studied.

At the institutional level, budgeting is traditionally understood as the contest between the executive and the legislature. In contrast, this study found institutional fragmentation among the local council, the executive leader, and the bureaucracy that drove budget enactment delays. The local executive was found to be fragmented between the executive leader and the bureaucracy due to different backgrounds and interests toward local budget resources. In addition, this study also found a dynamic political coalition between the executive leader and the political parties in the local council during a five-year term in office.

This study also found that nonpolitical issues drove budget problems in the three cases studied. First, this study found that rigid and complicated budget administrations delayed budget execution and led to underspending of budget appropriations. Budget documents and the budget execution process were perceived to be so rigid and complicated that the bureaucracy was unable to respond to the subsequent needs, events and changes following the budget enactment date. For example, expenditures and activities were stated in very detailed and narrow categories in which any small changes during budget execution were allowed only after budget revision was approved by the local council. This means the focus of budget administration is on input and process instead of on results. This study argues that the rigid and complicated budget administration was mainly due to the regulations on the local budget administration. The budgetary reforms initiated by the central government introduced new public management concepts as well as new budgetary techniques, but some lower level regulations were out of line and contradicted the law.

Second, this study found that the notions of fears and worries of corruption perceived by the local government bureaucrats also drove budget execution problems. It is because the bureaucrats are assumed to take full responsibility for budget executions. Looking at the three cases being studied, corruption was still a major issue even after decentralization. Some bureaucratic respondents pointed out that corruption involving politicians and the executive leader were driven by the cost of money politics. The notions of fears and worries perceived by the bureaucracy was also due to excessive law enforcement efforts, criminalization, imbalanced positions, and ongoing and previous corruption cases involving key persons in the local governments.

Third, this study found that local budgets that are highly dependent on fiscal transfers from the central government can lead to budget problems. At the budget approval stage, uncertainty of fiscal transfers allocation was pointed out as causing budget delays in Bengkalis Regency. This is because fiscal transfers were the main financial sources of local budgets. Thus, uncertainty of fiscal transfers allocation increased the bargaining over the resource scarcity among budget actors and eventually led to budget enactment delays. At the budget implementation stage, uncertainty of transfer payment of revenue sharing funds was identified as causing cash flow problems and budget execution delays in Bengkalis Regency. This is because the government of Bengkalis was in doubt about the availability of money to pay government projects even though they had a subtantial amount of previous ending balance. This study also reveals the opinion that the uncertaintly of transfer payment of revenue sharing funds was due to the challenges in macro economic conditions suffered by the central government.

Fourth, this study found that limited capacity in budgeting, low commitment, indiscipline, and weak work ethics of politicians and the executive leader led to budget enactment delays. On

the bureaucracy side, this study also found that the limited number of people who have adequate knowledge in budgeting, low commitment, indiscipline, and weak work ethic led to budget execution problems. The limited capacity of human resources of the three local governments being studied was mainly due to poor practices of recruitment, promotion, and lack of training. Meanwhile, the low commitment and indiscipline of politicians and the executive leader was due to unassertive and unspecific previous sanctions for budget enactment delays. The low commitment, indiscipline and weak work ethic of the bureaucracy was due to little supervision or control from the leaders as well as improper financial incentives.

V. DISCUSSION

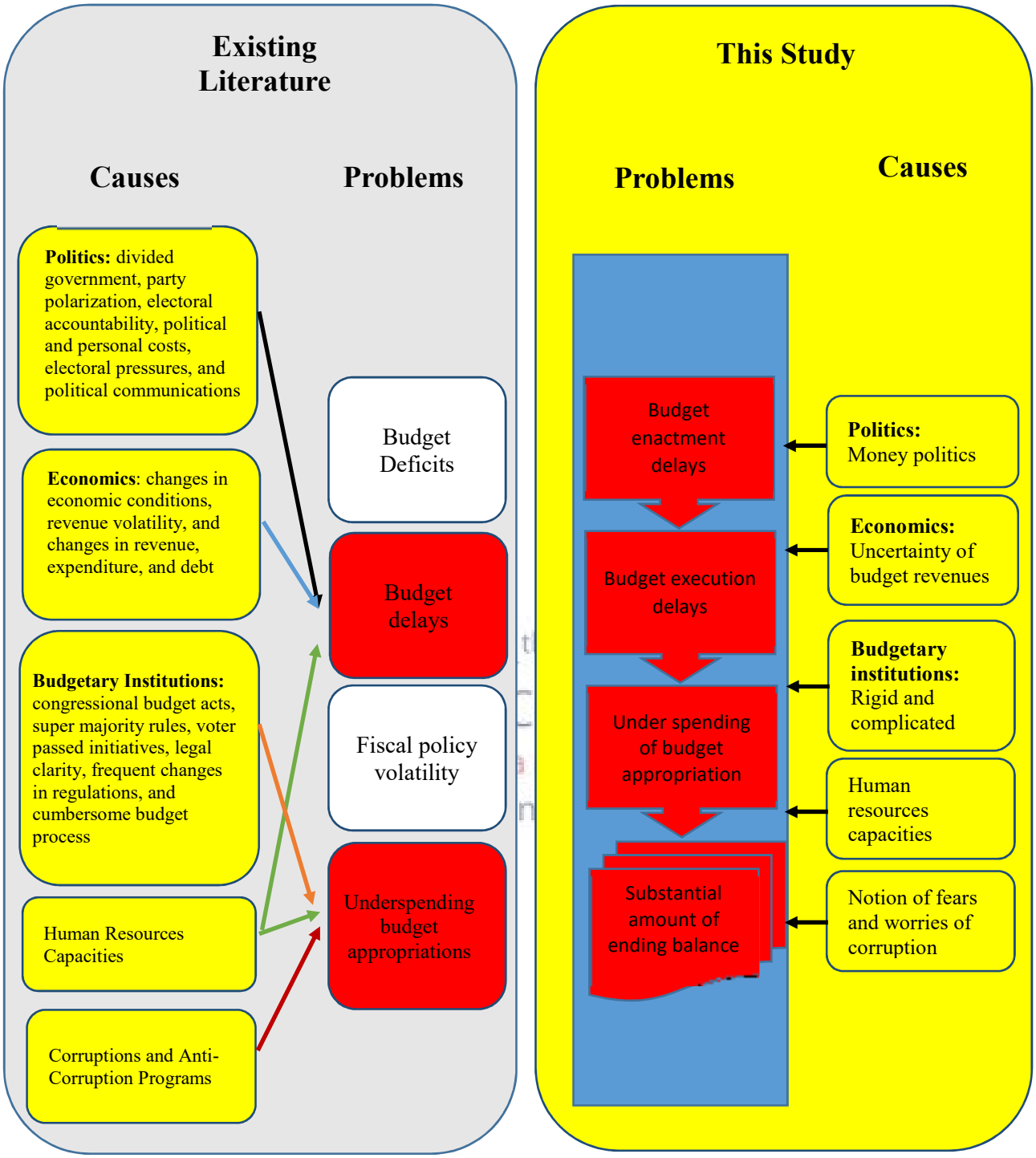
The overall contribution of this study is an understanding of budget problems and the causes of those budget problems experienced by three local governments in Indonesia. This study adds some information to reduce the literature gap of limited understanding of budget problems in developing countries at sub national government level as shown in Figure 1.

Most of the findings in this study supported the results of previous studies on budget problems at sub national government level. For example, this study supports that budget delay is a typical budget problem suffered by sub national governments in developed and developing countries (Andersen, Lassen & Nielsen 2010, 2012, 2014; Cummins 2010, 2012; Fowler & Rudnik 2015; Kartiko 2012; Klarner, Phillips & Muckler 2010, 2012; Speer 2016; Subechan, Hanafi & Haryono 2014; Yi Lu & Chen 2016). This study also confirms that underspending of budget appropriations is another typical budget problem suffered by governments in developing countries (Coventry 2009; Lewis 2005; Lewis & Oosterman 2009, 2011; Monsod 2016). This budget challenge seems to be more specific to sub national governments in developing countries than sub national governments in developed countries and therefore, need to get more acknowledgement when discussing sub national budget problem in developing countries.

This study also supports that politics play the most important role in driving budget problems, in addition to economics, budgetary institutions, corruption and human resources conditions (Andersen, Lassen & Nielsen 2010, 2012, 2014; Cummins 2010, 2012; Fowler & Rudnik 2015; Kartiko 2012; Klarner, Phillips & Muckler 2010, 2012; Speer 2016; Yi Lu & Chen 2016). Therefore, it is necessary to deal with those political and non-political conditions to overcome budget problems.

Nevertheless, looking more closely at the causes of budget problems in the three cases, some findings of this study highlight differences between the result of studies in developed countries and developing countries. For example, this study found that money politics drove fragmentation and polarization among budget actors which then led to budget enactment delays. In contrast, the existing literature focusing on developed countries suggests that polarization is driven by party ideology (Cummins 2010, 2012; Jones 2001; Kistner 2015; Speer 2016; Tsebelis 1995, 1999, 2000, 2002; Tsebelis & Chang 2004). This give us understanding that politics in Indonesia is driven by the logic of money politics instead of party ideology. This also means that it is not possible to expect political parties in Indonesia to carry out the aggregating and articulating functions of community demand on the budget especially given that parties have no clear ideology that direct their demand on the budget. Thus, instead of utilizing party ideology, political candidates tended to utilize money politics to win the general election and this is likely to have a major impact on budget process especially with the existence of aspiration fund in Indonesia sub national cases.

Figure 1. Budget problems and their causes



At the institutional level, divided government in developed countries involving the executive and the legislative was argued to cause legislative gridlocks and budget delays (Andersen, Lassen & Nielsen 2010, 2012, 2014; Cummins 2010, 2012; Fowler & Rudnik 2015; Kistner 2015; Klarner, Phillips & Muckler 2010, 2012; Speer 2016; Yi Lu & Chen 2016). In contrast, this study found that institutional fragmentation among the local council, the executive leader, and the bureaucracy drove budget delays. This means more study is needed on how bureaucrats are involved in shaping the budgetary problems, in addition to the legislature and the executive leader.

This study also highlights rigid and complicated budget administration as causing budget execution problems in the three cases. This is due to the focus of budget administration being on input and process. In contrast, rigid and complicated budget administration is not an issue that leads to budget problems in developed countries. This is because new public management concepts in developed countries puts the focus of budget administration on results instead of on input and process. The implication of this study is that local budget administration in terms of how the budget items being planned and recorded need to be reformed.

In addition, this study highlights that the impact of macro economic conditions indirectly affects local budgets in the three cases studied, through fiscal transfers from the central government. This is because the design of fiscal decentralization has made local governments to be highly dependent on fiscal transfers. The design of fiscal decentralization in Indonesia is similar to that of in China. In contrast, extant studies focusing on developed countries, especially in the USA, showed that the impact of macro-economic changes directly affects state government budgets (Andersen, Lassen & Nielsen 2012, 2014; Cummins 2010; Fowler & Rudnik 2015). This is because taxes are the major sources of income of state governments instead of fiscal transfers.

Lastly, this study highlights that the notion of fears and worries of corruption drove budget execution problem in the three cases studied, which supports the findings of the limited number of studies undertaken on Indonesian local governments. In contrast, curbing corruption has a low negative impact on budgeting in the New South Wales Government of Australia because of both preventive and curative actions being undertaken to curb the corruption (David 2010; Waldersee 2012). Therefore, local governments should be more active curbing the corruption by taking preventive actions while law enforcement officers take more part in curative actions.

VI. CONCLUSION

The purpose of this study was to explore budget problems and the causes of those budget problems suffered by the three local governments in Indonesia. This study has found that there are similar budget problems among the three cases being studied. The three cases suffered from interrelated budget problems of budget enactment delays, budget execution delays, and under spending of budget appropriations. Those interrelated budget problems may not be a specific issue for these three cases but those budget problems have rarely been strongly linked in previous studies. These persistent interrelated budget problems have negative impacts on government activities, internal administration, as well as socio-economics.

In relation to the second research question, this study has found that politics were the main driver of budget problems. Money politics drove fragmentation and polarization among budget

actors which in turn led to budget enactment delays. In addition, this study has found that rigid and complicated budget administration, the notions of fears and worries of corruption, uncertainty of budget revenues, human resource conditions, and geographical and natural challenges also drove budget problems. In general, the findings of this study are shaped by the local context.

This study has some limitations due to the approach of this study as follows:

(1) This study purposively selected three local governments in Indonesia to be studied. The three local governments may not represent the whole population of local governments in Indonesia. Thus, the findings of this study may not be generalized to other local governments in Indonesia. Nevertheless, some lessons from the three local governments in Indonesia pertaining to budget problems can be drawn.
(2) This study may not cover all budget problems suffered by the three-local governments in Indonesia. Nevertheless, this study covers the most significant budget problems and their causes according to the responses of research participants.
(3) Research participants of this study were purposively selected from a mix of bureaucrats and politicians. Those participants may not represent the whole population of stakeholders. Nevertheless, those participants are the key persons involved in local budgeting.

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Government Expenditure in Maluku: A Vector Autoregressive Analysis

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Abstract

In 1999 Indonesian government implementing the law of regional autonomy, direct impact to this implementation is every province has to manage the economic development of each province. It also happened in Maluku province, the increase of the APBD (Regional Income and expenditure Budget) supposed to be a instrument of the economic growth in Maluku but in fact Maluku still a 4th poorest province in Indonesia and have a highest unemployment rate in Indonesia, the effectiveness of the budget realization become the main problem, according to the BPS Maluku (National Bureau of statistic, Maluku Branch) most of the government budget is using as a routine expenditure (83.4%) and the rest of it (29.68%) is using as a capital expenditure, which is can't push the economic growth acceleration.

This study uses a VAR (Vector Autoregressive) Model, to determine effect of the government spending to economic growth in Maluku, the data that used in this study is a time series data from 1997-2016 sourced from BPS Maluku.

The result shows that the government expenditure in Maluku Province are determined by various variable both exogenous (government policy: such as Oil and Non-oil revenue) and endogenous variable (GDP and Fixed Capital formation). the other result of estimation using Impulse Response Function and Variance Decomposition analysis show all the variables in the short run and in the long run positively impact the Government Expenditure in Maluku.

Keywords: Government Expenditure, Economic Growth, VAR Models.

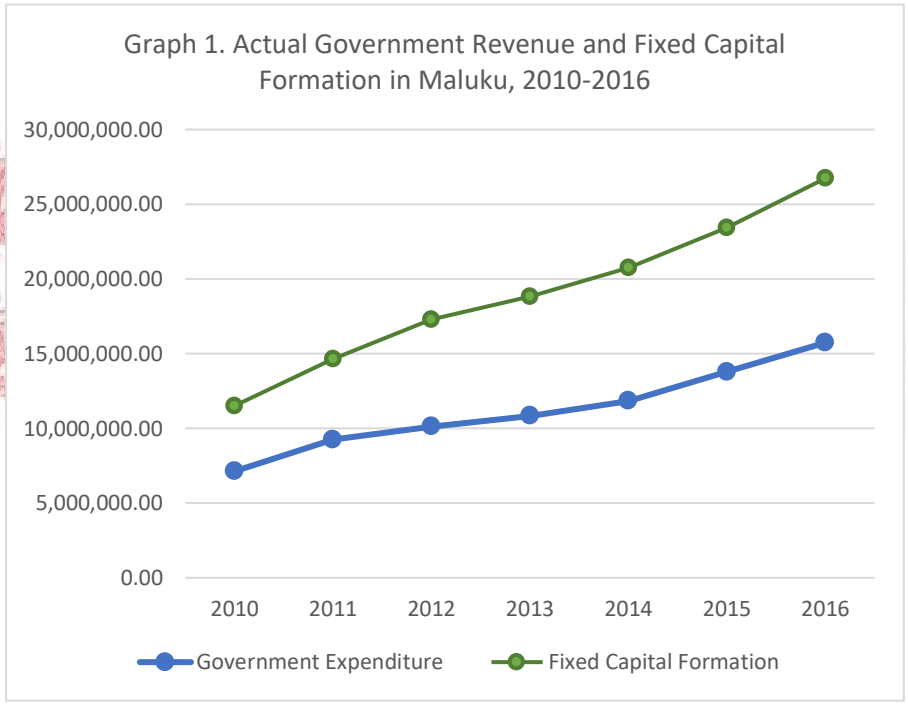
JEL Classification: H1, H10, 04

I. Introduction

In nowadays Government expenditure play a important role in regional economic development, especially after the implementation of regional autonomy law in 2000.

The Neo Classical Economic Growth Theory states economic growth (in areas measured by GDP growth) depends on the development of factors of production ie; capital, labor and technology (Sukirno, 2003).

Regional development is an integral part of national development that is implemented based on the principle of regional autonomy and regulation of national resources that provides an opportunity for democratic improvement and regional performance to improve the welfare of the community towards a collusion-free, corruption and nepotism-free civil society. Implementation of local government as a sub-system of the state is intended to improve the efficiency and results of government administration and community service. As an autonomous region, the Regency / City to act as a "motor" while the Provincial government as the coordinator has the authority and responsibility to organize the public interest based on the principles of openness, community participation and accountability to the community.



Source: BPS (Indonesian Statistical bureau) 2018

The data above imply that, in past 7 years there is increasing in government expenditure and also in the fixed capital formation. This increasing supposed to bring welfare to the society and also play role to alleviate poverty in Maluku. However, in fact poverty rate still increase and recently Maluku become 4th Poorest Province in the country.

The main objective of this study is to ascertain the direction of causality between the disaggregated values of government revenue and expenditure in Maluku by deploying a robust econometric methodology. The result would assist policy makers to recognize the source(s) of any fiscal imbalance that might exist and consequently, direct efforts to developing suitable strategies for a sound fiscal framework.

II. Method

The method used in this research is Vector Error Correction Model (VECM) is an alternative VAR method created by Christopher Sims (1980) to describe the relationship between the variables to be tested. Sims argues that if there is a simultaneous relationship between observed variables, the variables need to be treated equally so that no exogenous and endogenous variables exist. Based on this thought, Sims introduced a concept called Vector Auto Regression (VAR). but if the data is not entirely stationary still can be analyzed (Enders, 2010).

In general Vector Autoregression model is as follows:

$$y_t = A_1 \cdot y_{t-1} + A_2 \cdot y_{t-2} + \ldots\ldots + A_p \cdot y_{t-p} + \beta \cdot x_t + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where y_t is a vector k of endogenous variables, x_t is a vector d of exogenous variables, A_1, ..., A_p and β is the matrix of the coefficients to be estimated, and and εt are vectors of innovation that may have correlation with each other but not correlated with their own lag and not correlated with all right-side variables. So based on the general equation above we develop the equation as follows:

$$GEXP_t = \alpha_1 + \sum_{j=1}^{k} \beta_{1j}\, GEXP_{t-j} + \sum_{j=1}^{k} \gamma_{1j} GFCP_{t-j} \sum_{j=1}^{k} \lambda_{1j} GREV_{t-j} + \sum_{j=1}^{k} \delta_{1j} OREV_{t-j} + \sum_{j=1}^{k} \psi_{1j}\, NOREV_{t-j} + U_{1t} \ldots\ldots\ldots\ldots (2)$$

$$GFCP_t = \alpha_2 + \sum_{j=1}^{k} \beta_{2j}\, GFCP_{t-j} + \sum_{j=1}^{k} \gamma_{2j} GREV_{t-j} + \sum_{j=1}^{k} \lambda_{2j} OREV_{t-j} + \sum_{j=1}^{k} \delta_{2j} NOREV_{t-j} + \sum_{j=1}^{k} \psi_{2j}\, GEXP + U_{2t} \ldots\ldots\ldots\ldots (3)$$

$$GREV_t = \alpha_3 + \sum_{j=1}^{k} \beta_{3j}\, GREV_{t-j} + \sum_{j=1}^{k} \gamma_{3j} OREV_{t-j} + \sum_{j=1}^{k} \lambda_{3j} NOREV_{t-j} + \sum_{j=1}^{k} \delta_{3j} GEXP_{t-j} + \sum_{j=1}^{k} \psi_{3j}\, GFCP_{t-j} + U_{3t} \ldots\ldots\ldots (4)$$

$$OREV_t = \alpha_4 + \sum_{j=1}^{k} \beta_{4j}\, OREV_{t-j} + \sum_{j=1}^{k} \gamma_{4j} NOREV_{t-j} + \sum_{j=1}^{k} \lambda_{4j} GEXP_{t-j} + \sum_{j=1}^{k} \delta_{4j} GFCP_{t-j} + \sum_{j=1}^{k} \psi_{4j}\, GREV_{t-j} + U_{4t} \ldots\ldots\ldots (5)$$

$$NOREV_t = \alpha_4 + \sum_{j=1}^{k} \beta_{4j}\, NOREV_{t-j} + \sum_{j=1}^{k} \gamma_{4j} GEXP_{t-j} + \sum_{j=1}^{k} \lambda_{4j} GFCP_{t-j} + \sum_{j=1}^{k} \delta_{4j} GREV_{t-j} + \sum_{j=1}^{k} \psi_{4j}\, OREV_{t-j} + U_{4t} \ldots (6)$$

This study follows the (Fasano-Filho & Wang, 2002) method. However, where the variables are stationary and there is no co-integration between the variables in any of the equations, we adopt the normal granger causality method where the error correction term is not taken into account.

III. Result

A. Unit Root Test

The unit root test are performed by using Augmented Dickey-Fuller approach. And it was found that all of the variables are not stationary at level. The result as follow:

Table 1. Unit Root Test

Series	Prob.	Conclusion
Government Expenditure(Govex)	0.9999	Not Stationer
Government Fixed Capital Formation (GFCP)	0.9995	Not Stationer
Government Revenue (GOVREV)	0.0035	Not Stationer
Revenue With Oil (OREV)	0.9997	Not Stationer
Non- Oil Revenue (NOREV)	0.9997	Not Stationer

Source: Author's Computation

The result from stationary test above shows that all off the variable are not stationer. However, after performed the test in first and second difference we found that several variable are stationer. Thus, to continue this research we can performed Structural vector autoregressive or Vector Error Correction models regarding the result from the Johansen Cointegration test.

B. Cointegration Test

Result from Unit root test that none of the variables are stationer at level so to still find the long run relationship between variables then we had to make sure there is cointegration relation between variables. And the result as follows:

Table 2. Johansen Cointegration Test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.995151	149.9423	69.81889	0.0000
At most 1 *	0.754886	54.02105	47.85613	0.0118
At most 2	0.527055	28.71248	29.79707	0.0663
At most 3	0.436281	15.23452	15.49471	0.0547
At most 4 *	0.239031	4.916932	3.841466	0.0266

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Author Computation

From the table above we can conclude that at signification level 95% there is cointegration relationship between variable at most two equations. Thus, this research can still continue with the VECM models at level.

C. Lag length Criteria

In this test we used AIC (Akaike Information Criterion) to estimate precise lag length to the VECM and the result is shown at table below:

Table 3. AIC (Lag Length Criteria Result)

Lag	AIC
0	149.2151
1	145.7690
2	141.6602*

Source: Author Computation

So based on the test the maximum lag that been proposed according to the AIC criteria the maximum lag is 2 with the smallest AIC 141.6602.

D. Estimation Result

The estimation result uing Vector error correction models then the result shown as follow:

Table 4: Estimation Result

Vector error-correction model

Sample: 1999 - 2016	Number of obs	=	18
	AIC	=	142.8836
Log likelihood = -1246.953	HQIC	=	143.1496
Det(Sigma_ml) = 1.02e+54	SBIC	=	144.8128

Equation	Parms	RMSE	R-sq	chi2	P>chi2
D_GovEx	7	5.50E+08	0.9306	147.615	0.0000
D_GFCP	7	5.50E+08	0.9487	203.5485	0.0000
D_GovRev	7	45.4536	0.2422	3.51577	0.8336
D_Orev	7	491277	0.7848	40.12669	0.0000
D_NoREV	7	490287	0.7850	40.17399	0.0000

Source: Author Computation

The table above is the summary of the estimation result. The result shows that variable Government Fixed Capital Formation (GFCP) can significantly explain dependent variable which is government expenditure 94.87% and the rest of it 5.13% are explain by variable outside the model. Government Revenue (GovRev) had a positive impact but not strong enough to affect the government expenditure based on R-sq 24.22%. the revenue with oil and gases (Orev) have a significant impact for the government expenditure according to the equation Orev can explain dependent variable as 78.48% and 21.52 are explained by variable outside the models. The last variable is the non-oil and gases revenue/ income (NoRev) from regional income variable can explain dependent variable (Government Expenditure) as 78.50 % and 21.50 & are explain by variable outside the models.

IV. Discussion

As discussed before the government spending is a part of important fiscal's policy variable that able to have a strong effect to the development of the region. The shock of the government spending can simultaneously increase the consumption, employment rate, and the output that come from investment or private sector due to the multiplier effect (Nelimarkka, 2017).

Based on our estimation we find that all off the variable has a positive impact to the increasing of the government expenditure, the summary of the estimation result are represented in the table below:

Table 5. Variable coefficient Result

	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
GovExLD.	0.007586	0.413646	0.02	0.985	-0.80315	0.818318
GFCPLD.	0.517193	0.342781	1.51	0.131	-0.15465	1.18903
GovRevLD.	4530927	3218027	1.41	0.159	-1776290	1.08E+07
OrevLD.	32114.2	52754.77	0.61	0.543	135512	71283.24
NoREVLD.	29643.02	52863.03	0.56	0.575	-73966.6	133252.6
_cons	4.04E+07	2.25E+08	0.18	0.858	-4.01E+08	4.82E+08

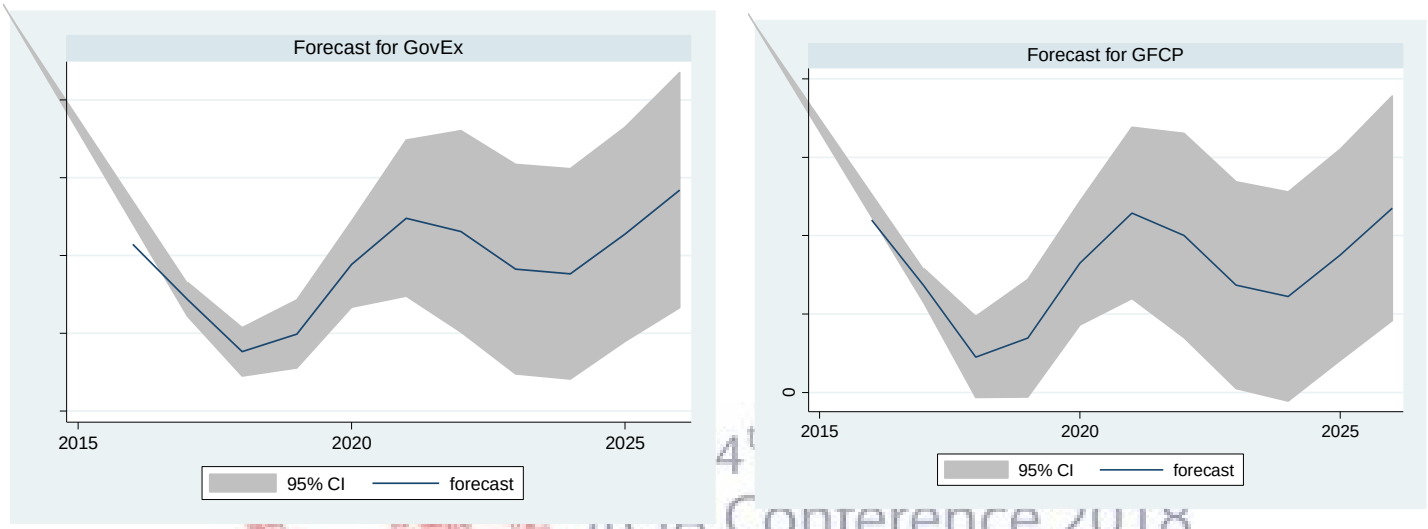
Source: Author Computation

According to the estimation result we can se that the variable that had a most impact to the government expenditure is the Government Revenue (4530927) it is obvious because in basic economics theory the expenditure always related with the revenue. Thus, the other two variable related to the income (Orev and NoRev) also obtain strong impact to the government spending

(coefficient Orev: 29643.02 and NoRev: 40400000). The only variable that have weak coefficient is the Government fixed capital formation, lack on the contribution of the fixed capital formation is being considered as a time lag effect because the investment tend to give contribution in the long run period. However, value of the coefficient that so small (0.517193) shows that the investment in Maluku Especially government investment haven't give strong multiplier effect to increase the economic Growth in Maluku.

In other hand, to give strong recommendation for the policy maker in this research we perform forecasting analysis to measure the development of each variable, the result of the forecasting are as follow:

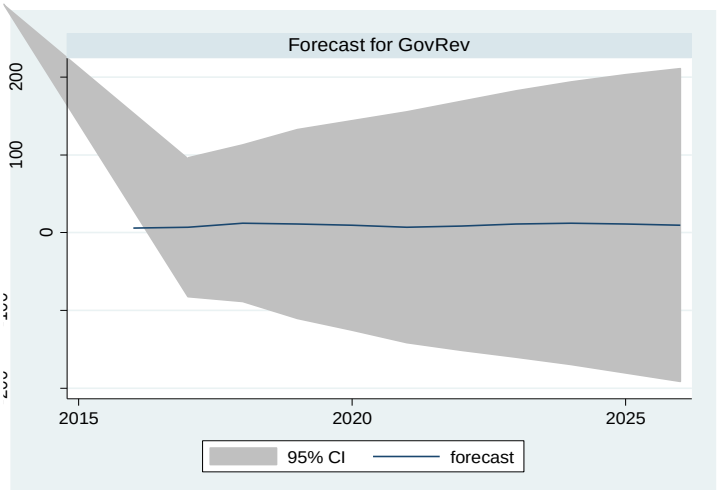
Graph 2. Forecast of the Government Expenditure in Maluku



Source : Author Computation

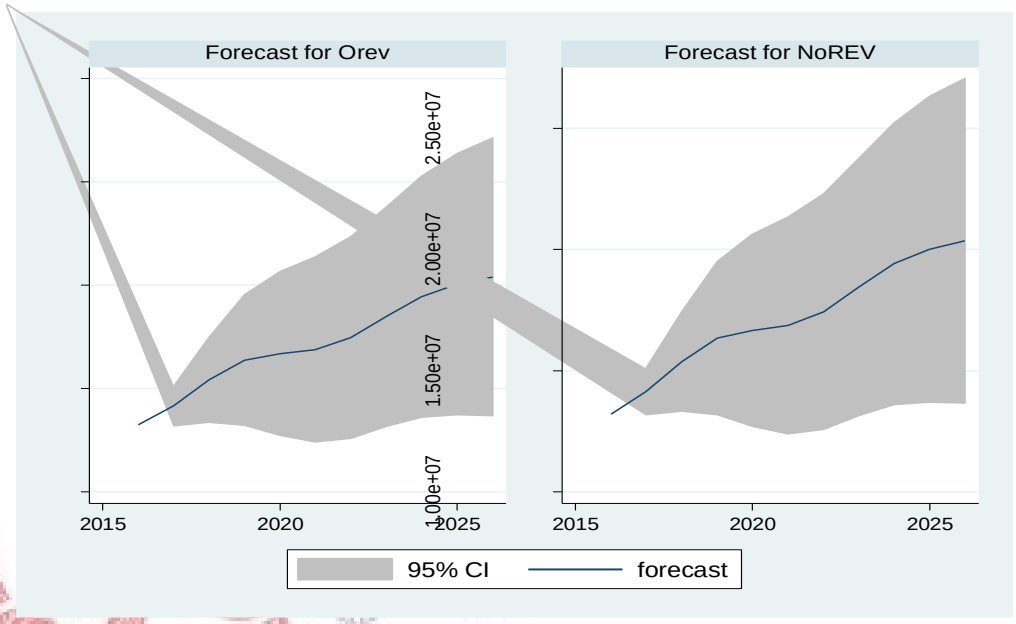
First, government expenditure and the Fixed capital formation. Both of this variable has an almost similar pattern, this phenomena shows that the investment in which is still rely on the fixed capital formation from government make government spending as a main factor that can affect Maluku economic development in next ten years. The slow investment growth that only depends from government spending makes the unemployment rate in Maluku still high and still maintain high poverty rate (Rijoly & Rum, 2018).

Graph 2. Forecast of the Government Revenue in Maluku



While the government expenditure have trend to keep increasing in other hand forecast for the government income or revenue still in constant level in the next several years. Inability of the government to create new income source will affect ability of the government to increase the income.

Graph 3. Forecast of the Oil and Non Oil Revenue



Source: Author Computation

The oil and non-oil revenue in several years forward will have increasing value but not significantly high. The operation Masela Gas Block predicted to give high input for Maluku Economic development. However, income increasing effect from Masela Block is not entirely give Maluku advantage because Maluku only get 10 % percent of the participation interest. Maluku people only depends on the multiplier effect that created from company operation. The non-oil revenue will remain have a stable increasing due to the changes in the macro economics shock and the economic structure.

V. Conclusion

According to the result we can conclude that, government expenditure in Maluku mainly affected by the shock of the macroeconomics variable in this case are the government revenue even though is not so significant. This is mean increasing of the government income will increase the government spending but this increasing is routine financial spending such as the salary of the government employee and the spending related to the government program.

In the other hand , the fixed capital formation that have an important role to the investment sector have less significant impact due to the time lag effect. However the high spending on the routine spending or expenditure make the amount of the fixed capital formation is not high as the expectation.

The exogenous variable such as government income and oil and non-oil revenue remain stable and have increasing trend in several years regarding to the macroeconomics shocks that come from the opening of the Masela Natural Gas operation in future.

In fact, the government expenditure has to be more effectively execute so that the increase of the expenditure can be more productive to help the development of the Maluku Economic.

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THE EVALUATION OF BIG DATA UTILIZATION FOR THE DEVELOPMENT OF BUS RAPID TRANSIT (BRT) IN DKI JAKARTA

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ABSTRACT

Jakarta as the on of the largest metropolitan city in the world suffered severe congestion for a long time. Approximately 21,9 million trips were made daily (2010), and increased to 25,74 million trips per day in 2014, causing potential losses of up to 45,2 Trillion rupiahs per year. One of the strategies used by DKI Jakarta government to combat this issue is by implementing a good mass transportation system by implementing the Bus Rapid Transit (BRT) system. In order to improve a better mass transportation system, the government of DKI Jakarta through UPT Jakarta Smart City collaborated with PT. Transjakarta undertake a project to study the BRT system enhancement using real – time data analytics. This research evaluates this new-type of data utilization to enhance public transportation in DKI Jakarta.

The research analyze the three key stakeholders involved in the project; the local government of DKI Jakarta through Jakarta Smart City as the regulator and the initiator of the project; Pulse Lab Jakarta as the data collector; and PT. Transjakarta as the operator of BRT system. Through literature study and semi-structured interviews, we analyze the stages and the technical processes of big data utilization in DKI Jakarta BRT system; the roles and networks among stakeholders; the importance of big data to improve mass transportation system and its obstacles; and examine big data utilization to support data driven policy in DKI Jakarta.

The research will contribute the following issues: first, provides insights on the governance implementation of big data collection and utilization. The big data is an emerging notion as a new way of data gathering globally, let alone in a developing country in Indonesia. Thus, it is important on how the roles of each stakeholders and networks among them to support the project. Second, the paper also provides a preliminary insight on the potential of smart city implementation in Indonesia by analysing the interplay between big data and stakeholder mapping in the case of BRT.

Keywords: Big Data, Buss Rapid Transit (BRT), Mass Transportation System, Stakeholder Analysis

INTRODUCTION

Jakarta as the second largest metropolitan city in the world with the fastest urbanization rate in East Asia[1], faces several urban issues, especially congestion. To tackle this problem, the Jakarta government implemented several strategies, one of which is by promoting the Bus Rapid Transit (BRT) mass transportation system (see Fig. 1).

After more than a decade of BRT operation, the DKI Jakarta government attempts to improve the service of Trans Jakarta by the utilization of big data. The Government of DKI Jakarta took the initiative to analyze the technical problems commonly encountered in the implementation of BRT. These problems include the arrival frequency of the bus is still unpredictable, as well as travel time and long headways. The DKI Jakarta Government Initiative to improve the quality of mass transportation services BRT through the use of big data technology is considered as one of the innovations made by the local government in planning by utilizing the progress of information technology.

Therefore, it is an interesting study to examine stakeholders in the process to utilize big data in the BRT system in DKI Jakarta. The paper is structured as follows, the second and third sections provides literature review and research methodology. Section four displays the research findings and stakeholder settings, and followed by the conclusion section.

Figure 1
Jakarta BRT System

Source: Authors Analysis

[1] World Bank. (2015, January 26). *Urban Expansion in East Asia-Indonesia*. Retrieved from worldbank.org. http://www.worldbank.org/en/news/feature/2015/01/26/urban-expansion-in-east-asia-indonesia (

LITERATURE REVIEW

It is generally known that today's data are recorded, analyzed and organized (Mayer-Schonberger & Cukier, 2017). Data refers to anything symbolized by numbers, letters, pictures, or other symbols that describe the value of a variable based on real conditions in the field.

Big data has dimensions that become special characteristics known as 5V's, namely Volume, Velocity, Variety, Value, and Veracity. The first characteristic, big data has a very large data volume. Large volumes are represented by the word 'Big' in the naming of 'Big data'. Defining the word 'big' relative to many factors, such as time and data type (Gandomi & Haider, 2015). Velocity refers to the frequency and speed of data formed in units of time. Big data is a collection of new data that is formed quickly and continuously.

Variety of big data refers to the diversity of the data. Big data includes all kinds of data, ranging from text, graphics, sound, and numbers obtained through various sources, one of them is sensors such as sensors on satellites, cameras and smart phones. Variety represents the diversity of big data types in the form of structured data. Value refers to the value or usefulness that we can get from these data. When analyzed, then the data - the collected data has a certain value that can be used as a new insight about an event or phenomenon that occurs. Veracity refers to the larger and complex data, the greater the probability of inconsistent, biased or abnormal data increment.

Jakarta Smart City cooperated with Pulse Lab Jakarta and PT Trans Jakarta using real-time data analytic to improve operational efficiency of bus rapid transit system in DKI Jakarta. The project was conducted for two months from May 2016 to July 2016. There were two types of dataset used in this project include Trans Jakarta passenger transaction data and GPS data. The data collected is regarded as big data that maps the movement of passengers, the locations of the congestion spots, and real-time data to measure the travel times and wait times of BRT passengers. The result of big data analytic was implemented by the local government of DKI Jakarta, especially by Agency for Transportation DKI Jakarta to support the policy – making process in mass transportation system.

METHODOLOGY

This section presented research methodology including data collection methods and data analysis methods. First, the data collection includes interviews that were conducted to stakeholders involved in the big data use project using purposive sampling and snowball techniques. Furthermore, content analysis are carried out to trace and analyze documents related to big data project in BRT transportation development in the form of journal, exposure, and photos obtained from related institutions and online sources. The method are also used to assess the stages and implementation of big data use in the development of the BRT transport system, and the perceived obstacles by the government faced during the project implementation. Secondary data collection was also conducted to obtain information related to big data utilization process in BRT transportation system development in DKI Jakarta.

Another method is stakeholder analysis to identify the roles and positions of stakeholders involved in the project, understand their interests on project implementation, and the relationships and interactions that occur between them. Stakeholder analysis has an important role to know who are the parties that can encourage or hinder the achievement

of a goal within the organization. Freeman (1984) described stakeholders as “any group or individual who can affect or is affected by the achievement of the organizations objectives”. And also Nutt and Backoff (1992) stated that “Stakeholders are all parties who will be affected by or will affect (the organisation’s strategy).”

ANALYSIS

There are three groups of stakeholders involved, directly or indirectly, in the utilization of big data in the development of the BRT transport system in DKI Jakarta. These stakeholders are the local government of DKI Jakarta, private parties and region-owned enterprises, and Non-Government Organizations. The following table shows the stakeholders involved in the Big Data usage project in developing the BRT system in DKI Jakarta (see Table 1)

TABLE 1
Stakeholders In BRT Transport System In DKI Jakarta

Local Government	Private Sector and region-owned enterprises	Non-Government Organizations
• Agency for Planning and Development DKI Jakarta (BAPPEDA DKI) • Agency for Transportation DKI Jakarta • Agency for Communication, Informatics, and Statistics DKI Jakarta • Jakarta Smart City Unit	• PT AINO INDONESIA • PT Trans Jakarta	• Pulse Lab Jakarta • ITDP Indonesia

Source: Authors Analysis, 2018

Stakeholder Identification

In this project, BAPPEDA of DKI Jakarta acts as an institution that oversees and evaluates the development of BRT in order to keep in synergy with the regional development plan. The BAPPEDA plays a key role to ensure that BRT system planning are align with regional development plan by providing technical assistance together with Agency for Transportation DKI Jakarta in formulating policy materials, guidelines and technical standards of BRT system planning. In relation to the development and use of big data, Bappeda only acts as an institution that strengthen the centralization of planning, development and evaluation data between SKPD within the government of DKI Jakarta

The Agency for Transportation in this project acts as a regulator making and giving consideration to the policy of BRT development implementation. In addition, the Department of Transportation serves as a provider of data that provides data - data related routes Trans Jakarta to Jakarta Smart City through Agency for Communication, Informatics, and Statistics DKI Jakarta (Diskominfotik). In planning the development of BRT system, the

Department of Transportation is involved as a fostering operator of Trans Jakarta as well as providing technical recommendations related to the implementation of BRT system.

The Agency for Communication, Informatics, and Statistics DKI Jakarta (Diskominfotik) is the policy maker of information and communication system development in DKI Jakarta. Jakarta Dept. of Communication, Information and Statistics plays a facilitator for other local agencies (Satuan Kerja Perangkat Daerah/SKPD) in DKI Jakarta to conduct data integration through the implementation of UPT Jakarta Smart City. Other SKPD in DKI Jakarta government, including the Transportation Department, reports on regular updates to discominfotics which then the data will be accommodated and collected into an integrated system.

The Jakarta Smart City unit coordinates stakeholders that are involved directly in the project as well as providing facilities in the form of technological tools for management and processing of big data. The big data processing are made possible with the advance infrastructure of technological tools in the unit. In this project, UPT Jakarta Smart City helps in providing additional infrastructure needed for data analysis process. The unit also acts as a coordinator of data collection and reporting of analysis results to the DKI Jakarta Regional Government. The Jakarta Smart City unit has access to be able to coordinate directly with other related local government such as Jakarta Transportation Department, Diskominfotik DKI Jakarta, and BAPPEDA of DKI Jakarta to convey the result of big data analysis as input in making policy related to BRT transportation system.

The PT Trans Jakarta in this project acts as a data supplier, the party that provides data as well as end user data, such as end users of data that receive direct benefits from the use of big data in this project.

While PT AINO INDONESIA is a provider that accompanies Trans Jakarta in developing and integrating the system. PT AINO INDONESIA acts as a provider to assist PT Trans Jakarta in establishing and developing electronic payment system (e-payment) using the card currently in use. PT AINO INDONESIA is also responsible for the management of restoration system of TransJakarta passenger transaction data.

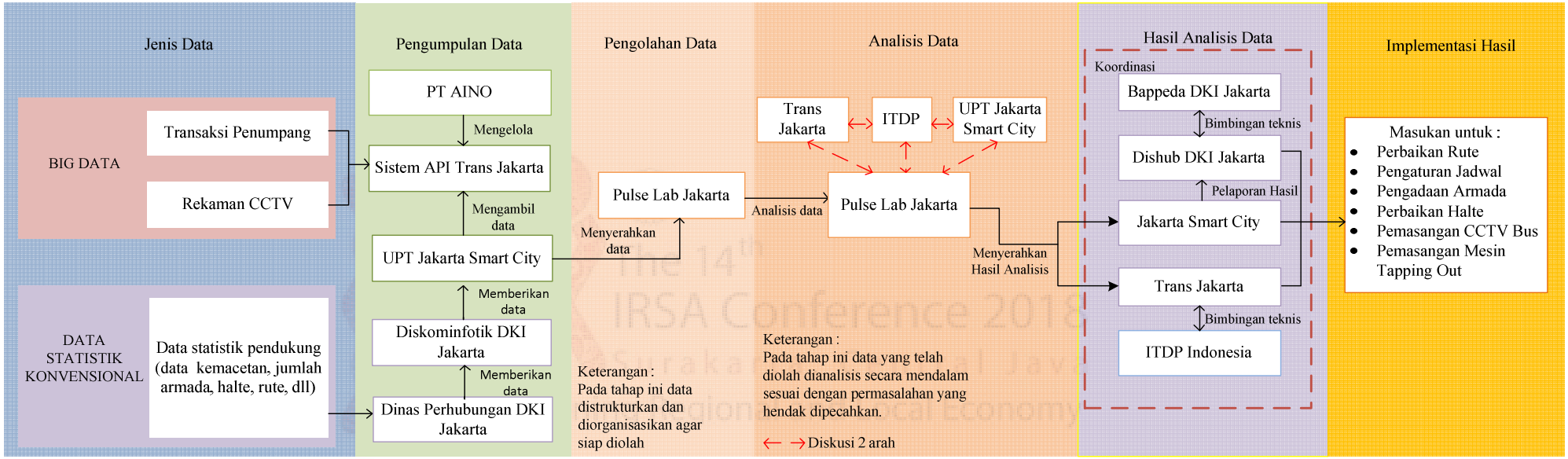
The role of Pulse Lab Jakarta is the knowledge institution in the field of data processing and analysis of big data by analyzing the problems of the implementation of BRT system using innovation big data utilization.

ITDP acts as a TransJakarta consultant assisting the implementation of the BRT system technically from the formulation stage of the problem to the formulation phase of the solution of the problem such as the addition and widening of bus stops, the design of road sections, the procurement of the Trans Jakarta route to formulate the integration of Trans Jakarta with other modes such as with KWK , Kopaja, metromini, MRT and LRT. In this project ITDP plays a role in providing recommendations on the development of the BRT system based on the big data analysis that has been done.

Stakeholder Mapping

The analysis found two types of data used, namely the big data in the form of TransJakarta passenger transaction data and CCTV bus data collected in a system owned by Trans Jakarta (See Fig.2). The data collected are stored in a database belonging to Trans Jakarta.

Figure 2
Stakeholder Mapping in the Utilization of Big Data in the BRT System



Source: Authors Analysis

In addition to the big data of passenger transactions and CCTV bus is also used conventional data types as supporting data obtained from the Department of Transportation of DKI Jakarta. The Jakarta Transportation Agency then submits the required supporting data to UPT Jakarta Smart City.

Local government agencies that can retrieve data directly from the database system Trans Jakarta is UPT Jakarta Smart City. UPT Jakarta Smart City has access to retrieve data from Trans Jakarta database using API service system provided by PT Trans Jakarta so that it can exchange data electronically. Thus, the data - passenger data stored in the database belongs to Trans Jakarta will also automatically enter into the database system owned by UPT Jakarta Smart City. Here is an illustration of data exchange between UPT Jakarta Smart City and PT Trans Jakarta using API service.

After the data are collected, the Jakarta Smart City unit provide the data to Pulse Lab Jakarta. The cooperation between Jakarta Smart City and Pulse Lab is under a disclosure agreement to maintain data confidentiality. The data received by Pulse Lab Jakarta is raw data that requires further data cleaning and analysis by Data Engineer. After data is structured, data analysis by expert team from Pulse Lab Jakarta is conducted.

In the process of analysis conducted a discussion between Pulse Lab Jakarta, ITDP, Jakarta Smart City and Trans Jakarta to understand and interpret the data findings. In this cooperation, Pulse Lab Jakarta acts as an expert in the field of data, ITDP and Trans Jakarta as an expert in the field of BRT and Transport system implementation which understands the context of the problem, while Trans Jakarta as a regulator that also provides input on technical implementation of BRT system.

Big data analysis results then submitted to the Department of Transportation Jakarta, Jakarta Smart City, and Trans Jakarta. The result of the analysis is used as a consideration in policy-making on Trans Jakarta system planning by Transportation and Trans Jakarta Office. In preparing the development plan of the Trans Jakarta system, the Transportation Department coordinates with BAPPEDA of DKI Jakarta.

CONCLUSION

The paper confirms the importance of each stakeholder different roles that affects the project's journey. The project on big data utilization does not only involving local government, but also quasi-government and private institutions participation. In this project the role of local government remains to be dominant. Local governments act as initiator, coordinator, mediator, and facilitator. In this project there are three stakeholders who become key stakeholders, namely UPT Jakarta Smart City, PT Trans Jakarta and DKI Jakarta Transportation Department.

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IMPACT OF MINIMUM WAGE IN MANUFACTURING INDUSTRY OF LAMPUNG PROVINCE

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ABSTRACT

The purpose of this study is to explore the effect of minimum wage growth in medium and large scale manufacturing industries in Lampung Province. The data used is time series data 1995-2003 interpolated in the form of quarterly data. The model employed are labor equations and reduced form wage equations that it derived from simultaneous model of labour market equilibrium. The results show that the minimum wage significantly increases wages and workers in medium-scale manufacturing industries, whereas in large industries the minimum wage growth is not proven to be significant to number of workers or wages levels but has a negative tendency. If the minimum wage policy aims to increase the wages of workers then this policy is effective for medium-scale industries but not effective for large-scale industries. It would be better if the future of this policy not only determines a single wage value but also determines the sectoral wages to improve policy effectiveness.

Keywords: Minimum wage policy, number of workers, wage rate, manufacturing industry.

Background and Problems

Minimum wage policies for developing countries are important because they are used to improve living standards of low-paid workers. Several studies on the previous conclude that minimum wages have been shown to have a negative impact on employment (Neumark et al 2002, Abowd et al, 1999). However, from some previous studies also found the fact that minimum wages have a positive and zero effect on workers (Card et al., 1994; Dickens et al., 1999). For this controversy, there is an explanation that the use of time periods of data in Card et.al research is relatively very short. But this leaves a question about the real impact of minimum wage policy. If the minimum wage has more negative impacts than positive on workers then it will need more information on how much impact the implementation of this policy on the labor market, especially in the manufacturing industry. The manufacturing sector is an important sector because it has given a significant role in the absorption of workers. Does the minimum wage have a meaningful impact on production workers who always receive low wages, and also how will they affect the wages rate of workers? As is well known, in theory the minimum wage is set above the market wage rate, with the aim that low-wage workers may receive an increase in wage rates that will increase their purchasing power, and in turn will improve workers welfare.

This research was conducted in Lampung manufacturing industry. Lampung Province is the gateway of Sumatera Island and has mobility of goods and people high enough. The entry of immigrants to find work, life, and settling in the province is happening continuously. If the available employment in the province is declining then the impact is an increase in the unemployment rate. This will not be good for regional growth and will increase the burden of development. Lampung's manufacturing industry sector is one of the main sectors in absorbing workers besides trade, hotel and restaurant sector. This sector is

also one of the sectors affected by regulation of minimum wage policy. As a mainstay sector it is necessary to keep the wage rate increase in this sector not to exceed the increase in productivity. If the increase in wage rates exceeds the increase in productivity then there is an inefficient production process. Inefficient production processes will produce industries that have no competitiveness.

Manufacturing industry sector based on the number of workers who have been absorbed can be differentiated according to scale such as large scale industry, medium scale and small scale. Minimum wage is not binding on the small-scale processing industry due to financial constraints in this sector so that this type of industry is not the focus of attention in this study. Small-scale manufacturing industry is included in the group of companies that are unable to cope when circumstances change the company's cost structure (Smeru, 2001). What is the impact of minimum wage policies for large and medium-sized industries? This is an interest to know because if there is a difference of influence then of course the policy taken by the local government for each type of industry should also be different. In addition, since January 2001, Indonesia has implemented decentralization and regional autonomy policies. This policy causes the authority of minimum wage determination to move from the central government to the local government. This transfer of authority causes the minimum wage to grow relatively faster for some provinces in Indonesia including Lampung Province. Lampung minimum wage during the period 2000 - 2001 grew by 10.4%, while in 2001-2002 the change of 17.7%. In the previous decade minimum wages have also increased due to international pressure (Rama, 2001). If minimum wage growth is faster than regional economic growth then what will happen in the long run is the deterioration of regional conditions. It is therefore important to know the impact of this policy on employment and wage rates in manufacturing industries in Lampung Province.

Problems

Based on the background can be stated as follows.

1. How does the effect of minimum wage increase on wage rate and number of production workers in Lampung manufacturing sector.
2. How big is the effect of the minimum wage on the wage rate and the number of production workers by industry size?

Research purposes

This study aims to determine:

1. Effect of minimum wage on wage rate and number of workers in each industry size.
2. The difference in the effect of the minimum wage on the wage rate and the number of production workers by industry size.

LITERATURE REVIEW

In economic theory the interaction between the demand and supply curves will result in a price level known as the equilibrium price. The equilibrium price becomes an ideal price when the forces of demand and supply are balanced. However, if the power is different then the price that appears will be unprofitable for either party. This can happen in a Labor Market or Employment Market where workers have relatively weak bargaining positions at the time of wage determination. Especially for unskilled wokers market where the education level of wokers is low. In this labor market it is necessary to intervene by the government to increase the wage of workers so that the wage of this group of workers is not lower than a certain value. The need for government intervention is increasingly important especially for developing countries with over supply.

Implementation of minimum wage policy by the government has a goal to stabilize the price at a higher rate than the price that occurs in the free market. This policy is referred to as the lowest price policy. If the government does not intervene, the balance of supply and demand will result in a wage rate that the government considers not meeting decent living needs (KHL). Therefore, through a minimum wage policy, a certain level of wage is determined which has already adopted the value of the decent living needs of a worker in a particular area. With this policy the government has changed the demand curve of workers and employers are only willing to hire fewer numbers of workers, while the supply of workers due to wage increases will increase. Then there will be surplus (excess) workers (Sadono Sukirno, 2000, p. 138). Assuming the minimum wage as a base price, in line with earlier thought Lipsey (1986: 103) states that an effective base price will result in an excess supply. An unsold surplus or "someone" must be involved and "buy" the excess, for example in the form of government policies that minimize the negative impact of minimum wages. This policy is deemed appropriate by supporters of the minimum wage as a cost to poverty alleviation of other community groups. But opponents of the minimum wage view the minimum wage policy is not the best way of helping the poor because it will only cause unemployment and the target of minimum wages is too weak.

In developing countries such as Indonesia with relatively low wage rates, minimum wages prove helpful in improving workers' living standards by being crucial determinants of increasing monthly wages for people below the formal minimum wage line but not for the informal sector. Although for all workers there was no significant influence, but found a significant negative effect of reducing employment in all income distribution classes in the formal sector. This shows that the minimum wage has played a role in reducing income inequality in Indonesia (Chun and Khor, 2010). In line with Chun and Khor, Bell (1997) using company data to find minimum wage has become a binding policy at Columbia, but different things are found for Mexico which are not found to be the impact of minimum wage policy because minimum wage rates are set below market wages. The positive influence of minimum wage on the average wage of workers in Indonesia is also obtained by Smeru (2001) using Sakernas data although the results are not significant. Although not statistically significant this does not mean that the minimum wage has no effect on the increase in the wages of workers. But the influence varies between workers. The wages of some workers are lifted by minimum wage, while other workers are depressed so that the effect becomes unreal at the average wage of the whole worker.

Specifically the negative impact of minimum wages on employment is found in the clothing, textile, footwear and leather processing industries in the Greater Jakarta area for medium and small scale industries. In large-scale industries its influence proved positive and significant (Alatas and Cameron, 2008). This supports the findings of Rama (2001) using provincial aggregate data that there is a negative impact of minimum wages on the absorption of workers in small firms, while for medium and large companies the possibility of influence is positive. Smeru (2001) using Sakernas data also finds negative impacts of minimum wages on employment for vulnerable and low-educated workers. Workers are vulnerable hey are women workers, young workers, and workers with low levels of education. Some estimates using the Labor Force survey data for households obtain sensitive results for the specifications used (see SMERU 2001; Islam and Nazara, 2000).

RESEARCH MODEL

The research model is defined based on the supply and demand equation for workers in the labor market as follows.

$$l^S = \alpha^S + \beta^S W + \gamma^S W(M) + \theta^S X \quad (1)$$

$$l^D = \alpha^D + \beta^D W + \gamma^D W(M) + \theta^D Y \quad (2)$$

Subscript S and D are the indices of supply and demand, then lS represents the labor supply and lD is the worker's demand. The variable W is the wage variable, W (M) is the minimum wage. X is a worker supply shift vector and Y is a vector of worker demand shifts that always vary over time, whereas α, β, γ and θ are parameter vectors. The minimum wage is defined as a function of wages because in fact in the determination of the prevailing wage rate one of the factors under consideration is the minimum wage rule.

In equation (1) the variable W on the right side of the equation is an endogenous variable that correlates with the disturbance so that the ordinary least square (OLS) technique can not be directly applied because there will be simultaneous bias problems. The two equations (1) and (2) involve the relationship between the endogenous variables l and W and show the values of the exogenous variables X, Y and W (M) together assign values to l and W. Thus the solution of the above equation system The best is to use the reduced form form.

In the labor market equilibrium, the supply of workers is equal to the demand of the worker, then taking into account equations (1) and (2) is obtained:

$$\alpha^S + \beta^S W + \gamma^S W(M) + \theta^S X = \alpha^D + \beta^D W + \gamma^D W(M) + \theta^D Y \quad (3)$$

The reduced form solution for wage and worker equations is obtained as follows:

$$W = \Lambda^W + \Omega^W W(M) + \Pi^W Y + \Sigma^W X \quad (4)$$

$$l = \Lambda^l + \Omega^l W(M) + \Pi^l Y + \Sigma^l X \quad (5)$$

the provisions for equation (4) and equation (5) are as follows:

$$\Lambda^W = \frac{\alpha^D - \alpha^S}{\beta^S - \beta^D} \quad \Omega^W = \frac{\gamma^D - \gamma^S}{\beta^S - \beta^D} \quad \Pi^W = \frac{\theta^D}{\beta^S - \beta^D} \quad \Sigma^W = \frac{-\theta^S}{\beta^S - \beta^D} \quad (6)$$

The identification problem of the model has been solved because the number of linear equations in model (G) is equal to the amount of retriction on its parameter (R). Then we can declare R = G.

Data

The data used in this research is the time series data manufacturing industry of Lampung Province during the period of 1995 - 2003. Data not available in quarterly form so to enlarge the amount of observation data tesebut lowered to quarterly data through linear interpolation as follows.

$$Qkt = 1/4\ Qt\ [1 + (k-2.5)(1-B)/4] \quad (9)$$

k = 1, 2, 3, 4

Qkt = quarter to year t data

Qt = year data to t

B = slack operation time operation

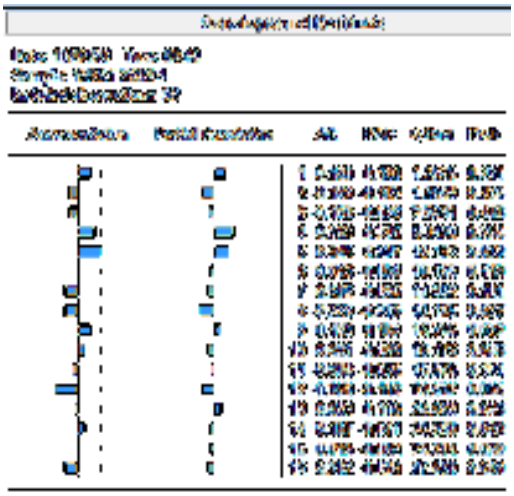
Tests of data stationarity use software such as Augmented Dickey-Fuller test. The test result using unit root test found that the data did not pass the unit root test and integration degree test. It found stationarity data on different degrees of integration. Then the cointegration test of the variables is not followed. The data is declared stationary on unequal degrees and there

is no co-integration of the set of variables so that the ECM model can not be applied. (Granger, 1986; Insukindro, 1992) The next model estimate will use citation data.

ESTIMATION OF RESEARCH MODELS

The worker model for the medium size processing industry is specified as follows:

$$l = \Lambda^l + \Omega^l M(W) + \Pi^l Y + \Sigma^l X \qquad (10)$$



The result of estimation with OLS obtained result as follows:

LnLM = 0.143442 + 0.9619 LnWm + 0.3451 LnY - 0.5713 LnX

$R^2 = 0.9865$ Adj.$R^2 = 0.9850$

$S^2 = 8.3110$ F = 683.3316

This model does not pass the heteroscedasticity test. Non-stationary residuals are shown by adjacent corelogram testing. Based on the above diagnostic test it is shown that the medium industry worker model has residual that is not normally distributed with residual standard which is very leptokurtis and kurtosis value 8,0589. The value of a good kurtosis for normal distribution is about 3. Heteroscedasticity testing is also rejected or the conclusion there is heteroscedasticity in the estimation results of the model used. Observing ACF and PACF behavioral patterns visually and subjectively, ACF shows dying down pattern of damped sine wave and PACF shows cut off pattern. In theory if patterned so the appropriate model is AR (autoregressive). In the corelogram looks peak is in lag 12. Visual assessment can sometimes be a weakness, if we impose lag 12 as in the coleogram then we lose degrees of freedom that will cause the stability and reliability of our estimation disturbed. Possible MA (12) is an unknown event and is an outlier of the data. Then the simulation will be done from the above model in the form of AR, MA or ARMA based on the data set.

Estimation Results of Worker Model

Based on six simulations using ARMA model for worker model, the result of ARMA specification (2,4) is a relatively good specification. The model has a minimum variance over other models and passes for all classical assumption tests. Of the various models that have been simulated ARMA (2,4) are models with relatively small AIC and SBC values. In model condition of invertibilitas or stationer have been fulfilled. This is indicated by the number of MA or AR coefficients where each must be less than one. On result above MA = 0,9821 and AR = - 0,0437. The error distribution in the model forming a normal distribution is shown in the QQ plot in which the plotquantile is located in a straight line 45º and indicates the residual distribution is normal or in other words stationary conditions are met in this model. Then this model will be used to analyze the demand of medium-size industrial production workers.

Estimation Result of Wage Model

The second model is the wage industry equation model. In the model, the existence of the endogenous variable to the right of the equation indicates the unavailability of the OLS estimation method. Then the estimation will use TSLS and instrument variables will be used in this two-stage estimation. The minimum wage variable becomes an instrument variable along with other exogenous variables in the model.

The simulation results show ARMA with the order (1,4) as the selected model. The minimum wage variable, the shift of labor supply, the shift of the output demand are each approximated by the minimum wage value, the change of the ratio of the working age population to the total population, and the change in the total value of the output of manufacturing industry generally has positive and statistically significant effect. The classical diagnostic test states there is no autocorrelation, heteroscedasticity and error distribution in the normal distributed model. Estimated models for large size industries will follow similar stages with previous explanations and the results will be directly analyzed and compared with the estimates for the middle size.

The discussion is conducted in two sections, first, it will be noted the impact of minimum wages on production workers and the impact of minimum wages on wage levels. Second, a comparison of the results between the estimate of medium and large scale industries.

Impact of Minimum Wage on Production Workers

Estimated results for the regression of medium-sized industrial workers using the ARMA specification (2,4)

$$LnL_M = \underset{(0.0352)}{- 0.2248^{**}} + \underset{(0.0203)}{0.3501^{***}}\ LnWm - \underset{(0.0118)}{0.1807^{***}}LnX + \underset{(0.0012)}{0.3390^{***}}\ LnY$$

$$- \underset{(0,2556)}{0,0437}\ LnL_{t-2} + \underset{(0,0224)}{0,9821^{***}}LnE_{t-4}$$

Workers regression estimation results for large size industry with ARMA specification (3, (2,4)):

$$LnL_B = \underset{(0.0965)}{- 0.1471} - \underset{(0.0621)}{0,0355}\ LnWm + \underset{(0.,1369)}{0.4903^{***}}LnX + \underset{(0.0844)}{0.5602^{***}}\ LnY$$

$$+ \underset{(0,1314)}{0,6824^{***}}LnE_{t-2} - \underset{(0,0851)}{0,4204^{***}}\ LnL_{t-3} + \underset{(0,0844)}{0,7494^{***}}LnE_{t-4}$$

The estimation of the workers' model for large industries shows that the impact of minimum wages on demand for production workers is influenced by the number of workers in the labor market the previous three quarters. If the number of production workers three quarters ago increased will impact the decline in demand for current production workers. The third quarter for the manufacturing industry is a difficult period because in that period aggregate demand (export activity declined in the third quarter and increased in the other quarter) decreased. The past four quarters (or a year ago) past error forecasts also have a statistically significant effect on the demand for production workers in large and medium industries. Manufacturers in determining the current number of workers considering past conditions especially those not yet included in the model such as changes in labor regulations, the existence of other costs other than the cost of production should be.

The effect of the minimum wage on the demand of production workers for the two industries is different. In medium industry the effect of minimum wage on workers has a positive and statistically significant effect. A minimum wage increase of one percent in the mid-sized industry will still increase labor demand by 0.35 percent. These findings are in line with Card et al. and Dickens et al. Based on the value of the coefficient of minimum wage becomes an important determinant for the demand of its workers. A 10 percent minimum wage increase will increase workers' demand by 3.5 percent. Different conditions are found for large industries, that the effect of minimum wages does not prove statistically significant. The inadequate minimum wage in the industry is likely due to the average wage rate of production workers in large industries already above the minimum wage so minimum wage increases no longer affect the demand of their workers. However, based on the direction of

the coefficient there is a tendency to decrease the demand for workers in large industries if the minimum wage is increased. This is in contrast to Alatas and Cameron (2008) who have found no employee impact from minimum wages in the clothing, textile and footwear industries. So it can be concluded that the change in minimum wage value of Lampung did not affect the decrease in the number of workers demand in medium and large scale processing industries during 1995-2003. However, there is a tendency to decrease labor demand in large-scale processing industries if minimum wages continue to increase.

The effect of the proxy demand shift (LnY) variable with the total value of the manufacturing industry's output proved statistically significant for both industries. That is, the level of output is a variable that is also important in determining the demand for workers. Expansion of output for both industries will increase the number of workers demand. This is because of the effect of scale. The expansion of aggregate demand results in a scale effect for the secondary industry by increasing the number of workers. The alleged increase in scale effects is also shown in the form of a trend of declining allegations of economies of scale in the Lampung manufacturing industry. This phenomenon shows the increasing scale of production to obtain economies of scale (Budiarty, 2007).

The impact of a supply shift using a proxy ratio of population aged 10 (ten) years and above to the total population has a positive and statistically significant effect on employee demand. In other words, the shift in the number of job seekers is followed by the increasing demand of workers in the manufacturing industry.

Impact of Minimum Wage on Wage Level

$$LW_M = \underset{(0.0921)}{0{,}2552^{**}} + \underset{(0.1142)}{0{,}4134^{***}}\ LnWm + \underset{(0.0137)}{0.0594^{***}}\ LnX + \underset{(0.1190)}{0.3399^{***}}\ LnY$$
$$- \underset{(0{,}2407)}{0{,}1132}\ LnW_{t-1} + \underset{(0{,}04084)}{0{,}9830^{***}}LnE_{t-4}$$

$$LW_L = \underset{(0.0611)}{-\ 0{,}1732^{***}} - \underset{(0.0246)}{0{,}0090}\ LnWm + \underset{(0.0696)}{1{,}2591^{***}}\ LnX + \underset{(0.0032)}{0.2271^{***}}\ LnY$$
$$+ \underset{(0{,}1030)}{0{,}1285}\ LnW_{t-2} + \underset{(0{,}1942)}{1{,}2809^{***}}LnE_{t-1} + \underset{(\ 0{,}1684)}{0{,}3052^{*}}LnE_{t-4}$$

Based on the above estimation the F-test value both show the valid model. However, wage models for large industries do not indicate invertibility or stationary conditions because the number of MA coefficients is greater than one (1.5861> 1) then this model is not very good for predicting wages (Enders, 2004). The effect of the minimum wage on the wage rate in the manufacturing industry has a pattern similar to the effect of minimum wages on workers. The minimum wage affects the wage rate in the medium industry and does not affect for large industries. During the observation period, a minimum wage increase of ten percent will increase the wages of the medium industry by 4.1 percent. The value of the elasticity of the industry minimum wage of 0.41 approximates the value of elasticity found by Neumark et al. for workers in the US who have a wage value of between 1.1 to 1.5 times the minimum. Producers of medium-size industrial production benefit from increasing minimum wages. The effect of demand shifts and a shift in supply on labor demand in both industries has been statistically significant. In the medium industry, an increase in supply shifts will increase wages by 0.05 percent. While in large industries the wage rate of production workers will increase by 12.6 percent if the bid shift increases by 10 percent, this means that the increasing competition in the labor market will tend to increase the wage rate by 12.6 percent to get the best quality workers . The expansion of output will increase workers' wages in both the medium and large industries. An industrial output increase of ten percent

will increase the wages of medium and large industries by 3.4 percent and 2.3 percent, respectively. An increase in output with a fixed number of workers is an increase in the productivity of workers, and this means there is an increase in corporate revenue. This revenue increase can be allocated to workers or for investment, or both simultaneously. Increased new investment in turn will increase the number of workers. It is natural that the increase in corporate income is allocated and perceived by the production worker and this is in line with the theory of marginal productivity, the better the productivity of the worker the better the wage rate that should be received by the worker.

Based on the estimation of previous worker model for medium size industry can be calculated real wage growth in medium industry.

$$LnW_t = \frac{0{,}2552 + 0{,}4134LnWm + 0{,}0594LnX + 0{,}3399LnY + 0{,}9308LnE_{t-4}}{(1 + 0{,}1132LnW_{t-1})}$$

Based on this equation if the real wage growth in the previous quarter (LnWt-1) is high then the real wage rate growth at the moment will tend to be low. The higher growth of real wages of the previous quarter will reduce the real wage growth at this time. Changes in the minimum wage have a positive effect on the growth of wage rates in the medium-sized industries. Changes in the value of real wages as a result of changes in real minimum wage in the form of elasticity expressed as a one percent increase in minimum wage will increase 0.41 percent wage rate. In the form of anti-Ln can be stated:

$$\frac{\partial LnW}{\partial LnWm} = \frac{\partial W}{\partial Wm} X \frac{W_m}{W} = 0{,}4134 \quad \text{atau} \quad \frac{\partial W}{\partial Wm} = 0{,}4134\, X \frac{W}{W_m}.$$

The change in wages of production workers from the increase in the minimum wage during observation is 0.4134 multiplied by the ratio of the own wage to the minimum wage.

CONCLUSION

1. The impact of minimum wages on wage rates and production workers in the two different processing industries. The minimum wage in the medium-sized industry positively affects both workers and wage levels. This means that the increase in the minimum wage provides increased welfare for the production workers in the medium industries. In contrast, in large industries the impact of minimum wages tends to decrease the demand for workers.
2. The demand for the number of workers in the medium-sized industries is affected by the previous year's condition. In large industries the number of workers is affected by the forecast error two to four previous quarters and the number of workers the previous three quarters. It seems that consideration of the change in the number of workers in large industries is done by taking into account the lowest session of aggregate labor demand occurring in large industries.

The above conclusion raises some suggestions as follows:

1. Minimum wage policy needs to be done carefully and based on what the main policy objectives are. If the policy objective is to improve the welfare of workers in the form of wage increases without a decrease in the number of workers, then this policy is appropriate for the medium size manufacturing industry.
2. If the policy objective does not want a layoff as a result of the increase in minimum wage, then this policy becomes inappropriate for the labor market large industrial due to a decrease in demand for production workers if the minimum wage increases.

3. The amount of wages is also determined by the value of the variance in the past, then for a rational entrepreneur and always maximize profits need to understand the labor market properly and know what and how the amount of variance is so that it can take into account the risk of any investment.

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CORRELATION BETWEEN VILLAGE FUND AND GROSS REGIONAL DOMESTIC PRODUCT IN INDONESIA

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ABSTRACT

In period of 2015-2018, Village Fund is raising highly i.e. 561,80% (Rp50,93 trilliun), from Rp9,07 trilliun in 2015 to Rp60 trilliun in 2018. Village Fund is implementation of "village arrangement" which one of its aims is to boost people welfare (economic growth), as mandated by Law Number 6 Year of 2014 concern to Village. Rural economic growth is indicated by increase in rural aggregate demand which is represented by gross regional domestic product. So, the research question is what is the correlation between village fund and gross regional domestic product in Indonesia? The research's goal is to know what is the correlation between village fund and gross regional domestic product in Indonesia. This research analyse using Pearson Coefficient Correlation with hypotesis that village fund have a strong and positive correlation with gross regional domestic product in Indonesia or H: $\beta \geq 0.60$. Data of gross regional domestic product of 434 Indonesian district/municipality are obtained from BPS Statistics Indonesia. Village Fund data is obtained from Ministry of Village, Development of Underdeveloped Regions and Transmigration of the Republic of Indonesia. This research found that the correlation between village fund and gross regional domestic product from the village fund-receiving districts in Indonesia is positive and low. The research recommend that the Indonesian government needs to step up efforts in guiding and directing villagers in using village fund so that village fund can be used optimally to improve the economy of rural communities.

Keywords: Village Fund, economic growth, coefficient correlation, aggregate demand, government expenditure.

JEL Classification: R10, I38, H72, H43, D04.

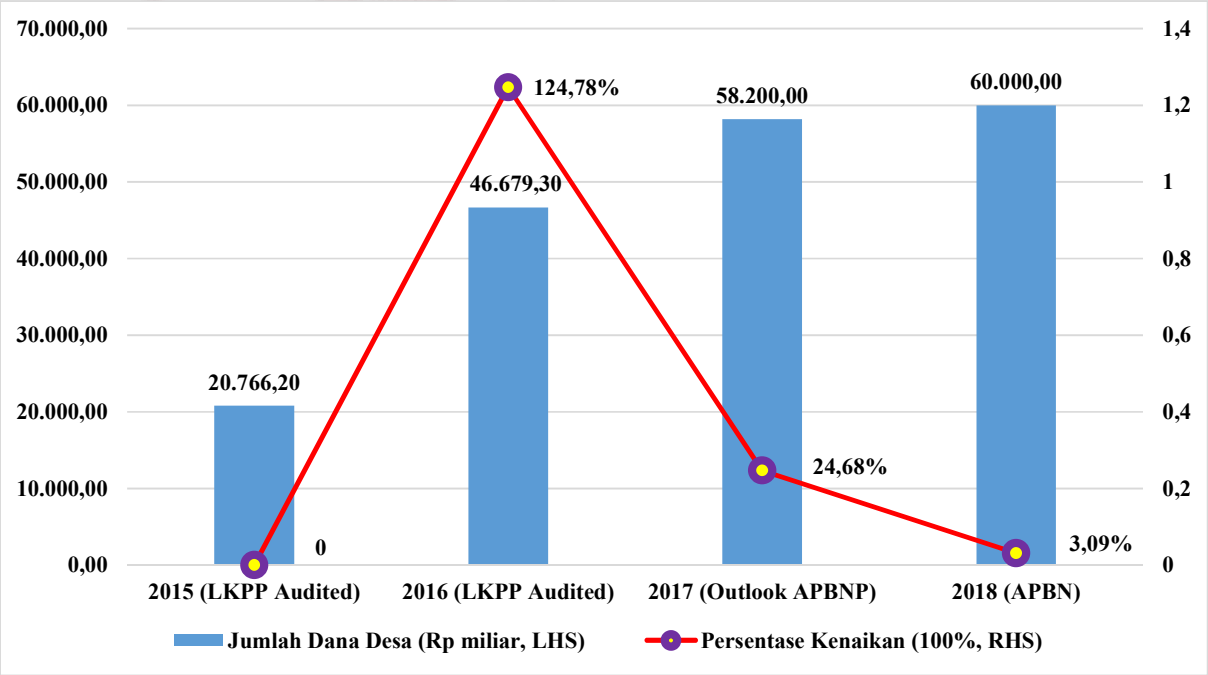
PRELIMINARY

As the implementation of the provisions referred to Article 18 paragraph (7) and Article 18B paragraph (2) of the 1945 Constitution of the State of the Republic of Indonesia, Law Number 6 of 2014 on Villages establishes village arrangements by having nine objectives, among others are: (a) encouraging village communities' initiatives, movements and participation for the development of village potentials and assets for the common good,

(b) promoting the village community's economy as well as addressing the national development gap, and (c) strengthening the village community as the subject of development.

To achieve these three objectives, villages are given sufficient authority and resources to manage their potential to improve the economy and welfare of the village community. One such source of funds is the Village Fund, which is budgeted annually by the Central Government in considerable amounts. That is Rp60 trillion in 2018. This number increased by Rp50.93 trillion or 561.80% when compared with the distribution of Village Fund in 2015 amounting to Rp9, 07 trillion. The year 2015 was the year in which the Village Fund was first channeled. In nominal terms, the distribution of Village Fund from 2015 to 2018 always increases, as can be seen in Figure 1.

Figure 1 Realization of Village Fund Distribution in 2015-2018



Source: Financial Note: APBNP 2016[1], APBNP 2017[2], dan APBN 2018[3].

Village fund are used to achieve one of the objectives of village regulation: to promote the economy of village community which is indicated by, among others, the increase

[1]Republic of Indonesia (2016).
[2]Republic of Indonesia (2017b).
[3]Republic of Indonesia (2017a).

of gross regional domestic product. Therefore this research tries to answer how correlation between village fund and gross regional domestic product in Indonesia.

Research Question

What is the correlation between village fund and gross regional domestic product in Indonesia?

Research Objective

The purpose of this study is to answer the question of how the correlation between village funds and gross regional domestic product in Indonesia.

Research Hypothesis

The hypothesis of this study is that village fund have a strong and positive correlation with gross regional domestic product in Indonesia or H: $\beta \geq 0.60$.

RESEARCH METHOD

Research Time and Object

The study was conducted in 2018. The research object was village fund received by 434 districts/municipalities in Indonesia and gross regional domestic product of 434 village fund receiving - districts/municipalities, 2015 and 2016.

Data Collection

Village fund data from 434 districts/municipalities of 2015 and 2016 were obtained from the Ministry of Village, the Development of Underdeveloped Regions and Transmigration of the Republic of Indonesia. Data of 2010 constant regional domestic product data of 434 districts/municipalities which are village fund recipients of 2015 and 2016 is obtained from the Indonesian Central Bureau of Statistics (BPS Statistics Indonesia).

Research Analysis Method

This study looks for correlations between village fund and gross regional domestic product in Indonesia. This study used Pearson Correlation Coefficient or Product Moment Coefficient of

Correlation. Guidelines to provide interpretation of the correlation coefficient are as follows (Sugiyono, 2012):

0.00 - 0.199 = Very low correlation

0.20 - 0.399 = Low correlation

0.40 - 0,599 = Medium correlation

0.60 - 0.799 = Strong correlation

0.80 - 1,000 = Very strong correlation

The data used are: (1) 2010 constant gross regional domestic product data of 434 districts/municipalities in Indonesia which are village fund recipients for 2015 and 2016[4], and (2) village fund data received by 434 districts/municipalities in Indonesia for 2015 and 2016[5].

The purpose of village arrangement is to promote the economy of the village community. The increase in the economy of the village community can be indicated from the increase of aggregate income. Aggregate income equals aggegate demand, because for the whole economy, every dollar spent on final goods and services must also be a dollar received by someone as income. The equilibrium condition of aggregate demand (Y) is Y (aggregate demand) = C (consumption) + I (investment) + G (government expenditure) + X (exports) - M (import). Thus, gross regional domestic product (GRDP) or aggregate demand or aggregate income is a function of Consumption (C), Investment (I), Government Expenditure (G), Export (X), and Import (M), or GRDP = f (C, I, G, X, M). Village fund is part of government expenditure (G) so that based on the theory, village fund is a function of GRDP or village fund is one of variables that affect GRDP (B.McElroy, 1996).

RESULT AND ANALYSIS

[4]BPS-Statistics Indonesia (2017).
[5]Ministry of Village, the Development of Underdeveloped Regions and Transmigration of the Republic of Indonesia (2018).

Coefficient correlation between village fund and gross regional domestic product in national is 0,27244 for all years (2015 and 2016), 0,32319 for 2015, and 0,32302 for 2016.

The three correlation coefficients indicate that: (a) the correlation between village fund and gross regional domestic product from rural/beneficiary districts in Indonesia is positive (proportional) and low, (b) the correlation between village fund and gross regional domestic product of districts/rural recipient city in Indonesia, in 2016 weaker than in 2015, or a decrease in correlation, and (c) the correlation between village fund and gross regional domestic product from rural districts/villages in Indonesia for the all years (2015 and 2016) is lower than for 2015 and 2016 annually. This is because for 2015 and 2016, the time period is shorter than the all years, where in the shorter term, more variables affecting gross regional domestic product which are more constant, less dynamic nature, so that the correlation of village fund with gross regional domestic product is stronger, because it is estimated that village fund is a variable that have a dynamic influence in the short term, on gross regional domestic product.

Figure 2 Coefficient Correlation between Village Fund and Gross Regional Domestic Product in Indonesia

No	Province	Coefficient Correlation		
		2015	2016	all years
1	Maluku Utara	0.79347	0.79198	0.64292
2	Sulawesi Tengah	0.75020	0.76591	0.61594
3	Aceh	0.64729	0.63766	0.55515
4	Lampung	0.75450	0.75393	0.54644
5	Nusa Tenggara Timur	0.73698	0.72116	0.53276
6	Sulawesi Utara	0.66959	0.67132	0.50711
7	Sulawesi Selatan	0.50960	0.51912	0.44664
8	Gorontalo	0.66367	0.66480	0.44238
9	Kalimantan Tengah	0.53192	0.53781	0.40446
10	Kalimantan Timur	0.50789	0.50966	0.38365
11	Kep Bangka Belitung	0.81717	0.80851	0.36336
12	Jawa Timur	0.49808	0.50913	0.35167
13	Sumatera Barat	0.39985	0.40028	0.34323
14	Kalimantan Barat	0.40096	0.38608	0.31986
15	Sumatera Selatan	0.39562	0.40195	0.31017
16	Sulawesi Tenggara	0.34645	0.34639	0.29089
17	Sumatera Utara	0.34511	0.34440	0.28537
18	Bengkulu	0.21075	0.20726	0.17034
19	Sulawesi Barat	0.09053	0.10663	0.11174
20	Jawa Barat	0.13797	0.13665	0.11124
21	Riau	0.04555	0.06990	0.04792
22	Kalimantan Selatan	-0.00192	0.00181	0.03167
23	Nusa Tenggara Barat	0.01112	0.00072	0.02984
24	Papua Barat	-0.12206	-0.03415	-0.03194
25	Jawa Tengah	-0.15855	-0.15451	-0.06191
26	Bali	-0.12676	-0.12923	-0.06513
27	Maluku	-0.14078	-0.14377	-0.09068
28	DI Yogyakarta	-0.24620	-0.24625	-0.09620
29	Papua	-0.13766	-0.16085	-0.11829
30	Kep Riau	-0.32113	-0.34820	-0.14636
31	Jambi	-0.27759	-0.27226	-0.16769
32	Banten	-0.94612	-0.94658	-0.17585

Source: writer's calculation.

Of the 32 provinces receiving the village fund (the Province of North Kalimantan is still united with the Province of East Kalimantan and the province of DKI Jakarta does not receive village fund), 15 provinces (46.88%) have an all-year correlation between village fund and its gross regional domestic product very weak or very low, as many as 8 provinces (25.00%) have low correlation, 7 provinces (21.88%) have medium correlation, and 2 provinces (6.25%) have strong correlation. The two provinces are North Maluku (0.64292) and Central Sulawesi (0.61594) provinces.

Only one province has a very strong and positive yearly correlation, it is Bangka Belitung Islands Province with correlation coefficient of 0.81717 (2015), 0.80851 (2016) and 0.36336 (all years).

Only one province has a very strong and negative correlation (yearly) that is Banten Province with correlation coefficient of -0.94612 (2015), -0.94658 (2016) and -0.17585 (all years).

CONCLUSION

The hypothesis of this study that village funds have a strong and positive correlation with gross regional domestic product in Indonesia is rejected because the result of the research is that the correlation between village fund and the gross regional domestic product of the village fund-receiving districts in Indonesia is positive and low.

The correlation between village fund and gross regional domestic product from rural/beneficiary districts in Indonesia, in 2016 is weaker than 2015, or a decrease in correlation. The correlation between village fund and gross regional domestic product from rural districts/municipalities in Indonesia, for the all years is lower than for annual 2015 and 2016, this is because for annual 2015 and 2016, the time period is shorter than the all years in the shorter period of time, the variables affecting gross regional domestic product are more constant, less dynamic, so the correlation of village fund with gross regional domestic product is stronger, since it is estimated that village fund is one of dynamic influencing variables in the short run, to gross regional domestic product.

POLICY RECOMMENDATION

The correlation between village fund and gross regional domestic product from low-income village districts/rural districts may indicate that village fund have not yet been able to improve the economy of rural communities. Therefore, the Indonesian government needs to improve efforts in guiding and directing villagers in using village fund so that village fund can be used optimally to improve the economy of rural communities.

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Willingness to Pay of Tourists for Ecosystem Service Fund in Gili Matra Lombok

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ABSTRACT

Gili Matra is one of marine-based tourism attraction in Lombok providing beautiful coral reefs. However, tourists' activities have been negatively impacting the coral. Tourism activities in Gili Matra is more featuring economic benefit without significant effort to conserve the coral. As a result, the coral conditions are getting worse due to lack of maintenance.

This study explores a potential for development of a system that can make a synergy between the tourism industry and coral conservation through a Payment for Ecosystem Services (PES) program. PES program can be used as a tool for coral conservation and local community empowerment. To develop the PES system, a Willingness to Pay (WTP) analysis is needed that aiming to elicit the willingness to pay of tourists for the ecosystem services provision, in this case, coral reefs.

By employing Contingent Valuation method, this study found that tourists in Gili Matra are willing to pay for the coral conservation with an amount of IDR 35,000. This study suggests that a PES system can be developed in Gili Matra to promote a sustainable tourism industry.

Keywords : Ecosystem services, Willingness to Pay, PES, Sustainable tourism industry

1. INTRODUCTION

Tourism is one of leading sectors and also a major source of foreign exchange in Indonesia. This industry contributes to Indonesian foreign exchange of US $ 13.5 million in 2016, which is the second largest contributor after crude palm oil, and is targeted to become the highest source of foreign exchange by 2019 (Sukmana, 2017).

The North Lombok Regency in West Nusa Tenggara Province (NTB) has a strategic position related to the development of tourism industry thanks to its location that lies on the golden triangle of tourist destination in Indonesia—Bali, Komodo and Toraja. The main tourist attraction in this regency is marine tourism located in Gili Matra area (Huzaini, 2017). Gili Matra has an area of 2,154 hectares, which covers tree small islands (Gilis) namely Gili Air, Gili Meno and Gili Trawangan. The main attraction of tourist attractions in Gili Matra is the beauty of marine parks including coral reefs and marine life.

The increasing of tourist visits to Gili Matra has resulted in an increase in number of hotel, accommodation and other infrastructure, which could have a negative impact on the

environment related to the carrying capacity both of land and sea. The existence of coral reefs and marine biota as an environmental goods in Gili Matra is highly dependent on conservation efforts undertaken by the related parties. The activities of tourists and fishermen had have negatively affected the condition of coral reefs in Gili Matra (Suana & Ahyadi, 2013). Maritime tourism activities have been promoted with more emphasis on the economic aspects. Meanwhile, the conservation aspect has not been considered seriously that lead to deterioration of coral reefs and other marine biota (Bb, officer of Indonesian marine and fisheries agency, interview, 10/02/2018). If this condition continues to occur in the long term, the marine parks in the region will not be attractive anymore. As a result, the economic growth that relies on the tourism sector, will decline.

To prevent this adverse condition, an effort to harmonize tourism and conservation activities is needed. In this case, tourism activities in Gili Matra need to be followed by conservation, including coral reefs conservation. One potential effort to be implemented is Payment for Ecosystem Services (PES) program. To formulate the PES, a preliminary study in the form of willingness to pay (WTP) study is required to determine the willingness of tourists to participate in the provision of conservation funds.

2. PREVIOUS LITERARURE

Payment for Ecosystem Services (PES) is defined as a voluntary transaction in which clearly identified environmental services are purchased by at least one environmental service buyer from at least one environmental service provider in a condition that the provider continues to conserve the associated resources to ensure the sustainability of the environmental services (Wunder, 2005, 2007).

Researches on the contribution of PES programs to sustainable natural resource management and community empowerment has been conducted in various countries. For example, Bremer, Farley, Lopez-Carr, and Romero (2014) found that PES programs in Ecuador have contributed positively to community empowerment and sustainable natural resource management. Research conducted by Allendorf and Yang (2013) in China shows that an understanding of ecosystem service can be the basis for harmonizing the relationship between people's economic livelihoods and environmental conservation. Nevertheless, the research was more focus on rising the awareness of related parties and did not formulating activities to harmonize economic activities and conservation. Schuhmann, Casey, Horrocks, and Oxenford (2013) analyzed the scuba divers's willingness to pay for marine biodiversity in Barbados, the Caribbean island. They found that there was an a potency for marine biota conservation through the economic benefits of dive tourism activities in the area. However, this study has not recommended a scheme to balance tourism activity with the conservation of coral reefs and marine biota.

Taking into account the existence of the research gap above, i.e. there is no research that examines the scheme of harmonization of tourism and conservation activities, this study

aims to analyze the potential for harmonization of marine tourism activities and marine conservation, in this case coral reefs, through PES scheme. The creation of a PES system is expected to contribute positively to the sustainability of marine resources including coral reefs as a major tourist attraction in Gili Matra, and the empowerment of local communities to create sustainable tourism activities. By taking Gili Matra area as a case study, it is expected that this study can suggest a policy that can be applied in other similar marine tourism locations to create a harmonious relationship between tourism, conservation, and the empowerment of local communities.

3. CONCEPTUAL FRAMEWORK

The maximum Willingness to Pay (WTP) of tourists for coral conservation was modelled and elicited through a Contingent Valuation Method (CVM) (Bateman & Turner, 1992). This method uses survey techniques to find out how much the value of an environmental good and service for individuals or society.

The maximum WTP is modeled as a function of age, level of education, income, and visit frequency. The maximum WTP of each tourist was elicited through the Contingent Valuation (CV) question. The CV question in this survey provides a hypothetical scenario that the local government is going to charge every tourist a certain amount of money that is going to use for coral conservation. A bidding game techninque (Calia & Strazzera, 1999) was used to capture the maximum amount of money that tourist is willing to pay for the sustainability of coral reefs ecosystem.

This study also identified factors that influence the amount of WTP of the tourist. For this purpose an econometric model was developed and analized using ordinary least square (OLS) regression analysis.

4. DATA COLLECTION

A survey was carried out among tourists who came to Gili Matra. The respondents for this survey were 100 domestic tourist that were selected randomly. International tourists were excluded from this survey since this is a plemenary survey that focuses only to capture domestic tourists' WTP. Another study is going to be conducted in the future that focus on international tourists, as a comparison and complemantry for the current study.

The survey collected information about tourists opinions on the state of coral reefs benefit for human and for the responden himself. Questions about respondents' socio-economic characteristics, travel costs, including their visit frequency were also asked. Prior to the survey, supporting data related to the coral condition was collected through a deep

interview with an officer of Indonesian maritime and fisheries who are responsible to manage the marine in Gili Matra.

5. SURVEY FINDINGS

5.1. Respondents characteristics

Respondents characteristics that expected to influence the amount of WTP in this study are age, education, occupation, income and origin of respondents.

5.1.1. Age

The age of respondents ranged from 16 to 58 years with an average of 30 years. Of the total respondents, the majority of them are 28 years old.

5.1.2. Education

Respondent's education is measured from the year of schooling that has been conducted by the respondent. Of a hundred respondents, the majority of them have studied for 16 years or equivalent to bachelor education. The longest respondents' schooling time is 18 years old or equivalent to master degree. The majority of respondents in this study have completed a bachelor education. The lowest education of the respondents are Junior High School and the average length of the respondent's schooling year is 14.32 years or equivalent to senior high school level.

5.1.3. Occupation

The majority of respondents work as private employees (39%) and entrepreneurs (38%). Meanwhile, minority respondents work as farmers (1%) and fishermen (3%). Only 12% of respondents worked as a government officer, and 7% as students.

5.1.4. Income

Based on their income, respondents were divided into four group: 1 - 3 million rupiah, 3.1 - 5 million rupiah, 5.1 - 8 million rupiah and above 8 million rupiah. Of the hundred respondents, the majority of their income is between 1 - 3 million rupiah with the percentage of 68%. Meanwhile, the smallest group of respondernt hold an income above 8 million rupiah which is equal to 1%.

5.1.5. Origin of Respondents

In this study, the respondents are also divided based on their origin which is those who come from Lombok Island and from outside of Lombok island. As many as 60% of respondents come from Lombok Island and the rest are from outside of Lombok.

5.2. Willingness to pay of tourists for the conservation of coral reefs

The result of the CVM survey suggests that the average of tourists' willingness to pay for coral reef conservation in Gili Matra is Rp 31,200. The lowest WTP is zero rupiah which

means that there are some respondents who do not want to pay for coral conservation. Meanwhile, the highest WTP is Rp 200,000.

Econometric analysis

The WTP of respondents is hypothesized to be influenced by a number of independent variables, represented by the vector x

$$WTP_i^* = ß'x_i + \varepsilon_i, \quad (1)$$

where ß is a vector of slope parameters and X_i is a vector of observations on the explanatory variables for individual *i*. The error term ε_i is assumed to be a normally distributed random variable with mean zero.

The independent variables used in this model are age, education, income, and visit frequency. An ordinary least squares (OLS) regression was performed to analyze this model. The estimation result is presented in table 1.

Table 1

Coeficient estimates

Variable	Coefficient	*t*-value
Constant	7.315	7.315
Age	-1.919	-2.883
Education	3.196	3.189
Income	1.363	3.191
Visit frequency	0.254	0.790

Source : Data analysis

Table 1 presents the effect of the variables on the amount of rupiah that respondent willing to pay for coral conservation. The estimated regression coefficients are marginal impacts of the related variable on the amount of rupiah that the repsondents are willing to pay. Three of estimated coefficients, namely age, education, and income are significant at α= 0.05, meaning that these variables are significantly influencing the amount of money that people willing to pay for coral conservation.

The sign of coefficient for *age* is negative, meaning that the older the tourists, the lower their WTP for coral conservation. An increase of their age by 1% will decrease their WTP by 2.88%, *ceteris paribus*. Education has a positive and significant impact on the amount of money that people WTP for coral conservation. An increase of education level by 1% will be followed by an increase of WTP value of 3.19%, *ceteris paribus*.

The income of respondents also have a positive and significant impact on the amount of their WTP. Respondents with high incomes tend to have a larger WTP value. An increase of income by 1% will cause an increase of WTP by 1.36%, *ceteris paribus*. Meanwhile, the frequency of visits does not affect the amount of WTP.

The estimation result suit the expectation that people with high level of education, high income and young generation are more aware on environmental condition thus more willing to contribute to the effort for conservation.

6. POLICY IMPLICATIONS

In this study we present the first study ever conducted on the willingness of tourists to pay for the conservation of coral reefs in Gili Matra, Lombok. This study indicates that Payment for Environmental Services (PES) program is potential to be developed in Gili Matra as a method to collect conservation fund from tourists that can be used for coral reef conservation. The willingness to pay of tourists for the coral reefs conservation is an indication of potential demand side of the PES system.

7. CONCLUSION

This study explored a potential for PES development in Gili Matra, Lombok. As a preliminary study for the PES design, this study analized the willingness to pay of tourist for coral conservation in the Gilis. Considering only domestic tourist as the sample, this study found that tourist are willing to contribute to coral conservation. The average amount of money that tourists are willing to pay for the coral conservation in Gili Matra is 31,200 rupiah per visit.

This amount of money is influenced by age, education and income of the respondents. People whith high income tend to pay more than those who have less income. People with better education also tend to pay more than those with lower education level. Meanwhile, young people have higher WTP than the oldest.

Considering that there is a WTP of tourist for coral conservation in Gili Matra, this study suggest that PES program is possible to be developed in Gili Matra to promote a sustainable tourism industry. For policy setting purposes, it would be usefull to replicate this study with different target of tourists, i.e. international tourist, and with larger number of sample.

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INDONESIAN FISHERMEN EXCHANGE RATE: BEFORE AND AFTER THE FIGHTING AGAINST ILLEGAL FISHING[1]

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Abstract

Since the end of 2014, the Ministry of Maritime Affair and Fisheries (MoMAF) of the Republic of Indonesia has intensively battled illegal, unreported, and unregulated fishing (or illegal fishing*, for short). The policy is expected to overcome* overfishing *problem, to remedy ecosystem deterioration, as well as to increase the welfare of Indonesian fishermen. The MMAF of the Republic of Indonesia claims that its policy against illegal fishing has increased Indonesian Fishermen Exchange Rate (FER). This research aims to compare the average of Indonesian FER, before and after the implementation of the illegal fishing eradication policy, both at national and provincial levels. Descriptive statistics is used to analyze the FER monthly data (from January 2014 to January 2017). This study also applies two scenarios of the timeline of 'before' and 'after' the implementation of the policy. The first scenario uses the timeline of January 2014 up to April 2015 as the 'before', and of May 2015 up to January 2017 as the 'after'; while the second scenario uses the timeline of January 2014 up to July 2015 as the 'before', and of August 2015 up to January 2017 as the 'after'. The study concludes that at the national level, for both scenarios, the average of Indonesian FER after the implementation of the policy is significantly higher than the average of Indonesian FER before the implementation of the policy. However, the situation is not always the case for the data at provincial level. Not all Indonesian provinces experiences increasing FER; for the first scenario, the provinces experiencing FER decrease, are: Aceh, South Sumatera, Bali, East Kalimantan, North Sulawesi, South Sulawesi, and Maluku; for the second scenario, the provinces experiencing FER decrease, are: South Sumatera, Bali, North Sulawesi, South Sulawesi, Maluku, and North Maluku. Another conclusion is that, for the provinces which experience FER increase, not all of them are significant statistically.*

Key Words*: illegal fishing, IUU fishing, Fishermen Exchange Rate, Indonesia, capture fisheries.*

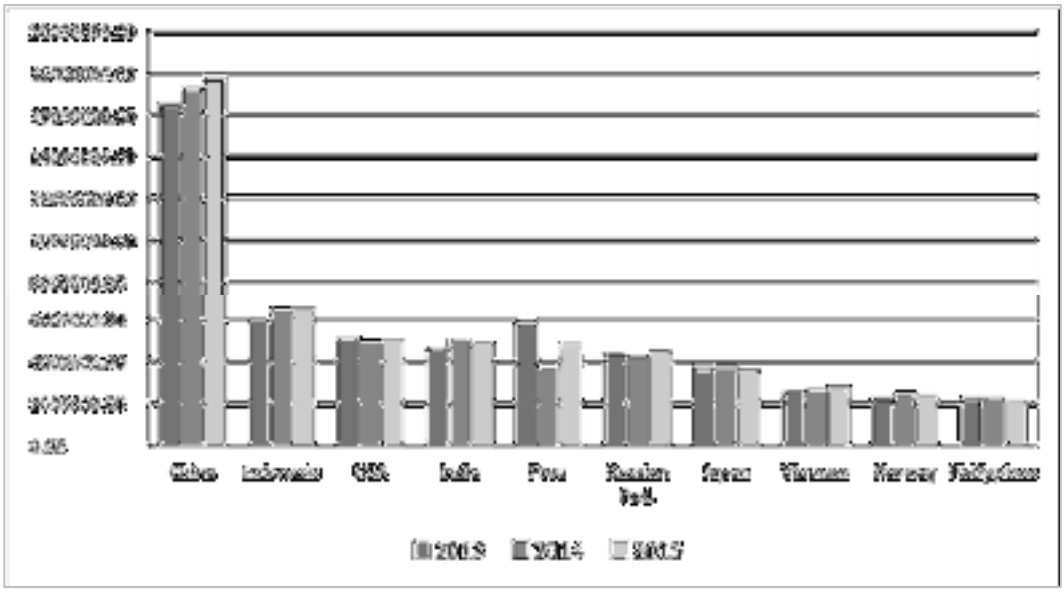
1. Background

Indonesia has great marine capture fisheries potential. Consists of more than 17.000 islands and coastal length of 95.991 km, Indonesia is the largest archipelago in the world. The Ministry of Marine Affairs and Fisheries (hereafter MoMAF) states that capture fisheries sector is promising to stimulate economic development of the country because of four aspects: great supply capacity vis-a-vis increasing demand, high potential export market for fisheries capture and downstream fishing industry, the sector provides large amount of jobs, and capture fisheries is a renewable resource (MoMAF, 2016).

Indeed, Indonesia is the second largest capture fisheries producer after China. Data from the World Bank (2018) show that Indonesia's captue fisheries production in 2013, 2014, and 2015, are 6.056.193 ton, 6.508.387 ton, dan 6.565.350 ton, respectively; while China's capture fish production in the same years are 16.557.948 ton, 17.352.110 ton, and 17.853.069 ton, respectively (see Figure 1.). In 2015 top ten capture fisheries producer countries are: USA, India, Peru, Russia, Japan, Vietnam, Norwegia, dan the Philippines.

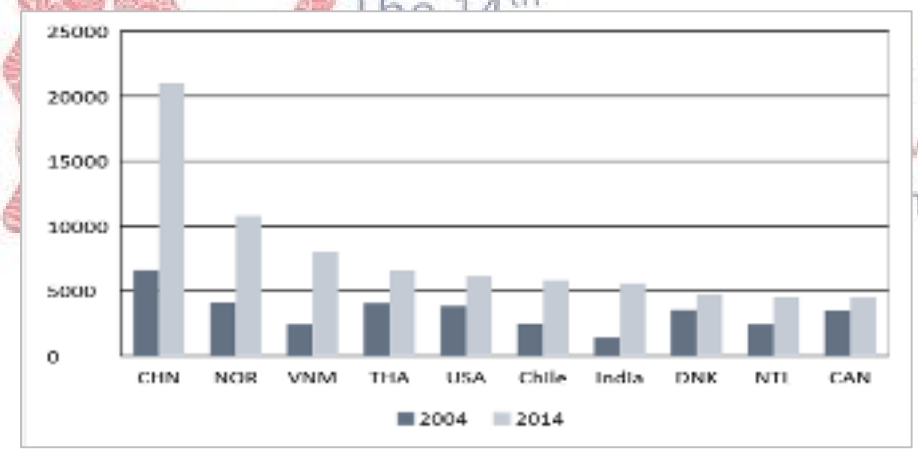
[1] We would like to thank the lecturers and students of the Department of Development Economics of Universitas Katolik Parahyangan, Bandung, for the fruitfull comments during the writing of this article.

Figure 1. Capture Fisheries Production of Top Ten Producer Countries, 2013, 2014, and 2015 (in ton)



Source: World Bank (https://data.worldbank.org/indicator/ER.FSH.CAPT.MT) (accessed 15 Maret 2018)

Figure 2. Export Value of Capture Fisheries from Top Ten Exporter Countries, 2004 and 2014 (in million US$)



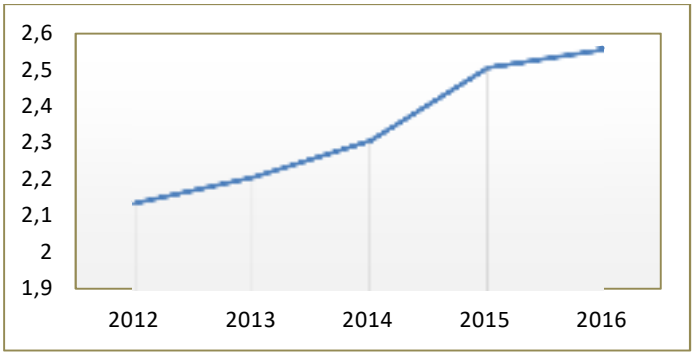
Source: FAO, 2016 the state of the world fisheries and aquaculture

Although Indonesia is ranked as the second largest of capture fisheries producer, the role of capture fisheries in Indonesian economy is still limited. This could be seen from three economic indicators. First, the country is not included in the top ten exporter countries. Based on the year 2014 data, China is still the largest exporter country, with the total export value are 20,980 million US$ (FAO, 2016). On the other hand, Indonesia's export values from fisheries sector (capture and aquaculture) in the same year is 4,642 million US$ (MoMAF, 2015)[2]. The top ten exporter countries in capture fisheries sector in 2014 are: China, Norwegia, Vietnam, Thailand, USA, India, Denmark, Belanda, and Canada (FAO, 2016) (see Figure 2.). Second, the contribution of fisheries sector (capture and

[2] The export value of the year 2014 is higher than that of the previous years. Indonesia's export value from fisheries sector in 2012 and 2013, are 3,853 million US$, and 4,182 million US$, respectively (MoMAF, 2015, *Analisis Data Pokok Kelautan dan Perikanan*).

aquaculture fisheries) in the country's GDP is very small. Although the trends is increasing, but it is still below 3 percent (see Figure 3.). Third, the capture fisheries sector has not succeeded to elevate the traditional fishermen welfare (Puryono, 2017). Data from SMERU (2003) shows that poverty incidence in Indonesian coastal areas are more severe than that in other geographic areas.

Figure 3. Contribution of Fisheries Sector to Indonesian GDP, 2012 – 2016 (in percent)



Source: BPS

The MoMAF raised the issue of illegal, unreported, and unregulated (IUU) fishing (or illegal fishing, for short) that has been occured for decades as the main problem for Indonesia to increase the contribution of capture fisheries sector to the country's economy and to the welfare of the fishermen (MoMAF, 2017). Illegal fishing has occurred in almost all Indonesian waters areas, in different level of intensity (see Figure 4)[3]. Natuna sea, North Sulawesi sea, and Arafura sea, are among those that have high intensity of illegal fishing. Illegal fishing has caused Indonesia's marine life under the threat of overfishing and depleting stocks. Data shows that fish stock in various Indonesia ocean areas are decreasing (WWF, 2014). Study of the *University of California Santa Barbara* (UCSB) and *Balitbang* of MoMAF concludes that, if overfishing continues to happen at the same rate, then the Indonesian fish stock will decrease 81 percent by 2035 (MoMAF-UCSB, 2016).

Overfishing in Indonesia oceans does not only lead to deteriorating marine ecosystem and threatening fish and marine species, but also have negative socio-economic impacts. The World Bank and FAO estimate that the annual financial loss due to illegal fishing in Indonesia is about US$ 20 billion, or equal to Rp. 240 triliun (assumption: US$ 1 is equal to Rp.12,000) (*Buku Putih* of MoMAF, 2017). Decrease in fish stock will also reduce the fishermen productivity, and thus decrease their welfare (MoMAF, 2017).

Since the end of 2014, MoMAF of the Republic of Indonesia has focused its policy on figthing against illegal fishing. The policy was implemented by blowing and sinking vessels that have been caught illegally fishing in the country waters. Until 2017, there have been 331 vessels blown and sunk (see Table 2.). The policy has attracted the world's attention. The Minister, Susi Pudjiastuti, received *Peter Benchley Ocean Awards* for her vision and policy in marine development and conservation in Indonesia (Tempo.co.id, 12 May 2017). The policy against illegal fishing is expected to increase the fish stock, and as a result, improve the welfare of the Indonesian fishermen.

[3] Recently, the monitoring of fishing vessels is live (real time) by satellite using *Global Fishing Watch* http://globalfishingwatch.org/map/, a product developed by *Oceana* (an organization in the USA on ocean conservation) in collaboration with *Skytruth* (an organization that encourages the use of *remote sensing* and *digital mapping* to identify the threats to natural resources , to increase the people's awareness of environmental conservation) , and *Earth Outreach* of Google. *Global Fishing Watch* project started in 2014 (source: http://globalfishingwatch.org), and in Septemer 2016 when the project was launched, Indonesia was the first country to use the product by publishing the data of *Vessel Monitoring System* (VMS) in the platform of *Global Fishing Watch* (source: http://news.kkp.go.id/index.php/global-fishing-watch-resmi-diluncurkan/).

Figure 4. Map of Illegal Fishing in Indonesia's Waters

Source: Bolongaita, Garner, and Root (2009): p. 25 (note: the area of illegal fishing are marked by circles; the bigger the circle the higher the intensity of the problem).

Table 2. The Number of Vessels that Caught Illegally Fishing in Indonesian Waters been Sunk 2014 - 2017

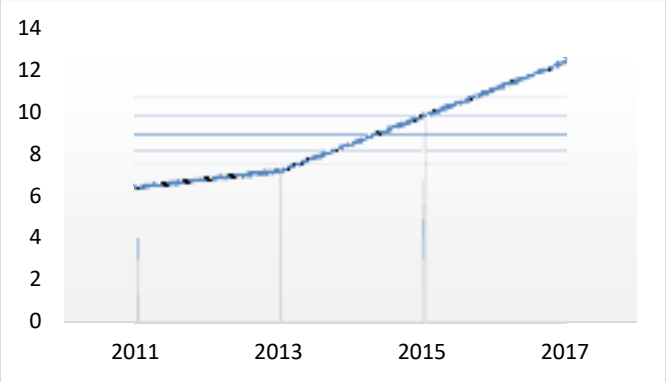
Year	Number of Vessels that Have Been Sunk		
	Indonesian Vessels	Foreign Vessels	Total
2014	-	8	8
2015	4	109	113
2016	3	112	115
2017	23	72	95
Total	30	301	**331**

Source: *Laporan Tahunan Kementerian Kelautan dan Perikanan*, 2017

Several studies report that the fish stock increase in various areas of Indonesia, and thus increase the maximum sustainable yield[4] of the country's capture fisheries sector (for example Syahrani *et al.*, 2017; Mongabay, 2017). Based on the stock assessment in 11 Fisheries Management Area (FMA), the MoMAF claims that the MSY of the Indonesia capture fisheries increase from 6.5 million tons in 2011 to 9.9 million tons in 2016 (Republika.co.id, 2018). Data from Mongabay (2017) also notes that MSY in Indonesia fisheries in 2015, 2016, and 2017, are 7.3 million tons, 9.93 million tons, and 12.541 million tons, respectively (see Figure 5.).

[4] Maximum Sustainable Yield (MSY) is the largest yield (or catch level) that can be taken from fish stock in a sustainable way (over an indefinite period of time). MSY is associated with sustainable harvesting, in order to maintain the population size at the point of maximum growth rate by harvesting the individuals that would normally be added to the population, so that the fish population continues to grow indefinitely. MSY is the potential sustainable capture fisheries production. The concept is originally derived from Schaefer's model of sustainable fisheries shown in a diagram which relates the fish stock (horizontal axis) and the sustainable harvested rate (vertical axis), with an inverted-U-shaped curve; in the early stage, increase in fish stock will increase the rate of MSY (Tietenberg & Lewis, 2012).

Figure 5. Maximum Sustainable Yield (MEY) of Indonesian Capture Fisheries, 2011-2017 (million ton)



Sumber: KKP, 2018

Increase in Indonesian fish stock should increase the country's fishermen catches, and thus increase the fishermen welfare. This study aims to analyse whether or not the Indonesian Fishermen Exchange Rate (FER), as an indicator of the fishermen welfare, in the period of 'after' the policy of fighting against illegal fishing, are significantly higher that that of the period of 'before' the policy; both at national and provincial levels.

2. Method and Data

Fishermen Exchange Rate (FER) is considered as the fishermen welfare indicator. FER calculates the ratio between fisherman's total income and fishernman's total expenditure, and usually is calculated on monthly based; as the following:

$$FER = \frac{Y_t}{C_t}$$

where:

FER	:	Fisherman Exchange Rate
Y_t	:	fisherman's total income in the month of t (in Rupiah)
C_t	:	fishernman's total expenditure in the month of t (in Rupiah)

There are pros and cons of using FER as a welfare indicator. The cons are usually based on two arguments; fisrt, FER does not include fisherman's household consumption spending, and; second, since the fisherman's total income is affected by either production or output (fish) price, increasing fisherman's income does nor necessarily increase their real income (Basuki *et al*., 2000, as cited by Ustriyana, 2015). However, Ustriyana (2015) asserts that FER is the most appropriate indicator to measure fisherman welfare because FER take the whole revenues and the whole expenditure of the fisherman's household into account. Thus, FER shows the ability of the fisherman household to meet their subsistence needs. In this case, FER is also reflected the subsistence terms of trade of the household. FER[5] is considered better than the fisherman's income change (Ustriyana, 2015).

[5] FER is then developed into FER Index (FERI). FERI calculates the ratio between fisherman's total income index and fishernman's total expenditure index. However due to data availabilty, this research uses FER instead of FERI.

This study analyses whether or not the Indonesian FER in the period of 'after' the policy of fighting against illegal fishing, are significantly higher that that of the period of 'before' the policy. Data of monthly FER at national and provincial levels are obtained from BPS. Available data are from January 2014 un to January 2017. We employed Z-stat test of to draw the conclusion. A Z-test is a statistical test used to determine whether two populations have different means or not and the sample size is large (more than 30).

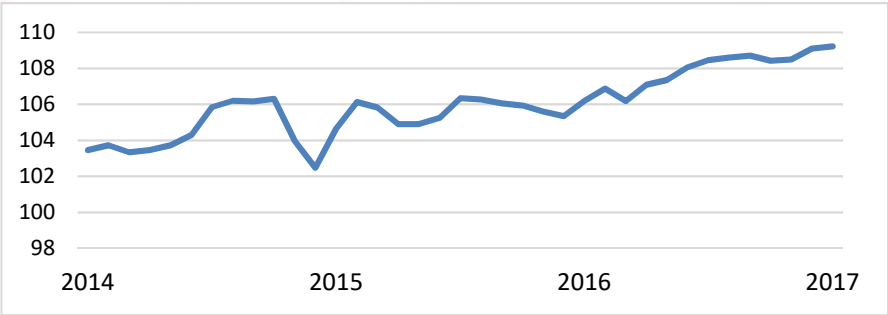
To determine the timespan considered to represent the 'before policy' and 'after policy' period, we analyze using two scenarios. If the policy starts to be effective by early 2015, and taking into consideration that the fish takes time to breed, then May 2015 is considered the right time as the beginning of rising fish stocks. It becomes the basis of our argument to make it as the first scenario. In addition, we searched for news stating that fish stocks are starting to rise. The information we have found so far is that the MoMAF (through several statements by the Director General of Capture Fisheries, Sjarief Widjaja) stated that fish stocks have increased since August 2015 (Tempo, 2018). Therefore, another scenario is required by assuming August 2015 to January 2017 as the period 'after the policy. Based on that information, we process the data based on two scenarios, namely:

- Scenario -1 : the period of 'before' is from January 2014 to April 2015, while the period of 'after' is from May 2015 sampai January 2017
- Scenario -2 : the period of 'before' is from January 2014 to July 2015, while the period of 'after' is from August 2015 sampai January 2017

3. Findings and Discussion

Data from the BPS shows that from January 2014 to January 2017, Indonesian FER fluctuated over time, but the trend is increasing (see Figure 6). However, data at provincial level reveal different result (see Table 3).

Figure 6. Indonesian Fishermen Exchange Rate, 2014-2017 (monthly)



Source: BPS

MoMAF of the Republic of Indonesia claimed that the policy of drowning illegal fishing has successfully increased the fish stocks in Indonesian waters. The ministry also stated that the increasing fish stock has increased the prosperity of the local fishermen as indicated by the increasing of Fisherman Exchange Rate (FER). Indeed, the Indonesian FER at the national level has increased significantly (see Fig.6.), but this does not the case of all fishermen at provincial level. Provinces experiencing declining average FER under Scenario-1 are: Aceh, South Sumatra, Bali, East Kalimantan, North Sulawesi, South Sulawesi, and Maluku; while provinces experiencing declining average FER under Scenario-2 are: South Sumatra, Bali, North Sulawesi, South Sulawesi, Maluku and

West Papua. As FER is constructed by fishermen's revenues and costs, declining FER means increasing costs is greater than increasing revenues.

Tabel 3. Indonesian FER Before and After the Policy Against Illegal Fishing at Provincial Level, based on Two Scenarios

Province	FER - Scenario 1					FER - Scenario 2				
	Before	After	Change			Before	After	Change		
			Δ	P-value Z test	Signif.			Δ	P-value Z test	Signif.
Aceh	101.12	100.82	↓	0.908	*NSig.*	100.87	101.04	↑	0.664	*Nsig.*
North Sumatera	100.94	102.64	↑	0.037	*Sig.*	100.91	102.95	↑	0.012	*Sig.*
West Sumatera	101.38	103.85	↑	0.001	*Sig.*	101.49	104.14	↑	0.001	*Sig.*
R i a u	106.59	113.70	↑	0.000	*Sig.*	106.83	114.64	↑	0.000	*Sig.*
J a m b i	102.49	106.25	↑	0.000	*Sig.*	102.62	106.74	↑	0.000	*Sig.*
South Sumatera	97.24	96.75	↓	0.291	*NSig.*	97.04	96.87	↓	0.727	*Nsig.*
Bengkulu	99.67	101.95	↑	0.000	*Sig.*	99.68	102.31	↑	0.000	*Sig.*
Lampung	105.98	106.30	↑	0.957	*NSig.*	106.02	106.31	↑	0.868	*Nsig.*
Bangka Belitung Islands	102.74	105.38	↑	0.005	*Sig.*	102.39	106.18	↑	0.000	*Sig.*
Riau Islands	107.26	108.10	↑	0.249	*NSig.*	107.00	108.50	↑	0.015	*Sig.*
DKI Jakarta	104.21	104.34	↑	0.718	*NSig.*	103.68	104.92	↑	0.061	*Nsig.*
West Jawa	105.48	109.64	↑	0.000	*Sig.*	105.81	109.99	↑	0.000	*Sig.*
Central Jawa	106.00	108.11	↑	0.000	*Sig.*	105.91	108.55	↑	0.000	*Sig.*
D.I. Yogyakarta	105.92	110.02	↑	0.000	*Sig.*	106.11	110.50	↑	0.000	*Sig.*
East Jawa	106.33	110.31	↑	0.000	*Sig.*	106.48	110.82	↑	0.000	*Sig.*
Banten	113.67	118.69	↑	0.000	*Sig.*	114.17	119.00	↑	0,000	*Sig.*
B a l i	113.83	111.93	↓	0.002	*Sig.*	113.73	111.72	↓	0.000	*Sig.*
N T B	101.31	107.99	↑	0.000	*Sig.*	102.22	108.14	↑	0.000	*Sig.*
N T T	103.74	105.13	↑	0.016	*Sig.*	104.03	105.05	↑	0.142	*Nsig.*
West Kalimantan	100.48	103.40	↑	0.000	*Sig.*	100.41	103.96	↑	0.000	*Sig.*
Central Kalimanta	108.02	109.79	↑	0.013	*Sig.*	107.79	110.33	↑	0.000	*Sig.*
South Kalimantan	110.74	113.09	↑	0.000	*Sig.*	111.07	113.13	↑	0.000	*Sig.*
East Kalimantan	107.47	107.32	↓	0.987	*NSig.*	107.04	107.75	↑	0.161	*Nsig.*
North Sulawesi Utara	109.94	106.85	↓	0.001	*Sig.*	110.18	106.09	↓	0.000	*Sig.*
Central Sulawesi	103.34	112.93	↑	0.000	*Sig.*	104.41	113.41	↑	0,000	*Sig.*
South Sulawesi	106.93	104.66	↓	0.001	*Sig.*	107.05	104.15	↓	0.000	*Sig.*
South-eastern Sulawesi	106.54	112.88	↑	0.000	*Sig.*	106.41	114.07	↑	0.000	*Sig.*
Gorontalo	102.48	104.48	↑	0.001	*Sig.*	102.60	104.68	↑	0.002	*Sig.*
West Sulawesi	96.60	103.88	↑	0.000	*Sig.*	97.38	104.27	↑	0,000	*Sig.*
Maluku	105.70	105.33	↓	0.421	*NSig.*	105.62	105.35	↓	0.571	*Nsig.*
North Maluku	100.02	101.59	↑	0.000	*Sig.*	100.19	101.67	↑	0.000	*Sig.*
West Papua	105.39	105.61	↑	0.941	*NSig.*	105.73	105.28	↓	0.223	*Nsig.*
Papua	104.21	109.75	↑	0.000	*Sig.*	105.23	109.60	↑	0.000	*Sig.*
INDONESIA	**104,77**	**107,27**	↑	**0,019**	***Sig.***	**104.91**	**107.53**	↑	**0,015**	***Sig.***

Source: the authors calculation

In general, provinces in which their fishermen experiencing increase of their average FER, the changes are statistically significant. In those cases, the policy has effectively increased the avegare FER. However, there are also some provinces that their average FER is increasing, but not

statistically significant. Under Scenario-1, those provinces are: Lampung, Riau Island, Jakarta and West Papua; and under Scenario-2, those provinces are: Aceh, Lampung, Jakarta, East Nusa Tenggara, and East Kalimantan. In the latter cases, the policy had no effect on average FER.

This research also suggests that some provinces experiencing a decrease in their average FER, and the declining are statistically significant. These provinces are Bali, North Sulawesi, and South Sulawesi. In those cases, although the vessel drowning policy has successfully increased the fish stock in Indonesia's waters, the welfare of the fishermen in the three provinces are getting worse. There are factors that might cause the average FER decrease, such as: increasing the cost of fishing, and decreasing the number of domestic fishermen. The policy of drowning illegal vessel is not only applicable to foreign vessels, but also to domestic vessels that do not have licenses to go to sea. In other words, the policy against illegal fishing might cause illegal domestic fishermen did not go fishing, thus reduce the intensity of fishing, and as a result, decrease the fishermen's income. However, it needs further study to confirm the factors causing the decrease of average FER in Bali, North Sulawesi, and South Sulawesi provinces.

There are provinces that have higher average FER compared to national average FER. Those are: Riau Islands, West Java, Central Java, *Daerah Istimewa Yogyakarta*, East Java, Banten, Bali, West Nusa Tenggara, Central Kalimantan, South Kalimantan, East Kalimantan, Central Sulawesi, Southeast Sulawesi and Papua. Three of them, namely: West Nusa Tenggara, Central Sulawesi, and Papua had average FER below the national average FER before the policy, then after the policy, the average FER of those provinces are higher than that of national level, and the difference is also statistically significant. Therefore, we argue that the vessel drowning policy is more influential for those three provinces. In the case of West Nusa Tenggara province, as one of the provinces with the largest fish potential in Indonesia (Bank Indonesia, nd), the policy is effectively increase the income of the fishermen. As the cases of illegal fishing decrease, the local fishermen could benefit more from harvesting the local sea potential of capture fish. The similar case is occured for Papua province. Arafura sea of Papua province is one of the three areas with the most frequent illegal fishing. The policy has successfully decreased the case of illegal vessels, thus increased the local fishermen income as well as the average FER. A slightly different story applied for Central Sulawesi province. Increasing average FER in this province might be due to decreasing cases of fish catching using bombs and chemicals. There were many cases of fish catching using bombs and chemicals in Central Sulawesi (republica.co.id, 2017). The policy reduces the cases of fishing using bombs and chemicals, and thus increases the fish stock, the harvesting rate of the fishermen, and the average FER. Based on the cases of West Nusa Tenggara, Papua, and Central Sulawesi provinces, we argue that the policy against illegal fishing has more impact on the provinces that have the greatest fish potential and at the same time have the greatest tendency of illegal fishing activities.

4. Conclusion

One of the policies of the Ministry of Marine Affairs and Fisheries (MoMAF) of the Republic of Indonesia is to eradicate illegal, unreported, and unregulated (IUU) fishing (or better known as illegal fishing), through the drowning of illegal fishing vessels and the regulation of the use of fishing gear. The government's action to drown the vessels of illegal fisher has attracted the attention of Indonesians and the world. The vessel drowning policy is not only expected to reduce overfishing, but also to improve local fishermen welfare. This study aims to compare the average FER between

the period of 'before' and that of 'after' the policy. This research suggests three conclusions. First, although at the national level the average FER has been successfully increase (as reflected by: the average FER in the period of 'after' the policy is higher that that of the 'before' the policy), it does not apply for all regions at provincial level. Average FER of some provinces has increased, but not significant. In fact, there are three provinces that experience a decline in their FER but statistically significant, namely: Bali, North Sulawesi, and South Sulawesi. Second, there are three provinces experiencing increase of their average FER significantly, namely: West Nusa Tenggara, Papua, and Central Sulawesi provinces. Based on the case of the latter three provinces, we conclude that the policy against illegal fishing is mot effective in the regions having great potential capture fish, and at the same time experiencing severe illegal fishing activities. Third, as we use FER as our analitycal tool, we have to consider its weaknesses. The first weakness of FER is that, the tool does not include fishermen income received from other activities outside fishing, for example as tour guides, fish breeders, and crafters. Another weaknes of FER is that, it does not reflect the real events. For example, the vessel drwoning policy that is proven to increase fish stock, does not necessarily increase the harvesting rate of the fishermen. Extreme weather is another factor influencing the cathed fish rate, and thus the fishermen revenues.

We suggest further research to find out factors causing the increase of Indonesian average FER, whether the increase is caused by the changes in fishermen's income or by changes in fishermen's cost. Another topic for further is to analyze the changes of average FER based on different types of vessels, so that we could see the welfare change of the fishermen who have small vessels.

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ADAPTATION TO CLIMATE CHANGE IN AGRICULTURAL SECTOR FOR ACHIEVING GREEN GROWTH

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ABSTRACT

The potential for future economic growth and development is put at risk, as a result of environmental degradation, climate change, and other environmental risks which are driven by internal and external factors. The impact of climate change in agricultural sector, especially on food crop sub-sector, are threat of floods and drought, plant pest organism attack resulting in decreased quantity and quality of agricultural product. Therefore, it is necessary to adopt strategies and efforts to anticipate the impacts of climate change. Farmers need to adapt climate change in the form of a tolerant agricultural adaptation (resilience) to climate change.
This study investigated farmers' willingness to pay (WTP) for adapting climate change in agricultural sector. Contingent valuation method was employed to elicit the WTP of farmers for adapting to climate change. The farmers as respondents were offered a yes/no option to select their WTP for adapting the climate change. Therefore, this study use logit regression to estimate the determinants of the WTP's farmers. The data were obtained by direct face to face interviews in order to get reliable responses from respondents. The structured questionnaires consisted of four sections which included household characteristics, household assets, social capital, and location characteristics. The last section consisted of CVM question to estimate farmer's WTP for adapting the climate change. The study area was located in Daerah Istimewa Yogyakarta Province where identified as agricultural area with any plant pest organism attack due to the climate change. This kind of climate change effect selected as the object of this study because it had been experienced by the most of the agricultural land identified by Geographic Information System.
The study result as 73.8 % of respondents were willing to pay of IDR 26,500 for adapting climate change. The socio-economic factors were found influence to the WTP. The result reveals that age, number of family members, trust, participation in farmer community and number of relatives live in other region influence to the farmers' WTP for adapting climate change. This study could support policy makers to design an efficient adaptation framework to the adverse impacts of climate change especially in agricultural sector.

Keywords: contingent valuation method; adapting climate change; logistic regression; willingness to pay; climate change

INTRODUCTION

Climate change has brought extreme weather, unexpected temperature and fluctuating rainfall. Studies showed that this situation causes a reduction on agro-economy performance in several countries (Georgescu et al., 2011; Lobell et al. 2011; Fischer et al. 2005). In this situation, Stern et al. (2006) argue that poor countries are more vulnerable concerning climate change exposure, economic and social sensitivity. In Southern Africa, for example, Lobell et al. (2008) found that maize harvest dropped up to 30% due to climate change. In South East Asia, climate vulnerability cause grain and maize product decrease

approximately by 10% (IPCC, 2007). A growing quail due to climate change could significantly affect the productivity of rice crop in China (Tao et al. 2008). In Malaysia, agricultural productivity is decreasing due to climate vulnerability and other related issues (Siwar et al. 2009). In some agricultural areas in Yogyakarta Indonesia, based on a mapping using Geographic Information Systems, Saptutyningsih & Ma'ruf (2016) found various impacts of climate change exist including flood or even drought that hit agricultural land, and pest attack, that cause farmers experience crop failure.

Related disciplines, in particular, the risk management literature, often use the term mitigation (rather than adaptation) to describe actions that reduce climatic risks. The Intergovernmental Panel on Climate Change (IPCC) defines resilience as the ability of a system to anticipate, absorb, accommodate or recover from a hazardous event (Field et al. 2012). The adaptation researches has now become an area of academic interest. Studies conducted by Dell et al. (2014) and Carleton and Hsiang (2016) confirm that there is a strong connection between economic studies of adaptation and literature on the economic impacts of climate change. The fifth assessment report of the IPCC devoted an entire chapter to the economics of adaptation, which includes over 500 references (Chambwera et al. 2014), including Markandya et al. (2014), Kahn (2016) and Massetti and Mendelsohn (2015).

Regarding the impact of climate change, among a society members, farmers are often less concern on climate change due to their weakness on institutional capacity including lack of confirmation of local knowledge that might lead to restriction on adaptation and environmental engagement (SPORE 2008; BNRCC 2008; Royal Society 2005; Adams et al. 1988). Climate change directly or indirectly affects the social and economic sustainability of farmers. Climate change causes crop failures, low productivity and high production costs and results in loss of income for farmers, while also raising the seasonal unemployment rate (Siwar et al. 2009; Alam et al. 2011).

Concerning the above circumstances, a new economic model that value environmental endowment would be necessary to address the impact of climate change to achieve sustainable development. Various efforts need to be made for adapting climate change, such as in the form of a tolerant agricultural adaptation (resilience) to climate change. The adaptation to climate change could be made by strengthening social capital in essential community roles, as mentioned by Siregar (2011).

This study aimed to measure the willingness to pay of farmers to adapt and identify the role of social capital in adaptation to climate change. The willingness to pay measurement will determine the pattern of adaptation of farmers in facing the climate change. Study of climate change that has been conducted mainly employed descriptive study (Ngigi, 2009) and choice experiment (Chaisemartin & Mahe, 2009). Meanwhile, this study uses a contingent valuation method to measure the willingness to pay of farmers in adapting to

climate change and identify the factors affecting the willingness to pay of farmers for adapting climate change. Based on the mapping that has been conducted previously by Saptutyningsih & Ma'ruf (2016), this study focused on the location of farmland that is impacted by climate change especially pest attack, in Yogyakarta Indonesia.

This study is expected to help policymakers and government to address the challenge of climate change better and meet expected growth targets by providing them with data about the awareness levels of farmers towards climate change and their WTP for adapting the climate change. To this end, the study of the WTP of farmers is necessary, especially given the fact that, to date, no such research has been conducted in the Indonesian context. There is, therefore, a pressing need to survey the behaviour and WTP of farmers for adapting climate change in this country.

RESEARCH METHODOLOGY

Description of the study area

This study was conducted in Yogyakarta, Indonesia, since climate change has had an impact on the agricultural sector in this province. A mapping of climate change impact on agricultural land using geographic information system shows that most agricultural lands in the province were affected by pest attacks as presented in Figure 1 (Saptutyningsih & Ma'ruf, 2016).

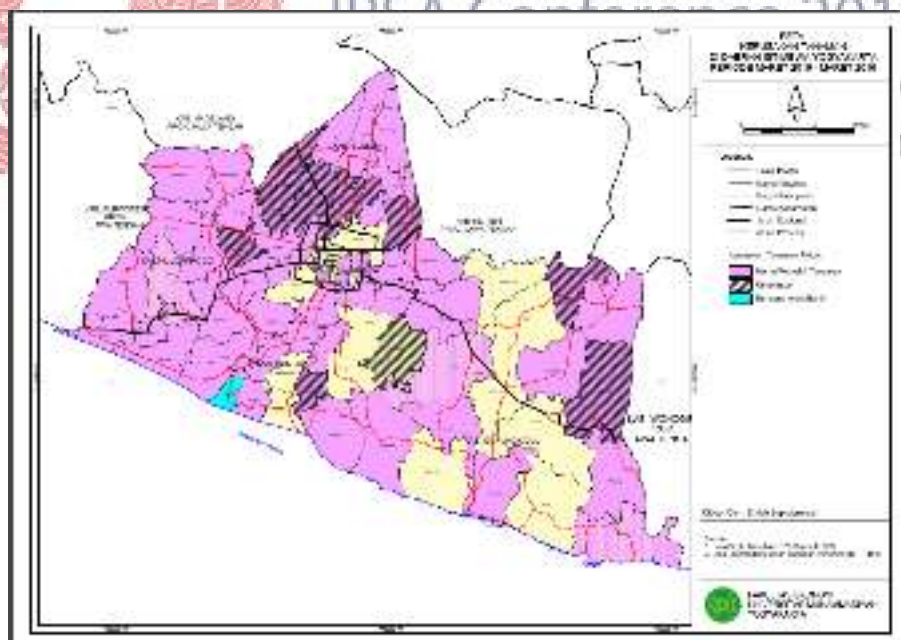

Figure 1. Impact of climate change on agricultural land in Yogyakarta

Sampling procedure

Subjects in this study were farmers and owners of agricultural land in Yogyakarta whose land was affected by climate change. The mapping of climate change impact mentioned above indicates that there are three types of climate change impacts in this province: flood, pest attack, and drought (Saptutyningsih & Ma'ruf, 2016). This study focuses on pest attack

since this impact was the one that mostly incurred in the area. 191 samples were selected using a non-probability technique with systematic random sampling. This number was determined using Slovin formula. This study employed logit regression model. It was assumed that adaptation to ecological technology that chosen by farmers would maximize their utility.

Design of the questionnaire

The questionnaire consisted of 4 sections. Section A collected information on the farmers' socioeconomic characteristics (i.e. family size, age, sex). Section B enquired the farmers' household endowment asset (i.e. land size, land tenure). Section C collected information on social capital characteristics (i.e. trust, community participation, number of relatives outside the village, etc.) and location characteristic (i.e. distance from home to farm). Finally, section D consisted of CVM questions to estimate farmers' WTP for adapting climate change. This methodological approach conforms to research carried out by Loomis et al. (2000), Zhongmin et al. (2003), and Herrera et al. (2004), who contended that a clear explanation of CV variables to be studied is crucial in valuation studies. This method gives a better understanding of the variables that affect the household's WTP, which is an important key to identify the hypothetical situation. It also helps to elicit the range of amount/values of WTP through binary (close-ended) choice questions. Furthermore, this method ensuring accurate benefit estimates of the studied ecosystem good and services. In this regard, we set questions in the form of binary/ dichotomous, i.e. respondents had two options (1 = Yes and 0 = No). We designed bids amount ranging from 5,000 where respondents were required to mention or circle the amount they were willing to pay. These bids were finally set after a careful pre-testing and feedback from farmers. In the CV questionnaire, we selected a payment vehicle as the adaptation fees. Based on the respondent's previous answer, we ask follow-up questions for lower or upper amounts of adaptation fees.

Data analysis

This study employed the Contingent Valuation Method (CVM) which is a hypothetical value based method used to estimate farmers' WTP for adapting climate change. CVM is a survey technique that constructs a hypothetical market to measure willingness to pay (WTP) or willingness to accept (WTA) compensation for different levels of non-market natural and environmental resources (Loomis, 2002). The approach was selected for this study because of its ability to assign a market value of ecosystem services in the agricultural sector that do not have market values or cannot be assessed through market mechanisms (Bateman et al., 2002; Amponin et al., 2007; Haab and McConnell, 2002).

The estimation model in this study was:

WTP Adaptation = f (household characteristics, household asset endowment characteristics, social capital characteristics, location characteristic)

Table 1. The definition of explanatory variables

Variables		Definitions
Dependent variable		
WTP Adaptation		Willingness to pay (WTP) for adapting climate change
Independent variables		
Household characteristics	AGE	Age of household head
	SEX	Sex of household head (=1 if male)
	FAM_SIZE	Average number of family size
Household asset endowment characteristics	SQUARE	Average total farm area in hectare
	LAND TENURE	dummy land tenure 1 if farm area owner; 0 if otherwise
Social capital characteristics	TRUST	Trust in people (=1 if respondent believes people are trust worthy)
	COMMUNITY	The household participation in community (=1 if participate)
	FAM_OUT	Number of relatives outside this village
Location characteristic	DIS_HOME	Distance to home from farm area (km)

VARIABLES AND DATA DESCRIPTION

The survey involved 191 farm households that were randomly selected in 7 villages, located in Kulonprogo district of Yogyakarta, Indonesia. The dataset includes detailed information on the socioeconomic characteristics of the households, asset endowment characteristics of the household, social capital characteristics, and location characteristics.

The dependent variable is the willingness to pay for adapting to climate change. The respondents stated that they adopt adaptation technologies to reduce the risk of climate change especially plant pest organism attack that causes a decreased quantity and quality of their agricultural production.

Table 2. Willingness to pay for adapting climate change

WTP	Yes	No
Amount (person)	141	50
Percentage (%)	74	26

Table 3 presents descriptive statistics of variables considered in the analysis. The willingness to pay for adapting to climate change in the agricultural sector was a dummy variable with a value of 1 if the farm household head willing to pay IDR 26,500. The household characteristics of this study are sex of household head (= 1 if male); the age of household head which had an average of 58.2 years old; and the average number of family size of the sample was two people. The average total farm area as the household asset endowment was 1861 hectares on average. The farm area owner captured as a dummy variable with a value of 1 if respondents were the owner of the farm area.

Table 3. Descriptive statistics of explanatory variables

Description of variables	Mean	Minimum	Maximum	SD
Willingness to pay for adapting climate change	.738	.00	1.00	.441
Household characteristics				
Sex of household head (=1 if male)	.753	.00	1.00	.431
Age of household head	58.200	34	88	10.360
Average number of family size	2.308	.00	8.00	1.798
Household asset endowment characteristics				
Average total farm area in hectare	1861.360	35.00	20000.00	2221.840
Dummy land tenure (=1 if farm area owner)	.654	.00	1.00	.476
Social capital characteristics				
Trust in people (=1 if respondent believes people are trust worthy)	.884	.00	1.00	.320
The household participation in community (=1 if participate)	.628	.00	1.00	.484
Number of relatives outside this village	5.125	.00	150.00	14.731
Location characteristics				
Distance to home from farm area	901.267	5.00	22000.00	2175.990

The determinant of adapting to climate change in this paper, social capital, refers to trust in people and household participation in the community. The trust variables are formed from trust in people and trust in institutions. Trust in people is captured as a dummy variable with a value of 1 if respondents think that people are trustworthy and 0 if otherwise. The household participation had a value of 1 if respondents participate in a community. The number of relatives outside this village was five people on average. The characteristic of location in this study was the distance to home from farm area was about 901.267 metres on average.

RESULTS DAN DISCUSSION

Among the household characteristic variables, sex of household head has no significant effect on willingness to pay (WTP) for adapting climate change included in this study (Model 1 and 2) but affects WTP in Model 3 and 4. Sex of household head positively correlated with the WTP for adapting climate change since the model has the interaction between sex of household head and trust in people. It means that male household head with trust in people has a significant effect on WTP for adapting climate change. The household size has a significant effect on WTP of adaptation to climate change. This was expected given that the adoptions of the ecological adaptation technology require labour.

The household endowment variables have no effect on WTP for adapting climate change. The land size was positively associated with WTP of adaptation to climate change in the study area but does not significantly correlated with WTP. Our results also show that land tenure has no significant effect on WTP for adapting climate change considered in this study. But by including interaction between age of household head and trust in people, land tenure became significantly correlated with WTP of adaptation to climate change. Land

tenure also had no significant effect on WTP for adapting climate change. By including interaction between age of household head and trust in people and interaction between sex of household head and community participation, land tenure became significantly correlated with WTP of adaptation to climate change. It means that an older household head with trust in people and male household head who participate in the community caused the land tenure positively correlated with WTP for adapting climate change.

Table 4. Regression results

Variables	Odds ratio (SE)			
	1	2	3	4
Constant	.009	.000	.001	.000
	(1.627)	(2.994)	(3.034)	(8.665)
SEX	1.019	1.015	.090**	.005**
	(.465)	(.472)	(1.179)	(2.768)
AGE	1.044**	1.111**	1.118**	1.551***
	(.022)	(.048)	(.049)	(.150)
FAM_SIZE	1.346**	1.379**	1.339**	1.442**
	(.143)	(.144)	(.148)	(.170)
SQUARE	1.000	1.000	1.000	1.000
	(.000)	(.000)	(.000)	(.000)
LAND TENURE	.631	51.502	63.089	206.867*
	(.315)	(2.887)	(2.940)	(3.166)
TRUST	19.169***	21.456***	3.354	278394173
	(.601)	(.616)	(.962)	.6**
				(7.824)
COMMUNITY	2.192*	2.242*	2.163*	9.854**
	(.449)	(.452)	(.458)	(1.027)
FAM_OUT	.954**	.956**	.955**	.959*
	(.024)	(.023)	(.023)	(.023)
DIST_HOME	1.000	1.000	1.000	1.000
	(.000)	(.000)	(.000)	(.000)
AGE*OWN		.925	.923	.904*
		(.051)	(.052)	(.056)
SEX*TRUST			16.984**	676.005**
			(1.257)	(2.777)
AGE*TRUST				.723**
				(.136)
SEX*COM				.101**
				(1.161)

Dependent variable : WTP for adapting climate change
*significant at level 10%; **significant at level 5%; ***significant at level 1%

On the other hand, household head trust in people has a positive and significant effect on WTP for adapting climate change. Our findings of the effect of social capital on WTP for adapting climate change are in line with other similar studies. As described in the previous section, there is some literature on the link between social capital and technology adoption on adapting climate change. For example, based on analysis from different African countries, van Rijn et al. (2012) argue that an aggregate measure of social capital and the adoption of agricultural innovations by farmers are highly correlated. But they further argue

that different dimensions of social capital are associated with agricultural innovation in a variety of ways: some are positively related while others are negatively related. Also, Bouma et al. (2008) found that social capital is not a significant determinant for household investment in soil and water conservation when such investments are subsidized. Similarly, Gebremedhin and Swinton (2003) examined the effect of community influence (social capital) in inducing adoption of soil conservation in the northern part of Ethiopia. They found that it had no significant effect on adoption of both soil and stone bund terraces.
Another dimension of social capital considered in this paper was trust in people has a significant effect on WTP for adapting climate change. The participation of respondents in a community has a significant effect on WTP of adaptation to climate change in level 10%. The total number of relatives of the household living outside of the respondent's village. This is positively and significantly correlated with the WTP of adapting climate change. As a measure of location characteristics, distance to home is also included in the analysis. But it has no effect on WTP for adapting climate change.

CONCLUSION

This study assesses farmers' willingness to pay for adaptation to climate change in agricultural sector. Specifically, this study focuses on pest attack as the impact of climate change on the agricultural sector, ecological adaptation technology for adapting climate change and alternative social capital measurement.

This study found that farmers in Yogyakarta are willing to pay for climate change adaptation. Their WTP is influenced by sex, age, land size, and social capital. A different forms of social capital have different relationships with the farmers' WTP. Trust, as a main social capital measurement in this study, has significant influence on the WTP of the farmers to adapt their agricultural practice due to climate change.

There is remain challenges that limit the explanatory power of social capital as a tool in climate change adaptation. Further studies may extend the current study by including other kinds of sustainable land management practices such as agroforestry, maintenance of soil fertility such as manure application and the use of chemicals etc., to understand and provide a complete picture on the role of social capital, climate change and other household characteristic variables.

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The Role of Waste Bank toward Community Empowerment in Local Area: A Comparison Analysis

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Abstract

Waste Bank is an alternative way to overcome environmental problem through community empowerment. The paper aims to analyze the implementation of waste bank and compare the effectiveness in order to empower community economic between two waste banks in East Java, Indonesia. This research was conducted in Bank Sampah Malang (BSM) and Bank Sampah Jombang (BSJ) by using descriptive qualitative method. The data collection was performed through field study and in-depth interview. In general, BSM more effective than BSJ did based on several categories namely the receive waste classified, total of waste bank's customers, waste management, empowerment community program, and type of savings. The research undergoes SWOT analysis an effort to obtain the potentially impact of success of the waste bank.

Keywords: community empowerment; community development; waste bank

INTRODUCTION

Waste has become the biggest problem in several developing countries including Indonesia. The common model waste management has based on the final approach which waste be collected, transported, and disposed to final processing of waste (Tanuwijaya, 2016). The model would cause the occurrence of hoarding the waste in the landfills. According to performance of environmental management area of Jombang District in 2016, the amount of waste produced by Jombang District was recorded appoximately 512,27 tons per day, while Malang has the potential to waste 620 tons per day (Suryani, 2016). The number of waste has positive correlation to the increasing number of population (Al-Jarallah & Alesia, 2013). Moreover, this problem will exist continuosly if the civilians still throw less care and low awareness about the environment.

Dealing with environmental problem, waste bank offers alternative program to overcome that problem particularly related to waste problem. Alike a commercial bank, waste bank provides service in saving and lending money. However, customers are not allowed to save their cash money but the only propose their garbage in waste bank that will convert to money depend on the categories. Furthermore, waste bank provides several program to teach community to sort their waste as well as to grow community awareness to manage their garbage.

The existence of the waste bank involves the environment become clean and reduce environmental pollution. This is reasonable because people think that almost all garbage is money and they will save to waste bank. Consequently, waste bank not only make environmental better but it also have a potential to

increase their income. Moreover, Wulandari et al. (2017); Sulistyani & Wulandari (2017); Shentika (2016); Wijayanti & Suryani (2015); Purba et al. (2014). revealed that waste bank management model not only beneficial in making a clean environment but also has an impact on local economy by increasing the income of housewives around the waste bank. Therefore, the existence of waste bank is important because it can make people more aware toward the advantages of garbage in increasing their revenue. In addition, waste bank also improve the awareness about environmental particulary how to recycle waste to increase the value added of good through community development (Purnami et al. 2016). Nurjanah et al. (2016) remarked that waste bank is able to build and empower community in local communities by promoting self-reliance and creativity of local communities and improve the welfare of the household using the process of empowerment through human development, business development, institutional development and community development.

One of the biggest waste bank in Indonesia is Malang Waste bank (BSM) which is located in Malang, while Jombang Waste Bank (BSJ) is a main waste bank which is in Jombang District. Those waste banks have several differences such as the number of waste classification, the number of customers, waste management. In managing of waste, BSM has organic waste management for compost production and non-organic waste for making crafts, whilst in BSJ there are inorganic waste for making crafts and ecobricks. Furthermore, the program of empowerment in BSM is training program for making the ecobricks. Those differences deserve to compared each other which ones tend to be more empowering community based on existing teories. The description of situation, internally and externally, Malang Waste bank and Jombang Waste bank can be seen using SWOT analysis (Strengths, Weakness, Opportunities, Threats).

METHOD

The research aims at analyzing and comparing the effectiveness of waste bank in empowering community between Malang Waste Bank (BSM) and Jombang Waste Bank (BSJ) This research uses in-depth interview to the informant as well as documentation and field observation. In depth interview is addressed to the both Chairman of waste, Chairman of empowerment, and customers bank in BSM and BSJ. This documentation is related with activities of customers as well as waste mangement in BSM and BSJ because both of those waste banks is the main of the waste bank in Malang and Jombang. Analysis of model which is used in this study using interactive models through data reduction phase, display data, and data verification which is developed by Miles and Huberman (1984). The research undergoes SWOT analysis in order to obtain the potentially impact the success of waste bank.

RESULTS AND DISCUSSION

Malang Waste Bank (BSM) is the main waste bank in Malang. Initially, BSM is purchased law of cooperatives, which is founded by Government of Malang. BSM is waste bank which be the national sampling because of the best waste management. In daily operational, BSM working together with Malang Goverment and CSR of PT. PLN (Persero) distribution of East Java. Malang

Waste bank was founded since the emergence of waste problem concerns by environment basic unit who exist in Malang.

On the other hand, Jombang Waste Bank (BSJ) is the main waste bank which exist in Jombang District. This BSJ is waste bank which is under the auspices of the Department of the environment (DLH) Jombang. The first, Jombang waste bank was an association of waste bank units in Jombang which has been formed in 2012. This association aims to coordinate the waste bank units in Jombang in order to be able to walk together and can develop. Therefore, The waste bank was formed to make it be official and can has Letter of the Ordinance the Goverment of Jombang. Here are the number of customers of BSM and BSJ which will be presented in table 1.

Table 1. The Number of BSM and BSJ Customers

Malang Waste Bank (BSM)	Jombang Waste Bank (BSJ)
Individual Customer : 1375	Individual Customer : 27
Customer Unit : 576	Customer Unit : 9
Customer School : 257	Customer School : 16
Customer Institute : 8	Customer Institute : -
Total overall customer : 30000	**Total Overall Customer: 6726**

* the data was collected on January 2018

The Strategies of Waste Bank in Empowering Community

The role of waste bank in empowering community in the local area in both waste banks have several stages namely enabling, empowering, and protecting. More specifically, in enabling stage, introducing BSM and BSJ to the community about BSM and BSJ background, goals, and programs. This process mainly to change the mindset of community about waste which is waste was something useless and now it has economic value. In this stage, BSM did it through socialization which is held by BSM such as door-to-door or *karang taruna, PKK* and *Dharsa Wisma*. This socialization is executed in place where the management of BSM was visiting, and involve or invite the community in waste management programs and community empowerment. Whereas, the enabling stage which is executed by BSJ is invite citizens who agree to attend in BSJ office of one village which is held once a week. Therefore, invitation is addressed to the different village every week. As well as involving the community in waste management programs and community empowerment programs.

The next step is community empowerment. BSM provides training to the community about waste management such as handicraft which making from inorganic waste, worm cultivation, composting, biogas production. As well as, providing competitive price for waste which is saved by costumers. Besides that, BSM has empowerment program such us pay electricity and commodity using waste, pay the health insurance using waste. On the other hand, BSJ provides training to the community about waste management such as handicraft making from inorganic waste, dresses designing from plastic waste, ecobricks producing. Moreover, BSJ has empowerment program such as buy commodity using waste.

The last section is protecting. In this stage, BSM management actively in socializing about program and waste management to the community of Malang and to the visitors from other waste bank in outside of Malang. Since as it is known that BSM is the national sampling of waste bank, so most of visitors from

others banks in outside of city want to implement the program of Malang Waste Bank. Similarly, BSJ visits another developed waste bank to learn about waste management. After that, BSJ socializes that waste management to the community of Jombang District about how waste management in other waste bank which can be applied in BSJ.

SWOT (Strengths, Weaknesses, Opportunities, Threats) between BSM and BWJ

The following is the SWOT analysis of malang Waste Bank and Jombang Waste bank, will be presented in table 2 and table 3.

Table 2. SWOT Analysis of Malang Waste Bank

Elements	Analysis
Strengths	1. Already has a legal entity which is cooperative 2. BSM has classified of 71 types of the waste, then the customer can obtain more revenues because of various waste types which BSM provided. 3. Customer can pay electricity using waste and buy some commodities by using waste. 4. BSM has applied waste purchasing from customer either cash form or save it in deposit account. 5. Waste is made clean, so the community or customer who will buy the waste to create it be handicraft prefer to buy in BSM 6. There is a chopped machine which is still working and can process to chopping waste once a week, and output of it can increase the waste price 7. Output of chopping waste will be classified according to type, so that company which will be partner of BSM can choose type of chopped waste 8. BSM has wider market system that makes many handicraft products can sold easily 9. The presence of waste pick-up in BSM each once a week, and in one day committee of BSM take in 15 group of communities or more, depend on customer's request. 10. The price of waste remains stable that make BSM unit easier to buy waste from their customers. 11. The number of visitors from other area in Indonesia can increase BSM income because most of them buy handicraft product in BSM, it makes the customer who make the handicraft be more motivated to produce more the good quality of handicraft so crafter be more motivated to create more handicraft product which has the good quality 12. There is empowerment program such us morning walk and pay the waste, *kampong bersinar* competition, give reward for the customer who has the highest deposit can be the motivation to keep the environment to be clean.
Weaknesses	1. It needs extra time and more effort to sort out waste to 71 types of waste. 2. To decided how much the price of waste, BSM has a standard on total of chopped waste from BSM company

	partner. If, purchase of chopped waste is low, it will effect the waste price. 3. The lack of transportation to pick waste up from community, because of BSM just has 1 truck and 2 pick up cars (which still works) and the have 15 locations each day which the waste have to pick up and in a picked up car just can load around 50 kgs/half ton of waste (The number of waste increases everyday), so isn't effective if it just provide 1 truck and 2 picked up cars. Besides that, it needs high cost to maintained the picked up car, because the car's age is quite old and sometimes car's engine doesn't work so, it can't be used. 4. It is difficult to unite group unit of elite community, because they prefer to be individual customer and deliver their own wasteby their private vehicle. 5. The customer who understand well about price of waste always compare the price between the waste gatherer and BSM. If the waste price from waste gatherer highest than BSM, they will move to the waste gatherer. 6. To separate the wastem from its packaging still in manually way, so it takes longer time to finish it.
Opportunities	1. BSM is the waste bank which is the national sampling waste bank so, all of indonesia waste banks make BSM as a model of waste bank, so make their staff be more entusiasm to develop BSM. 2. Malang always get the Adipura award and has commitment to keep that reward, one of Adipura's assessments from BSM, the main waste bank and unit of waste bank. 3. BSM is an icon of Malang in 3R movement, so that many visitor from others districts and it motivates all of staff and customer of BSM to maintain and develope it. 4. Sometimes, the price of waste in BSM be standard for waste gatherer and others waste banks, because BSM in determining the price based on the market characteristic, but also depend on the number of purchasing the chopped plastic by company partner of BSM. The existence of CSR of PT. PLN, East Java distribution, which has been being began in 2011 until now gives contribution such as facilities which is needed by BSM and BSM makes commitment to keep the empowering community to keep pay attention to waste and environment. 5. The unique and diverse in Waste management, make the community be interesting to be the customer of BSM, and the number of customer of BSM to increase every month, either individual customer or group/unit customer.
Threats	1. High selling point of waste in waste gatherer makes the customer switch to sell their waste to the waste gatherer. 2. Decrease of waste's price at any moment can affect to the salling points in BSM 3. Competition of grinder/counter waste in Malang makes BSM to compete with them, especially grinder for plastic type PET. So that, that competition makes plastic company

	be dilemma to buy plastic chopped in BSM or plastic grinder in Malang.

Table 3. SWOT Analysis of Jombang Waste Bank

Elements	Analysis
Strengths	1. BSJ classifies the waste be 22 types of waste. 2. The customer can purchase the commodities in BSJ and be paid by waste. 3. BSJ has applied to produce ecobricks, which is most of waste bank have not applied it yet. 4. It receives the residue waste such as plastic bag and packagings to be material for ecobricks. *5.* Weighting the waste in BSJ by fairly and is not corrupt 6. BSJ to apply waste purchasing from customer either in money form or savings in book of deposit. 7. Use old newspaper to make handicraft such as flower vase and flower which have high economical value, handicraft from the old newspaper is not perfomed by others waste banks in Indonesia 8. There is cooperation between the customer in making the handicraft from inorganic waste. 9. BSJ provides dress renting which is made from plastic waste.
Weaknesess	1. BSJ does not have a legal entity 2. The organization of BSJ is inappropriate and the job description of each staff is unclear. 3. The location of BSJ is not strategic so that make customer difficult to find out BSJ office. 4. The financing of BSJ only from the income from selling the waste and handicraft, almost all of the activities are restrained by finance aspect. 5. Transportation to pick waste up just use two small vehicles which is less to accomodate all of waste from the customer 6. Not all of the waste banks in Jombang join be customer of main waste bank has been cooperating with waste gatherer before BSJ exist. 7. There is not type of regular deposit which is the output of customer's deposit can be taken at any moment, so it makes the customer be dissatisfaction. 8. Inorganic waste is sold to waste gatherer in raw material form of waste, there is not further management. 9. In determining of waste price, BSJ only focus on the gatherer in Jombang so that the waste price in BSJ does not have any different of the waste gatherer.

Opportunities	1. BSJ is assisted by Department of Environmental, Department of education, and Department of cooperative in Jombang so that BSJ get support of those ministries in execute the activities. 2. BSJ Staff is the leader of waste bank units in their own village are. Therefore, BSJ is held by the expertise staffs who will make BSJ be more developed. 3. BSJ is quite young gives chance to BSJ to always study more and can develop BSJ become the legal entities such us cooperation. Since a young age, BSJ can recruit many more customer.
Threats	1. When the price of waste in waste gatherer descend, it will affect to the waste price in BSJ. 2. The large number of plastic grinder factory make BSJ be dubious to proccess the waste until become tiny pieces, because sometimes plastic industries have cooperated with plastic grinder factory.

Comparison Between Malang Waste Bank (BSM) and Jombang Waste Bank (BSJ) In Empowerment Community in Local Area

Malang Waste Bank (BSM) and Jombang Waste Bank (BSJ) have their own way in empowerment community. From the classification type of waste which is received by waste bank, BSM has wider acceptance for waste. The types of waste that suitable for BSM are 71 types, whilst BSJ only 22 types of waste. Based on the analysis, BSM tend to be more empower community than BSJ because Empowering is an effort to build up potency to push, motivate, and raise the awareness up. So, BSM which classify to four types and increased to 71 types of waste which makes community more motivate to collect and deposit the waste to BSM.

Another result related to the number of customer, BSM definitely higher than BSJ. It is Approximately 30,000 of 851.298 citizen of Malang become customers of BSM which are divided be several group, namely individual customer as many as 1,375, approximately almost 600 unit of waste bank for schools, more slightly than 250 for customers, and about eight for institution customer. However, It approximately 6,726 population become the customer of BSJ of 152,823 citizen of Jombang which are divided into several groups namely individual customer, residence customer, waste bank unit, and office customer. It is more slightly than 25 customers for individual customers. The number of customer by residence and office customers i approximately 9 units and 16 customers resepectively.

In context of waste management, BSM manages both organic and inorganic waste. Organic waste is managed to be compost and inorganic waste such as plastic there are sold, be processed to be the handicraft and chopped be the tiny plastic pieces, while in BSJ receives inorganic waste only. Some of inorganic waste be sold to waste gatherer, the other is made for handicraft. BSM tend to be more empowerment community than BSJ, because, according Ardiyansyah (2016:159) empowered is effort to improve, motivate, and raise awareness up. So, the existence of waste management which more various than BSJ, make Malang's

community to be more motivated to choose the type of waste management, which will they do for their waste and it doesn't depend on other side.

In order to empower the community, BSM tend to be more empowerment community than BSJ, BSM provides to the community related to sort out the waste be 71 types, training of handicrat making, worm growing, Produce compost, competition about sanitary program such as shining village and the morning walk program, and pay the waste. BSM tend to be more empowering than BSJ. It is reasonable because empowerment is effort to build up potency by stimulate, motivate, and raise the awareness (Asteria & Heruman, 2016; Samadikun, 2017). Then, the existence of the various deposit's types in BSM make Malang community feel be pushed and motivate to save their waste than in BSJ, because of deposite's types which is owened by BSJ, it does not have the type of deposit which can be able to take any time.

CONCLUSION

Based on the explanation both views of BSM and BSJ, they have their own roles in empowering community. There are several stages namely enabling, empowering, protecting. Furthermore, both waste banks have different of strengths, weaknesses, opportunities, and threats due to different factors both external and internal. Community empowerment which is done by both waste banks can be seen from several aspects such as the waste classification, the number of customer, waste management, community empowerment program and type of deposit. Those aspects make BSM tend to be more empowering community than BSJ. This is understandable that the existence of BSM make community in local area more aware about the importance to create a clean and healthy environment as well as community of Malang are not underestimate the waste either organic or inorganic waste because all of the waste can be useful of waste management process.

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THE CONTRIBUTION OF DUSUN FARMING TO HOUSEHOLD INCOME IN SMALL ISLANDS: A CASE IN AMBON ISLAND, INDONESIA

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ABSTRACT

Whereas many studies highlight positive environmental effects of agroforestry systems, the socio-economic of *Dusun* practices as indigenous technology agroforestry systems have rarely been studied in detail, in particular in small island. The purpose of this study was to examine the contribution of *Dusun* systems to sustain household income of rural-coastal communities in small islands. Observation and survey was conducted in three different *Dusuns* to obtain data through in-depth interview of 88 heads of households. Findings indicated that there were around 26 crops in the *Dusun* that were grown together and formed multiple cropping structures from high stratum to low stratum to avoid soil erosion, maintain bio-diversity and source of income. The average potential contribution of the *Dusun* to support rural household income was estimated around IDR 84.33 million/year or US $3.6/capita/day. This was almost two fold of World Bank poverty line but the problem was that it is still followed by high poverty level and income inequality. Almost 80% of the total income were contributed by four main crops, that is clove (*Eugenia aromaticum*), durian (*Durio zibethinus Mur*), nutmeg (*Myristica fragnans*) and duku (*Lansium domesticum*), whilst the rest of 11% was contributed predominantly by snake fruit (*Salacca zallaca var amboniensis Becc*), mangosteen *(Garcinia mangostana L)* and langsat *(Lansium domesticum),* whilst the rest was contributed by the rest of the crops. The size of land, age of the farmer, the number of clove and nutmeg, are identified as the main significant factors to influence household income.

Keywords: *Dusun Farm*, household income, small islands, Maluku

INTRODUCTION

The current issues of conventional agriculture practice are its dependency on high and expensive external input particularly chemical fertilizer and insecticides to nurture and increase production of monoculture crops. This practice will not only harm the environment, water pollution, reduce soil fertility and productivity but also become a threat to human health. As an alternative, it needs to search for an ecological agriculture system that is more sustainable and profitable, resistant to climate change impact, reduce soil and water pollution. An important ecological agriculture is known as agroforestry system that gives better contribution to ecological services, biodiversity, carbon stock in the land and provides a better alternative solution to the problem of natural resources degradation, global warming and climate change impact both at the global and local level (Ducos, 2014; Schwab et al, 2015).

In general, agroforestry is a multiple cropping systems that combine both agricultural crops and forestry trees. However, agroforestry shapes an identity of its own, therefore it is not the part of agriculture or forestry. Forest trees should be embraced as enthusiastically as agriculture crops (Nair, 1998). Monk et al. (1997) defined agroforestry as 'garden in which few or no annual crops are grown, and which have a permanent close canopy together with a closed forest structure'. By incorporating into science and technology, traditional agroforestry is modified into modern agroforestry systems such as *alley* farming systems and *taungya* farming system in Nigeria, Liberia, Nepal and the South Pacific regions that combined multipurpose trees, edible fruits and food crops to substitute shifting cultivation and to create a sustainable soil and land, food security and cash-income for rural households (Adegbehin and Igbuanugo, 1990; Fouladbash and Currie, 2015; Vergara and Nair, 1985; Neupane and Thapa, 2001).

Even though modern agroforestry has been promoted in many countries in the last decade, however, most farmers are unable to adopt because of several reasons (Rasul and Thapa, 2003; Rasul and Thapa, 2004). First, they need short term production for food security and cash income to fulfill basic needs including acquire credit incentive and subsidy from government. Second, low competitiveness of ecological agriculture products because most people are uninformed the danger of chemical fertilizer and insecticides so the price of ecological farm was less-competitive. Third, the environmental costs of conventional agriculture system are not incorporated into the benefit cost analysis so that there is no significant level of financial benefit between conventional and ecological systems. Next, most of government policy like agricultural and fishery office is focused on economic and then subsidy, credit support, price distortion, credit, extension service, research and marketing to conventional rather than to ecological farming systems. Therefore, as part of small islands ecological systems, agriculture and fishery development need to incorporate into *Dusun* systems.

Most studies of agroforestry were in line with soil, water, crops in continental regions but limited studies were about agro-economic of agroforestry in small islands (Montambault et al., 2005). Different from continental region, small islands are more vulnerable to natural disaster and the high level usage of chemical agriculture inputs. Because of limited natural resources, small islands are also sensitive to social conflict and environmental degradation. As an indigenous knowledge and technology agro-forestry, *Dusun* systems have been practiced by farmers from generation to generation and has a crucial role to sustain the natural and human resources in the islands, however, little is known about agro-economic

aspects of the *Dusun* systems and its possibility to incorporate into science and technology. Therefore, this study will explore the agro-economic including the agronomy and economic of the edible fruit and spices crops of *Dusun* systems in the small island-Ambon city, Maluku Indonesia.

METHODOLOGY

This research was conducted in three different Dusun areas that were selected purposively, including *Negeri* Hutumury, *Negeri* Hative Besar and *Negeri* Soya. The main reason to choose the first two villages was to explore the *Dusun* characteristics in the coastal areas whilst the last Dusun was chosen to describe the *Dusun* characteristics in the hilly land area. Different from village, *Negeri* is the smallest unit of local government administration region but its borders and land ownership refer to the local administrative rules and customary laws. These three villages are part of the small island Ambon city administration area (Figure.1).

Figure 1. Research site map of Ambon island, Maluku

The first type of primary data was in line with the history of *Dusun* and the types of crops in the *Dusun*. Data was collected regarding household income and factors that have influenced income from the *Dusun*. Primary data was obtained from of 88 households in three Dusun areas selected by researchers and enumerators. The enumerators were trained to apply in-depth interview and to fill the questionnaire forms before gathering the data in the

field. Further investigation was conducted through field observation and interview with head of village and key informants in the Dusun areas. Then data was analyzed using both qualitative and quantitative approach.

RESULTS AND DISCUSSIONS

DUSUN FORMATION PROCESS

Dusun development processes can be divided into 4 phases. First, the head of household opened and cleared primary forest to cultivate food crops garden (*kabong)*. Farmers let some tree crops grow to shade the land and crops. Second, farmers cultivated the garden/*kabong* land with annual crops and then cultivated edible fruit crop, otherwise the garden will become *Aong* (fallow land). Third, due to the declining soil fertility after land was used for several years, then farmers moved to other new land, whilst edible fruit crops and perennial crops will be grown naturally and shading the previous crops. This was the reason for farmers to have several plots of garden, *aong* and *Dusun*. At this phase, the beginning of *Dusun* formation will begin where birds and mammal from Wallace regions started to come and live in the *Dusun* (Wattimena, 2003). Finally, several years later, *Dusun* systems will be completely formed alike primary forest and will give return to ecological service, food security, energy and fiber and cash income to household members (Figure 2).

Derived from its historical background, the process of *Dusun* development was similar to *swidden* agriculture, which is defined by Dove (1983) as non-destructive agricultural practices, family land ownership and market economy oriented. This explains that deforestation issues around 1.2% per year in Maluku (Matinahoru, 2014) was not caused by *swidden* agriculture but private companies that have Forest Concession Right, large area of plantations, resettlement program and ambiguous forest borders between villages and state (Silaya and Hatulesila, 2008; Ducos, 2014). In this case, *Dusun* can be defined as traditional agroforestry as it has not been incorporated with science and technology (Montambault and Alavalapati, 2005), consists of complex coexistence between trees and wild plants (Kumar and Nair, 2004), and is mainly cultivated with spontaneous regeneration of clove, nutmeg and coconut trees (Kaya et al, 2001). Both agriculture and fisheries that is found in the dusun systems are the basis for livelihood strategies in order to survive or to consolidate and accumulate capital assets as well as to reduce risks and uncertainties in every season (Girsang, 2011)

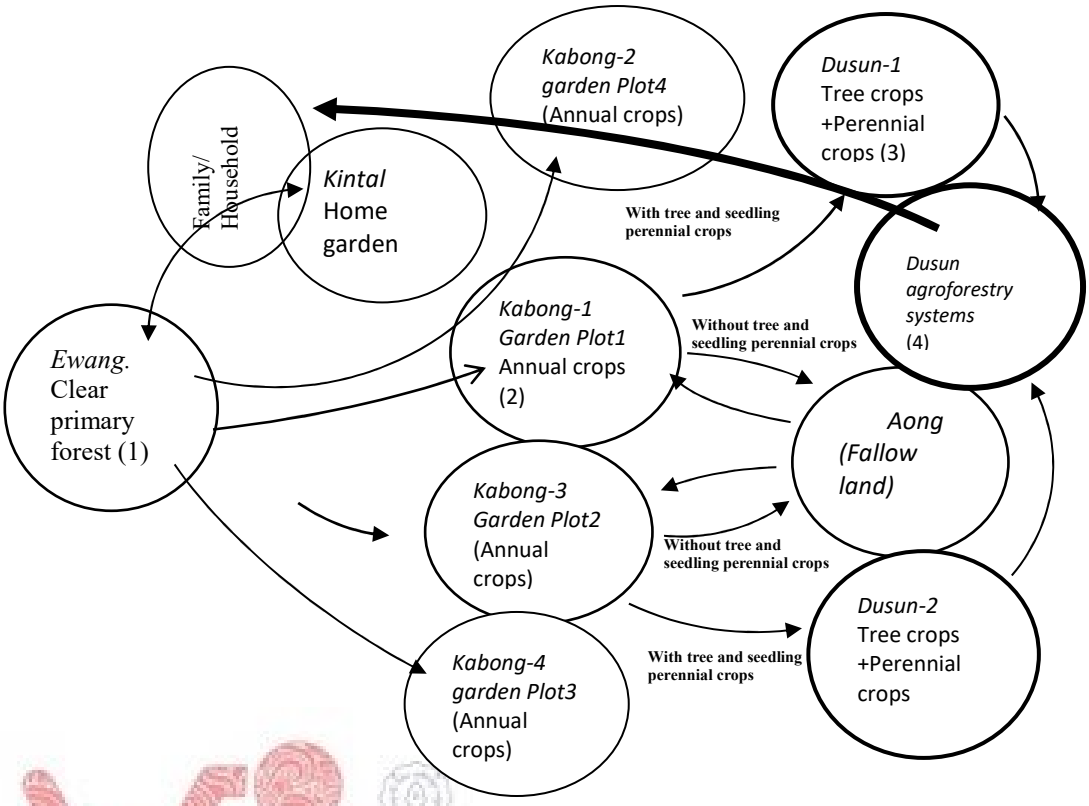

Figure 2. The processes of *Dusun* development in Ambon island

Note: Thin arrow shows the change process from clearing the land into Dusun agroforestry systems whilst the thick arrow shows the agro-economic and environmental services to household

CHARACTERISTICS OF DUSUN FARMER HOUSEHOLDS

Table 1 shows the characteristics of human capital of farmer households that is pivotal to maintain and sustain *Dusun* systems development. Generally, Dusun farmers were in their old age, and half of them have low level of formal education-elementary school and lack of access to the new technology and market. Each household has around 3 children or more, and around 92% of them work as farmers. In the past children were expected to work as the source of agriculture labor but now young generation are reluctant to work on agriculture land anymore. Amongst all farmers, around 71% work as pure farmers, and are fully dependent on *Dusun*, whereas the rest of the farmers have secondary job in fishery (18%) and non-farm activities.

The important Dusun characteristic was land ownership status. *Dusun* land status can be divided into *Dusun raja (king's dusun), Dusun negeri (village dusun), Dusun pusaka (private or family land), tanah dati (clan-family land), and also tanah sewa (rental dusun land)*. Most of *Dusun* land status belonged to *tanah negeri and is followed by dusun dati* because most of family members work together for the land. As a consequence, all family members have rights and inheritance to the *Dusun* land, which is based on patriarchal

systems. This shows that land status of the *Dusun* was different from agroforestry, which is based on private ownership status. In this matter, *Dusun* system land might be more sustainable as it will be much more difficult to sell the land because it needs agreement from all family members. Rental *Dusun* is not common but it happens because there are family members without land, and ask to rent the Dusun from the owner who probably does not have enough labor to nurture the *Dusun*.

Table 1. The main Characteristics of the farmer's household in the *Dusun* systems in Ambon city islands

Characteristics	Indicators	%	Characteristics	Indicators	%
1. Age	Older (≥45)	77.0	6. Land ownership status	Dati (Clan)	95.5
	Young (<45)	23.0		Negeri (Village)	3.4
2. Education	Elementary	50.0		Rental	1.1
	High school	44.0	7. Dusun land size	Small (1-2 ha)	53.4
	University	6.0		Medium (3-4)	22.7
3. Number of dependents	Low (≤2)	33.0		Large (>4 ha)	23.9
	Medium (3-4)	40.0	8. Number of Dusun location	One location	69.3
	High (>4)	27.0		2-3 locations	26.1
4. Primary job	Farmer/Fisher	92.0		4-5 locations	4.5
	Non farmers	8.0	9. Sex	Male	95.5
5. Secondary jobs	Farmer only	71.0		Female	4..5
	Farmer + Fisher	18.0	10. Marital status	Married	94.3
	Farmers + Non-farm activities	11.0		Unmarried	5.7
Household income/Year	Mean (IDR million)	StDev (IDR000)	Minimum (IDR million)	Median (IDR000)	Maximum (IDR million)
Household Income/ year	84.16	123.18	2.16	49.8	89.7
Household Expenditure/Year	21.79	10216.74	5.92	18960	56.54
HHE/Capita/Month	0.69	569.76	0.12	493.17	0.26
Income inequality	The first 20% layer	The 2nd 20% layer	The 3rd 20% layer	The 4th 20%	The 5th of 20%
Household income (%)	2.27%	6.99%	12.10%	22.04	56.60%

Note: n=88

Next, more than half of households (53.4%) have small size of Dusun land (less than one hectare) whereas the other farmers have larger land size that is more than 3 hectares. The difference of land size is not caused by selling land transaction but by the capability of the farmers to expand Dusun land area in several locations around the village (1-10 km). Based on its ownership, of 69.3% households who have *Dusun* land in one location, only the rest have more than 2 Dusun locations. The declining of Dusun land size and locations indicates

that the size of land has a tendency to decrease gradually due to the labor scarcity to nurture productive Dusun land and conversion of the land into to resettlements, property development and monoculture vegetable crops. The problem is that, on one side, *Dusun* is the main source of household income for the farmers, however, on the other side, the number of poor households is still high-up to 22% and it is also followed by income inequality.

THE CONTRIBUTION OF DUSUN TO HOUSEHOLD INCOME

Research found out that the total amount of multiple cropping that have been identified around 26 crops in three different *Dusun* sites. Based on the structure of crops in the Dusun, these crops can be categorized into three stratum: (1) the highest stratum of trees and edible fruits such as petai (*Parkia speciosa*), durian *(Durio zibethinus),* langsat/duku (*Lansium domesticum Correa*), coconut (*Cocos nucifera*) and aren (*Arenga pinnata*); (2) middle stratum of spices and fruits such as clove, nutmeg, *mangosteen* and banana; and (3) the lowest stratum crops including vegetables and food crops such as egg plant, chili, cabbage and tubers. These crops have mutual biophysical interaction with each other to conserve water and soil as well as to protect from pest and diseases (Wattimena, 2003).

Because edible crops are seasonal and harvested once per year, only when farmers need cash money for daily basic needs, therefore farmers start to convert small part of suitable flat land in the Dusun to vegetable cash crops that can be harvested monthly. To increase production, farmers use limited dose of external inputs such as chemical fertilizers, pesticides and compost. However, due to the high demand of vegetables from Ambon city market, Dusun land conversion to vegetables in the Dusun of Hutumury has been extended and the use of external inputs increased due to the declining of soil fertility. In this case, an excessive usage of chemical fertilizer should be controlled by provincial agricultural agency or otherwise this practice will endanger crops, soil, water as well as aquaculture in the coastal areas and human health.

Dusun system does not only have the structure and stratum of crops but also it has prime commodity as well as similarities and differences of crops within and between *Dusun*. Pine apple, duku (*Lansium domesticum Correa)* and nutmeg (*Myristica fragnans)* are found as the dominant crops in Hutumury whereas pine apple, tubers and clove are found to be dominant crops in Hative Besar *Dusun*. The higher number of snake fruit, durian (*Durio zibethinus Mur)* and tubers were found in Soya Dusun.

Annual household income potential from *Dusun* was estimated around IDR 84.3 million ($US 6487). Amongst all types of crops, almost 80% of household income was

obtained from 4 types of edible tree crops predominantly clove (*Eugenia aromaticum)*, durian (*Durio zibethinus Mur)*, nutmeg and duku (*Lansium domesticum)*. The other 3 crops, namely snake fruit, *mangosteen* and *langsat (Lansium domesticum)* contributed 11% to the income. In short, these 7 main crops contributed around 91% to the household income.

In fact, the potential and types of crops and its contribution to household income are different and unequal among *Dusuns.* Annual household income in Soya *Dusun* was about $US 8312, whereas household income in the *Dusun* of Hutumury and Hative Besar was $US 5769 and $US 5380, respectively. This means that household income in Soya was almost 1.5 times higher than that of the household income in the other two villages. In general, the contribution of *Dusun* crops to household income was estimated around 3.6 US$/capita/day or almost two folds of World Bank poverty line standard.

Table 2 shows that Dusun land area, the number of clove, durian and *mangosteen* trees influenced positively on income whilst age level of the farmers and the number of snake fruit crops have negative impacts on income. All these variables together have determinant coefficient around 78.2% meaning that all the chosen independent variables can explain 78.2% variation in the household income from *Dusun*. A multiple regression model for Dusun household income was formulated as follows: $HHI=161{,}306 + 2.39X_1 - 3.83X_2 + 5.09X_3 + 6.67X_4 + 3.03X_5 - 2.83X_6 + e$; where HHI was household income, X_1=the size of Dusun land; X_2=age; X_3= the number of clove trees; X_4= the number of *mangosteen* trees; X_5= the number of durian trees; and X_6= the number of snake fruit trees; e = error.

Table 2. Factors influencing the household income in the *Dusun*

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	161306.0	45142.53		3.573	0.001
Size of Dusun land area (X1)	10287.3	4308.93	0.146	2.387	0.019
Age of the farmers (X2)	-43080.2	11257.09	-0.249	-3.827	0.000
Number of Durian trees (X5)	395.633	130.54	0.177	3.031	0.003
Number of clove trees (X3)	701.173	137.67	0.368	5.093	0.000
Number of snake fruit trees (X6)	-131.708	46.53	-0.17	-2.831	0.006
Number of Manggis trees (X4)	9.177	1.38	0.515	6.674	0.000

Notes: Dependent Variable: Household income from Dusun/year; Adjusted R^2=78.2%; α=0.05%; n=88

The model indicates that the increasing one unit the size of mangosteen and clove will increase 6.6 and 5.09 unit of income, respectively. Among all these independent variables, the variables that have significant influence to income, that is the size of Dusun land, age of farmers, and number of clove, durian, snake fruit and mangosteen fruit.

CONCLUSIONS

Different from the purpose of monoculture practices, that is focused on increasing production and profit, the historical background of *Dusun* system is the continuum line process from *swidden* agriculture (Dove, 1983) to settled traditional agroforestry that has purposes not only for production but also to maintain soil, water and crops productivity, as well as to sustain the source of regular and stable staple food and household income for the people who live in the dynamic socioeconomic and environmental change of coastal rural areas in the islands (Ducos, 2014). Based on agro-economic view, findings suggest that around 26 kinds of crops in the Dusun, and these form the structure that can be categorized into high, medium and low stratum crops to maintain and sustain a complex relationship of soil, water and crops and farmer income from the Dusun systems. Annual household income from *Dusun* was estimated around $US 6487 or it was almost two folds of poverty line standard ($US2/day). The household income was influenced positively by the size of land, the number of edible trees, particularly spices crops.

Due to the issues of housing development, division of land inheritance to the children, and land conversion into vegetable and food crops that endanger sustainability of Dusun, it suggests to develop Dusun Land Protected Area (DLPA). The next implication is to develop Dusun modernization through incorporating science and technology to manage land use and to improve productivity of primary crops specially spices, durian, mangosteen and snake fruit as part of Dusun Agro-tourism Development (DAD). Incorporating science and technology to support the agro-economic sustainability of the Dusun systems, a number of complex factors need to be considered, including market price of the products, education and training of *Dusun* systems to lecturers and students, operational costs, technology development, access to credit and contact with extension service (Molua, 2005; Lu et al., 2015; Tremblay et al., 2015; Arifin, et al., 2003; Walker et al., 1995) and also the role of actor power-forest department (Islam et al., 2015). Future research needs to explore these complex, diverse, dynamic factors of the *Dusun* systems that interplay to shape an integrated and sustainable agriculture and aquaculture environments in small islands

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Analysis of Green Growth Framework (GGF) on Financial Deepening for Sustainable Development Goals in Indonesia

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Abstract

In the last few years, the concept of green economy is getting attention because it is same with efforts of the world community in finding solutions to various global challenges that occur right now, especially in order to achieve sustainable development. The strategy undertaken by Indonesia in realizing economic growth while still striving to maintain the quality of the environment is with the application of Green Growth Framework. Economic growth that occurs certainly can not be separated from the role of the financial sector. A good state of the financial sector is indicated by an increase in financial deepening. This study aims to see whether or not there is a short-term and long-term relationship between Green Growth Framework to financial deepening in Indonesia in 1973 to 2014 using the Error Correction Model (ECM) method. In addition, this study also explains the response of Green Growth Framework to financial deepening in Indonesia by using Vector Autoregressive (VAR) method. The results of the research show that in the short term only the variable of energy intensity and green GDP in the previous year which significantly have relationship with financial deepening. However, in the long run all the independent variables of energy intensity, carbon emissions, green GDP, and energy consumption have significant financial deepening relationships. The response shown by each independent variable to financial deepening varies according to the condition of the Indonesian economy in the year, but cumulatively it can be said that at the beginning of the period all the independent variables give negative response to financial deepening.

Keywords: Sustainable Development, Green Growth Framework, Financial Deepening, ECM, VAR.

1. Introduction

Sustainable Development Goals (SDGs) as a substitute for the Millennium Development Goals (MDGs) are now widely used by each country including Indonesia as a basis for implementing development. The economic growth relationship with the environment known as the Environmental Kuznets Curve explain that the severe environmental damage along with the economic growth is prone to occur in developing countries, which are mostly middle-income countries per capita like Indonesia. One way to align the needs of economic growth while preserving the natural resources in Indonesia is to implement the Green Growth Framework strategy or green economic growth.

Economic development characterized by an increase in economic growth, always accompanied by the increas of energy use. In addition, the economic development of a country can not be separated from the financial sector. The existence of the financial sector in the economy of a country has an important role in efforts to promote economic growth. A

good financial sector can be shown with an M2 improvement indicator. The existence of a sound and efficient financial system is very important in sustaining economic growth especially in developing countries because investment efficiency will be able to encourage growth in the region (Asian Development Bank, 2010).

Research discussing the influence of financial deepening on the growth of green economy is still not done in Indonesia considering the implementation of green economy in Indonesia is still done several years. As for research from Tamazian et al. shows that the development of the financial sector as a whole can promote economic growth that can be accompanied by industrial pollution and environmental degradation.

King and Levine's research describes financial deepening into four variables, namely the ratio of money supply (M2) to GDP, the allocation of domestic credit by the central bank, the percentage of credit allocated to the private sector, and the ratio of private sector credit to GDP. While economic growth is seen from the change in GDP per capita. The results showed that economic growth did not cause financial deepening (King and Levine, 1993).

In addition, an Augmented VAR Approach conducted in 1988-2011 using the VAR and ECM approaches shows that financial variables play a role in emissions mitigation only on the final period of research where there is an increasing rate of liberalization and financial sector development. The VAR approach in this study is used to examine the long-term relationship between carbon emissions with some economic and financial variables such as GDP, total credit, stock market capitalization, and FDI. While the ECM approach is used to examine the short-term relationship between carbon emissions with some economic and financial variables.

Next is a study conducted by Evan Lau in 2014 under the title Econometric Analysis of the Causality between Energy Supply and GDP: The Case of Malaysia. This study uses the VAR method and some variables used are GDP as an indicator of economic growth and oil, gas, petroleum, and coal as an indicator of energy supply. The results show that in the long run there is a relationship between GDP and energy supply, in the short run there is a causal relationship of GDP to energy supply (oil and gas), and the result of variance decomposition testing shows that GDP only responds to long-term energy supply thus implying that government measures in energy saving may increase GDP.

Based on the above description, this research will be conducted to see the Green Growth Framework response to financial deepening. Indicators that are used as variables in financial deepening are M2, while the variables used to represent green economy concept are carbon emission, energy consumption, energy intensity, and green GDP.

2. Method

This research uses Error Correction Model (ECM) and Vector Autoregressive (VAR) methods. The ECM method is used to see whether there is a relationship between short-term and long-term Green Growth Framework to financial deepening. The existing response is in the VAR method shown by the Impulse Response Function test.

Types and Data Sources

The data type in this study is using the annual data starting from 1973 to 2014. The data include M2, carbon emissions, green GDP, energy intensity, and energy consumption as a whole obtained from World Bank.

Data Analysis Method

The data analysis techniques used in the ECM method are started with stationary test, cointegration test, short and long-term ECM test, and classical assumption test. The short-term ECM model specifications are used, namely:

$$\Delta M2_t = \alpha_0 + \alpha_1 \Delta ECN_t + \alpha_2 \Delta CE_t + \alpha_3 \Delta INE_t + \alpha_4 \Delta GDP_t + \alpha_5 EC_t + e_t$$

where α1 is the short-term coefficient of energy consumption, α2 is the short-run coefficient of carbon emission, α3 is the short-run coefficient of energy intensity, α4 is the short-run coefficient of green GDP, and α5 is the balance correction coefficient. While the long-term ECM model used is:

$$M2_t = \beta_0 + \beta_1 ECN_t + \beta_2 CE_t + \beta_3 INE_t + \beta_4 GDP_t + e_t$$

where β1 is the long-term coefficient of energy consumption, β2 is the long-term coefficient of carbon emission, and β3 is the long-term coefficient of energy intensity, and β4 is the long-term coefficient of green GDP.

Data analysis technique with VAR method starts with stationary test, cointegration test, optimum length lag test, stability test, Granger causality test, VAR / VECM estimation test, impulse response function test, variance decomposition test, and classical assumption test. The short-term ECM model specifications as follows:

$$M2_{1,t} = a_{1,0} + \sum_{i=1}^{k} a_{1,i} ECN_{t-1} + \sum_{i=1}^{k} b_{1,i} CE_{t-1} + \sum_{i=1}^{k} c_{1,i} INE_{t-1} + \sum_{i=1}^{k} d_{1,i} GDP_{t-1} + \mu_{1,t}$$

$$ECN_{2,t} = a_{2,0} + \sum_{i=1}^{k} a_{2,i} M2_{t-1} + \sum_{i=1}^{k} b_{2,i} CE_{t-1} + \sum_{i=1}^{k} c_{2,i} INE_{t-1} + \sum_{i=1}^{k} d_{2,i} GDP_{t-1} + \mu_{2,t}$$

$$CE_{3,t} = a_{3,0} + \sum_{i=1}^{k} a_{3,i} ECN_{t-1} + \sum_{i=1}^{k} b_{3,i} M2_{t-1} + \sum_{i=1}^{k} c_{3,i} INE_{t-1} + \sum_{i=1}^{k} d_{3,i} GDP_{t-1} + \mu_{3,t}$$

$$INE_{4,t} = a_{4,0} + \sum_{i=1}^{k} a_{4,i} ECN_{t-1} + \sum_{i=1}^{k} b_{4,i} CE_{t-1} + \sum_{i=1}^{k} c_{4,i} M2_{t-1} + \sum_{i=1}^{k} d_{4,i} GDP_{t-1} + \mu_{4,t}$$

$$GDP_{5,t} = a_{4,0} + \sum_{i=1}^{k} a_{4,i} ECN_{t-1} + \sum_{i=1}^{k} b_{4,i} CE_{t-1} + \sum_{i=1}^{k} c_{4,i} INE_{t-1} + \sum_{i=1}^{k} d_{4,i} M2_{t-1} + \mu_{4,t}$$

Where M2 is money supply / broad money, ECN is energy consumption, CE is carbon emission, INE is energy intensity, and GDP is Green Gross Domestic Product.

3. Results and Discussion

Research result

Error Correction Model (ECM) Analysis Results

The stationarity test, which is the first stage in ECM method, shows that all variables are stationary at the second difference level at a significance level of 1%. Furthermore, cointegration testing showed that all variables were cointegrated either at a significance level of 1%, 5%, or 10%. Here are the results of short-term ECM testing that has been done.

Table 1. Test Result of Short Term ECM

Variabel	Koefisien	t-statistik	Probabilitas
C	1.12E+13	6.979781	0.0000
CE	-2.11E+11	-0.311819	0.7574
ECN	1.96E+08	0.002877	0.9977
GDP	6.917605	0.175407	0.8620
INE	-2.27E+13	-2.442752	0.0209*
CE (-1)	4.93E+11	0.735249	0.4681
ECN (-1)	1.14E+11	1.650264	0.1097
GDP (-1)	1.746260	3.231338	0.0031*
INE (-1)	-2.08E+12	-0.265089	0.7928
ET	0.919434	19.25545	0.0000
Adjusted R-squared		0.949793	
Prob. F-sratistik		0.000000	

*significant α=1%, ** significant α=5%, ***significant α=10%.

The table above gives a picture of the behavior of independent variables to the dependent variable partially. The results of short-term ECM test indicate that independent variables that have significant effect on financial deepening are energy intensity and green GDP variables in the previous year.

Table 2. Test Result of Long Term ECM

Variabel	Koefisien	t-statistik	Probabilitas
C	1.10E+13	1.940774	0.0604***
CE	-4.08E+12	-2.353721	0.0243**
ECN	5.25E+11	-2.829289	0.0077*
GDP	2.264428	-1.925790	0.0623***
INE	3.33E+13	-1.702518	0.0975***
Adjusted R-squared		0.731488	
Prob. F-sratistik		0.000000	

*significant α=1%, ** significant α=5%, ***significant α=10%.

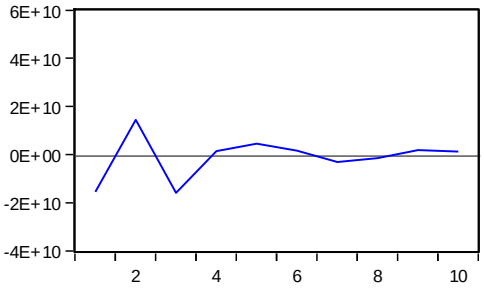
Table 2 above also provides an overview of the behavior of independent variables to the dependent variable partially. Long-term ECM test results show that independent variables

that significantly affect financial deepening are the variables of carbon emissions, energy consumption, energy intensity and green GDP.

Vector Autoregressive (VAR) Analysis Results

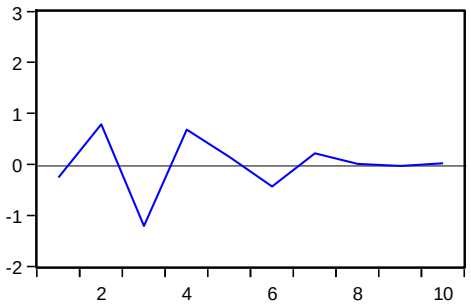
Vector Autoregressive (VAR) analysis results shows that Impulse Response Function test for see the response given by Green Growth Framework to financial deepening in Indonesia.

Figure 1. Test Result of IRF Green GDP



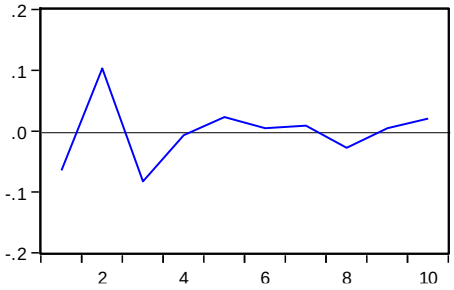
Response of green GDP to financial deepening that can be seen from the figure above shows that at the beginning of the period, green GDP responded to negative financial deepening. then in the second period, where green GDP is still showing a positive response to financial deepening. However, in the third period, the green GDP response to financial deepening began to show changes from the previous period, which began to show a negative response and in the fourth period and the next period, the fifth to the end period, it can be seen that the green GDP response to financial deepening shows relatively stable in a positive position and towards the point of balance.

Figure 2. Test Result of IRF Carbon Emission



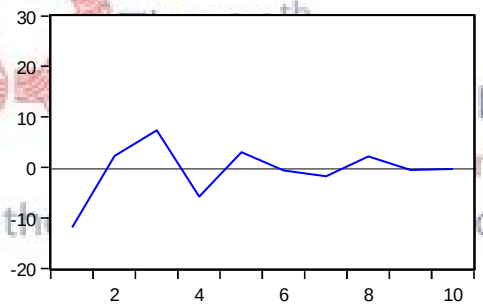
In the figure above shows the response of carbon emissions to financial deepening. At the beginning of the period, carbon emissions show a negative response to financial deepening. The second period showed a positive response but soon in the third period showed a negative response. A positive response was shown by carbon emissions to financial deepening in the fourth period. However, in the fifth period, changes in carbon emissions response to financial deepening began to be demonstrated by a declining response in the sixth period. But in the period ketuju slowly to show a positive response. A positive response is shown by carbon emissions to financial deepening in the period of the seventh to the end period and continues to move to the point of equilibrium.

Figure 3. Test Result of IRF Energy Intensity



The figure above explains the energy intensity response to financial deepening. In the early period, there was a negative response indicated by the energy intensity of the financial deepening. In the second period showed a positive response but soon the response showed negative in the third period. In the period of keempar positive response lasted long until the seventh period. The change in response is indicated when entering the eighth period, where the energy intensity response to the financial deepening starts to decline in the negative area. The slow rise in the nine period is continuously shown until the final period, but overall it can be said that the energy intensity response to the financial deepening shows a positive response.

Figure 4. Test Result of IRF Energy Consumption



The figure above explains the response of energy consumption to financial deepening. At the beginning of the period, energy consumption provides a negative response to financial deepening. In the second period, the increase in positive response continues to be shown by energy consumption to financial deepening hungga the third period. But soon the negative response emerged in the fourth period and began to stabilize steadily from the fifth to the final period. Overall, energy consumption is able to provide a positive response to financial deepening.

Discussion

Relation of Green Growth Framework to Financial Deepening

Based on the results of the test using the first method of Error Correction Model (ECM) method in the short term indicates a significant negative relationship of energy intensity variables to financial deepening as measured by M2 of 2.7%. In accordance with research conducted by Yoo (2006) in South Korea, it was found that there is a relationship between

energy intensity and GDP in the short term and this condition will affect the financial deepening in South Korea.

Furthermore, green GDP in the previous year also showed a significant positive relationship of 1.7%. Previous research using green GDP is still hard to find given the green GDP itself is GDP that takes into account the contribution of natural resources to development and the costs caused by pollution and environmental degradation. However, for previous research which states that GDP is able to affect M2 in the short term has been done. One of them is research conducted by Dede Ruslan in 2011 about financial deepening analysis in Indonesia. The results of this study indicate that to date GDP variables are still considered able to serve as an indicator in assessing the economic performance of a country.

Furthermore, the carbon emission and energy consumption variables still do not show any significant positive or negative relationship to financial deepening in the short term. Energy consumption shows no significant relation to financial deepening in accordance with previous research conducted by Joko Susanto in 2013 in ASEAN countries, where the results show that there is no significant relationship between energy consumption and economic growth.

The results of Error Correction Model (ECM) analysis in the short term indicate that energy intensity negatively affects financial deepening because at that time in Indonesian financial sector applied balanced budget policy which emphasize principle that state expenditure must equal to amount of state income. While the free variables of green GDP show a positive influence on financial deepening because it is caused by the decrease of energy intensity that occurs, so automatically the value of green GDP will increase and affect the financial sector considering green GDP itself is a GDP that takes into account the contribution of natural resources to development and cost- costs caused by pollution and environmental degradation.

In the carbon emission and energy consumption variables, there is still no significant positive or negative relationship to financial deepening in the short term. In the short term, carbon emission variables that still show no significant due to the implementation of balanced budget policy so that the level of state expenditure should be equal to the income of the country at that time, so that this causes the energy intensity is not increased and the carbon emission in the short term does not change (Suryadi, 2006). Furthermore, energy consumption variables also still do not show a significant relationship to financial deepening because if there is a relationship between energy consumption and economic growth, then every step of energy consevation to reduce emissions will have an impact on economic growth and development. Furthermore, if the relationship between economic growth and energy consumption in developing countries is greater than that in developed countries, any restriction on energy consumption will have a greater impact on developing countries than on similar impacts in developed countries.

In contrast to the results of testing the Error Correction Model (ECM) method in the short term, in the long run all free variables show have positive or negative relation and significant at certain level. Result of research from Error Correction Model (ECM) method in long term which shows all independent variable have an effect on to financial deepening of course not escape from phenomenon that happened in Indonesia in 1973 until 2014.

Green GDP which shows a positive influence on the financial deepening occurred due to the implementation of Green Growth Framework conducted in Indonesia starting in 2012. Every development effort undertaken in Indonesia must be accompanied by efforts to improve the quality of the environment, which can be reflected from the decreasing levels of carbon emissions . Based on data obtained from the World Bank, carbon emissions in Indonesia itself has decreased from 2006 to 2014. In 2006, carbon emissions showed a high enough rate of 30.8% and then declined slowly until the year 2014 figure carbon emissions to 18.4%.

Similarly, energy consumption, where energy consumption that shows a positive influence on financial deepening means that the Indonesian economy in increasing economic growth depends on energy consumption. This can be seen from the increase in the level of energy consumption that occurs every year in Indonesia. Energy consumption in Indonesia from 2000 to 2014 shows a relatively increasing trend. Energy consumption in the year 2000 that originally only reached 735.8 million increased slowly to reach 883.9 million in 2014. The stable state of energy consumption is shown from 2004 to 2008 where energy consumption ranged from 789.9 million to 790 , 7 million. However, in the following year, in 2009, energy consumption again increased significantly from the previous year to 843.4 million and followed by a sharp increase in the following years until the end of the period, which is 2014. Besides caused by the increase of population every year, the increase of energy consumption continuously in Indonesia is also caused by inefficiency in energy utilization. So from here it can be said that in the long run, energy consumption can have a positive effect on financial deepening in Indonesia.

The pattern of development of carbon intensity variables, energy consumption, green GDP has the same trend trend, where in the long run the three variables are significantly increased. Indonesia which in fact is a developing country must continue to build the economy. This increase is driven by various government programs through the green revolution, improved world oil prices, high investment rates and a sustainable five-year development program (Pelita).

Green Growth Framework Response to Financial Deepening

Overall, it can be seen that the majority of all independent variables, namely carbon emissions, energy intensity, energy consumption, and green GDP indicate a negative response to financial deepening in Indonesia at the beginning of the period. This condition indirectly implies that the condition of Indonesian economy at the beginning of the research year, ie in 1973/1974 became the determinant of carbon emission response, energy intensity, energy consumption, and green GDP on financial deepening in Indonesia. The negative response shown is not separated from the oil crisis that occurred in 1973/1974 in the Middle East region which of course also has an impact for Indonesia.

The rise in oil prices for the Middle East political crisis to increase revenue for Indonesia. In fact, since 1977, the Indonesian government has begun putting fuel into older countries APBN funds used to reduce the price of crude oil, while on the one hand the government must be faced with increasing demand for oil consumption from year to year. year by community. However, they still have to lose fuel subsidy because it can cause a deficit in the state budget although of course it can cause an increasing spiral effect on all other goods and services.

Therefore, to overcome the spiral effect, it is necessary to control the policy of inflation which also involves the agency and also the strengthening of market operation instruments.

One of the Indonesian government's policies at the time was to implement a balanced budgetary budget (APBN) budget (Balanced Bugdet) policy, in which state expenditures must be in line with existing state revenues. Some of the positive impacts such as increased government savings up to several times a surplus, hyperinflation that occurred in 1966 amounted to 650% can be reduced to 10%, and the Indonesian economy began growing above 6% at the end of 1973 so this also impact on financial sector improvement especially financial deepening. The success of the Indonesian government in responding to the oil crisis due to the Central Timu political upheaval is what causes the conditions of the energy defense sector as measured by carbon emissions, energy consumption, energy intensity, and green GDP provide a negative response to financial deepening conditions in Indonesia.

Furthermore, the positive response shown by the Green Growth Framework indicator in this study of financial deepening in Indonesia is due to the oil crisis or oil shocks that occurred again in 1979 to 1981. For developing countries including Indonesia brings impact that can be said very severe, Due to the rise in prices of capital goods in industrialized countries that have an impact on the financial sector in Indonesia and the rise in prices of domestic goods and services causes unpopularity of people's purchasing power on basic necessities, so the number of poor people is increasing.

The condition of the energy sector and the financial sector in Indonesia experiencing the turbulence resulted in the response given by Green Growth Framework indicators such as carbon emissions, energy consumption, energy intensity, and green GDP gave negative and positive response fluctuation to financial deepening which is a reflection of the condition financial sector in Indonesia. So it can be said that the economic crisis that occurred in 1997/1998 and the global financial crisis in 2007/2008 did not have a significant impact on Green Growth Framework indicators such as carbon emissions, energy consumption, energy intensity, and green GDP and this is evidenced with the response shown to the relatively stable financial deepening to the point of equilibrium.

4. Conclusions and suggestions

Conclusion

Based on the results of Green Growth Framework research on financial deepening in Indonesia by using VAR method can be taken some final conclusion that first, energy intensity and green GDP variables in the previous year as indicators of Green Growth Framework have short-term relationship to financial deepening in Indonesia. Second, all Green Growth Framework indicators have significant long-term relationship to financial deepening in Indonesia and third, cumulatively can be seen at the beginning of period of carbon emission, green GDP, energy intensity, and energy consumption give negative response to financial deepening.

Suggestion

Some suggestions related to this research are first, the role of the monetary authorities and the government, particularly those that are involved in energy defense in Indonesia, is required by regulatory review, energy conservation and driven by economic policy. Second, support from various parties, both public and private in implementing Green Growth Framework policy can be achieved maximally. Third, for further research is related to research methods used, is expected to use a more accurate method in describing the influence of Green Growth Framework to financial deepening in Indonesia.

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Financial and Economic Cost Benefit Analysis of Organic Compared to Conventional Rice Farming: an Application of eCBA[1]

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ABSTRACT

Organic is considered more ecologically sustainable than conventional-green-revolution-based rice farming. Several studies also concluded that the productivity of organic is more than that of conventional rice farming. However, only about 0.2 percent of Indonesian rice fields are utilized under organic system. One of the causes of the farmers' reluctance to adopt organic system is due to the decrease of productivity in the first two or three years of transition (from conventional to organic system). The aim of this study is to conduct cost benefit analysis, financially as well as economically, on a hypothetical project of converting a hectare of conventional rice paddy field in Cipamokolan Village, Rancasari Sub-district, Bandung City, into organic rice farm. Three scenarios are used in the analysis based on three different price of organic rice farming, namely Rp.7.000/kg (scenario-1), Rp.6.500/kg (scenario-2), and Rp.6.000/kg (scenario-3). Economic cost benefit analysis is conducted using extended Cost Benefit Analysis (eCBA), to exclude subsidy of chemical fertilizer, and to include economic cost of deterioration resulting from chemical pesticide use. The results suggest that, converting conventional rice farm into organic one will start to be financially profitable in the third year (scenario-1), the fourth year (scenario-2 and scenario-3). After correcting the market failures (ie. chemical fertilizer subsidy and health cost of chemical pesticide), the result of economic (extended) cost and benefit analysis is slightly different from that of financial analysis. The net economic benefit of converting a hectare rice farm from conventional to organic system starts to be positive in the third year (scenario-1 and scenario-3), and in the fourth year (scenario-3).

Keywords: Organic Farming, Indonesia, Green Revolution, Extended Cost Benefit Analysis, Rice Farming.

I. BACKGROUND

As the staple food, rice is the most important crop in Indonesia. Although the average of Indonesian rice consumption was decreasing in the last couple of years[2], Indonesia still needs to import rice to meet its country demand. Thus, the government considers that increasing domestic rice production is one of the solutions. Indeed, the productivity of rice paddy field in Indonesia was increasing, but the rate was slowing. The average rice farm productivity per planting season between 2012 and 2014 was 5.1 tons/ha, and in 2015 was 5.34 tons/ha (bps.go.id, accessed 13 May 2018).

[1] The authors would like to thank Bapak Tatang (of Cipamokolan Village, Bandung City), and Bapak Hendra Kribo (of Mekarwangi Village, Tasikmalaya District) for the data used in this research. We also would like to thank the students and lecturers of the Department of Economics, Parahyangan Catholic University, for their valuable comments during the writing process of this article. However, any remaining errors, and values expressed, are the authors' responsibility.

[2] Indonesian annual rice consumption per capita in 2010, 2014, and 2017 are 130 kg, 124 kg, and 117 kg, respectively (bps.go.id; accessed 13 May 2018).

While the government attemps to increase rice farm productivity, organic rice system seems to be promising. In Tasikmalaya district, data from *Dinas Pertanian Kabupaten Tasikmalaya* (as cited by Herawati, Hendrani, & Nugraheni, 2014) shows that, in the period of 2005 to 2012, the average productivity of organic rice farm were fluctuated, from 7.3 tons/ha to 7.8 tons/ha; in the same period of time, the average rice farm productivity as a whole (both organic and conventional rice farm) were fluctuated from 5.3 tons/ha to 6.6 tons/ha. Nugraheni (2011) also noted that in several areas of West Java, the average organic rice farm productivity was 7 tons/ha, even there is an area in West Bandung district in which the productivity was 12 tons/ha, per planting season.

Organic rice system is also considered more environmentally friendly than conventional rice farming. Indeed, conventional-green-revolution-based rice farming system has increased Indonesia's rice farm productivity, in particular in the 1980s to 1990s. However, the system has caused many environmental problems, such as: soil nutrient deficiency, air and water pollution, erosion, eutrophication, decrease in biodiversity, and green house gas emissions. The problems have been more severe in Indonesia's rice farms due to overuse of chemical fertilizers (N and P) (Fox, 1991; ADB, 2006; Buresh, Witt and Pasuquin, 2007), and of chemical pesticides (Mariyono, 2002; Triwidodo, 2013; Thorburn, 2016).

In addition, conventional rice farming causes health and social problems. Chemical pesticide residues from the system threaten the health of the farmer-producers as well as rice consumers. Green-revolution-based rice farming also decreases the farmer's sovereignty because they have to buy almost all of production inputs (Shiva, 1991).

Apart from the advantages of organic rice farming over conventional rice farming, only 0.2% (about 130.384 ha) of rice farms in Indonesia are managed under organic system. The fact that only a small portion of rice fields in Indonesia use organic systems indicates that rice farmers are reluctant to switch from conventional to organic systems.

There are several problems faced by organic rice farmers. A study by Nugraheni & Purnama (2014) that was conducted based on the experience of 26 organic farmers in several districts of West Java province revealed that, the problems include: lack of technical skills, lack of government support, threat to farmers' cohesiveness to maintain their collaboration in achieving their goals; and, the most important factor is that, decreasing productivity during the first two or three years after the conversion from conventional to organic rice farming systems.

Considering that organic rice system has several advantages compared to conventional rice farming; yet, there is declining productivity of organic rice farming system during the first couple of years, this study raises the following research questions:

1. How long will the **financial losses** due to reduced productivity in the initial years of organic rice farming be compensated by increased productivity in the following years?
2. How long will organic farming be profitable when the estimation include the **economic benefits and costs**?

To answer both questions, the authors constructed a hypothetical project: transforming a hectare of rice farm in Cipamokolan Village, from conventional to organic systems. Cipamokolan Village is an area of 300,288 ha, located in the eastern part of Bandung City. There are 20,612 people lives in Cipamokolan Village, and the majority of the village resident work as rice farmers.

The selection of the research site is based on the following consideration. Few years ago, rice farmers in Cipamokolan Village received organic fertilizer from the government in order to encourage them to implement organic farming system. Yet, the farmers were reluctant to switch from conventional to organic rice systems, because after implementing organic system, their farm

productivity was decrease. The farmers claimed that organic fertilizers did not (instantly) enrich their rice farm.

II. RESEARCH METHOD AND DATA

This study employed a cost benefits analysis method. In order to answer the second question, an extended cost and benefit analysis (eCBA) method were used by removing market failures (in this research, there are two market failures to be removed, namely: subsidy for chemical fertilizer, and economic cost of using chemical pesticides). We used primary as well as secondary data on rice farming's production costs and revenues. Primary data were collected from Bapak Tatang[3] (the Chairman of Joint Farmer Group, or *Gapoktan*) of Cipamokolan Village; and from Bapak Hendra Kribo[4] of Mekarwangi Village, Tasikmalaya District. The latter keyperson has been practicing organic rice farming system since 2003. Secondary data were collected from other research on organic rice farming in Indonesia. This includes *Badan Pusat Statistik* (BPS), and studies by Sukristiyonubowo (2011), Hidayat & Lesmana (2011), Herawati *et al.* (2014), and Kernalis & Lubis (2017).

Production costs of rice farming includes: seed, fertilizers, pesticides, and labor. On the revenue side, we collected data on productivity, and price of dried-milled rice grain. Other data that is needed to consider are: the number of planting season per year, and the productivity of the initial years and onward of the organic rice system. It should be noted that we made several data adjustments for our analysis. First, on the productivity of Cipamokolan rice farm, when the keyperson said that their rice farm produced 4,000 kg/ha up to 5,500 kg/ha of dried-milled rice grain, per planting season, we then used 5,000 kg/ha as the productivity for conventional rice farming per planting season. Second, as the productivity of organic rice farming is fluctuated across years, we then combined information from the main keyperson (in this case, Bapak Hendra Kribo), with the research of Hidayat & Lesmana (2011), Herawati *et al.* (2014), and Kernalis & Lubis (2017). Based on those considerations, we had the productivity of organic rice farming for the initial years, as the following: 2,500 kg/ha (first year), 4,000 kg/ha (second year), 5,500 kg/ha (third year), and 7,000 kg/ha (fourth year and onward). Third, we also employed three different scenarios based on the output price of the organic system, namely: Rp.7,000/kg (scenario-1), Rp.6,500/kg (scenario-2), and Rp.6,000/kg (scenario-3). Finansial and economic analysis were conducted by calculating Net Present Value (NPV) of a hectare rice paddy farm, using a 10% p.a. of interest rate.

The net benefit of implementing organic rice system (the hypothetical project of this research) is calculated by deducting the cost of the project (in this case is the net benefit received from conventional rice farming; in other words, the benefit forgone as we converting the rice farm into organic system), from the benefit of the project (in this case is the net benefit received by farmers who implement organic rice farming). The economic cost and benefit analysis (or extended CBA) was conducted by removing subsidy from the chemical fertilizer price (thus increase the economic cost of production), and by adding the economic cost of deterioration caused by chemical pesticide. The last component added the benefit of the project. Data on the subsidy was collected from the Regulation of the Minister of Agriculture of the Republic of Indonesia number 122/Permentan/ SR.130/11/2013 on the Highest Retail Needs and Prices (HET) Subsidized Fertilizer for Agriculture Sector Fiscal Year 2014; while the economic cost of chemical pesticide on rice farm was based on the work of Mariyono (2002). Table 1. shows the parameters used for analysis.

[3] Interview with Bapak Tatang was conducted on 29 March 2019;
[4] Interview with Bapak Hendra Kribo was conducted on 24 March 2018.

Table 1. Basic data on costs and revenues of rice farming that is used for analysis

Component		Conventional Rice Farming		Organic Rice Farming	
		Per planting season	Per year	Per planting season	Per year
Frequency of planting season		-	3	-	2
Costs of Production / ha					
	Seed (Rp.)	700,000	2,100,000	500,000	1,000,000
	Fertilizer (Rp.)	1,560,000	4,680,000	2,500,000	5,000,000
	Pesticide (Rp.)	100,000	300,000	200,000	400,000
	Labor (Rp.)	7,200,000	21,600,000	3,200,000	6,400,000
	Total cost (Rp.)	9.560.000	28,680,000	6.600.000	13,200,000
Revenue / ha					
	Productivity per ha (kg)				
-	1st year	5,000	15,000	2,500	5,000
-	2nd year	5,000	15,000	4,000	8,000
-	3rd years	5,000	15,000	5,500	11,000
-	4th year & onward	5,000	15,000	7,000	14,000
	Price of GKG*) (Rp./kg)				
-	SCENARIO 1	4,500	4,500	6,000	6,000
-	SCENARIO 2	4,500	4,500	6,500	6,500
-	SCENARIO 3	4,500	4,500	7,000	7,000
Interest rate for cost benefit analysis (for NPV calculation)				10% p.a.	
Fertilizer subsidy (Rp./kg)				1,800	
Economic cost of chemical pesticides (Rp./ha)				2,341,440	

Notes: *) GKG = *gabah kering giling*, or dried-milled rice grain.

III. RESEARCH FINDINGS AND DISCUSSION

To answer the research questions, we calculated NPV at the end of each year, for several years (in this report we presents the result of NPV calculation for the first eight years) of the implementation of the project. The result of finansial cost benefit analysis is presented in Table 2.

Based on Table 2, the NPV of the project of converting conventional rice farm into organic rice farm is starting to be profitable in the third year (scenario-1), fourth year (scenario-2 and scenario-3). In scenario-2 and scenario-3, the loss is getting higher in the second year, meaning that the project's costs are still higher than the project's benefits; indicating that the net benefit from conventional rice farm is higher than that from organic rice farm.

Financial cost and benefit analysis only calculates financial costs and benefits. The conventional rice farming causes environmental problems due to chemical inputs use. These externalities have not been included in financial analysis. Study by Mariyono (2002) were used to monetize the impact of externalities due to the use of chemical pesticides in the form of loss of net benefit of Rp.2,168,000/ha per year. The value of loss of net benefits is considered the price of many cases of pesticide poisoning in agriculture[5]. The value of Rp.2.168.000/ha is in 2002, therefore we adjusted for the inflation from 2002 up to now (2018). If the average inflation from 2002 to 2018

[5] WHO and UNEP estimate the number of cases of pesticide poisoning in agriculture in developing countries (including Indonesia) of 1-5 million cases every year and 20,000 are cases of death (Mariyono, 2002)

was 8% per year (bi.go.id), so that the net benefit value lost due to chemical pesticide use in the rice farming in 2018 is Rp2.341.440/ha per year.

Table 2. Financial Cost and Benefit Analysis of Converting a Hectare Conventional Rice Farm into Organic Rice Farm

End of year	Net Present Value (NPV) at 10% discount rate on		
	Scenario – 1 (GKG: Rp.7,000/kg)	Scenario – 2 (GKG: Rp.6,500/kg)	Scenario – 3 (GKG: Rp.6,000/kg)
1	(17,020,000)	(19,520,000)	(22,020,000)
2	(13,401,818)	(19,538,182)	(25,674,545)
3	7,242,810	(3,439,008)	(14,120,826)
4	41,788,264	25,847,243	9,906,221
5	73,193,223	52,471,107	31,748,991
6	101,743,186	76,674,620	51,606,055
7	127,697,697	98,677,814	69,657,931
8	151,292,707	118,680,718	86,068,728

Source: authors' calculation

In addition, government subsidies for chemical fertilizers have caused its prices received by farmers does not reflect the actual prices. Based on the government regulation, the ceiling price for chemical fertilizer is Rp.1,800/kg. By using 4.3 ton fertilizer/ha per planting season, the cost of fertilizer used in conventional rice farming in Cipamokolan is Rp.4,680,000/year (three planting seasons). In other words, the value of subsidy is Rp.1.820.000/ha per year. Therefore, the economic (extended) cost benefit analysis is conducted by adding the health cost related to the use of chemical pestice and by removing chemical fertilizer subsidy. The result of conomic (extended) cost benefit analysis are shown in 3.

Table 3. Economic (extended) Cost and Benefit Analysis of Converting a Hectare Conventional Rice Farm into Organic Rice Farm

End of year	Net Present Value (NPV) at 10% discount rate on		
	Scenario – 1 (GKG: Rp.7,000/kg)	Scenario – 2 (GKG: Rp.6,500/kg)	Scenario – 3 (GKG: Rp.6,000/kg)
1	(12,858,560)	(15,358,560)	(17,858,560)
2	(5,457,251)	(11,593,615)	(17,729,978)
3	18,626,584	7,944,766	(2,737,053)
4	56,298,590	40,357,568	24,416,546
5	90,545,868	69,823,752	49,101,636
6	121,679,757	96,611,192	71,542,627
7	149,983,293	120,963,410	91,943,527
8	175,713,780	143,101,790	110,489,801

Source: authors' calculation

Based on information shown in Table 3, there are negative values of NPV, for the first two years (scenario-1 and scenario-2), and for the first third year (scenario-3). In terms of the period of time in which the project of converting a hectare conventional rice farm into organic farm, the result of economic analysis is slightly different from that of financial analysis. This answers the second research question.

The result of this research also suggests two points. First, related to the first research question, there are possibilities of the project's 'turning point' from loss to profit starts to occur eventhough the productivity of the organic rice farm is still lower than (ie. scenario-1 for financial analysis, and scenario-1 and scenario-2 for economic analysis). This means that 'the sacrifice' of converting conventional rice farm into organic is not 'that bad'. This answers the first research question. Second, the longer the period of time, the difference of the net benefit between conventional and organic farming is the bigger. This could be an incentive for farmers to switch from green-revolution-based rice system to organic one.

IV. CONCLUSION

The purpose of this study is to analyze the costs and benefits of a project of converting a hectare of rice farm from conventional to organic system. The analysis is conducted by creating a hypothetical project of converting of conventional rice farm in Cipamokolan Village, Bandung City. Three scenarios on the organic price are used to calculate the NPV of the project under financial cost benefit analysis and economic cost benefit analysis (extended CBA, or eCBA). NPV for economic cost and benefit analysis is estimated after removing chemical fertilizer subsidy and adding social cost resulting from the use of chemical pesticides. The results of financial analysis does not quite differ from that of economic analysis. Indeed the productivity of rice farm decrease in the initial phase of the conversion. However, the loss from decreasing productivity is compensated by increasing productivity that starts to occur in the fourth year, and by growing profit in the following years. This open the possibilities to encourage farmers to switch from conventional-based rice farming to organic farming. Government could play a role to provide incentives, especially for the first couple of years of conversion, when the productivity of organic farming is as low as 2.5 tons/ha per planting season. It should also be considered that there are more environmental and social benefits generated from organic farming system that have not been calculated in this study. Thus, implementing organic farming system will result in higher NPV.

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The Impact of Forest Area Control Policy on Permit Use in Forest Areas for Mining in Indonesia

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ABSTRACT

This research analyzes the influence of three policies controlling the use of forest area against the number of permit use in forest areas (IPPKH/*izin pinjam pakai kawasan hutan*) areas for mineral and coal mines in Indonesia in the period 2008-2017. The policies controlling the use of forest areas evaluated in this paper are: (1) moratorium of the permit use in forest areas; (2) tariff increase of the permit use in forest areas (PNBP PKH/*penerimaan negara bukan pajak – pinjam pakai kawasan hutan*); and (3) the quota on the size of permit use in forest areas. To evaluate the impact of the moratorium and the tariff increase, we apply the ARIMA model to make projection of the business as usual (BAU) scenario to represent the condition when the respective policy is not in place. The BAU is compared to the actual data to look at the change made by the policies. To evaluate the impact of quota on permit use in forest areas, we use descriptive-spatial approach to look at the distribution and expansion pattern of permit use in forest areas for mines. Furthermore, in-depth interviews were conducted with competent sources to deepen the analysis. The results of the analysis indicate that the moratorium policy is ineffective in reducing the extent of permit use in forest areas for mineral and coal mines, while the policy of tariff increase of permit use in forest area levy scheme are indicated to be able to control the extent of the number of permit use in forest area for mineral and coal mines. The quota policy tends to encourage forestry companies' control of forest areas and competition to obtain permit use in forest areas for mines, especially in areas rich in natural resources.

Keywords: Forest areas, permits, mining, moratorium, tariff on land use permit, quotas

1. Introduction

Indonesia is an archipelagic country consisting of 17,000 islands. The forest area reaches 120.7 million hectares, covering 64% of the total land area of Indonesia. Forest areas consist of 21.9 million hectares of conservation forest (18%), 29.6 million hectares of protected forest (25%), and 69.2 million hectares of production forest (57%) (KLHK, 2015). Indonesia is ranked eighth out of the top ten countries in terms of forests areas (FAO 2016). Forest plays an important role in providing critical social, economic, environmental, and health benefits in human life (FAO, 2012), including an important role in maintaining water quality, preventing soil erosion, mitigating climate change, and maintaining ecosystem balance. Forests not only have a local impact but also regional, national, and even international (FAO, 2009). That way, the loss of forests has a negative impact environmentally, economically, and socially (Lele, Joshi, & Agrawal, 2008). However, many forest ecosystems around the world are degraded and threatened with extinction due to human activities (Lele et al., 2008; Li et al., 2009). Changes in land use, especially large-scale forest land conversion for agricultural, pastoral, and industrial uses, create ongoing challenges to global conservation efforts (Manuschevich & Beier, 2016). The degradation of forest ecosystems are exclusively related to forest loss and fragmentation (Onojeghuo & Blackburn, 2011).

In Indonesia, forestry issues are regulated in the Law no. 41/1999, all of the forest in the country and natural resources within shall be under the authority of the state for the greatest benefit of the people. Currently, the use of forest areas for sectors outside the forestry sector such as mining, infrastructure, electricity, and others is done through a permit regime from 2006 and the Forest License Use Permit (IPPKH) mechanism as regulated through the Minister of Forestry Regulation (Permenhut) No. 14/2006. Furthermore, the use of forest areas for mining activities through IPPKH schemes is only allowed in production areas and protected forest areas. Protected forest areas are only allowed mining activities with a closed mining pattern (underground mining). While the production forest can be used for closed and open mining. However, many of these forests are considered important and critical tropical rainforests. As it is known in Brazil, Indonesia has the most productive and diverse forest, which has grown rapidly with the export of commodities such as pulp, soybeans, beef, biofuel, and palm oil (FAO, 2014). This condition will create a trade-off between the interests of stakeholder management and the interests of forest management. According to ESDMK in 2015, the biggest mining reserves are found on the islands of Sumatera and Kalimantan. Coal potential on Sumatra Island covers about 1.34 million hectares, and on the island of Kalimantan, it covers around 1.15 million hectares. In July 2017, the contribution of the mining sector to Indonesia's GDP reached IDR 205685.00 billion.

Based on data from the Ministry of KLHK, for the 2008-2017 period, IPPKH for mining other than for the oil, gas, and geothermal sector was 331.3 thousand hectares, and it was dominated by coal commodities with an area of around 235.5 hundred thousand hectares (71%), mineral commodities with an area of 90,900 hectares (27%), and quarry materials area covering 6,9 thousand hectares (2%). Furthermore, the results from coordination and supervision by KLHK, the Ministry of Energy and Mineral Resources (ESDMK), and the Corruption Eradication Commission (KPK) in 2014 (not published) suggest that about 3.3 million hectares of IUP was in the production operation stage, and about 22.7 million hectares of IUP Exploration area was within the forest area. The potential of large mineral and coal mining in the forest area will ultimately put direct pressure on the forest area. However, mining is seen as one of the sectors that can cause environmental degradation, and mining is a direct cause of forest destruction (Contreras-Hermosilla, 2000). Mining occupies relatively small amounts of land compared to other anthropogenic activities but has become the most disturbing and visible activity (Redondo-Vega, Gómez-Villar, Santos-González, González-Gutiérrez, & Álvarez-Martínez, 2017). The quick nature of change in the main components of the landscape from mining depends primarily on the type of mining done (Redondo-Vega et al., 2017). If the environmental impact of mining is not handled with great policy, the impact of mining on physical effects, hydrological impacts, climate impacts, and biological and health impacts may be doubled (Maryati, Shimada, Hamanaka, Sasaoka, & Matsui, 2012).

Research about Indonesia's deforestation conducted by Margono et al. (2014) finds that forest clearance of 6.02 million hectares of natural and primary forest degraded during the period 2000-2012. The high rate of deforestation occurs in primary forests, and a peat land caused by mining activities on a large scale provides that the government adopt a moratorium policy on new licenses on primary forests and peat lands. The moratorium policy is done through Presidential Instruction No 11/2011, which is valid for two years and has been extended the last three times by Presidential Instruction No. 6/2017. The moratorium area includes the forest area, not the forest area in the form of primary forest and peat land. The indicative moratorium revision is attachment to the map of New License Delay (PIPPIB) and is revised every six months. In 2011, the moratorium area (PIPIB) prior to the revision was 69.1 million hectares, and in 2016, after eleven revisions, the result was the decrease of PIPIB to 66.4 million hectares. The changes in the moratorium area occurred for several reasons, such as the updating of licensing data, the renewal of land data, spatial development, permit confirmation prior to Inpres, the need to prepare field survey reports, and the existence of rice fields.

Natural resources including forest areas are common full resources (CPR) (Ostrom, 1990). Everyone can benefit from the existence of forests (non-excludable), but in the direct use of forests, there needs to be competition for the right to use them (rivalry). As a form of state power over natural resources, in accordance with the mandate of Article 33 of the 1945 Constitution, the government intervenes through control of the use of natural resources through regulation. With regard to mining in forest areas, government intervention is carried out in controlling the use of forest areas by granting Forest License Use Permits (IPPKH). An IPPKH is a form of granting legal rights to forest lands by the government. Based on a review by the Ministry of Justice and Human Rights (HAM) in 2009 that in order not to face greater challenges in the future, forestry policy is directed toward pro-poor and pro-investment activities according to the mandate of Article 33 Paragraph (3) of the 1945 Constitution. In order for this policy not to be misinterpreted as a forest plot for the people and investors, it should be understood that this policy has a broader meaning. This study aims to analyze the impact of policies on controlling the use of forest areas for IPPKH for mining in Indonesia.

2. Literature Review

Forest Regulation in Indonesia

Forest and forest areas have different meanings. Law Number 41/1999 explains that the forests are a unity of ecosystems in the form of expanse of land containing biological resources dominated by trees in their natural environment, one can't be separated from the other. The forest areas are designated and/or specified by the government to be maintained as permanent forests. The government has the authority in the regulation and management of forest areas that are natural resources in accordance with the mandate of Article 33 of the 1945 Constitution, and is based on Law 41/1999, that every province/land/island must have at least 30% of land that must be maintained as a forest area. The recognition of the forest area is not counted on the basis of forest cover, but on the proportion of space that must be maintained to achieve the ideal spatial structure. In essense, a non-forested land can be designated and established into a forest area to achieve the ideal space structure as mandated by Law 41/1999. In addition, under Law 41/ 1999, the space for open mining activities within forest areas is permitted in production forest, whereas in protected forests only closed mining activities (underground mining) are permitted.

According to Tambunan (2010), several theoretical approaches to explain the process of utilizing Natural Resources and Environment (SDAL) are (1) frontier economic theory, (2) economic theory of Malthus, and (3) Ricardian economic theory. These theories explain the meaning of scarcity with an analysis of future economic growth trends equipped with population growth, improvement in per capita income, and human intervention in technology. Natural resources and forest environment are common pool resources (CPR) where the forest is non-excludable. These conditions can encourage the exploitation of natural forests in excess (over exploitation) and cause major forest damage (Ostrom, 1999). The involvement of other parties to utilize forest resources by granting access to the use of forest areas for mining is done through the IPPKH scheme. This scheme is regulated in Law 41/1999, PP 24/2010, and its amendment, as well as its implementation regulation through Permenhut No. 14/2006 and the latest amendment with Ministerial Regulation on LHK No 50/ 2016. The IPPKH creates exclusive rights for companies to conduct mining businesses within forested areas.

Stronger ownership rights encourage individuals to have an incentive to lobby for lower levels of extraction. This condition will encourage regulators to balance the interests of current and future user resources. The decisions of economic actors in the mining sector, as related to land use, not only consider the current factors but also consider future factors. Mishkin (2007) explains the main theory of rational expectations. The establishment of expectations will change if the variable's behaviour is expected to change. In relation to natural resources and the environment, the dynamics of government policies on natural resources will

cause changes in expectations for business actors. Deforestation and degradation are the most obvious forestry problems while mining generally revolves around issues of land and environmental degradation. The dominant causes of deforestation are large-scale logging and mining activities as well as illegal activities (Zubayr, 2014). Furthermore, Chakravarty et al. (2012) explain that one direct cause of deforestation is mining activities on a large scale. Mining will encourage massive activities, road construction, other infrastructure, and large manpower needs.

In Indonesia, government efforts to control the use of forest areas for mining are also carried out by the government through PNBP PKH, which is regulated by PP No. 2/2008. At the beginning of this regulation, the PKH PNBP rate was 2,400,000/rupiah/hectare/year. PNBP adopted schemes based on areas cultivated not by controlled areas. This PP was then revoked and replaced by Government Regulation No. 33 of 2014, which in essence increased tariffs and changed the PNBP PKH charges scheme. The new charges scheme of PNHP PKH is based on controlled areas. All areas that have received IPPKH are subject to PNBP PKH. The rates of PNBP PKH in PP 33/2014 have increased to 3,500,000 rupiah/hectare/year for active mining areas (cultivated area) and 1.750.000 rupiah/hectare/year in inactive mining areas (licensed area but not yet worked).

The policy of controlling the use of other forest areas for mining is also finished by limiting the IPPKH quota for mining to a maximum of 10% of the total area of production forest or protected forest areas in each district/city. This policy has been established since the early days of establishing access through the IPPKH scheme regulated in Permenhut 14 of 2006, and continues to be maintained to date. However, the implementation of government policies is often not as expected. This quota restriction policy even in subsequent years is expanded by applying a maximum quota limit of 10% for IPPKH mines if their location overlaps with forestry permits. Government policies related to mining in forest areas are conducted in an effort to control the use of forest areas and maintain the sustainability of the forestry business itself.

Effect on Land Use Policy

Christopher Costello and Corbett Grainger (2017) explains that the government is a more conservative regulator in managing resources, and has strong ownership rights. One of the efforts in reducing Greenhouse Gas (GHG) emissions is through the reduction of deforestation (KLHK, 2017). The moratorium calls for the cessation of logging and forest conversion activities for a certain period to assess the problem and identifty a long-term and permanent solution (Contreras Hermosilla, 2000; Chakravarty et al., 2012; Zubayr, 2014). In this case, the moratorium contains a correlative meaning, not just a pause effort but, especially, an effort to improve property. Murdiyarso et al. (2011) explained that the moratorium should not be seen as a goal to achieve the emission reduction target, as proclaimed by the president. The moratorium is an instrument for creating circumstances that enable improved forest and peat land governance, which are necessary to support low carbon development strategies and participation in global mechanisms, such as REDD +, over the long-term. The moratorium could pave the way for successful policy reform beyond two years.

The linkage between forest area and tax policy, especially land taxes, has been studied in Louisiana, USA by Polyakov (2008), and the result is that high property taxes on certain land will lower the probability of converting to other land uses. This property tax policy has greater impact on land use change and also prevents the conversion of agricultural land and forestry into other uses. In contrast, a study by Skinner (1991) indicated that land tax policies to encourage more productive land use and voluntary land reform have not been successful. Firstly, the theoretical basis of the purpose of land taxes has not been properly socialized. Secondly, the land tax has no significant effect on the outcomes of land-use decisions. Some strategies—including Integrated Multi-Trophic Aquaculture (IMTA), mangrove restoration, and Reducing Emissions from Deforestation and forest Degradation (REDD +)—could help to reduce blue carbon emissions (Ahmed, Cheung, Thompson, & Glaser, 2017). Another study showed that rural subsidies to

large farmers tend to be associated with low land productivity and excessive deforestation (Bulte, Damania, & López, 2007). Research in Chile relating to the Native Forest Land (NFL) policy concluded that the NFL would not be effective in preventing the loss of native forests because tree plantations are profitable, and the NFL regulations are being undermined by an opposing industrial coalition (Manuschevich & Beier, 2016).

A study conducted by Rudorff et al. (2011) on the expansion of soybean agriculture into forest areas in the Amazon in Brazil in the context of reducing GHG emissions, which was undertaken with remote sensing approaches and aerial photography, indicated that the moratorium policy adopted in 2006 could hamper the conversion of forest areas into soybean farms. The successful of decline of the deforestation in the Amazon is due to a moratorium policy of soybean expansion according to Nepstad et al. (2014) due to progress in governance, law enforcement, and mechanisms of access to markets and finance for soy products in the Amazon, Brazil. The impact is only 0.25 percent of the area of deforestation planted soybeans, and this is the smallest during the last 22 years. The successful decline of deforestation in the Amazon through a moratorium policy of soybean expansion was reviewed by Nepstad et al. (2014). The results found that improvement in governance, law enforcement, and market access and finance mechanisms for beef and soy products in the Amazon, Brazil, managed to reduce deforestation but failed to address the needs of private investment, innovation, and business activities.

3. Data and Methodology

3. 1 Data

This section describes the data and empirical model used to assess the impact of policies on controlling the use of forest areas for IPPKH for mining. The data used in this study consists of quantitative data, i.e., IPPKH data mining of minerals and coal between 2008 and 2017. The data in this study was obtained from the Directorate of Planning, Use and Establishment of Forest Management Area (Dit.RPWF), Directorate General of Forestry and Environmental Planning, KLHK. This research also uses qualitative primary data obtained through observation and in-depth interviews. Respondents to in-depth interviews were conducted by purposive sampling. Secondary data are also collected to support the results of research. The data can be in the form of regulations related to IPPKH policy, documents, and other literatures and data relating to research.

3. 2 Methodology

We use the following ARIMA model. The ARIMA model is a combination of autoregressive (AR) and moving average (MA) models by adding non-stasionarity. The general model ARIMA (p, d, q) is fulfilled, where p expresses the order of AR, d expresses the integrated order and q expresses the order of MA. The AR model (p) is the relationship between the dependent variable Y and the independent variable Y at the previous time. The general form of the autoregressive model with the order p (AR) or ARIMA model (p, 0.0) is expressed as follows:

The MA model (q) shows dependence of the dependent variable Y on the previous residual values sequentially. The general form of the moving average model of order q (MA) or ARIMA (0, 0, q) is expressed as follows: [x]

The general model for a mixture of actual AR (1) and MA (1) actual, or ARMA (1, 0, 1) processes is expressed as follows: [x]

If non-stationary is added to the mixture, then ARMA process in the ARIMA general model (p, d, q) is fulfilled. The equation for the simple case of ARIMA (1, 1, 1) is as follows:

4. Result and Analysis

4.1. Policy on License of Borrowing Use of Forest Area for Mining: Descriptive Analysis

Establishment of access to the use of forest areas for purposes outside the forestry sector is regulated in Law no. 41/1999, which was revised in Law no. 19/2004 about forestry. This revision is believed to not provide legal certainty, especially for mining permits in protected forest areas issued before Law no. 41/1999. The utilization of forest areas in Law no. 41/1999 is defined as the use of part of the forest area for the benefit of development outside of forestry activities without changing the function and designation of the forest area. In the period before the issuance of Law 41 /1999, the use of forest areas for mining was conducted under a land use loan agreement between a mining company and a Contract of Work (CoW) or a Coal Mining Concession Agreement (PKP2B) with the government, and both are in the same position in the agreement. After the issuance of Law no. 41/1999, the forest-use agreement regime has become a licensing regime with the final scheme embodied by IPPKH. Regulations relating to the implementation of IPPKH were issued in 2006 through the Permenhut P.14/Menhut-II/2006.

The dynamics of IPPKH regulation often create uncertainty for mining entrepreneurs who own IUP areas in forest regions and must follow IPPKH processes in order to execute operations in the sector. The results of in-depth interviews with staff from a Government Relation Group on Coal Mining who have instituted IPPKH on Sumatra and Kalimantan Island that explained the uncertainty and dynamics of the regulation made the company hold back on the decision to expand the land through IPPKH because the IPPKH process is too long and complicated. Changes in government regulations often encourage companies to make adjustments to adjust their mining activities in forest areas under the applicable regulations. Furthermore, government as a regulator is more conservative in managing resources with strong ownership rights. IPPKH as a form of exclusive rights for companies or individuals in the conversion of forest areas for legal mining activities is a government step in creating and encouraging the efficient extraction of forest resources.

The distribution of mineral and coal mining IUP for the period 2008-2017 is concentrated on Kalimantan, with a total of 231,170 hectares. The highest IPPKH area in Kalimantan occurred in 2009, covering 39,144 hectares, and the smallest in 2015, covering 5,702 hectares. In Sumatra, the highest IPPKH in 2016 was 7,406 hectares and the lowest in 2008 was 370 hectares. On other islands, the highest IPPKH occurred in 2013, covering an area of 11,580 hectares, and the smallest was in 2008, covering 470 hectares. While the area of Indonesia's forests according to KLHK (2015) statistics reaches 120 million hectares, 50 % of this forest area is in Sumatra and Kalimantan. This is in-line with the IPPKH distribution of mines that are also concentrated in Sumatera and Kalimantan. Indonesia Mineral and Coal Information the Ministry ESDMK (2015) also explains that the largest coal potential is found on the Sumatra and Kalimantan. Coal potential on Sumatra covers the total area around 1.34 million hectares and the island of Kalimantan covers the total area around 1.15 million hectares. In Table 1 below, the largest IPPKH mining area is in Kalimantan, with a total area of 8,643.15 hectares, Sumatera covers 1,098.50 hectares, and other islands cover 2,987.39 hectares. The partial return of the IPPKH mineing area mostly occured in 2016 and 2017, following the policy of the tariff increase and change of PKH PNBP charges scheme in 2014.

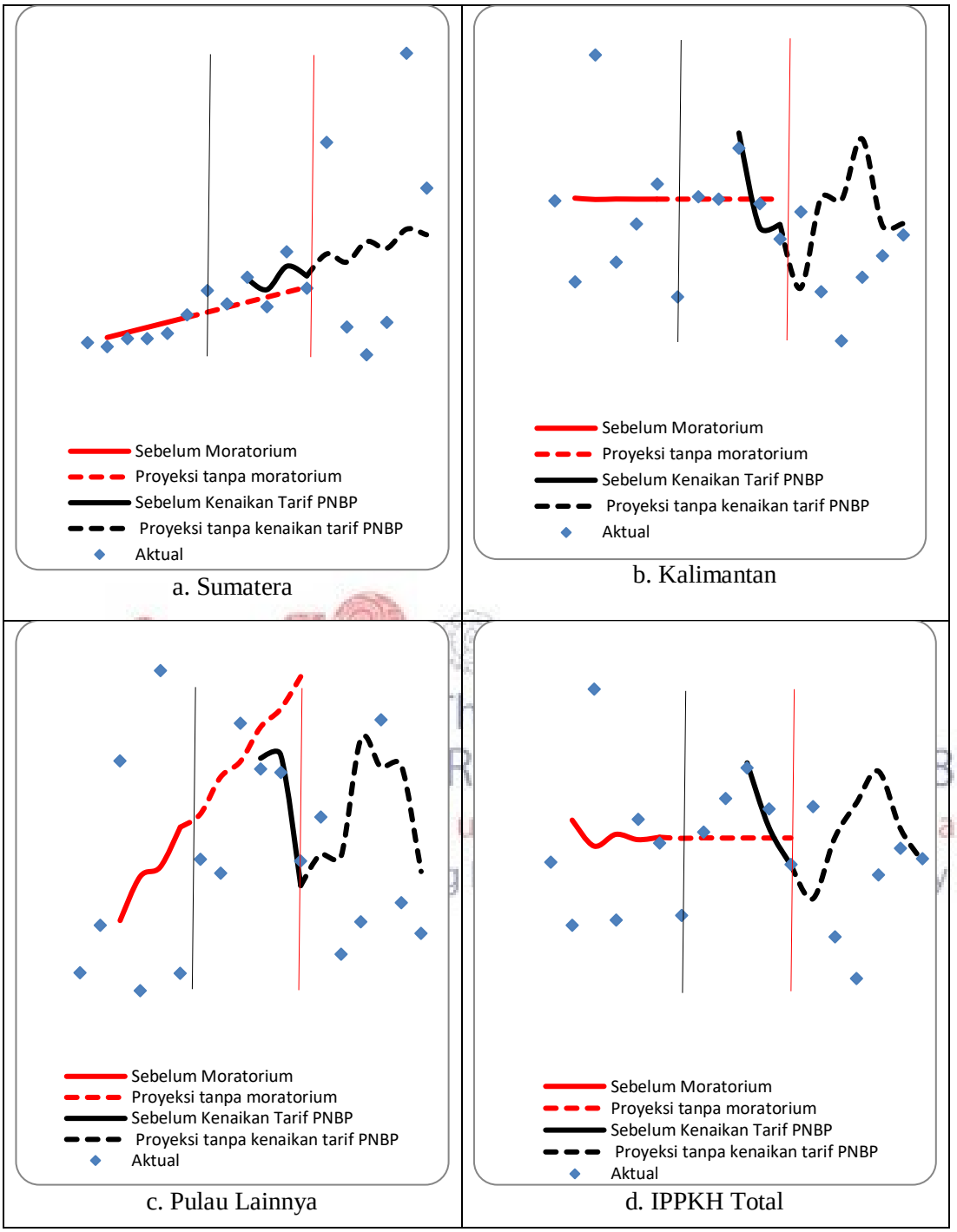
In 2009, the initial first period of opening access to conversion of forest areas through IPPKH mechanism was included for mining. The response to the IPPKH mechanism was more prevalent on the Kalimantan and significantly increased. The significant response also occurred in other island regions that

showed a positive response. The large increase of IPPKH at the beginning of IPPKH mechanism was opened in 2008 of 470 hectares to 7,775 hectares in 2009. In the Sumatra, the initial response to IPPKH mechanism disclosure tends to be insignificant. IPPKH mines are dominated by coal commodities, accounting for 71% of the total IPPKH area for mines, 27% of mineral commodities and IPPKH for excavated commodities only 2%. The high IPPKH for coal commodities occurs because technically coal exploitation is easier and coal potentials and resources are clearly mapped.

In the issue of forests and peat lands, the moratorium is the cessation for a certain period of logging and forest conversion activities to get the distance and way out from the problem in order to get a long-term and permanent. In this case, the moratorium has a correlative meaning, not just a pause effort but especially an effort to improve things (Zubayr, 2014). Presidential Decree No. 6/2017 establish that delays in the granting of new licenses to primary natural forests and peat lands shall be contained in the Indicative Map for Delays in Granting New Permits (PIPPIB) issued by KLHK every six months. The moratorium policy on the permit is expected to reduce forest destruction by the widespread mining permits within the forest area. In fact, the area of moratorium mapped as PIPPIB and determined based on Ministerial Decree has dynamic. Total area of permit delays has continued to decline since established (see figure 1).

This permit moratorium policy forms the basis for KLHK to refuse IPPKH requests whose areas include primary natural forests and peat forests. This is what establishes the IPPKH application at the beginning of the moratorium permit is slightly slowed down. One of the policies in forest protection and forest ecosystem improvement is the moratorium policy of permit which is applied in the semester two 2011 through Inpres 10/2011 and until now this policy is still implemented. Deforestation and forest degradation in Indonesia is mostly caused by conversion for plantations, industrial timber plantations and only a small portion for other uses such as infrastructure, including mining activities. Deforestation trends in Indonesia in 2009-2011 amounted to 0.45 million hectares, 2011-2012 amounted to 0.61 million hectares, in 2012-2013 amounted to 0.73 million hectares, and the deforestation rate in the last calculation period of 2013-2014 obtained value of 0.4 million hectares. Deforestation rates tend to fluctuate within three years after the policy permit moratorium; even in the period 2012-2013 the deforestation rate is the largest during the period 2009-2014. Reflecting on the findings of Margono et al (2014), the policy instrument of the permit moratorium has not been fully able to overcome deforestation and forest degradation in Indonesia which is the hope of the moratorium policy itself.

Table 1: IPPKH for Mineral and Coal Mining by Region



a. Sumatera

b. Kalimantan

c. Pulau Lainnya

d. IPPKH Total

Permit moratorium policy provides incentives for mining entrepreneurs whose working area is within forest areas to expand IPPKH as land tenure. The moratorium policy raises concerns about the forestry sector's policy direction that is increasingly limiting mine space within forest areas. According to Tambunan (2010), there is an inelastic supply area, but on the other hand, mining IUP covers large areas within forest areas (KPK, 2015) to create a trade-off of forest use. This condition also encourages

competition in controlling forests for mining, especially in districts rich in natural resources. The concerns of mining companies that have IUPs in forest areas on licensing moratorium policies can ultimately create expectations for forest tenure. In the relationship with the issuance of new policies by the government, the moratorium policy permit will change the existing system and will also change the mining company's expectation regarding the use of forest areas. This is a rational expectation. The policy of permit moratorium which is expected to control IPPKH excessively becomes an incentive to change the expectation by conducting a large land tenure business after the moratorium policy (perverse incentives). An expectation of a policy direction that further limits the mining space in forests in the future and limited scarcity encourages the expansion of IPPKH as a form of forest tenure and long-term anticipatory measures.

Policies that result in opposite effects of estimates (unusual incentives) have occurred in Africa related to the international elephant ivory trade ban policy by CITIES, studied by Andrew M. Lemieux and Ronald V. Clarke (2009). The effort to control forest areas through IPPKH is a result of changing perceptions of government policychanges. Expectations arising from the mining company also consider the scarcity factor (scarcity). In the future, due to increased applications and also because of government policies, the forest area for the mine itself results in increasingly limiting the space for forest conversion. This company's view is in line with the principle of Malthusian, where population growth as a channel that encourages the demand for natural resources is greater than the increase in natural resources itself, which in turn will create scarcity of natural resources.

4.2. Tariff Increase Policy on PNBP PKH and IPPKH Mining

PNBP PKH is compensated for the use of forest areas in accordance with government regulation No. 2/2008. This PP was subsequently revoked and replaced by government regulation No. 33/2014, which in essence raises the PNBP PKH tariff and changes the PNBP PKH. The aged PP adoption scheme provides that areas that have already received IPPKH and have not been used are not subject to PNBP PKH. In the new PP established in 2014, all areas that have received IPPKH are subject to PNBP PKH. Besides the increase of the PNBP PKH tariff, the charges scheme changed: the original PKB PNBP object based on the area that was cultivated was changed to charges based on the controlled area. The contribution of PNBP PKH in KLHK is considerable. The charges of PNBP PKH started in 2009; at that time, the contribution of PNBP PKH only amounted to IDR 168.05 billion. This number continues to increase in line with the increase in the amount of mandatory pay. Payer here is the holder of IPPKH with compensation to pay PKB PNBP and, in this case, is the holder of the IPPKH mine. In 2015, PKB's PNBP contribution reached IDR 1.04 trillion.

In 2014, the government adopted a new policy related to PNBP PKH by raising tariffs and changing the PKH PNBP charges scheme. The basic thing besides the increase of the PNBP PKH tariff is the charges scheme change; the original PKH PNBP object, based on the area that was cultivated, was changed to charges based on the controlled area. In the old PKH PNBP scheme, prior to the change in 2014, unused IP PKH areas were not the object of levies. According to the new PKH PNBP scheme of 2014, unused IPPKH areas are considered to be subject to PNHP PKH charges.

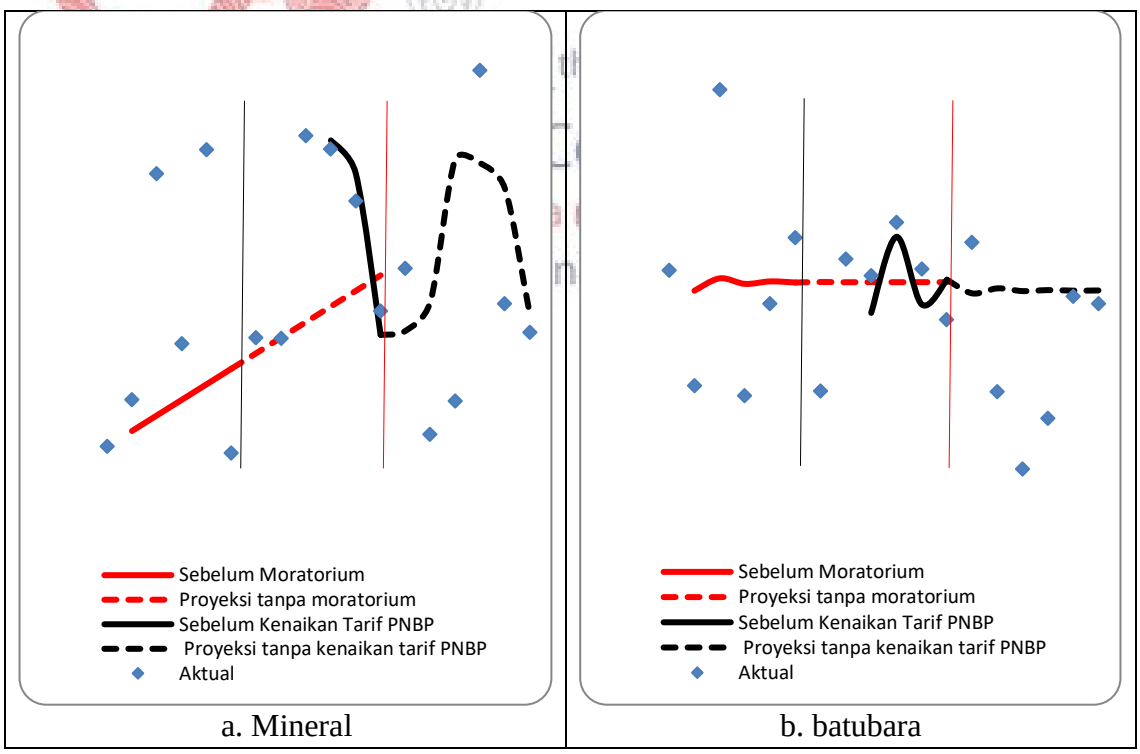
4.3. The Quota Policy and the Spatial Distribution of IPPKH Mines

The spatial distribution pattern depicted in Figure 2, below, shows that the distribution pattern of mineral- and coal-mining IPPKH tends to be concentrated in one particular location, and this condition occurs in almost every region. For example, in the Kalimantan region, IPPKH tends to be concentrated in eastern and southern Kalimantan. According to Tambunan (2010), natural resources, especially mines, are given. The natural resources of mineral and coal mines occur naturally and are not created by humans or the location. This situation is different from that of forest areas, which can be designed according to an ideal layout. Law 41 on Forestry of 1999 mandates that the proportion of forest area be at least 30% of the

land area of the island or province. Different patterns of the distribution of forested areas' mineral resources ultimately create problems when the forestry sector establishes a quota restriction policy for mines within forest areas that limits utilization to only 10% of the forest area in each district or city. This policy encourages IPPKH upgrades in certain areas, especially those regions or districts that are rich in mining resources.

In the situation of limited quotas for IPPKH mines, demand for mining forest areas will increase. The decision of the mining investor is not always due to the current push for satisfaction but also because of the expectation of an opportunity to increase the value of the goods or services in the future (Pindyck, 2013). This increase in demand is a rational choice because of limited land tenure expectations, and in the future, the value of the forest area will increase. This increase in demand is a rational choice because of limited land tenure expectations, and in the future, the value of the forest area will increase. This condition is justified by the information of several IPPKH holders of mines that have extensive IPPKH area and that are spread over several islands in Indonesia. However, anticipatory measures related to the limited IPPKH quota for mines can only be done by companies that have information on IPPKH distribution and quota mines in each district. Mining companies belonging to large groups with close relationships with the government have more information on the distribution of IPPKH and the quota of each district so as to be able to perform anticipatory measures.

Figure 2. Map of Distribution Pattern and Expansion of IPPKH Mine



a. Mineral b. batubara

ARIMA Model Analysis

ARIMA model analysis was conducted to analyse the effect of policy on moratorium of permit and policy of rate increase tariff of PNPB PKH to IPPKH mine. Previous IPPKH data on a permit moratorium in the period 2008-2011 are projected and identified as Business As Usual (BAU) IPPKH without

moratorium policy, compared to actual data after the policy so that policy impact can be identified. The actual proportion of IPPKH data under the large BAU line indicates a significant effect of policy intervention and to the contrary, if the actual proportion of IPPKH data below the small BAU line indicates no effect of policy intervention. The trend change of IPPKH mineral and coal mine in each region without policy of permit moratorium and without policy of rate increase PNBP PKH in can be seen in figure 1 below. BAU lines illustrated in dashed lines in the figure below are further compared with the actual IPPKH data by region to determine the effect of policies on each region.

Figure 3 illustrates IPPKH's trend of projection result without any moratorium policy and without policy of rate increase of PNBP PKH as Business As Usual (BAU) from IPPKH. In the Sumatran, without the IPPKH BAU moratorium policy indicates an upward trend, but most of the actual IPPKH are in above the BAU line. These results indicate that a permit moratorium is not effective in reducing IPPKH in the Sumatra. While without the policy of increase of PNPB PKH tariff, BAU IPPKH line shows an increasing trend. In case, if compared to the actual IPPKH, some are below the BAU line, and some are above the BAU line. This result shows that the policy of tariff increase of PNBP PKH has not effectively reduced the increase of IPPKH, but when compared to permit moratorium policy, the increase of PKH PNBP tariff tended to control the area of IPPKH more effectively. In the Kalimantan, the BAU IPPKH line without the permit moratorium policy shows a stable trend, but IPPKH actually tends to fluctuate. The actual IPPKH is mostly located around the BAU line. This condition indicates that the permit moratorium policy is not effective enough to reduce the extent of IPPKH. Meanwhile, the BAU IPPKH line without the PKB PNBP rate increase policy shows an increasing trend and the actual IPPKH is mostly below the BAU line. This condition indicates that the increase of PNBP PKH tariff is quite effective in reducing the area of IPPKH of mineral and coal mines in Kalimantan.

In other island regions (Java, Sulawesi, Maluku, Papua, and Nusa Tenggara), the IPPKH BAU line without the permit moratorium policy shows a significant upward trend, and most of the actual IPPKH is below the BAU line. These results indicate that an effective permit moratorium policy reduces the extent of IPPKH of mineral and coal mines. While the BAU IPPKH line without the PNBP PKH rate increase policy also shows an increasing trend and most of the actual IPPKH is below the BAU line. Tariff increase policy of PNBP PKH effectively reduces the extent of IPPKH of mineral and coal mines outside the Kalimantan and Sumatera islands.

Trend change of IPPKH according to mineral and coal commodity without permit moratorium policy in the second semester of 2011 and without policy of PKH PNBP rate increase in the second semester of 2014 can be seen in figure 2 below. The effect of the moratorium policy on the permit and the policy of tariff increase of PNBP PKH on IPPKH analysed through projection approach with ARIMA method is further compiled to see the proportion of IPPKH data that is below the BAU line as the expected result after the policy. The proportion of IPPKH data below the BAU line is presented in table 2 below. The proportion of data below the BAU line after the moratorium policy, of 11 analyses conducted, 5 of which the proportion of more than 50%. While the proportion of data that is under BAU line after the policy of PNHP PKH tariff increased, from 11 analyses conducted, 9 of them have more than 50% proportion and the other two have a proportion of 50%. From IPPKH proportion data that is below the BAU line, in general, the policy of rate increase of PNBP PKH tends to be more effective in controlling the extent of IPPKH of mineral and coal mines compared to the policy of permit moratorium.

Table2. Proportion of IPPKH Data that is below the BAU line

No	Pulau/Komoditas	Proporsi Data di bawah Garis BAU	
		Moratorium	Kenaikan Tarif PNBP PKH
1	Sumatera	(33 %)	(50 %)
2	Kalimantan	(67 %)	(83 %)
3	Pulau lainnya	(83 %)	(67 %)
4	Mineral	(17 %)	(67 %)
5	Batubara	(33 %)	(83 %)
6	Mineral dalam Region Sumatera	(67 %)	(67 %)
7	Mineral dalam Region Kalimantan	(67 %)	(67 %)
8	Mineral dalam Region Pulau Lainnya	(17 %)	(67 %)
9	Batubara dalam Region Sumatera	(17 %)	(50 %)
10	Batubara dalam Region Kalimantan	(67 %)	(83 %)
11	Total	(33 %)	(83 %)

Based on the results of spatial mapping, the pattern of distribution of mining IUP in Indonesia generally shows the same distribution and expansion pattern. Distribution of mining IUP tends to be concentrated in certain locations while the expansion pattern occurs locally as expansion is mostly done around the old IPPKH area. The IPPKH expansion pattern of mines from mapping results in the Kalimantan region (see Figure2) shows the expansion patterns of some IPPKH mine holders such as PT. Arutmin Indonesia, PT. Borneo Indobara, and PT. Tunas Inti Abadi. These mine holders show the same pattern of IPPKH expansion around IPPKH areas that have been previously obtained and occurred mostly after the policy permit moratorium, or in the period 2012 until 2014. The pattern of IPPKH expansion of the mine that is local is due to IPPKH follows the existing resources.

Furthermore, the trend of IPPKH changes based on mineral commodities and coal commodities without a permit moratorium policy in the second half of 2011, and without the policy of rate increase of PNBP PKH in the second semester of 2014, as can be seen in Figure 5 below. In mineral commodities, the BAU IPPKH line without the moratorium policy shows an upward trend, but most of the actual IPPKH data resides above the line. These results indicate that if a permit moratorium is ineffective, it reduces the IPPKH of mineral commodities. Meanwhile, without a tariff increase policy for PNBP PKH, the BAU IPPKH line shows a fluctuating trend, and if compared with the actual IPPKH, most of the actual IPPKH is below the BAU line. These results indicate that the tariff increase policy for PNBP PKH is quite effective in reducing the increase of IPPKH.

Figure 4. IPPKH Projection by Commodities

For coal commodities, the BAU IPPKH line without a moratorium policy shows a fairly stable trend, whereas the actual IPPKH is largely above the BAU line. This condition indicates that the policy moratorium is not effective in reducing IPPKH coal mine production. On the other hand, the BAU IPPKH line without the policy of rate increase of PNBP PKH shows that the trend is stable, and the actual IPPKH is largely below the BAU line. This condition indicates that the policy of tariff increase of PNBP PKH effectively reduces IPPKH coal mine production.

5. Conclusion and Policy Recommendation

5.1. Conclusions

The policy of controlling the use of forest area through the IPPKH mechanism is used by the government in an effort to reduce forest destruction. The control policies are, among other things, the licensing moratorium policy, the tariff increase policy, the change to the PNBP PKH scheme, and IPPKH's broad quota policy for mines of up to 10% of forest area in each district or city. The IPPKH moratorium policy that has been carried out since 2011 has generally been ineffective in reducing the extent of IPPKH, both in aggregate and to regions and commodities. Moreover, in some regions and commodities that are incidental (perverse incentives), the moratorium policy actually encourages the increase of IPPKH mine areas, as happened in mining IPPKH in the Sumatera region and IPPKH mines on mineral commodities.

The policy of tariff increase and the change to the PKH PNBP levy scheme that was implemented in 2014 tend to effectively decrease the extent of IPPKH of mineral and coal mines. These policies encourage IPPKH mines to be efficient. Companies or individuals propose IPPKH in areas that are bound to be used and contain mine deposits so that excessive tenure practices are difficult to undertake. The new PNBP PKH policy of 2014, which is levied on the basis of the controlled area, is not based on the area that is endeavored to push the IPPKH mine area to be efficient.

IPPKH's broad quota policy for mines (up to 10% of forest area in each district or city) tends to encourage competition when applying for IPPKH mines. The distribution of equitable forest areas is not in line with the distribution of mining materials that tend to be uneven or concentrated in certain locations so as to encourage the high IPPKH intensity of mines in districts/municipalities rich in mineral resources due to the limited IPPKH quota of mines.

5.2. Policy Recommendation

The moratorium policy on the new PKH PNBP license and the policy of 2014 have different effects on IPPKH. Mining and coal mining companies have made significant responses to the new policy of PNBP PKH in 2014. This policy has been quite successful in encouraging mining companies to convert forest areas through IPPKH efficiently and not use excessive land tenure. This policy needs to be maintained and be applicable to other land-based models such as the oil palm plantation and industrial tree plantations. Policy permit moratorium tends to be ineffective in controlling the extent of IPPKH that needs to be evaluated. The moratorium policy needs to be supported by other policies that support the moratorium on the permit itself. The implementation of this moratorium policy should be done carefully as this policy also fails to address the needs of [missing words]. The permit moratorium policy should be applied to forest areas that need to be protected because of the great benefits, but in other forest areas containing high mineral and coal resources, the moratorium policy needs to be further analyzed to determine the benefit-cost analysis, private investments, innovations, and business activities.

In fact, the IPPKH quota restriction policy fo mines creates competition for land tenure, especially in areas rich in natural mining resources and causes some holders of mining IUPs to be unable to produce due to the quota limits. In order to solve these problems, the government needs to change the quotas that were originally set at each regency/municipality to the quotas set at each provincial or wider area. In the case where the quota in a district/municipality has been exhausted, a policy could be established whereby IPPKH mines can be granted certain provisions such as compensation in the form of replacement land with the same area as that requested by IPPKH.

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THE ROLE OF LOCAL TAX FOR OWN SOURCE REVENUES IN HELD REGIONAL STANDARD MINIMUM SERVICS OF TOURISM IN YOGYAKARTA

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ABSTRACT

Local taxes has an important role in regional autonomy. Local governments have full authority to manage local taxes to support regional finances in the context of regional autonomy. Yogyakarta as one of the provinces in Indonesia that has potential in tourism. Tourism has a very big share in the realization of local finance in Yogyakarta. Various forms of development to support tourism in Yogyakarta has been done by the Government of Yogyakarta Special Region, however still encountered public facilities that are less preserved. Maintenance is still felt less. In this case, it is necessary to examine the management of asset management as well as matters that support the existence of state assets, including one of them is the management of local taxes that are destined for tourism in Yogyakarta.

The research methodology is done collaboratively between normative and empirical. Normative research is done by literature study. Normative research is a research that is done by examining library materials or secondary data, also called bibliography legal research. This type of empirical research is often referred to as socio-legal research; in this case law is seen not only as a prescriptive and applied discipline, but empirical or a legal reality.

The research, published in this published paper, has the hope of contributing to the drafting of local regulations, especially the actualization of income revenues from the local tax sector devoted to the maintenance of tourism assets in Yogyakarta. The contribution in this form of thought must be viewed from the academic side which is summarized objectively.

Keywords
Local taxation, Yogyakarta, maintainance tourism facility

HEADING 1 – Tourism in Yogyakarta

For the people of Yogyakarta, where every stage of life has its own meaning, tradition is an important thing and it is still implemented until now. This tradition is also inseparable from the art presented in the ceremonies of the tradition. Yogyakarta is a city famous for its history and cultural heritage. In addition to the cultural heritage, Yogyakarta has a beautiful natural scenery, among others, Mount Merapi and the unspoiled beaches located in the south of Yogyakarta.[1]

Art atmosphere is felt in Yogyakarta, especially in Malioboro is seen from a variety of handicrafts and street musicians who entertain visitors lesehan stalls. A strong culture in Yogyakarta society is the main attraction for tourists. The vision of Yogyakarta city development in 2007-2011 as stated in the Yogyakarta Municipal Medium Term Development Plan (RPJMD) 2007 - 2011 is the city of Yogyakarta as a city of quality education, culture-based tourism city and environmentally friendly city center service. In the field of tourism, the vision determines the development target of 2007-2011 that is as a cultural-based tourism city with the support of diversity of objects and tourist attraction.[2]

Yogyakarta is known for its tourism potential, Yogyakarta tourism office has development program in each region in periodical time. In the adjacent period in Yogyakarta also born creative attractions that attract foreign tourists and tourists to visit the archipelago. Even for the world's top officials were interested to enjoy the typical atmosphere of Yogyakarta, one of which is Obama's former president of the United States who made a visit to Indonesia in 2017.

This great potential will certainly be maximized utilization if supported by the maximum tourism facilities. These facilities include transportation, accommodation, and maintenance of tourist objects. Basically with the holding of tourism activities of course there is a contribution from the tourists directly or also called levies / direct charges. On one side of the income can be used or realized for the maintenance of public service facilities, on the other hand the Government is in charge of providing optimal public services.

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[1] Yustisia Kristiana, *Kesiapan Yogyakarta Sebagai Kota Wisata MICE,* Hospitour Vol. I No. 1 April 2010,Sekolah Tinggi Pariwisata Pelita Harapan, 8 Hal. 49-50

[2] Ibid.

This public service is known by the movement of the Government of Minimum Service Standards. In this paper will discuss specifically how public services in Yogyakarta, especially in the field of tourism, where one of its supporting comes from local taxes. This has certainly been regulated in legal products.

Special Region of Yogyakarta Regulation No. 5 of 2014 on Public Services, again re-arranged with the Regulation of the Governor of Yogyakarta Special Region No. 4 of 2016 on Guidelines for the Preparation of Service Standards.

HEADING 2 – Regional Standard Minimum Services Tourism in Yogyakarta

The main function of local government is the provision of public services for the local community concerned. Therefore, the optimization of efficient and effective public services becomes the main concern of local governments in order to present excellent public services for the community. Minimum Service Standards (SPM) is one way to encourage local governments to perform appropriate public services for the community, and at the same time encourage the public to exercise control over government performance in the field of public services.[3]

SPM is considered as a logical action for the Regional Government for several reasons. First, based on the ability of each region, it is difficult for the Regional Government to execute all existing authorities / functions. Limited funds, apparatus resources, completeness, and other factors make the Local Government must be able to determine the types of services that should be provided at least for the community. Secondly, with the advent of SPM it is possible for the Regional Government to conduct its activities "more measurably". Thirdly, with the SPM accompanied by benchmarks of achievement that logical and real will make it easier for the community to monitor the performance of its officers, as one of the elements of the creation of good governance .[4]

In January of 2018 there have been established legal products that deal specifically with Minimum Service Standards. Government Regulation No. 2 of 2018 on Minimum Service Standards supersedes Government Regulation No. 65/2005 on Guidelines for the Preparation and Application of Minimum Service Standards. This legal product contains

[3] Kushandajani, *Standar Pelayanan Minimal (SPM) dan Peningkatan Pelayanan Publik di Era Otonomi Daerah,* Jurnal Publikasi Ilmiah, hal. 1

[4] *Ibid*, Hal. 2

Chapter VI and Article 27, set on January 4, 2018 and enacted January 5, 2018 in Jakarta. This legal product is registered in the State Gazette of the Republic of Indonesia Year 2018 No. 2 and Supplement to the State Gazette of the Republic of Indonesia Number 6178. Minimum Service Standards (SPM) is a provision concerning the Type and Quality of Basic Service which is a Compulsory Government Affair which is entitled to be obtained by every citizen minimally. Where the SPM will be enacted in January 2019.

In the context of regional expenditure, it is clearly defined and clear that regional spending is prioritized to fund the setting of MSS. On the priority and the implementation of SPM, the SPM has guaranteed the constitutional rights of the community, so it is not the performance of the Regional Government which is the main priority let alone the performance of the ministry but the main priority is the fulfillment of the basic needs of the Citizen. SPM is a reference in the implementation of public services.

However, Yogyakarta as one of the provinces with special autonomy has regulated the public service. Special Region of Yogyakarta Regulation No. 5 of 2014 concerning Public Service provides that Public service, including services that produce various forms of services required by the community.

Such public services shall include the provision of public services by the Regional Government, Regency / Municipal Governments and / or Village Governments which part or all of their funds are sourced from the State Revenue and Expenditure Budget, Regional Income and Expenditure Budget, Regency / Municipal Revenue and Expenditure Budget and / or Village Revenue and Expenditure Budget. [5]

Income of APBD among them is from various tourism activities. Where from this tourism also carried out the construction of its public service facilitation. Among other various public facilities of tourism developed by the Local Government of Yogyakarta in recent years including the construction of international airports that are in the process[6].

[5] Pasal 8 Peraturan Daerah Daerah Istimewa Yogyakarta Nomor 5 tahun 2014 tentang Pelayanan Publik

[6] Bandara New Yogyakarta Internasional Airport Menuju Konstruksi Fisik, TribunJogja.com, 2 Januari 2018. http://jogja.tribunnews.com/2018/01/02/bandara-new-yogyakarta-international-airport-menuju-kontruksi-fisik

Construction of hotels as tourist accommodation [7], construction of tourism bus parking area,[8] and village tourism development.[9]

HEADING 3 – Own Source Revenue of Yogyakarta

Regional Revenue and Expenditure Budget (APBD) is a description or an important benchmark of the success of an area in improving the potential of the regional economy. That is, if the region's economy is growing, it will have a positive impact on the increase of Local Own Revenue (PAD), especially the receipt of local taxes.[10]

Pendapatan Asli Daerah (PAD) is a source of local financial revenue that is excavated from the potentials owned by the region concerned. Ahmad Yani said that the Original Revenue is the revenue earned by the region from the sources within its own territory which is levied according to the Local Regulation in accordance with the prevailing laws and regulations.[11]

Based on Law no. 32 of 2004 on Regional Government and Law no. 33 of 2004 on Fiscal Balance of Central and Regional Governments, Local Own Revenue (PAD) is revenue derived by areas levied according to local regulations in accordance with laws and regulations, including:[12]

a. Local tax;

b. Levy area;

c. The result of separated regional wealth management;

d. Other Local revenue is legitimate.

[7] Priscilia Felicia Elu, Berpikir Postifi tentang Pembangunan Hotel di Yogakarta, 13 Septtember 2017, Kompasiana. Com

https://www.kompasiana.com/priscila-namanya/59b898c7085ea649b83d7c42/berpikir-postitif-tentang-pembangunan-hotel-di-yogyakarta

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[10] Afriyanto & Hernita, *Analisis Pendapatan Asli Daerah Terhadap Belanja Daerah di Kabupaten Rokan Hulu*, Jurnal Publikasi Ilmiah, Hal. 5

[11] *Ibid*.

[12] *Ibid*, Hal. 6.

Regional Original Income (PAD) is a source of revenue areas that must be continuously driven growth. Indigenous revenues aims to authorize local governments to finance the implementation of regional autonomy in accordance with regional potentials as a manifestation of decentralization. PAD has an important role in financing regional development.[13]

Based on the potential of each region, the increase in revenue of PAD will be able to improve the financial capacity of the region. PAD can be used as an indicator in assessing the level of independence of a region in managing local finance, the higher the ratio of PAD compared with the total income the higher the level of independence of an area.[14]

With PAD Yogyakarta is quite significant sourced from the Regional Tax, for the next will be discussed about local taxes, especially from the field of tourism.

HEADING 4 – Local Tax in Yogyakarta

According to Adriani, taxes are public dues to the state (which can be enforced) owed by the taxpayers paying them according to general regulations (law) by not obtaining immediate re-eligible achievement and whose use is to finance general expenditures since the task of the state to organize the government.

Government Regulation no. 65 of 2001 on regional taxes, local taxes are taxpayers dues made by private individuals or regional heads without equal direct returns, which can be enforced under applicable legislation used to finance local governance and regional development.[15]

Types of provincial and regency / municipal taxes according to Law no. 34 of 2000 are as follows:

a. Tax Type of Province

1) Motor vehicle tax and vehicle over water

2) Notwithstanding the name of motor vehicles and vehicles over water

3) Motor vehicle fuel tax

4) Tax collection and utilization of underground water and surface water

[13] *Ibid*

[14] *Ibid*

[15] *Ibid.*

b. Tax Type District / City

1) Hotel tax

2) Tax restaurant

3) Advertising tax

4) Road lighting tax

5) Withdrawal tax of class C category

6) Parking tax and others.

Both Levies and local taxes related to Yogyakarta tourism can be considered to contribute and from time to time increased.

No	Source	Year					
		2012			2013		
		amount	percentage		amount	percentage	
			proportion	increase		proportion	increase
1.	Pajak Pembangunan (PPI)	126.221.366.085	82.4%	41.3%	156.889.641.098	83.1%	24.3%
2.	Pajak Tontonan/hiburan	8.910.404.862	5.8%	16.7%	12.923.919.118	6.8%	45%
3.	Retribusi Obyek dan daya tarik wisata	13.700.610.515	8.9%	49.8%	17.716.742.423	9.4%	29.3%
4.	Retribusi perijinan	3.932.090.845	2.6%	100593.7%		0%	0%
5.	Retribusi penggunaan aset milik Pemda (sewa/kontrak/bagi hasil)	409.927.170	0.3%	343.8%	1.308.712.705	0.7%	219.3%
	TOTAL	153.174.399.477	100%		188.839.015.344	100%	23.3%

Year								
2014			2015			2016		
amount	percentage		amount	percentage		amount	Percentage	
	proportion	increase		proportion	increase		Proportion	Increase
192.879.137.826	81.4%	22.9%	208.918.260.442	78.2%	8.3%	284.042.872.859	80.3%	36.0%
15.611.645.197	6.6%	20.8%	18.672.116.225	7.0%	19.6%	25.819.124.353	7.3%	3.83%
27.216.020.527			38.382.409.531			43.078.343.950	12.2%	12.2%
	0%	0%		0%	0%		0%	0%
1.248.784.140	0.5%	-4.6%	1.020.573.117	0.4%	-18.3%	973.024.378	0.3%	4.7%
236.955.587.960	100%	25.5%	266.993.359.315	100%	12.7%	353.913.365.540	100%	32.6%

Development of Total Local Revenue (PAD) of Tourism Sub-Sector in Yogyakarta Year 2012-2016 (type of income / levy)

Source: Statistic of Tourism Yogyakarta 2016 page 77

From the data above shows that the potential of Yogyakarta tourism provides a significant role because income from the taxes of the tourism sector from year to year has increased.

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Assessing The Impact of Infrastructure on Economic Growth in Indonesia

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The main objective of the Indonesian government in national development for border areas through the improvement of infrastructure development. Because the border areas in Indonesia is a strategic zone that needs to be considered in order to encourage improvement of people's welfare and economy in the region. Infrastructure development, especially in the field of road, is done to realize the national development which is reflected from the growth of the economy. The problems that arise on inequivalent economic growth can encourage inequality. The purpose of this research is to evaluate road infrastructure in influencing economic growth and inequality. The data used in this research is panel data with research object is West Kalimantan which has a direct border with Malaysia. The analysis tool used in this research is Panel Least Square (PLS) to see the connectivity of road infrastructure with economic growth and inequality. In addition, this research uses α-convergence to see imbalances as well as β-convergence models in looking at the relationship of infrastructure with economic growth. The contribution of this research is as a recommendation of the importance of road infrastructure in influencing economic growth caused by the ease of mobility and distribution. The results of this study show that the area of West Kalimantan is still in the imbalance position and there is a relationship between economic growth with infrastructure.

Keywords: Economic Growth, Infrastructure, Convergence

INTRODUCTION

Based on Nawa Cita's vision points are there to build Indonesia from Pinggiran with the spirit of the villages and villages in state freedom. Infrastructure as one of the pillars in development has an important role. Roles and infrastructure are vast, such as productivity boosters, connectivity, twin costs, poverty alleviation and improved quality of life (Ullah & Naveed, 2012; Raihan, 2011; Boccanfuso, Joanis, Paquet, & Savard, 2015).

In research conducted by Kondongo & Ojah, (2016) and Prasetyo, Proyarsono, & Mutsih, (2013) explained that infrastructure, especially road infrastructure, has an influence in increasing economic growth. The presence of road infrastructure makes the connection of a region with other areas that will drive the economic activity (Moyaki, 2015, Moeketsi, 2017). On the other hand, research conducted by Maryaningsih, Hermansyah, & Savitri, (2014) and

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Palei, (2015) also provides an explanation that infrastructure can stimulate investments which in this case can increase an economic growth.

Indonesia's developing country with its territory has a direct relationship with the Malaysian countries which resulted in the inequality and slowdown of economic growth. Counter areas are very different from other regions and even have socioeconomic conditions that are up to date (Prasetyo, Proyarsono, & Mutsih, 2013; Lansing & Markiewicz, 2016). On the other hand, weak infrastructure is also a trigger in problems in disadvantaged areas. Thus the need for national development through various aspects of one of the infrastructures in improving economic activity.

Based on the problems present in the border areas, this study seeks to see how the impact of road infrastructure policy contributes to economic growth. This is because, in research conducted by Prasetyo, Proyarsono, & Mutsih, (2013) and Edmonds & Fujimura, (2006) provide assertiveness of road infrastructure can be a trigger in increasing economic growth. In addition, the government that has a vision of improving road infrastructure in disadvantaged areas can be seen the effectiveness of the policy. Because the border area requires the development of appropriate infrastructure along with the suitability of characters in the border area because it will impact on the acceleration of economic development, increased competitiveness, and prosperity.

DATA AND METHODOLOGY

The examination of the relationship between economic growth and infrastructure in this study used the concepts of research conducted by Barro & Sala-I-Martin, (1991), Maryaningsih, Hermansyah, & Savitri, (2014) and Gömleksiz, Sahbaz, & Mercan, (2017) is the sigma convergence (σ-convergence) and beta convergence (β-convergence). This study uses panel data with time series from 2010 to 2016 and cross section 5 districts of Bengkayang, Kapuas Hulu, Malinau, Sambas, and Sanggau. The use of 5 districts represents 14 districts declared as border districts in Indonesia. Source of data used in this research sourced from the Central Bureau of Statistics each regency.

Sigma and beta convergence extensions are used in this study to see in detail inclusive economic growth coupled with improved infrastructure. The use of sigma convergence is aimed at assessing the distribution of income between the studied areas (Maryaningsih, Hermansyah, & Savitri, 2014; Quah, 1993; Friedman, 1992; Gömleksiz, Sahbaz, & Mercan, 2017). The occurrence of per capita income inequality between regions that experience decreases over time indicates the presence of sigma convergence. Indicators in viewing the

occurrence of sigma convergence can be seen through three sizes: Unweighted Coefficient of Variation, Theil Index, and Gini Coefficient.

Unweighted Coefficient of Variation is used to see the presence of an indication of the disparity of the distribution of income per capita real in an area. The lowered value of Unweighted Coefficient of Variation means that the low disparity in an area. Thus the Unweighted Coefficient of Variation can be an indicator of sigma convergen

$$Unweighted\ Coefficient\ of\ Variation = \sqrt{\frac{(Y_i - \bar{Y})^2}{n}} \Big/ \bar{Y} \quad (1)$$

The second indicator that can be used to see the occurrence of sigma convergence is Theil Index. Theil Index is used to see the contribution of inequality between provinces. Provinces with positive Theil Index value explain the richest province. While the negative Theil Index value implies the poorest province.

$$Theil\ Index = \sum Y_i log \left(\frac{Y_i}{\bar{Y}}\right) \Big/ n\bar{Y} \quad (2)$$

The third sigma convergence indicator is the Gini coefficient. The Gini coefficient is used to see inter-provincial disparities based on the Lorenz Curve (Maryaningsih, Hermansyah, & Savitri, 2014). The Gini Coefficient value is smaller giving the meaning that there is a low disparity

$$Gini\ Coefficient = \sum \sqrt{Y_i - Y_j} \Big/ 2n^2\bar{Y} \quad (3)$$

information

Y_i = PDRB per capita regency i

Y_j = PDRB per capita in addition to districts i

Y = average per capita GRDP

n = number of areas

The concept of beta convergence is aimed at measuring the speed of lagging regions in a catch-up in rich areas (Maryaningsih, Hermansyah, & Savitri, 2014; Gömleksiz, Sahbaz, & Mercan, 2017). Beta convergence is performed by panel data regression analysis with a model based on Solow growth model. The model specification performed in this study modifies from research conducted by Maryaningsih, Hermansyah, & Savitri, (2014); Malik, (2014) and Gömleksiz, Sahbaz, & Mercan, (2017) by including the Solow growth model as follows.

$\ln y_{it} - \ln y_{it-1} = \alpha_i + n_t + \beta \ln y_{it-1} + \gamma Inves_{it} + \varphi Road_{it} + \varepsilon_{it}$,

where $\beta = e^{-\tau t} - 1$ (4)

can be simplified as follows

$\ln y_{it} = \alpha_i + n_t + \rho \ln y_{it-1} + \gamma Inves_{it} + \varphi Road_{it} + \varepsilon_{it}$, dimana $\rho = e^{-\tau t}$ (5)

information

y_{it} = Gross Domestic Regional Product (PDRB)

Inves = Invesment

Road = Long road

α_i = individual effects

n_t = time effects

ε_{it} = error term

$\beta, \rho, \gamma, \varphi$ = coefisien

τ = the level of convergence of an area

t = research time

The estimation technique used in this research uses static panel data analysis tool. Static panel analysis tool used in this research to give detail infrastructure relation with economic growth in Indonesia lagging area. the use of statistical analysis tools there are three models used are Pooled Least Square (PLS), Fixed Effect Model (FEM) and Random Effect Model (REM). The three models will be selected to be the best model to estimate.

The Pooled Least Square (PLS) model has the concept that it assumes the behavior of the same individual within the period (Maryaningsih, Hermansyah, & Savitri, 2014; Muye & Hassan, 2016; Deniz, Stengos, & Yazgan, 2018). The Pooled Least Square (PLS) equation based on research conducted by Maryaningsih, Hermansyah, & Savitri, (2014) can be written as follows.

$y_{it} = \alpha + \beta X_{it} + \varepsilon_{it}$, i = 1, .. N dan t = 1,.., T (6)

where N is the number of cross section units and T represents the time series. Parameters α and β to remain constant efficiently required greater regeneration by performing N x T observations (Maryaningsih, Hermansyah, & Savitri, 2014; Deniz, Stengos, & Yazgan, 2018).

Different with Fixed Effects Model (FEM) analysis tools, there are differences between individuals from each individual intercept (Maryaningsih, Hermansyah, & Savitri, 2014, Muye & Hassan, 2016). Use of Fixed Effect Model (FEM) if there is a condition of correlation between individual effects with regressor. The Fixed Effects Model (FEM) based on research conducted by Maryaningsih, Hermansyah, & Savitri, (2014) can be written as follows.

$y_{it} = \alpha_i + \lambda_i + \beta X_{it} + \varepsilon_{it}$, i = 1, …, N dan t = 1,…, T (7)

in error (ε_{it}) there is one-way and two-way. One-way is characterized by individual effects and random error in error (ε_{it}). While in two-way contains individual effects, random error and time effects.

The third panel model is the Random Effect Model (REM) with the assumption that there is no correlation between individual effects with regressors (Maryaningsih, Hermansyah, & Savitri, 2014). The Random Effect Model (REM) equation can be written as follows

$$y_{it} = \alpha_i + \beta X_{it} + \lambda_i + \varepsilon_{it}, \text{ i = 1, …, N dan t = 1,…, T} \quad (8)$$

the use of the three models in this study will be selected as the best model for estimation. Model selection can be done by chow test comparing PLS model with FEM. Hausman's test is intended to compare the FEM and REM models and the Lagrange Multiplier test used to have the REM or PLS model.

RESULTS

The result of the analysis using GW convergence with three approaches are Unweighted CV, Theil Index and Gini Coefficient in Bengkayang Regency, Kapuas Hulu Regency, Malinau District, Sambas Regency and Sanggau Regency show that there is no convergence. It is shown in Figure 1 that shows the condition of gamma convergence in the underdeveloped regions of Indonesia in each district there is a gap of high inequality. On the other hand, when viewed in detail based on assessments of unweighted cv, theil index and Gini coefficients focusing on Bengkayang, Kapuas Hulu, and Malinau districts show an uneven convergence and income distribution. However, if included Sambas District and Sanggau District will happen Gap high inequality.

The occurrence of imbalances in the border areas in Indonesia is caused by several things. The problems that arise one of them are caused by unequal development in disadvantaged areas resulting in weak economic growth. On the other hand, due to uneven economic development causes not normally distributed per capita income. This is what makes the need for infrastructure development in the border area to increase economic growth through increased investment that will stimulate economic activity.

The occurrence of inequality in the border areas in Indonesia is caused by several things. The problems that arise one of them are caused by unequal development in disadvantaged areas resulting in weak economic growth. On the other hand, due to uneven economic development causes not normally distributed per capita income. This is what makes the need for

infrastructure development in the border area to increase economic growth through increased investment that will stimulate economic activity.

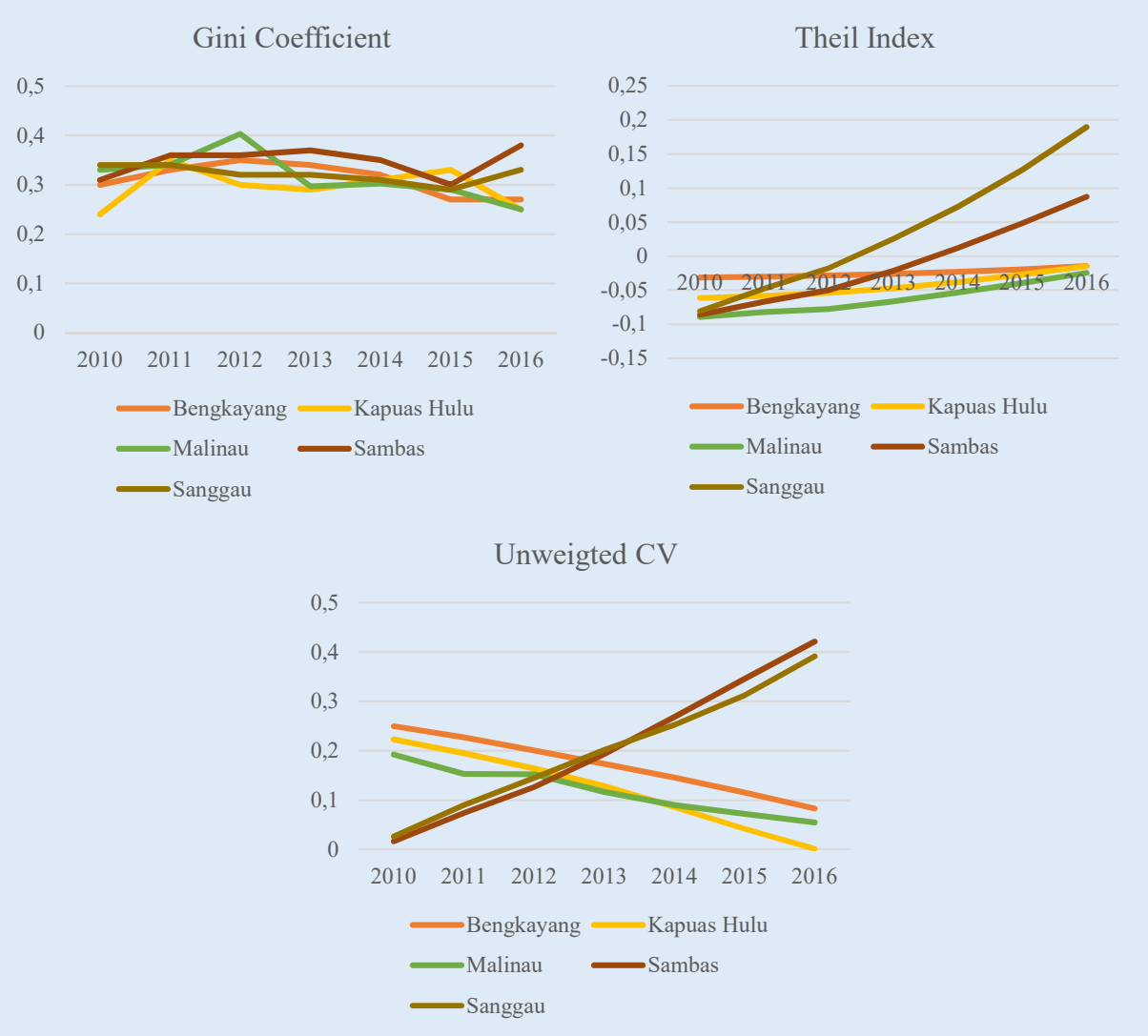


Figure 1. The condition of Gama Convergence in Land Border area of Indonesia

The influence of infrastructure in economic development in Indonesia's border regions uses the concept of beta convergence. The use of beta convergence to see how fast the boundary can be the equivalent of rich regions (Maryaningsih, Hermansyah, & Savitri, 2014; Gömleksiz, Sahbaz, & Mercan, 2017). The result of beta convention analysis with regression tool of panel data can be seen in Table 1.

The model used in this study to see the relationship of infrastructure with economic growth is fixed effect model. The use of fixed effect model is based on Chow test result and Hausman test. The value of chow test used to compare pooled least square model with fixed effect model. The chow test shows that the fixed effect model with the value of chow test of

0.035 is smaller than the alpha value (α = 5%) proves that the fixed effect model is the best model of the pooled least square.

Table 1. Results of Analysis in Land Border Areas in Indonesia

Variables	Pooled Least Square	Fixed Effect Model	Random Effect Model
$PDRB_{t-1}$	0,982 (0,000)*	0,653 (0,000)*	0,988 (0,000)*
Investasi	0,254 (0,019)**	0,109 (0,022)**	0,253 (0,013)**
Lonh road	0,038 (0,022)***	0,149 (0,051)***	0,0045 (0,014)**
Chow test	0,035		
Hausman test		0,0219	
Lagrange Multiplier		1,000	
Spped of Conv.[3]	0,259	6,083	0,172
Half Life [4]	269,663	11,836	17,915

* signifikan α=1%, ** signifikan α=5%, *** signifikan α=10%.
(….) = probability

Then, compare the fixed effect model with random effect model with Hausman test. The result of the Hausman test with a value of 0.0219 which is smaller than the alpha value (α = 5%) indicates a better-fixed effect model than the random effect model. Thus the estimation used in this study to see the relationship of infrastructure with economic growth through the use of fixed effect model.

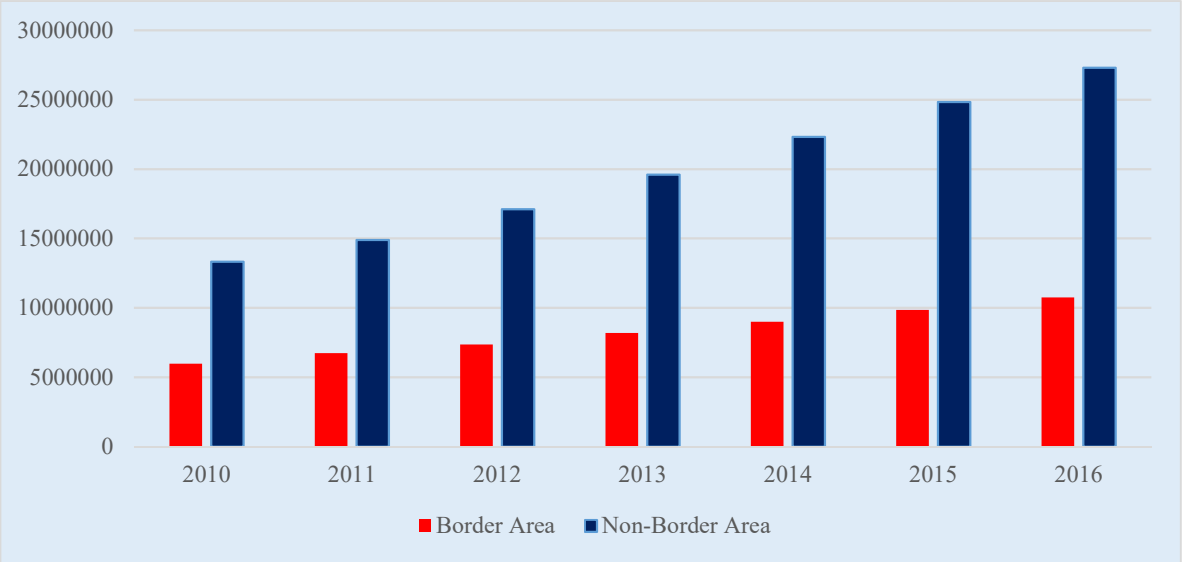
The result of fixed effect model analysis shows that infrastructure and investment have influence in economic growth. The results are seen from the probability value is smaller than the value of alpha (α = 1%, 5%, and 10%). The investment probability value of 0.022 is smaller than the alpha value (α = 5%) making the evidence that investment has a significant relationship with economic growth. On the other hand, a positive coefficient of investment can be interpreted as an increase in investment both domestically and abroad can increase economic growth. Increased investment will be a driving force in the economic activities of a region or country which in this case will affect the income per capita of society and increase production capacity (Hussain & Haque, 2016; Sulistiawati, 2012). Research conducted by Maryaningsih, Hermansyah, & Savitri, (2014) and Zouhaier & Karim, (2012) provide an assertion that investment has an important role in encouraging economic growth of a country.

Road infrastructure proxies to the length of roads available at the border area can affect economic growth. The relationship between road infrastructure and economic growth is based on a probability value of 0.051 less than the alpha value (α = 10%). Infrastructure coefficients

[3] Based on the formula in the equation (5) $\rho = e^{-t\,t}$
[4] Based on the half-life formula = $\frac{72}{\rho}$

with positive signals also indicate that as long roads continue to be increased, they will continue to each area that will facilitate economic activity. Research conducted by Banerjee, Duflo & Qian, (2012) and Tripathi & Gautam, (2010) explains that road access to an area increases the economic growth of a country through the growth of economic activity. Research conducted by Barzin, D'Costa, & Graham, (2018) explains that the presence of road infrastructure provides a major impact on increasing output of a company that will contribute to economic growth.

On the other hand, the β coefficients used for beta convergence show positive and significant signs with a 1% significance level. The estimation result using fixed effect model explains that the underdeveloped area that already has infrastructure will have 6.083% convergence speed with the half-life of about 11.836 years or 12 years. The condition shows that there is beta-convergence in the border area economy. However, the convergence process has a long time to remember there is a high gap between the border with non-border areas.



Source : Central Bureau of Statistics, 2017 (edited)

Figure 2. Average Economic Growth of Border Areas and Non-Border Areas in Indonesia

Average the economic growth in the border areas and non-border areas shown in Figure 2 indicates that over the next five years there is still a high gap. This condition indicates that although the border areas have increased economic growth but still not achieved the reduction of the gap caused by non-border area also experienced an increase in high economic growth. Research conducted by Maryaningsih, Hermansyah, & Savitri, (2014) and Ullah & Naveed, (2012) explain that low income per capita will give effect to capital which is infrastructure support to stimulate economic growth. While in research conducted by Prasetyo, Proyarsono,

& Mutsih, (2013) and Bajar & Rajeev, (2016) the availability of quality infrastructure also gives influence to economic growth and imbalance between regions or countries.

Road infrastructure that has an important role in encouraging the strengthening of national industry and national constituency to support increased investment as well as providing access to increased economic activity required the role of government. The Government's strategy to improve road infrastructure, especially in border areas, through increased connectivity support for strengthening competitiveness through improving the quality of national roads. On the other hand, the government also conducts national road preservation, new national and regional road development to improve the development of the region.

CONCLUSION

The results of the analysis in this study through sigma convention show still not happened, which is caused by the inequality in the border area. The economic growth of border areas has increased, but there is no income distribution. The beta convergence analysis showed that the border area experienced a convergence speed velocity of 6.083% with a half-life of about 11.836 years or 12 years. On the other hand, investment has an influence on the economic growth of border regions in Indonesia. In addition, Road Infrastructure also has an influence on economic growth. Thus the government needs to improve road infrastructure, especially in border areas through increased connectivity support for strengthening competitiveness and improving the quality of national roads

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EFFICIENCY AND EFFECTIVENESS OF THE TIRTONADI BUS STATION RETRIBUTION CHARGING DURING THE TRANSITION TIME: PRAGMATIC AND PARAMETRIC METHODS

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ABSTRACT

November and December of 2016 were a critical time for the Tirtonadi Bus Station retribution charging. It is important to analyse the efficiency and effectiveness levels at that time. The research aim is measuring the efficiency and effectiveness levels at that time. Another aim is analyzing the relationship between the efficiency and effectiveness level to the charged retribution. The method to measure is pragmatic and parametric methods. Assuming the charging can describe pragmatically the Tirtonadi Bus Station input, output and outcome, the efficient charging is measured by a comparison between the real charging to the maximum charging, while the effective charging is measured by a comparison between the target charging to the real charging. Furthermore, the relationship is estimated based on the partial adjustment model (PAM) regression equation. Peak time is imposed as an independent variable besides Efficiency, Effectiveness and Charged Retribution$_{t-1}$. The results show that the efficiency and effectiveness of the Tirtonadi Bus Station retribution charging during the transition time. Efficiency and effectiveness can be kept normally during the transition time. They are factors that influence the Charged Retribution. The PAM regression equation is a well specified Classical Normal Linear Regression Model (CNLRM) as shown by the Jarque-Berra normality and Ramsey RESET tests. The PAM regression equation shows that Efficiency, Effectiveness, Peak Time and Charged Retribution$_{t-1}$ variables are positive significantly influence the Charged Retribution. The short and long run coefficients are provided. Furthermore, its corrected model can be formed that indicates it as a parametric method for frontier efficiency and effectiveness analyses.

Keywords: Efficiency, Effectiveness, PAM Regression Equation, Retribution, Bus Station

INTRODUCTION

Tirtonadi Bus Station is located at Surakarta city. It has a strategic position because it is a station for national, regional and local buses. Also, it is close to Balapan National Train Station and Adi Sumarmo International Airport.

Since 2017 it has been taken over by the central government. It is prepared to represent the national transportation program. The building was renovated as the highest classification of a bus station in Indonesia and the connectivity to the train station is built by a sky bridge. In addition, a double track railway is planned to connect from the Train Station to the Airport so that the Bus passengers can easily go to the Airport.

Months before 2017 is a transition time for the Bus Station. It should adjust from under the Surakarta city authority to the central governmental authority. Human resources, regulations and administrations should be in line to the central government standards.

The adjustment is not easy. New opportunities and challenges await under the new regime, but regulations and standards under Surakarta city responsibility cannot be ignored. One of them is the efficiency and effectiveness of the bus station retribution charging. It is not easy because

under the central government responsibility the bus station retribution charging is not obeyed, while the old regulation under the Surakarta city responsibility ordered the efficient and effective retribution charging. Uncertainty emerges and leaves questions of the efficiency and effectiveness of the Tirtonadi Bus Station retribution charging in the adjustment period. Therefore our main objective is analyzing the importance of the efficiency and effectiveness of retribution charging during the transition months of Tirtonadi Bus Station.

Efficiency and effectiveness are very popular terminologies in the governmental organization concept and theory. They are mentioned by Schiavo-Campo & Sundaram (2000) and Osborne (2010) books 18 and 12 times. The reason is they represent important principles of organization and can be used to measure organizational performance (Otrusinova & Pastuszkova, 2012). In addition, efficiency and effectiveness are important characters for market oriented government (Mazur, 2013).

The concept to understand efficiency and effectiveness is the relationship among the input, output and outcome called 3 Es principles. The input should be bought economically. After that, the input should be used to product the output efficiently. Lastly, the input and output provide outcome or result effectively. Therefore the principles are Economy, Efficient and Effective. (Mihaiu, Opreana, & Cristescu, 2010), (Otrusinova & Pastuszkova, 2012) and (Florina, 2017).

There are three methods to measure efficiency and effectiveness. The first method measures the efficiency and effectiveness by a non-parametric approach. The efficiency and effectiveness are measured by the data envelopment analysis (DEA). The terminology is the network data envelopment analysis (NDEA) such as mentioned by Tavassoli, Faramarzi, & Saen (2015) and Matsuo (2015). Another terminology is the two-stage DEA as mentioned by Wanke, C.P, & Figueiredo (2016), Lo Storto & Goncharuk (2017) and Liu, Yao, & Lin (2017).

The second method measures the efficiency by the DEA, while the effectiveness is not measured by the DEA. The effectiveness is measured using various methods. Ziębicki (2013) uses a multi-dimensional criteria, Solihin, Mursinto, & Lilik (2017) employs a panel data regression equation, and Choi & Jung (2017) employs multiple quality factors.

The third method measures the efficiency and effectiveness using a natural method. The method employed a ratio or index of the efficiency and the effectiveness. Pelealu & Manossoh (2016) for instance, estimates the ratio of the efficiency and effectiveness of the Bitung bus station charging. To enrich the analysis, many researchers accompanies it by other methods. The ratio can be accompanied by Geographic Information System (GIS) method such as done by Isabello, Pensa, Arnone, & Rosa (2014), balanced scorecard as employed by Hookana (2011) or systematic review as done by Voorn, van Genugten, & van Theil (2017).

All of papers above focus on a measurement of efficiency and effectiveness. However, there are two weaknesses of them. The first is all of them indicate problem in the measuring of efficiency and effectiveness based on the parametric method. That is because the highest level of quantifying efficiency and effectiveness is a non-parametric method. The second is no additional focus of a governmental organization during the transition time. All of the additional focuses are usual focuses such as kind and level of a governmental organization, kind of efficiency and effectiveness objects or relationship between efficiency and effectiveness.

Based on these weaknesses, we contribute to the concept of efficiency and effectiveness in two perspectives. First is widening the efficient and effectiveness measurement perspective

by a pragmatic and parametric measurement. Second is adding the additional focus by analyzing efficiency and effectiveness during the transition time.

Assuming efficiency and effectiveness can be measured pragmatically, our goal is to measure efficiency and effectiveness levels of the Tirtonadi Bus Station retribution charging during the transition time based on the retribution charged. Another goal is to analyse the relationship between efficiency and effectiveness levels to the charged retribution based on partial adjustment model (PAM) regression equation as a base for a parametric measurement.

Our findings show that we contribute to the efficiency and effectiveness concept successfully. The efficiency and effectiveness of the Tirtonadi Bus Station retribution charging during the transition time exist. The efficiency and effectiveness are measured using pragmatic method. Furthermore, there is a relationship between the efficiency and effectiveness to the charged retribution during the transition time. The relationship is measured based on the PAM regression equation. The PAM regression equation indicates a parametric method because it can be transformed into a corrected PAM regression equation.

The second section of this paper discusses the pragmatic and parametric methods used to process the data. It is called the pragmatic method because it brings to one variable only to measure the efficiency and effectiveness level. It is called the parametric method because the PAM regression equation can be transformed into a corrected PAM regression equation although the transformed equation is not shown in this paper. The third section discusses results from the data processed. An explanation and meaning of the less efficient level, the effective level and the relationship between the efficiency and effectiveness levels to the charged retribution are discussed so that the efficiency and effectiveness during a transition time are analysed. The last section concludes the study. It is shown that the major and minor objectives are obtained.

METHOD

Pragmatic method is used to measure efficiency and effectiveness of the Tirtonadi Bus Station retribution charging. Three things show the pragmatic method. They are the charged retribution is assumed as outcome that represents output, inputs to produce the charged retribution are assumed as fixed variables during the observation time and the target charged retribution as the nominator variable to measure the effectiveness level can be obtained by a trend equation.

The charged retribution as output and outcome can be derived from the revenue equation that is usually practiced in the microeconomics field. The revenue is equal to the price times the output. The application of the revenue equation in this case is

$$R = Pr * Qr \quad (1)$$

R is the charged retribution as the outcome, Pr is the retribution rate and Qr is output of retribution. Assuming Pr fixed during the observation time, then

$$R \approx Qr \quad (2)$$

Inputs to produce the charged retribution are assumed as fixed variables during the observation time caused efficiency can be measured based on the charged retribution variable.

$$Eff = (Ra/Ia)/(Rm/Im) \quad (3)$$

Eff is the efficiency level, Ra is the actual retribution, Rm is the maximum retribution, Ia is actual inputs and Im maximum inputs. Assuming Ia and Im are fixed and measured as 1, then

Eff= Ra/Rm (4)

The target charged retribution as the nominator variable to measure effectiveness level can be obtained by the trend equation. Adopting and adjusting from Riyardi & Widojono (2013), equations are:

Efv= Rt/Ra (5)

Rt= bRk (6)

Efv is the Effectiveness Level, Rt is the Targeted Retribution, Ra is the Actual Retribution, b is the Trend Equation Coefficient, t is Time and Rk is Known Retribution which is 9 times of the retribution before t time.

Partial Adjustment Model (PAM) regression equation is used to measure the relationship between efficiency and effectiveness of the Tirtonadi bus station retribution charging to the charged retribution. The PAM regression equation is chosen because it is proposed to process the time series data. Furthermore, it can be transformed to a corrected PAM equation as a parametric frontier model. The form of the PAM regression equation is

Rat= f(δ, Rat-1, Efft, Efvt, Dt) (7)

Rat is the charged retribution at time t, charged, δ is the PAM coefficient, Rat-1 is the charged retribution at time t minus 1, Efft is the efficiency level at time t, Efvt is the effectiveness level at time t, Dt is the peak time at time t. The peak time is the busy time in Bus Station related to holiday. The peak time is formed as a dummy variable. If the time is a peak time the value is 1. Otherwise is 0.

The Equation 7 is the short run equation, and can be manipulated to the long run equation. The manipulation can be done by dividing all coefficient by δ and omitting the Rat-1 variable as mentioned by Gujarati (2003, p. 674). The long run equation is

Rat= f((Efft, Efvt, Dt)/1- δ) (8)

The main data is the charged retribution in the Tirtonadi Bus Station. The data has two characteristics. First, it is a daily data from November to December 2016. The data represents a transition time. Second, it is a total charged retribution from passenger, parking, slow bus and fast bus retributions.

The hypothesis is the charged retribution in the Tirtonadi Bus Station during the transition time is influenced by the efficiency, effectiveness, peak time and t-1 charged retribution variables. The transition time does not mean an uncertainty time that causing uncontrolled activities. In addition the Surakarta city regulation to the Bus Station was still enforced. As a consequent, Bus Station activities run as usual in the peak and normal times.

Some test are conducted to the PAM regression model. The first test is the Jarque-Berra test. The test ensures the normality requirement as required by the Classical Normal Linear Regression Model (CNLRM). The second test is the Ramsey RESET test. The test ensures that the PAM regression equation is best specified. The third test is the t test, The test ensured that the hypothesis is proofed.

RESULT AND ANALYSIS

The level of efficiency in the Tirtonadi Bus Station on average is 0,77. The highest level is 0,98 that is obtained at 24 December 2016. The lowest level of the efficiency level is 0,69. The level is obtained at 29 November 2016 and 6 December 2016. Table 1 shows the efficiency level.

The technical process from input to output in the Tirtonadi Bus Station are less efficient. However, the efficiency level is close to the not efficient level (Eff< 0,75). In addition, the level is far to the efficient level (Eff> 0,9). Therefore, the efficiency is more easy to decrease to the lower level, but is harder to increase to the higher level. In other words, the Tirtonadi Bus Station is in the hard point of the less efficient level.

The level is a normal level for a governmental organization. Every public organization, including the Tirtonadi Bus Station, always experiences an efficiency problem. Giving priority to the public service causes it losses from the efficiency incentive. The more is the service, the less is the efficiency level.

Even, governmental organizations are far below the efficient level. Few of them are in the less efficient level. Their efficiency grades are lower than 0,8. For example is the urban transportation modes that their inefficiency level is around 0,1 (Wanke, C.P, & Figueiredo, 2016). However, Others are in the not efficient level. For example, the lowest level of efficiency of the healthcare system in European Countries reached 0,4 (lo Storto & Goncharuk, 2017), while the lowest level of efficiency of rural local bus services in United States reached 0,05 (Matsuo, 2015).

Since 2015, the Tirtonadi Bus Station has improved its service. The building was renovated. Furthermore, new service regulation and technology had been applied. The improvement still implemented during the transition time. As a Consequent, the output and the charged retribution can be optimized. Furthermore, the level of inefficiency can be lessened, and its level is higher than the not efficient level.

The Tirtonadi Bus Station means the transition time as a positive perspective. It cares to the old regime. All of regulations and standards are used to keep the efficiency level.

Table 1 Efficiency Level of Tirtonadi Bus Station

DATE	LEVEL	DATE	LEVEL	DATE	LEVEL	DATE	LEVEL
01/11/2016	0,73	16/11/2016	0,77	01/12/2016	0,72	16/12/2016	0,73
02/11/2016	0,75	17/11/2016	0,74	02/12/2016	0,74	17/12/2016	0,79
03/11/2016	0,75	18/11/2016	0,75	03/12/2016	0,73	18/12/2016	0,77
04/11/2016	0,78	19/11/2016	0,77	04/12/2016	0,74	19/12/2016	0,76
05/11/2016	0,79	20/11/2016	0,78	05/12/2016	0,72	20/12/2016	0,77
06/11/2016	0,83	21/11/2016	0,74	06/12/2016	0,69	21/12/2016	0,76
07/11/2016	0,77	22/11/2016	0,73	07/12/2016	0,71	22/12/2016	0,77
08/11/2016	0,77	23/11/2016	0,75	08/12/2016	0,72	23/12/2016	0,81
09/11/2016	0,76	24/11/2016	0,74	09/12/2016	0,75	24/12/2016	0,98
10/11/2016	0,75	25/11/2016	0,74	10/12/2016	0,81	25/12/2016	0,84
11/11/2016	0,77	26/11/2016	0,76	11/12/2016	0,77	26/12/2016	0,91
12/11/2016	0,80	27/11/2016	0,78	12/12/2016	0,84	27/12/2016	0,85
13/11/2016	0,77	28/11/2016	0,75	13/12/2016	0,74	28/12/2016	0,87
14/11/2016	0,77	29/11/2016	0,69	14/12/2016	0,71	29/12/2016	0,82
15/11/2016	0,74	30/11/2016	0,71	15/12/2016	0,71	30/12/2016	0,82

The effectiveness level of Tirtonadi Bus Station is an effective level. On average, the effective level is 1. The lowest level of effectiveness is 0,87 on 14 December 2016, while the highest level is 1,23 on 24 December 2016.

The target of the retribution charging is fullfiled. Based on the observation days, only 9 days the target is not fulfilled. The effectivenes levels at these days are below 0,9 or over 1,1. It is not a significant problem. That is because the ineffectiveness level is close to 0,9, whereas the ineffectiveness level over 1,1 shows that the target is overcame.

The reason behind the effective level is the low target of the charging. It can be seen from the low growth of the charging. On average the daily growth of charging is 0,75%. The growth is contributed by the 0,13% November 2016 and the 1,37% December 2016 growths. The growth and target are specified low because the time is a transition time. The Tirtonadi Bus Station adjusts to the new responsibility from central government that prohibits retribution charging.

The Bus Station means the transition time in a positive perspective. During the time, it adjusts to the new regime. As a consequent the effectiveness level can be kept normally.

Table 2 The Effectiveness Level of Tirtonadi Bus Station

DATE	VALUE	DATE	VALUE	DATE	VALUE	DATE	VALUE
01/11/2016	0,91	16/11/2016	1,00	01/12/2016	0,98	16/12/2016	0,96
02/11/2016	0,96	17/11/2016	0,95	02/12/2016	1,04	17/12/2016	1,11
03/11/2016	0,97	18/11/2016	1,00	03/12/2016	1,04	18/12/2016	1,09
04/11/2016	1,03	19/11/2016	1,05	04/12/2016	1,07	19/12/2016	1,03
05/11/2016	1,05	20/11/2016	1,08	05/12/2016	1,00	20/12/2016	1,04
06/11/2016	1,11	21/11/2016	0,97	06/12/2016	0,95	21/12/2016	1,01
07/11/2016	0,97	22/11/2016	0,96	07/12/2016	0,99	22/12/2016	0,99
08/11/2016	0,96	23/11/2016	0,99	08/12/2016	1,00	23/12/2016	1,03
09/11/2016	0,94	24/11/2016	0,97	09/12/2016	1,06	24/12/2016	1,23
10/11/2016	0,94	25/11/2016	1,00	10/12/2016	1,17	25/12/2016	0,96
11/11/2016	1,00	26/11/2016	1,06	11/12/2016	1,02	26/12/2016	1,04
12/11/2016	1,08	27/11/2016	1,09	12/12/2016	1,11	27/12/2016	0,91
13/11/2016	1,03	28/11/2016	0,99	13/12/2016	0,90	28/12/2016	0,95
14/11/2016	1,00	29/11/2016	0,90	14/12/2016	0,87	29/12/2016	0,89
15/11/2016	0,96	30/11/2016	0,96	15/12/2016	0,89	30/12/2016	0,92

The PAM regression equation that shows the relationship between the level of efficiency and effectiveness to the charged retribution is shown by Table 3. The PAM regression equation is a classical normal linier regression model. The Jarque-Berra test, as shown by Appendix 1, shows that the data is a normal data. The probability to reject the error term data as a normal distribution data is more than 84%.

The PAM regression equation is specified well. The Ramsey RESET test, as shown by Appendix 2, shows that the 'competitor model' is miss-specified. Comparing to the original PAM regresion model, the 'competitor model' yields a very low value of the F-Statistic, 0,71588. The significant level is more than 40% that is far from 1%, 5% and 10% significant level. Therefore the PAM regression model is well specified.

The PAM regression equation shows the high value of the coefficient of determination and all independent variables influence the dependent variable. The coefficient of determination (R^2) as shown by Table 3 is 0,905. The t-test shows that the constant, the efficiency level and the

Charged Retribution$_{t-1}$ are significant at 1%, the Effectiveness Level is significant at 5%, and the Peak Time at 10%.

It can be interpreted that during the transition time the charged retribution in Tirtonadi Bus Station is influenced by the level of efficiency and effectiveness. The coefficient of efficiency is higher than the coefficient of effectiveness. It means that during the transition time the role of efficiency to influence the retribution charging is higher than the role of effectiveness. It indicates that the Bus Station cares to the efficiency more than to the effectiveness.

Table 3 The PAM Regression Equation of the Tirtonadi Bus Station Charging

Independent Variables	Short run Equation		Long run Equation
	Coefficient	p-value	Coefficient
Constant	10,755	0,000*	14,461
Efficiency	1,391	0,000*	1,870
Effectiveness	0,251	0,025**	0,337
Peak Time	0,028	0,057***	0,038
Logged Charged Retribution$_{t-1}$	0,256	0,002*	
δ	0,744		

R^2= 0,905
Dependent variable: Logged Charged Retribution
***= Significant at 1%, **= Significant at 5% and ***= Significant at 10%**

The Peak Time variable supports the interpretation. The Charged Retribution is higher in the busy day than in the normal day. The discrepancy is 0,038 for the long run equation. It means that the efficiency and effectiveness activities are run in the normal and busy days.

The measurement of the relationship between efficiency and effectiveness to the charged retribution in the Tirtonadi Bus Station during a transition time enrich studies that cover more than the efficiency and effectiveness measurement. Ziębicki (2013) analyses the relationship between efficiency and effectiveness level. We enrich it by analyzing that during the transition time, Tirtonadi Bus Station has more attention to the efficiency than to the effectiveness. Matsuo (2015) analyses the efficiency and effectiveness are influenced by the management characteristics. We enrich the study by analyzing that the efficiency and effectiveness influence the charged retribution.

The long run PAM regression equation can be easily transformed into the Corrected PAM model. The transformation can be done by the usual procedure to correct the ordinary least square regression equation. The procedure is subtracting the constant and the error term by the maximum error term (Kennedy & Smith, 2004), (Rani & Singh, 2015) and (Riyardi, Triyono, & Triyono, 2017). It means that The PAM regression equation is a base for the parametric efficiency and effectiveness methods, although the corrected PAM is not provided.

The corrected PAM equation has three characteristics. The first, it is a parametric frontier method. Second, it processes a time series data. Third, the independent variables is not input variables. The corrected PAM model is a new opportunity and challenge in the efficiency and effectiveness measurement field. It can accompanies other efficiency and effectiveness measurement methods such as the COLS for cross section data, DEA for non-parametric measurement or the natural methods.

CONCLUSION

The efficiency and effectiveness during the transition time of Tirtonadi Bus Station was analysed based on pragmatic and parametric method. The efficiency and effectiveness still exist during transition time. The pragmatic and parametric method are an alternative method in the efficiency and effectiveness field.

The transition time in the Tirtonadi Bus Station is seen in a positive perspective. The transition time means continuing the improvement run by Surakarta city government so that the efficiency level does not decrease to the not efficient level. In addition, the transition time means time to prepare and welcome the central governmental regulations and standards so that the effectiveness level is in the normal level. As a consequence, the efficiency and effectiveness level during the time do not sharply decrease. In addition, the efficiency and effectiveness has a significant positive influence to the charged retribution.

The pragmatic method measures the efficiency and effectiveness by treating the input, output, outcome and 3 Es principle specifically. The parametric method of frontier analysis in the efficiency and effectiveness field is specified indirectly. The name is a corrected PAM equation. The base is the PAM regression equation that models successfully the relationship between the efficiency and effectiveness to the charged retribution.

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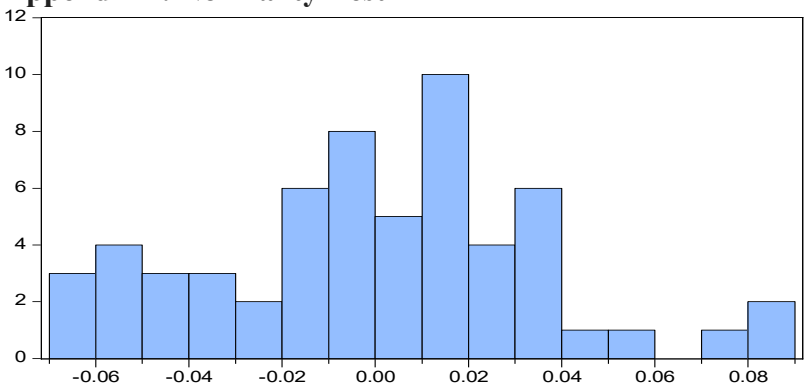
Appendix 1: Normality Test



Series: Residuals
Sample 11/02/2016 12/30/2016
Observations 59

Mean	2.75e-15
Median	0.000185
Maximum	0.085497
Minimum	-0.062904
Std. Dev.	0.035550
Skewness	0.137327
Kurtosis	2.759364
Jarque-Bera	0.327795
Probability	0.848829

Appendix 2: Specification Test

Ramsey RESET Test
Equation: UNTITLED
Specification: LOG(Y) C LOG(YT_1) X1 X2 D1
Omitted Variables: Squares of fitted values

	Value	Df	Probability
t-statistic	0.846037	53	0.4013
F-statistic	0.715778	(1, 53)	0.4013
Likelihood ratio	0.791477	1	0.3737

F-test summary:

	Sum of Sq.	Df	Mean Squares
Test SSR	0.000977	1	0.000977
Restricted SSR	0.073299	54	0.001357
Unrestricted SSR	0.072322	53	0.001365

LR test summary:

	Value	Df
Restricted LogL	113.6598	54
Unrestricted LogL	114.0555	53

Unrestricted Test Equation:
Dependent Variable: LOG(Y)
Method: Least Squares
Date: 03/14/18 Time: 15:49
Sample: 11/02/2016 12/30/2016
Included observations: 59

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	31.92956	25.05860	1.274196	0.2082
LOG(YT_1)	2.307105	2.425254	0.951284	0.3458
X1	12.65987	13.32053	0.950403	0.3462
X2	2.257534	2.374593	0.950703	0.3461
D1	0.254192	0.267343	0.950807	0.3460
FITTED^2	-0.247116	0.292087	-0.846037	0.4013

R-squared	0.906747	Mean dependent var	16.25251
Adjusted R-squared	0.897950	S.D. dependent var	0.115635
S.E. of regression	0.036940	Akaike info criterion	-3.662899
Sum squared resid	0.072322	Schwarz criterion	-3.451624
Log likelihood	114.0555	Hannan-Quinn criter.	-3.580426

SPATIO-TEMPORAL DISTRIBUTION OF LOCAL INFRASTRUCTURE IN JAKARTA-BANDUNG MEGA URBAN REGION (JBMUR)

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ABSTRACT

Indonesia is one of the Asian developing countries which facing rapid urbanization. Two metropolitan areas, namely The Greater Jakarta (Jabodetabek) region and Bandung Raya were experiencing the phenomenon of conurbation due to the connection of accessibility through transportation systems. Both of them are located in Java – the most populous island in Indonesia. Based on Pravitasari et al. (2018), socio-economic development in those two metropolitan areas (as known as "Jakarta-Bandung Mega Urban Region (JBMUR)") caused massive urban expansion and urban agglomeration in the country. Although JBMUR is one of the biggest growth center (growth pole) in Indonesia that serves as a service center for the region in its surrounding areas, the characteristics and hierarchy of regional development level for each sub-district are very diverse, especially in terms of number of local facilities or infrastructure. The purpose of this study are to analyze the development level of each sub-district in JBMUR by calculating the number and diversity of local infrastructure and to identify the time-series spatiotemporal distribution of the local infrastructure index in JBMUR. The local infrastructure index in this study were determined by considering the number of facilities/infrastructure (such as: educational facilities, health facilities, economic facilities, social facilities, etc) and the accessibility to access those facilities. Sub-districts with higher Local Infrastructure Index are more developed rather than others. Scalogram method was employed in this study to identify the diversity of infrastructure in each sub-district of JBMUR. Data which consists of the number and type of infrastructure in each sub-district were obtained from PODES (village potential) data. The analysis was conducted using data in 2003, 2006, 2008, 2011, and 2014, according to data availability. Based on the calculation using Scalogram method, the value of Local Infrastructure Index were displayed spatially in the map, so that it can be seen spatial distribution pattern of the index. At the end of this study, the local driving factors affecting the level of regional development especially in terms of the Local Infrastructure Index was analyzed using Geographically Weighted Regression (GWR) model. The GWR results show that the variables included in the model have local influences or spatial variability between locations.

Keywords: *Geographically Weighted Regression, Local Infrastructure Index; Metropolitan; Regional Development; Scalogram.*

INTRODUCTION

According to the United Nations (UN, 2004), 55% of 4.9 billion Asians, or 2.7 billion people, will live in urban areas in 2030. Based on Asian Development Bank (ADB, 2008), the urban population in Asia is growing faster than ever before and there will be more than 1.1 billion Asian people live in urban areas in 2030. Continuing population growth and urbanization are projected to add 2.5 billion people to the world's urban population by 2050, with nearly 90% of the increase are concentrated in Asia and Africa (UN, 2014). Urbanization and rapid urban development has been the key driving factor

of Asia's development growth, that marked by increasing buit up area which extends beyond metropolitan and city boundaries (McGee and Robinson, 1995; Hugo, 2006). Huge of population and rapid growth of economic in Asian megacities become magnets for people and any investments, although they bring both benefits and the problems of urbanization, since they facing urban expansion into their periphery areas (ADB, 2008). The process of urbanization has been associated with other important aspects such as economic, social, and environment. According to UN (2014), urban living is often associated with higher levels of literacy and education, better health condition, greater access to social and economic facilities, and enhanced opportunities for cultural and political participation. Nevertheless, rapid and unplanned urban growth threatens sustainable development when the necessary infrastructure is not developed or when policies are not well-implemented.

Indonesia is one of the Asian developing countries which facing rapid urbanization. In Indonesia, there are several metropolitan cities which have a strategic role in the development of the region as a center of economic activity. Two metropolitan areas, namely The Greater Jakarta (Jabodetabek) region and Bandung Raya (Bandung Metropolitan Area) were experiencing the phenomenon of conurbation due to the connection of accessibility through transportation systems. Both of them are located in Java – the most populous island in Indonesia. This expansion phenomenon characterized by an increase in built up area that spread out from the city center to the suburbs, causing an increase in economic development and urban activities (Pravitasari *et al.,* 2015). This urban expansion phenomenon caused the metropolitan area of Jabodetabek and Bandung Raya increasingly connected to a mega-urban area by a corridor. This mega-urban area is called Jakarta-Bandung Mega-Urban Region or JBMUR (Dorodjatoen, 2009). Based on Pravitasari et al. (2018), socio-economic development in those two metropolitan areas caused massive urban expansion and urban agglomeration in the country. The formation of the mega-urban area is caused by a conurbation process that characterized by increased population growth, increased activity in various sectors, and the development of built-up areas such as new city projects and industrial centers which connected through a network of roads or corridors within two metropolitan areas, namely the Bogor-Puncak-Cianjur-Bandung route and the Cipularang Jakarta-Bandung toll road (Saifullah et al., 2017).

A study of extended metropolitan region of Jakarta (Jabotabek) and Bandung (BMA) in the early 1990s concluded that Jabotabek and BMA are physically being integrated, shaping a belt of an urban region from Jakarta to Bandung reflecting the formation of mega-urban. This urban belt is characterized by a mixture of socioeconomic activities, including agriculture, industries, trade and residential, which in turn has created very intense rural–urban linkages, blurred the rural–urban distinction and made very distinct settlement patterns. There are several factors contributing to the process of mega-urbanization in Jakarta–Bandung Region (JBR), most notably large scale housing and new town, infrastructure and industrial estate development. Development of this region has greatly enhanced agglomeration economies (Firman, 2009).

Although JBMUR is one of the biggest growth center (growth pole) in Indonesia that serves as a service center for the region in its surrounding areas, the characteristics and hierarchy of regional development level for each sub-district are very diverse, especially in terms of number of local facilities or infrastructure. One way that can be used to measure the regional development is by determining the hierarchy of regional development. The hierarchy of regional development can be seen from the local infrastructure index. Local infrastructure index is an index resulted by scalogram analysis. Local infrastructure index has a value which affected by some dependent variables. The local infrastructure index analyzed by the scalogram method is one of the indicators that can be used to measure the development level, especially in terms of man made resources which includes regional facilities and infrastructures in every region (Rustiadi et al., 2009). Progress of development in a region in line with the increasing of population which will always be accompanied by increasing standards of quality and quantity of life necessities and increasing availability of facilities (Sitorus et al., 2012).

The purpose of this study are to analyze the development level of each sub-district in JBMUR by calculating the number and diversity of local infrastructure and to identify the time-series spatiotemporal distribution of the local infrastructure index in JBMUR. The local infrastructure index

in this study were determined by considering the number of facilities/infrastructure (such as: educational facilities, health facilities, economic facilities, social facilities, etc) and the accessibility to access those facilities. Sub-districts with higher Local Infrastructure Index are more developed rather than others. Based on the calculation using scalogram method, the value of Local Infrastructure Index were displayed spatially in the map, so that it can be seen spatial distribution pattern of the index. At the end of this study, the local driving factors affecting the level of regional development especially in terms of the Local Infrastructure Index was analyzed using Geographically Weighted Regression (GWR) model. GWR or spatial regression model, is a development of a global linear regression model in which the basic idea is derived from nonparametric regression (Fotheringham et al., 2002). Various studies have applied GWR to identify spatial variations in regional development and population segregation (Yu, 2006; Yu and Wu, 2004), urban expansion in metropolitan region (Pravitasari et al., 2015; Pravitasari et al., 2018), natural resources management (Jaimes et al., 2010; Clement et al., 2009), social studies (Farrow et al., 2005; Malczewski and Poetz, 2005), ecology (Su et al., 2012); and the relationship between environmental and socioeconomic indicators (Ogneva-Himmelbrger et al. 2009).

STUDY AREA

Jakarta-Bandung Mega-Urban Region or JBMUR is located in Java Island – the most populous island in Indonesia and generally covers the administrative area of Greater Jakarta (Jabodetabek Metropolitan Area), Bandung Metropolitan Area, and some areas around the mega-urban corridor. JBMUR consist of 20 regencies/municipalities: five (5) municipalities in DKI Jakarta Province (including East Jakarta, South Jakarta, West Jakarta, North Jakarta, and Central Jakarta Municipality), Tangerang Regency, Tangerang Municipality, South Tangerang Municipality, Bekasi Municipality, Bekasi Regency, Depok Municipality, Bogor Regency, Bogor Municipality, Karawang Regency, Cianjur Regency, Purwakarta Regency, Bandung Barat Regency, Cimahi Municipality, Bandung Municipality and Bandung Regency (Figure 1). The total area of JBMUR is only about 1% of the total area of the nation, inhabited by about 17% of Indonesia's population and contributes to 28% of the national GRDP.

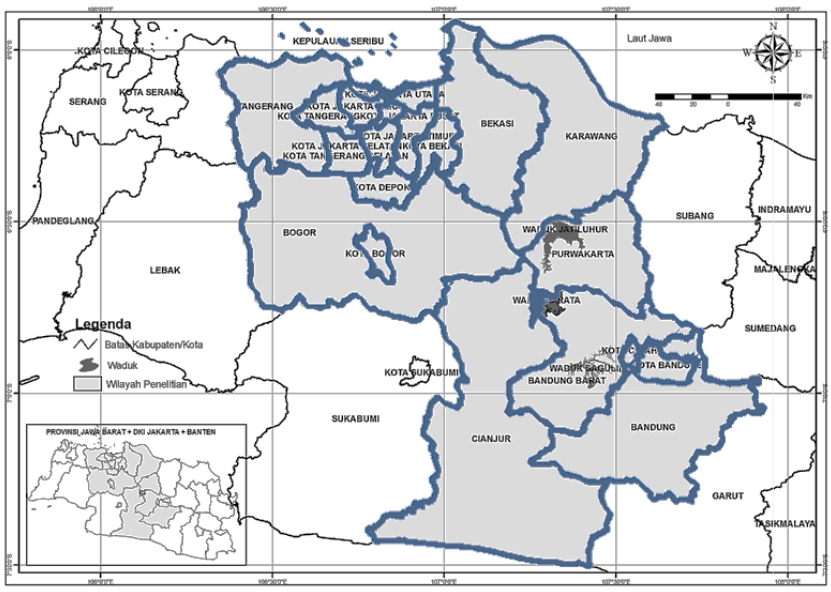

Figure 1. Study Area

MATERIALS AND METHODS

Scalogram Analysis to Calculate Local Infrastructure Index

Local infrastructure index was conducted by weighted scalogram method or modified scalogram. This scalogram technique not only considers the number and types of facilities but also the

service capacity as well as the accesability (inverse from the distance to the service facility). The scalogram technique was conducted for determining the hierarchy of a region's development. All data used in scalogram method were obtained from PODES (village's potential) data, published by BPS. The analysis was conducted using data in the year of 2003, 2006, 2008, 2011, and 2014. Analysis of the number of facilities data using the weighted scalogram method with the assumption that the weight of each facilities are not the same. The calculation of the weights used in this analysis was the ratio between the total numbers of facilities with the number of the regions having facilities.

The level of development of a region can be analyzed by calculating the value of Local Infrastructure Index by identifying the number and types of public facilities such as education, health, social and economic facilities. The level of regional development was analyzed by scalogram technique to determine the hierarchy of regional that support the region as the center of activity. The hierarchy was determined by the number and type of facilities. Region that have facilities with more quantity and more complete types have higher hierarchy levels (Panuju and Rustiadi 2011). The types of data used in this analysis include population size, number and types of public facilities (economic, educational, health and social facilities).

Based on Panuju and Rustiadi (2011) , the inverse distance determination using the formula: $\boldsymbol{B_{ij}}=\mathbf{1}/\boldsymbol{X_{ij}}$, where B_{ij}= index inverse data; and X_{ij}= the data value of the i-th region, the j-variable. Calculating the service capacity of the facility with the formula: $\boldsymbol{A_{ij}}=(\boldsymbol{F_{ij}}*\boldsymbol{P_i})/1000$, where A_{ij} = index of j-facility in region i; F_{ij} = the number of j-th facility in the i-th region; and P_i = Number of population in region i. The next step is determining the weight of each variable with the formula: $\boldsymbol{I_{ij}}=\boldsymbol{X_{ij}}\,\boldsymbol{X_{.j}}\,\boldsymbol{A_{ij}}$ where i= 1,2,....., n; and j= the amount of region 1,2,....., n. The final step of this analysis is to obtain the value of the Regional Development Index (in this study, the unit is the sub-district (there are 341 sub-districts in JBMUR), then hereinafter abbreviated as IPK, where the IPK score is the standardized value. Standardization was done since there are different units of each variable used. The formula to calculate the GPA value is: $\boldsymbol{K_{ij}}=(\mathbf{I_{ij}}-\mathbf{min}\ \mathbf{I}_j).\mathbf{S_j}$, where: K_{ij} = raw index hierarchy value; I_{ij} = the weight value of the i-th region and the Minimum of j-facility; $(I)_j$ = the minimum value of the index at the j-facility; and S_j = standard deviation value.

GWR Analysis for Identifying Factors Affecting the Local Infrastructure Index

The driving forces that affecting urban expansion in JBMUR were identifying using GWR model. GWR is a statistical method to identify local spatial variations. This model addresses the non-stationarity and allows the local spatial variations to vary over space. The result of this analysis is a regression model whose parameter values apply only to each location of observation, and different from other locations. In GWR, we use the weighted matrix element W(i) which the amount depends on the proximity between locations. The weighting function to be used for GWR model in this study is Gaussian Kernel function. The formulas and variables used in the model are as follows:

$$\mathrm{Y}_j = C_0(u_j, v_j) + \sum_{i=1}^{p} C_i(u_j, v_j)\mathrm{X}_{ij} + \varepsilon_j$$

where: Y_j = Dependent variable for observation j; X_{ij} = Independent variable Xi at location *j;* u_j,v_j = Coordinate point for location of observation j; C_0 (u_j,v_j) = Intercept for observation *j;* C_i (u_j,v_j) = Regression coefficient or local parameter estimate for independent variable X*i* at location *j.* The optimal bandwidth of GWR analysis in this study was determined by minimizing the corrected Akaike Information Criterion (AIC's value) with a correction for finite sample sizes, as described in Fotheringham et al. (2002). The dependent variable (Y) used in this model is regional development index (IPK); There are eight (8) independent variables (X) included in this model are: X_1 = educational facilities index; X_2 = number of industry per 1000 population; X_3 = economic facilities index; X_4 = percentage of built-up area (%); X_5 = population density (person/km^2); X_6 = percentage of plantation area (%); X_7 = regional income value (PAD); X_8 = distance to the provincial road (km).

RESULTS AND DISCUSSION

Spatio-temporal distribution of Local Infrastructure Index

Local Infrastructure Index is an index that calculates the level of regional development based on the completeness of facilities or infrastructure of the region. In this study Local Infrastructure Index is calculated in time series at some point of the years consisting of the year of 2003, 2006, 2008, 2011 and 2014. Facilities or infrastructure areas used include: educational, health, social and economic facilities. Spatio-temporal distribution of Local Infrastructure Index in the year of 2003, 2006, 2008, 2011 and 2014 can be seen in Figure 2.

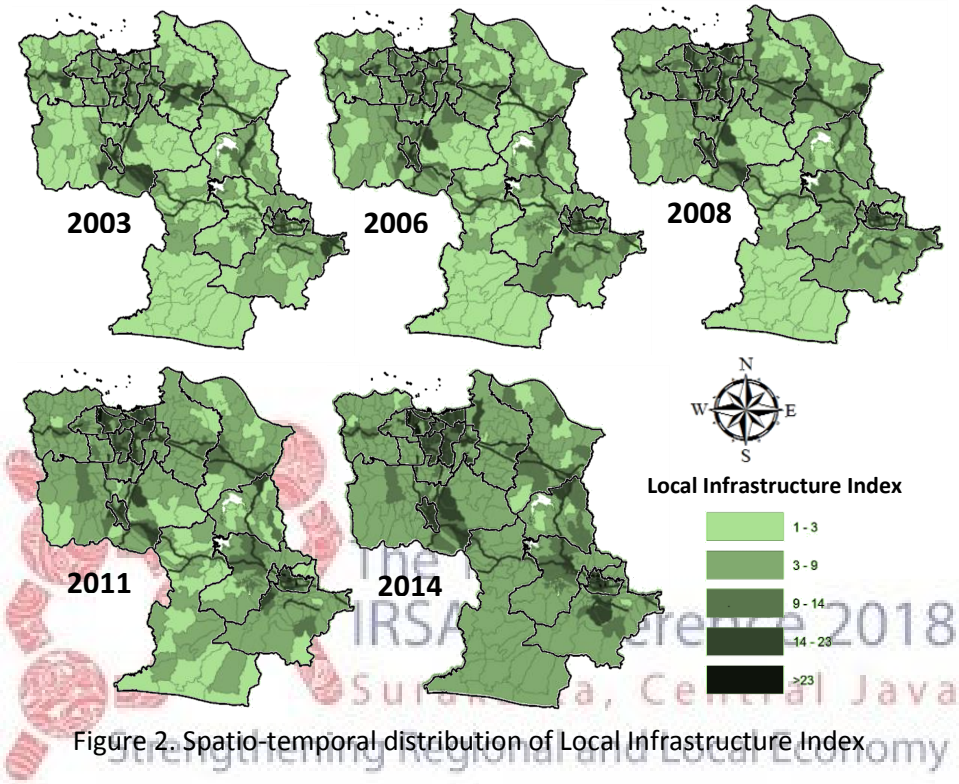

Figure 2. Spatio-temporal distribution of Local Infrastructure Index

From Figure 2, it can be seen that areas with high local infrastructure index are generally located in major cities in Indonesia. In JBMUR, these cities include the sub-districts of the administrative area of DKI Jakarta Province (which includes: North Jakarta, West Jakarta, South Jakarta, East Jakarta and Central Jakarta); several sub-districts in the center of Bogor and surrounding areas, sub-districts in Bekasi, Tangerang and South Tangerang, Bandung, Cimahi and some sub-districts in Bandung regency and other areas through transport routes (such as toll roads) or have good accessibility conditions. Local infrastructure index is calculated by using the scalogram method and its value can reflect the condition of the regional development level. In general, from Figure 2, it can be seen that from year to year the value of the Local Infrastructure Index of all regions is increasing, which means that the condition or the rate of development of the region is getting better. As the region grows and the population grows, the need for facilities or infrastructure is also increasing, and is generally characterized by an increasing number of built-up areas in the region.

Figure 3 shows the spatial distribution of the region's infrastructure in each sub-district in JBMUR based on the number of species. In this study, we selected 14 types of variables that represent public facilities or infrastructure of the region, including: number of educational facilities such as the number of high school, college, tutoring and courses; number of health facilities; number of malls, minimarkets, number of shops, stalls, restaurants and restaurants, as well as the number of hotels and hostels. According to Figure 3, it can be seen that in general all sub-districts have developed in terms of availability of public facilities or regional infrastructure. From 2003 to 2014 the number of public facilities or infrastructure in each district in JBMUR is getting more complete. In Figure 3, it can

be observed that the sub-districts where the number of public facilities or the infrastructure of the territory is more complete is the red area. In time series analysis, it can be compared that from year to year the number of red areas increases. For the entire JBMUR area, only a small part of the area is still yellow. This indicates that in general the whole area in JBMUR has grown and has a complete type of infrastructure.

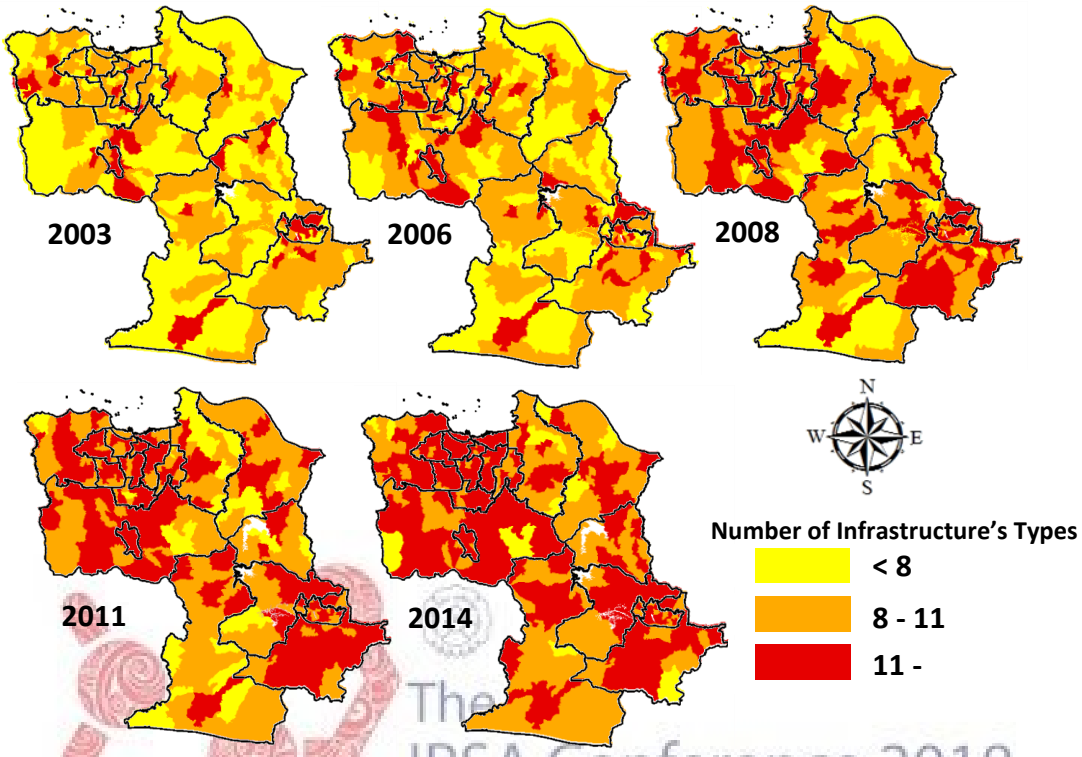

Figure 3. Number of infrastructure types in every sub-district of JBMUR

Identifying local driving factors affecting the level of regional development through Local Infrastructure Index

In this study, we employed 8 selected variables as driving factors affecting regional development in JBMUR area. Figure 4.a and 4.b illustrates the comparison between the Y variables of the observed data shown on the left-hand map with the variable Y of the model predicted results shown on the right-hand map. From both maps it can be seen that the spatial distribution pattern of regional development Index of observation and prediction of the model are having different range of value. The Y-observed value (Figure 4.a) which is the real observed value has a higher value than the Y-predicted value (Figure 4.b). The Y-observed value has a positive value with the lowest value of 0.00 and the highest value of 1248.27. While the Y-predicted value ranges from negative value to positive value, the lowest value is -103.75 and the highest value is 686.21. From the pattern of distribution can be seen that most areas have a low to medium regional development index value.

Then, we also analyzed another important analysis results from GWR model that is the value of local R^2. The local R^2 of this GWR model was found to range from 0.37 to 0.95 (Figure 4.c). The highest local R^2 value is located in the southern part of the study area is covered by red color area especially located in Cianjur Regency. Those area with a higher local R^2 value areas are more likely to increase regional development index values compared with the other area with smaller value of local R^2, since factors affecting regional development index are employed into the model. While the locations which have lower local R^2 value are covered by green area, especially located in the middle part of JBMUR area which consisting of northern part of Cianjur Regency, western part of Purwakarta Regency, and western part of Bandung Barat Regency.

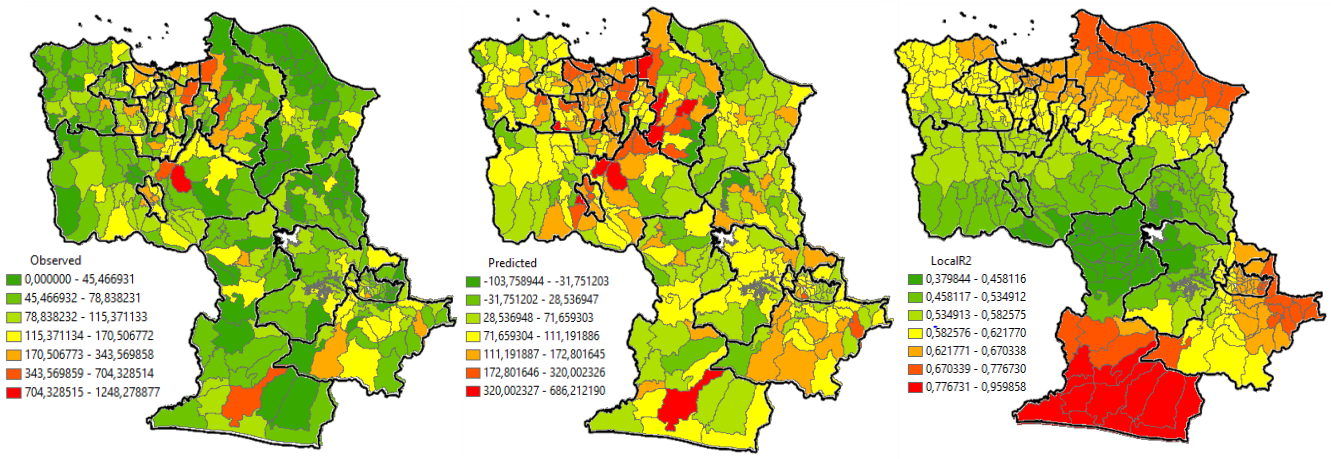

Figure 4. (a) Observed and (b) Predicted Regional development index by GWR model; (c) The local R^2 value of GWR model

The factors that affecting the most to regional development index in those areas are not included in the model. From the GWR analysis, we can know the value of coefficient or parameter estimates (C) for each X variable used in the model. The spatial distribution maps of the parameter estimates for each independent variable from the GWR model are shown in Figure 5. Based on the analysis, each variable has a different influence on each locations. The highest variable influence on a location has the highest C value as well. Variables which have a significant positive effect on village development in most of area are number of industry per 1000 population (C2 X2), economic facilities index (C3 X3), percentage of built-up area (%) (C4 X4), and population density (person/km^2) (C5 X5). Positive effect means that those variable has a positive effect toward regional development index. Therefore, it is understandable that increasing some activities and facilities such as the amount of industry, economic facilities, built up area as well as increasing of population density will increase the regional development index as well. The red colour area in Figure 5 (C2 X2, C3 X3, C4 X4, C5 X5) are the areas with the big influence of increasing number of industry, economic facilities, built up area, and population density.

Each variables shows the different pattern of parameter estimates. Based on the map result in Figure 5, regional development index will easily increase in the center part of Greater Jakarta (Jabodetabek area) which have a higher value (covered by red and orange color) if the number of industry per 1000 population (C2 X2) increases. It has been discussed elsewhere that between the 1970s and 1990s the rapid increase of urban population in Indonesia was also accompanied by substantial economic growth, which was favorable for land development. Therefore, since the 1990s Jakarta Metropolitan Area experienced massive land development (Winarso *et al.,* 2015). While in the increasing of economic facility (C3 X3) will easily affected the regional development index in the south-eastern part of Bandung Regency and western part of Bogor Regency and Cianjur Regency. Then, the increasing of built up area (C4 X4) will increase the regional development index in the most of southern part of Cianjur Regency, northern part of Bekasi Regency also Karawang Regency. Increased demand for such land leads to land conversion, especially the conversion of vegetated lands to built-up area (Pravitasari et al., 2018).

While population density (C5 X5) will affect the regional development index in the south-eastern part of Bogor Regency and western part of Cianjur Regency especially along Puncak area which is currently becoming a tourist destination that has a rapid development. Population density is considered as having relationships with urban expansion (Bilsborrow, 1992), since the development of a region is generally followed by population growth (Hartini et al., 2008). Then, considering GWR results, the coefficient or local parameter estimate for educational facilities index (C1 X1), percentage of plantation area (C6 X6), and regional income value (C7 X7) have a positive to negative value in different location. A positive value of the local parameter estimates means that the effect of the coefficient is directly proportional to the dependent variable (Y).

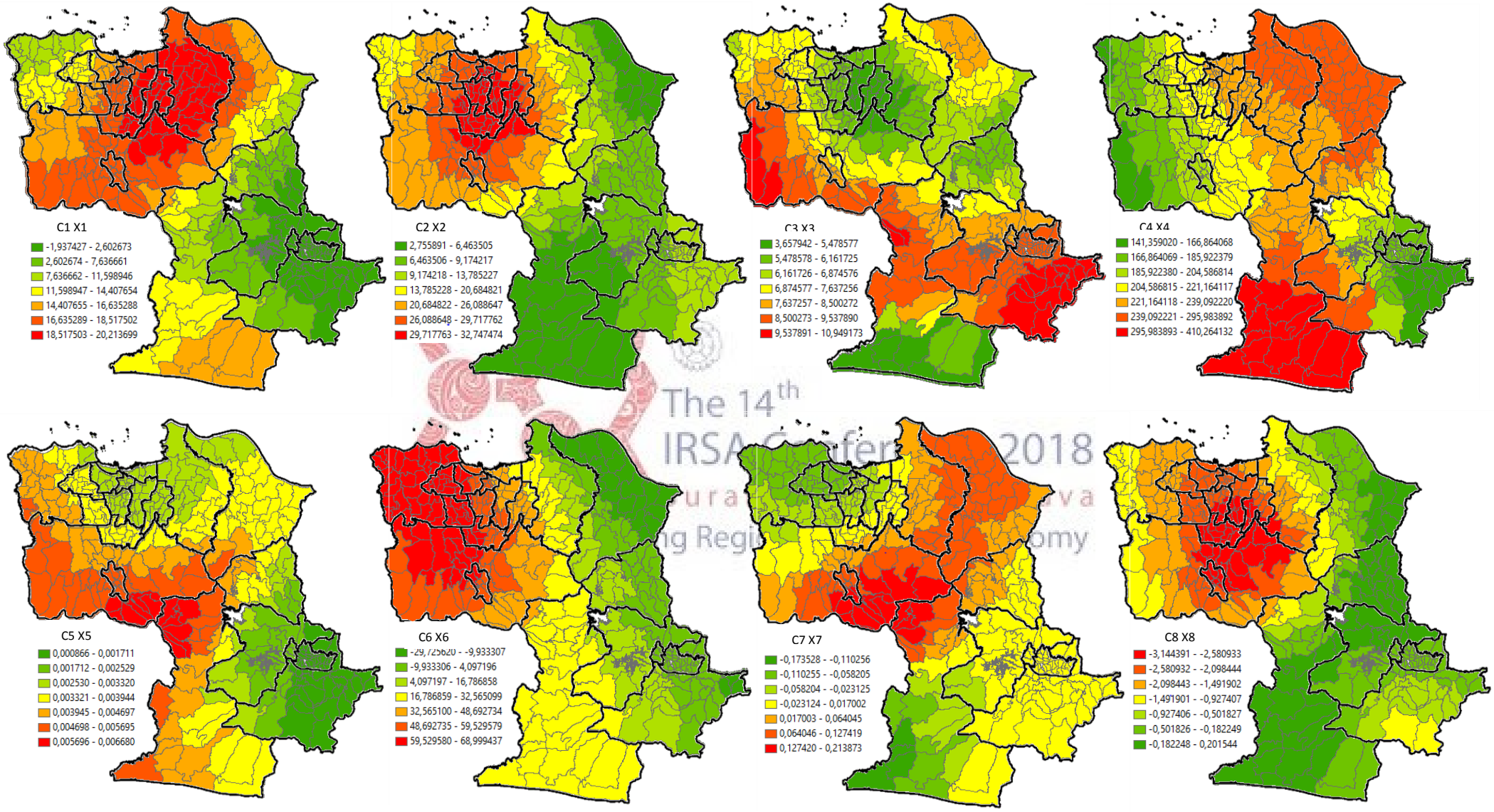

Figure 5. Parameter estimates (C) for each variable

On the other hand, negative value of local parameter estimates indicating negative relationship between the dependent variable (Y). The influence of percentage of educational facilities index (C1 X1), percentage of plantation area (C6 X6), and regional income value (C7 X7) show local spatially dependent relationships with regional development in certain locations. Therefore the value of coefficient or parameter estimates (C) are not the same, but varies in each location. Educational facilities index (C1 X1) was found to range from -1,93 to 20,21. It means, the effect of increasing or decreasing educational facilities index to the village development is depend on the location of the region. While for the percentage of plantation area (C6 X6), the coefficient value ranges from -29,72 to 68,99. It means, the effect of increasing or decreasing percentage of plantation area to the regional development is depend on the location of the region. Regional income value (C7 X7) was found to range from -0,17 to 0,21. Therefore, the effect of increasing or decreasing of regional income value to the regional development is depend on the location of the region as well. However, from the GWR results, it can be seen that the magnitude of the influence of the distance variables vary for each location.

Figure 5 (C8 X8) shows the spatial pattern of the distance to the provincial road which has a negative range of value. Negative effect means that this variable has a negative or inverse effect on the regional development index. Thus, increasing the distance to the provincial road will be inversely proportional to the regional development index. In the other words, the red area of Figure 5 (C8 X8) which located in the middle part of Jabodetabek area, indicating that at those location, increasing regional development index will be affected by the closer of the distance to the provincial road from the locations. The existence of provincial road access indicates that more and more activities are connected between locations. Accessibility is such an important factor to the development of built-up areas. Transportation is essential for the economic development of megacities in developing countries, and for the social and economic wellbeing of their inhabitants. In the process of rapid urban expansion, most of these megacities are experiencing changes in transportation patterns, which include in particular the dramatic growth of trip distance and motorized travel. Many factors are claimed to increase transport-related emissions in these growing megacities; for example, rapid urbanization and continuing population growth (Zhao, 2010).

CONCLUSION

The spatio-temporal of Local Infrastructure Index shows that from year to year the value of the Local Infrastructure Index of all regions in JBMUR is increasing, which means that the condition or the level of development of the region is getting better. The number of public facilities or infrastructure in each district in JBMUR is getting more complete. Various driving forces, consisting of educational facilities index, number of industry per 1000 population, economic facilities index, percentage of built-up area, population density (person/km^2), percentage of plantation area, regional income value and the distance to provincial road are spatially affecting the regional development index in JBMUR. Three variables which have highest influence to increasing regional development in JBMUR are percentage of built-up areas, percentage of plantation area, and number of industry per 1000 population.

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STRATEGY OF QUALITY IMPROVEMENT IN SUSTAINABLE PUBLIC TRANSPORTS BY IDENTIFYING PEOPLE'S PREFERENCE ON TRANS SEMARANG RAPID TRANSIT BUS (BRT)

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Abstract

The increase in the amount of private vehicles in the urban areas like Semarang causes problems such as accidents, traffic jams, and air pollution so that the government conducts a development of public transportation system. Trans Semarang Rapid Transit Bus (BRT) is a solution to overcome such problems. It requires a sustainable strategy of public transports to make the public transports especially Trans Semarang BRT a sustainable public transport system by identifying the Semarang city people's interest in Trans Semarang BRT. The aim of this research is to find out the general description of Trans Semarang BRT condition and also the Semarang city people's preference in the transport service of Trans Semarang BRT. Evaluating people's interest later will be a basis in formulating the strategy of sustainable public transport. This research uses the descriptive quantitative approach and tends to use the inductive approach analysis and the SWOT analysis. The data used is the primary and secondary data by using the purposive sample technique. The result of research found that the level of people's satisfaction in the transport service provided by Trans Semarang BRT is in good enough level. It indicates that people's interest in BRT of Semarang city is high enough. However, the complaint on the public transport facility provision is also still high. Whereas the strategy to conduct for the improvement is increasing the quality of public transports by repairing the shelters of Trans Semarang BRT, increasing the number of fleets, repairing the operational system, increasing the integration, holding a special lane, decreasing the price discrimination, increasing the facilities, holding trainings for the officers, and increasing the safety.

Keywords: strategy, quality improvement, public transports, BRT Trans Semarang, people's preference.

INTRODUCTION

Semarang city is the capital of Central Java that has great enough activities. The economy activities in Semarang city keep increasing because it is located in a strategy place, which is in the middle of Java Island and becomes the main line of people's mobility in Java Island. It is indicated by the amount of private vehicles that keep increasing year by year. The amount of private vehicles in Semarang City can be seen in table 1.1 as follows:

Table 1.1

Amount of Private Vehicles in 2012 – 2016 in Semarang City

No	Year	Two Wheels	Four Wheels	Total
1.	2012	66,921	17,893	84,814

2.	2013	67,279	18,230	85,509
3.	2014	77,373	20,517	97,890
4.	2015	65,436	22,392	87,828
5.	2016	63,700	24,080	87,780

Source: Directorate of Traffic, Regional Police of Central Java

Based on the above table, it can be seen that the amount of four-wheeled vehicles keeps increasing every year. This indicates that the amount of private vehicles increases along with the people's growth and the economy development.

In any economy transport infrastructure act like a baseline to ensure continues smooth flow of movability of public and goods as input and output from all economic sectors. There is a need therefore to maintain and improve the existing transportation and build new infrastructures for a national wealth (Jain, 2017). The greater the economy activities will increase either people's or goods' mobility. Public transport can be used to promote in some urban areas where it is considered as one of the significant measures for solving economic, social and environmental issues in transport sector (Muromachi, et.al. 2015). Shabani (2018) stated improved transport infrastructure facilitates the migration of labour from underdeveloped to developed areas through agglomeration effects, thereby causing negative spillover effects. Therefore, the spillover effects of transportation infrastructure on a region's economic growth depend on diffusion and agglomeration effects. The increase in the number of people and its mobility that is not in balance with the adequate infrastructure will raise a problem in transports. One of the problems in transports is traffic jams, which will make inefficiency in the economy. Traffic jams will bring several bad impacts such as the insufficiency in the flow of goods, the inefficiency of time for the workers, the increasing number of accidence, the waste of fuel, the air pollution, etc.

In the Act No.22 of 2009 on the Highway Transport Traffic, specifically article 158, it is mentioned that the government guarantees the availability of road-based mass transports to meet people's transport need with public transports in rural area. The mass transports are aimed at reducing the road traffic. If it is accompanied by the good policy, the mass transport system will absorb the private vehicle users who will move to use the mass transports.

In Semarang city there have been various types of mass transports, such as bus or public transports. The mass transports in Semarang city is programmed by the private sector and the regional government. The data of the amount of public transports in Semarang City is presented as follows:

Table 1.2

Amoun of Public Transports in Semarang City

Types of Route	Available	Required	Available (%)
Main Route	633	850	74,47
Branch Route	1527	1537	99,35
Twig Route	849	1171	72,50

Source: Master-plan of Transportation, Semarang City, 2009 – 2029

Viewed from table 1.2 as a whole, it can be seen that the amount of public transports required is greater that the available ones. There have been 633 public transports available for the main route of 850 that are required, while there have been 849 public transports available of 1171 that are required.

The government has guaranteed to meet the public transport need, but still some people feel unsatisfied with the public transports provided by the government. As a part of efforts to solve the traffic-jam problem, the Central Government through the Department of Transportation has proposed the program of Rapid Transit Bus (BRT) or known as bus-way, which has begun to be applied in many cities in Indonesia.

Based on the Master-plan of Transportation of Semarang city of 2009-2029, bus-based public transports like Rapid Transit Bus (BRT) is a public transport that is appropriate to be applied in Semarang city. BRT is expected to provide better service quality than other public transports previously existing. With better service, it is expected that it will attract people's attention to move to use the public transports and reduce using the private vehicles.

Now people in Semarang city requires more efficient public transport because the previous ones have not been able to solve the traffic-jam problem and the high pollution in Semarang City. Therefore, it requires a research to find out the transport problems and to evaluate the performance. Hence, it can find how to overcome the problem in accordance with people's need in Semarang city and with the traffic-jam condition in Semarang City (Dyah, et.al., 2014).

Rapid Transit Bus (BRT) is one of public transports that provides faster and more efficient service compared with other public transports. BRT has its own route and is well integrated. It offers comfort, security, safety, efficiency of time and cost. The BRT fare is quite affordable because it applies the same fare either the distance is far or near.

Trans Semarang BRT has started to operate in October 2010. It is the program of the Government of Semarang city in cooperation with PT Trans Semarang. The ticket price is the

same whether the distance is far or near that is Rp 3,500.- for public and Rp 2,000.- for students. The data of the amount of public transports available in Semarang city is as follows:

Table 1.3

Type and Amount of Public Transports in Semarang City in 2015-2016

No	Types of Transports	2015	2016
1.	Rapid Transit Bus (BRT)		
	a. Number of Routes	2	3
	b. Number of Fleets	40	46
	c. Number of Shelters	110	140
2.	Taxi		
	a. Number of Companies	8	8
	b. Number of Fleets	1,620	1,352
3.	Public Transports in Routes		
	a. Number of Routes		
	Main	33	33
	Branch	12	13
	Twig	33	31
	b. Number of Fleets		
	Main	737	731
	Branch	1488	1458
	Twig	877	860

Source: Bureau of Transportation, Communication and Informatics, Semarang City, 2016

From the above data, it can be seen that the number of routes, fleets, or shelters of Trans Semarang BRT is increasing. The number of routes, fleets, and shelters of Trans Semarang BRT has increased from 2012 amounted 2 routes, 40 fleets, and 110 shelters to be 3 routes, 46 fleets, and 140 shelters in 2013.

The program of BRT is expected to be in accordance with the initial purpose, which is to attract people's attention to move from using their private vehicles to use the BRT transport service so that the traffic jams will be overcome. The concept of BRT itself is a mass transport system integrated in every corridor, which aims at meeting people's need on transportation within the city. Therefore, it requires a strategy of optimizing BRT to be sustainable public transport, one of which is by analyzing people's attention in Semarang city on Rapid Transit Bus (BRT).

METHOD

This research is a combination of quantitative and qualitative research. The data used is primary and secondary data. The primary data is taken based on the interview with the officers of Trans Semarang BRT, the questionnaire to the passengers of Trans Semarang

BRT, and the observation through direct observing and recording to the object of research. The secondary data is used from the literatures, newspapers, and the government's data related to the problem of research.

The population of research is all the passengers of Trans Semarang Rapid Transit Bus (BRT). The passengers of BRT consist of various types of characters, viewed from the profession, the number of income, and the destination/interest of each passenger. Based on the population characteristics in this research, the sampling study is used, because the number of passengers of BRT cannot be predicted in certain time. And the sampling method taken in this research covers Non Probability Sampling, Haphazard Sampling, and Purposive Sampling.

The determination of sample measure uses the approach in accordance with the Yamane Approach (1973). The population of research (N) = 21917, d = 20%, so the number of samples (n) is 249.715 and rounded to 250. The analysis data used to process the data is the statistic descriptive and the SWOT analysis.

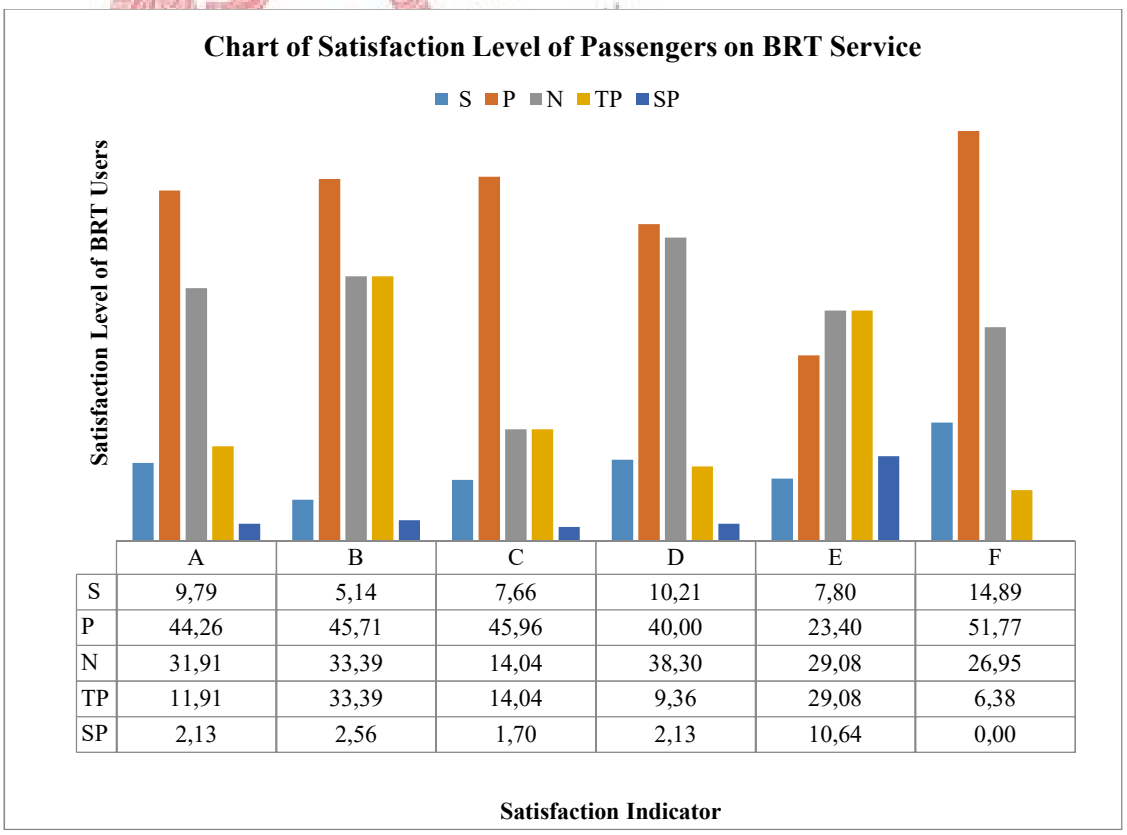
RESULT AND DISCUSSION

The survey of people's interest in Trans Semarang BRT analyzes 25 questions representing five factors as the parameter of people's interest and satisfaction (as costumers/consumers) those are Tangibility, Reliability, Responsiveness, Assurance, and Empathy. From such various indicators, the result of research finds several things as follows:

1) Tangibility indicator covers the cleanliness and view of the bus shelters, the view of the bus shelter officers, the view of the officers in the bus, the facility equipment in the bus shelter and in the bus. All the items of questions on the tangibility indicator show that most of the BRT passengers are satisfied with the service provided by BRT.
2) Reliability indicator covers the accuracy of bus departure, the facility available in the bus shelter, the facility equipment in the bus, the convenience and comfort to reach the bus shelter, and the officer's conformity in lowering and raising the passengers. All the items of questions on the reliability indicator show that most of the BRT passengers are satisfied with the reliability of BRT service.
3) Responsiveness indicator covers the officer's skillfulness in assisting the passengers to get information, in setting the queue of passengers, in keeping the cleanliness and comfort in the bus shelter. All the items of questions on the responsiveness show

some responses as follows: 108 passengers are satisfied, 78 passengers are neutral, and 33 passengers are not satisfied with the officer's responsiveness.

4) Assurance indicator covers the skill of the bus shelter officer, the service of the bus shelter officer in keeping the safety and discipline in the bus shelter, the skill of the bus driver, the skill of the bus officer, the kindness and honesty of the bus shelter officer and the bus officer. All the items of questions on the assurance show that most of the BRT passengers are satisfied with the assurance provided by the BRT.
5) Empathy indicator covers the officer's kindness in welcoming the passengers, the officer's saying thank you to the passengers, his well treating to the passengers. All the items of questions on the empathy show that the BRT passengers are neutral to the empathy provided by the BRT officers.
6) The whole satisfaction of the consumers covers the passengers' satisfaction when using BRT, their satisfaction with the BRT service, their satisfaction with the BRT officer's service. All the items of questions on the consumers' satisfaction as a whole show that the BRT passengers are satisfied with BRT as a whole.



	A	B	C	D	E	F
S	9,79	5,14	7,66	10,21	7,80	14,89
P	44,26	45,71	45,96	40,00	23,40	51,77
N	31,91	33,39	14,04	38,30	29,08	26,95
TP	11,91	33,39	14,04	9,36	29,08	6,38
SP	2,13	2,56	1,70	2,13	10,64	0,00

Figure 4.4 Chart of Satisfaction of BRT Service

Based on the above chart, it can be seen that most passengers are satisfied with each indicator. The highest level of satisfaction is on indicator C (Responsiveness) amounted 108 points. The highest level of dissatisfaction is on indicator E (Empathy) amounted 41 points. Therefore, it requires an improvement in the quality of Human Resource Development or the service related to empathy so that people's interest in BRT will be increasing.

Based on people's assessment on BRT transport's service, it requires a strategy to improve the service to be more efficient. Some strategies required for the planning of BRT Trans Semarang to be the sustainable public transports based on the result of SWOT analysis are as follows:

Strength	**Weakness**
1. The cleanliness of BRT is maintained 2. The view of BRT officer is neat 3. BRT has complete facilities in the bus 4. The accuracy of BRT departure 5. The officer's skillfulness in assisting to show the direction when asked by the passengers (direction-man) 6. The officer's skillfulness in assisting the passengers when having problem 7. The officer's skillfulness in keeping the bus cleanliness and comfort 8. The bus driver's skill in driving the bus 9. The polite and respectful treatment of BRT officer to the passengers without seeing their social status	1. The condition of BRT shelter is less well maintained 2. The lack of facilities in the bus shelter 3. The incompatibility of the officer in lowering the passengers 4. The minimal number of BRT fleets 5. The few corridors in BRT 6. The less professional operational system 7. The unintegrated BRT (not covering the whole Semarang City) 8. No special lane for BRT 9. Discrimination of price is too lame 10. The officer is less skilled in setting the queue of passengers 11. The officer shows busy impression when welcoming the costumers 12. The officer of shelter ticket is less skilled in ticketing service 13. The low safety level in the bus 14. The officer is less kind in giving service to the passengers like rarely saying thank you
Opportunity	**Threat**
1. The student bus program to overcome the price discrimination 2. The addition of bus fleets to make the passengers of Trans Semarang greater	1. The increase in private vehicles 2. The profession improvement makes the consumption increases one level 3. The switching function of the bus shelter because BRT shelter is not well maintained

3. The addition of corridors 4. Keeping the cleanliness more and more to make the passengers comfortable 5. Beautifying the view of BRT officer 6. Training the officer's hospitality to improve BRT service to increase the transport's demand 7. Making the additional corridors for Gunung Pati and Meteseh routes and for Tembalang – Guning Pati route to add the public transport demand of the university students	4. The worsening of BRT operational system 5. The specific lines are difficult to reach so that people in Semarang City is less interested in BRT 6. The price discrimination limits the passengers in student level 7. The lack of interest of Trans Semarang passengers makes Trans Semarang not as sustainable public transport

From the result of identifying the strength, weakness, opportunity, and threat presented above and the result of analyzing the Semarang city people's interest in Trans Semarang BRT, there are some planning strategies that should be conducted to make the public transports sustainable as follows:

1) Repairing the condition of the shelters of Trans Semarang BRT that are less well maintained and less representative
2) Increasing the number of fleets
3) Repairing and professionalizing the operational system of Trans Semarang BRT
4) Increasing the integration of Trans Semarang BRT
5) Holding a special lane for BRT
6) Decreasing the price discrimination
7) Increasing the facilities in the bus shelter
8) Holding trainings for the officers of BRT
9) Increasing the safety of Trans Semarang BRT

CONCLUSION

Trans Semarang BRT is one public transport programmed by the Government of Semarang city in cooperation with PT Trans Semarang to reduce the public transport problems in Semarang city. From the research conducted, it can be seen the people's interest measured based on the costumers' satisfaction with the transport service provided by Trans

Semarang BRT is in good enough level, which shows that people's interest in the Rapid Transit Bus (BRT) of Semarang City is high enough.

To make Trans Semarang BRT the sustainable public transports, it requires a strategy of improving the quality of public transports. This can be conducted by the following strategies: repairing the condition of BRT's shelters that are less well maintained and less representative, increasing the number of fleets, repairing and professionalizing the operational system of Trans Semarang BRT, increasing the integration of Trans Semarang BRT, holding a special lane for BRT, decreasing the price discrimination, increasing the facilities in the bus shelter, holding trainings for the human resource development (the officers) of Trans Semarang BRT, and increasing the safety of Trans Semarang BRT.

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Sanitation Improvement and Child Development in Indonesia: a Socioeconomic and Geographical Analysis

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Abstract

Empirical evidence proves that early childhood development, demonstrated as the development in the first thousand days of childhood after conception, holds an integral role in human development. Understanding this evidence, poverty becomes the most concerning factor in child development. In this context, poverty constraints child development as it limits access to goods and services for adequate health and development – sanitation, water quality, and education. At the same time, poverty also exposes children to more substantial development disparities. This concern is further addressed by the international community with the Goal 6 of Sustainable Development Goals that aims to fulfill human basic services in equitable water access, sanitation, and hygiene. This paper utilizes individual level dataset from Indonesian Family Life Survey (IFLS) conducted in 2014 to argue for the association between poverty as a socioeconomic status (SES) reflected by the existence of improved sanitation and child development reflected by the cognitive score of children aged 7-14 years old in Indonesia. This study found that improved sanitation resulted in 5.176 higher average cognitive score points, statistically significant ($p<0.01$). Improvement in water source also resulted in 2.416 higher average cognitive score points ($p<0.1$). Family total income is also significant in affecting child cognitive test score, where a 1% increase in total income increases average cognitive test score by 0.00475 points ($p<0.05$). The result of this analysis varies between regions in Indonesia. Generally, it is proven that children who live in rural areas have 2.721 lower average cognitive score than those who live in urban areas ($p<0.01$). We further divided regions in Indonesia into 5 regions: Java, Sumatera, Kalimantan, Sulawesi, and Others (Bali & Nusa Tenggara Barat), with Java as the base category. The difference in estimated child average cognitive test scores is 0.952 points lower in Sumatera, but not statistically significant,, 3.345 points higher in Kalimantan ($p<0.01$), statistically insignificant for Sulawesi, and 4.143 points lower in Bali and NTB. We also found that cognitive score is increasing consistently with age and 0.965 points lower in male children than female ($p<0.05$).

Keywords: Child Development, Poverty, Sanitation, Socioeconomic Status, Region, IFLS, Indonesia

Introduction

Studies in regards to the association between socioeconomic status (SES) such as household wealth, occupation, and social capitals to child development have long been a topic discussed in both social and economic studies. There are many ways to define child development, but the most favorable definition of child development is the development of their cognitive skills. The degree and aspects to which socioeconomic status relates to child development are different amongst related studies.

However consistent the result of the studies of the association between socioeconomic status (SES) to child development, several constraints limit the development of similar studies in this area. What socioeconomic status significantly affect child development? Does improved sanitation, as a representation of higher socioeconomic status, affect child development? In what regards does socioeconomic status and further improved sanitation affect child development? Is the result consistent throughout all regions in Indonesia, taking into account the significant economic gap between regions?

Understanding the many links to which sanitation is linked to child development, it is clear to state that improved sanitation is an integral part of the study on child development. The objective of this paper, therefore, is to test the relation between sanitation improvement and child development in Indonesia and to further assess the regional difference between regions in this area of study.

The Association between Socioeconomic Status and Child Development

Although the result of the association between SES and health is consistent among adults, as can be found on Adler *et al.*, (1994), there are also empirical evidences that the association remains consistent among children. The early study on the association between SES and child development proved that the association between SES and child development, in terms of cognitive skills, begin early on in infancy (McCall, 1981).

Generally, the link between SES and child development can be understood through several key analyses: nutrition, access to health care, and parenting styles.

The simplest understanding of the first analysis of association between socioeconomic status and child development can be found on Brooks-Gunn & Duncan (1997), in which child development can be hindered in many ways in group of families with low SES because families with low SES lack access to goods, services, and social connections seen to be beneficial for child development. This is consistent with the argument presented by Klerman & Parker (1991) that lower SES families lack access to resources; they suffer from the inability to purchase goods and services essential for health.

The argument is further supported by DiPietro et al. (1999), where he concluded that children from low SES families are hindered from development as they were found to be more likely to experience growth retardation and inadequate brain development. Mercy & Steelman (1982) studied the association between SES and intellectual attainment (education), which adds to the discussion that SES also affects child education. The aspect of health, specifically inadequate

dietary intake (Martorell, 1980) and poor nutritional intake (Pollitt et al., 1995) reinforces the argument that SES is associated with brain growth pre- and post-natal.

This fact is made worse by the fact that in some countries, access to adequate health is hindered by the lack of access to health care. Rushing & Ortega (1979) showed the connection between cognitive development and an increasing exposure to infection due to poor personal hygiene.

There are many debates on which aspect of SES affecting child development the most. Alexander et al. (1993), Escalona (1982), Walberg & Marjoribanks (1976), and Zill et al. (1995) all argued that poverty and parental education are two integral aspect of SES in its association to child development, showing that parents trapped in poverty and who have lower education are associated with lower levels of achievement of their children. Suggesting the support for this argument, Mercy & Steelman (1982) showed that among parental education, maternal education was a stronger predictor of their child development than paternal education.

However, there are also other views of how SES affects child development. DeGarmo et al. (1999) argued and showed that parenting style played a key role in child development. He further argued that higher SES parents are associated with better parenting style, which affects school achievement of their children through skill-building activities. The same view was adopted by Bloom (1964) and Hunt (1961) in drawing a conclusion that low-SES children lack access to activities to stimulate their cognitive development, like going on educational trips, attend theatrical performance, or be given lessons directly to enhance their skills (R. Bradley & Corwyn, 2002). With a slightly different approach, Phillips & Shonkoff (2000) argued that SES is associated with child development through cognitive-stimulating activities like more conversations, more time of reading, and the provision of more teaching experiences. Other than that, SES is also associated with child development through access to materials, such as educational and cultural events and exposure to television (R. H. Bradley et al., 2001)

Another approach analyzed the link between SES as reflected by parents' health-relevant behaviors like smoking and drinking alcohol and child development. Baum et al. (1999) showed that members of the lower social classes consume tobacco and alcohol more but tend to diet and exercise less. An alternative motive to see the reason of this behavior is that this behavior reflects the stress reactions of these individuals (Paltiel, 1988). Garbarino (1992) connected the dots between the behaviors explained by Garbarino and the motive in Paltiel by showing that stress, as reflected through smoking and drinking, made it harder for low-SES parents to provide stimulating care or to monitor their children.

Improved Sanitation, Health, and Child Development

In 2015, 2.4 billion people still lacked access to improved sanitation and 663 million did not have access to improved water sources (WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, 2017). This raises concern in regards to the health of the people who lacked access to water, sanitation and hygiene (WASH). According to World Health Organization,

improved sanitation facilities have several characteristics; connection to a public sewer, connection to a septic system, pour-flush latrine, simple pit latrine, and ventilated improved pit latrine. At the same time, improved drinking water sources have several characteristics; household connection, public standpipe, borehole, protected spring, and rainwater collection. Water source is said to be improved if the source of water is natural and protected from outside contamination, (WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, 2017).

Several studies were conducted to argue the importance of basic toilets and hygiene practices to the development of children. UNICEF (2003) highlighted the devastatingly high impact of inadequate sanitation on child mortality, showing that more than 340,000 children under five dying annually from diarrheal diseases due to poor sanitation, poor hygiene, and unsafe drinking water. This argument is further supported by similar studies to test the negative relation between the poor or lack of access to clean water, sanitation, and hygiene to the health, education, and development worldwide (Ballard, 2017). A study was conducted in India by Andrés et al. (2017) to test this hypothesis and it concluded that a child who moved from a household without improved sanitation and a low ratio of village access to a household with improved sanitation and a high ratio of village access eventually enjoyed a reduction in diarrhea prevalence of 47%. This study shows that diseases associated with lack of access to hygiene sanitation can be mitigated with improved sanitation.

Similar studies but with different approach were also done to test the further impact of unimproved sanitation to children; children health and cognitive ability. Bose (2009) and Fink, Günther, & Hill (2011) showcased positive relationship between better sanitation infrastructure and early childhood health outcomes. Checkley et al. (2004) showcased a similar conclusion; improved and more reliable water sources encourage improvement of the linear growth in children. The development of children, which is often measured by their cognitive ability, is tested further by Sclar et al. (2016) who supported that access to household sanitation is associated with measures of improved cognitive ability in children.

Another link studied in regards to the relation between inadequate sanitation and child development is undernourishment. Pollitt et al. (1995) studied an early link between undernourishment to brain development, physical growth, motor development, and physical activity stimulating brain development. World Bank (2008) claimed that poor WASH is the cause of 50% of maternal and childhood underweight cases, primarily through the reciprocal relation of diarrheal diseases and undernourishment. This statement is in line with Grantham-McGregor et al. (2007) showing that there are 200 million children under the age of 5 years old in low- and middle-income countries estimated to be at risk of not attaining full development potential due to insufficient nutrition.

Research Methodology

Data

This research uses household level data from Indonesia Family Life Survey 5, which was conducted in 2014, the most comprehensive household, individual, and community level panel data which was conducted in five waves since 1993 in 13 provinces in Indonesia; all provinces in Java, Bali, West Nusa Tenggara, South Sulawesi, South Kalimantan, South Sumatera, Lampung, West Sumatera, and North Sumatera.

Authors use ordinary least square model (OLS) to evaluate association between improved sanitation and child development. The dependent variable in this model is average score of cognitive test. The cognitive scores were obtained from a set of questions asked to children aged 7-14 years old. The key variable, and also one of the socioeconomic indicators for household, is represented in improved sanitation.

Other socioeconomic variable used in this paper is family total income, dummy variable rural, child's gender, and child's age.

In measuring child development, the data gathered used two types of tests; basic mathematic and raven test. Raven test is a test to obtain fluid intelligence using resembled pictures and basic mathematics as well as simple arithmetic test.

This paper uses children average cognitive score, which is the average of child *i*'s raven and math scores. Mathematically,

$$\sum_{i=1}^{n} avescore_i = \sum_{i=1}^{n} \left(\frac{ravenscore_i + mathscore_i}{2} \right)$$

On average, the scores of raven test for individuals aged 7 – 14 in Indonesia is 68.18 and 55.15 for mathematic test. Consequently, the average score for all cognitive scores is 61.66. The data showcases the fact that mathematic skills for Indonesian children on average is lower in comparison to other intelligence skills.

To see geographic implications of the study, we divided regions in Indonesia into 5 regions; Java, Sumatera, Kalimantan, Sulawesi, and Other (Bali & Nusa Tenggara Barat), with Java as base category. Authors also investigate factors affecting development in children and sanitation facilities across regions in Indonesia. Interaction variable included is between region and whether the household has improved sanitation in that region.

Model

$$avescore_i = \beta_0 + \beta_{1\,sanitation_i} + \beta_{2\,watersource_i} + \beta_{3\,rural_i} + \beta_4 sex_i + \beta_5 age(7-14y.o)_i + \beta_6 ltotinc_i + \beta_7 region_i$$

Result & Discussion

Improved Sanitation and Child Development

Variables	Average score
Sanitation	5.176***
	(0.639)
Water source	2.416*
	(1.419)
Rural	-2.721***
	(0.513)
Male	-0.965**
	(0.481)
Age: 8	4.765***
	(0.986)
9	8.957***
	(0.970)
10	12.83***
	(0.979)
11	16.19***
	(0.962)
12	19.49***
	(1.005)
13	19.54***
	(1.000)
14	19.77***
	(0.982)
Ln(Total income)	0.475**
	(0.201)
Sumatera	-0.952
	(0.714)
Kalimantan	3.345***
	(1.294)
Sulawesi	-1.717
	(1.202)
Bali & NTB	-4.143***
	(0.822)
Constant	36.89***
	(3.685)
Observation	5,933
R-squared	0.143

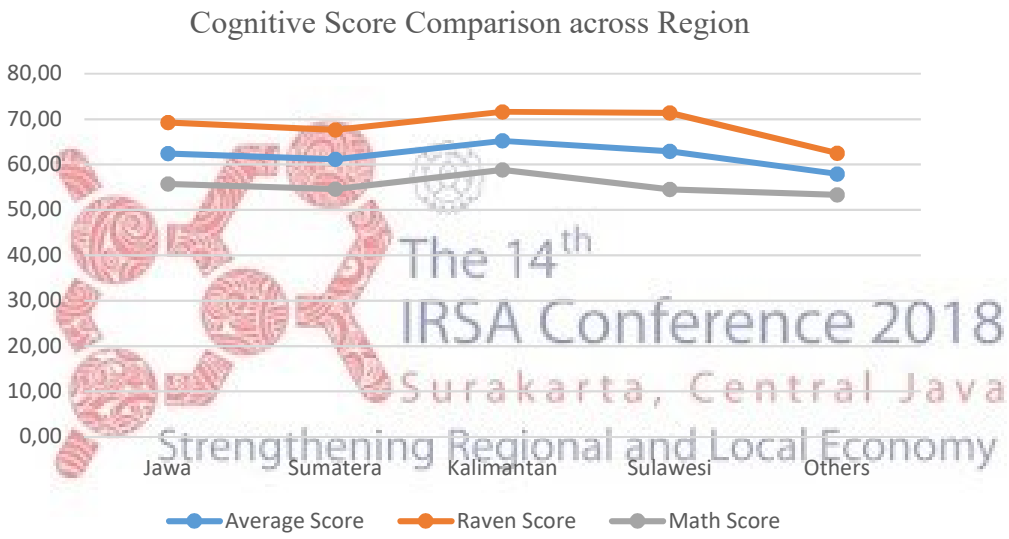
Table 1. Estimation result of the impact of sanitation improvement towards children average cognitive score. Source: Indonesia Family Life Survey 5, edited by authors

The data available showed that the tested improved sanitation and water source have significant positive relations with child cognitive score, indicating that children living in households with improved sanitation and water source have higher average cognitive score than those living in households with unimproved sanitation and water source. This is relevant with, Fink et al. (2011) who argued that sanitation in related with child development. Household with improved sanitation and improved water source have children's cognitive score 5.176 and 2.416

higher than household which doesn't improved their sanitation and water source yet, ceteris paribus, each variable are statistically significant ($p<0.01$) and ($p<0.1$).

The data also showed that all the socioeconomic variables, dummy variables rural and gender, children age, and household total income, have significant relations with children cognitive score. Previous study also found the same thing, Larson et al. (2015) showcased the positive relationship between socioeconomic variables and children cognitive score. The data shows that a 1% increase in total income increases cognitive test score by 0.00475 points ($p<0.05$), that cognitive score is increasing consistently with age ($p<0.01$), and it is also 0.9861 points lower in male children than female ($p<0.05$). Furthermore, it can be concluded that children who live in rural areas have 2.721 smaller average cognitive score than the children who live in urban areas ($p<0.01$).

Geographical Analysis



Graph 2. Average cognitive score across regions in 2014. Source: Indonesia Family Life Survey 5, edited by authors

In terms of geographical difference, it is one of the biggest findings of this paper to conclude that children living in Kalimantan regions possess higher average cognitive score than children living in Java. It is surprising because economically, Kalimantan regions have lower standard of sanitation facilities than Java region. This result is important to conclude that in the regions with lower socioeconomic conditions, improvement in basic needs facilities affects child development more than it does in the higher regions. Subsequently, children living in Bali and Nusa Tenggara Barat possess lower average cognitive scores than children living in Java by 4.14 points ($p<0.01$). At the same time, it can also be concluded that children living in the regions other than Kalimantan showed lower average cognitive scores.

One of the limitations of this paper is its inability to explain factors behind the difference in the results on average cognitive scores between children in different regions in Indonesia because there are many unobserved variables affecting children average cognitive score from the

model; parenting style, environmental conditions, urban & rural areas characteristics, parents' health-risk behaviors, etc.

One of the explanations for the result above is that Java has relatively higher density than Kalimantan. The higher number of population and the fact that Java is more industrialized Kalimantan significantly affect the quality of the sanitation in an on itself. According to The Indonesian Ministry of Health (2015), one of the contributors to the bad quality of sanitation is polluted water. The high number of pollution in Java contribute to the high number of unimproved sanitation. As a result, many people exhibit diseases associated with bad quality of water and sanitation such as diarrhea.

Conclusion

Although there have been varying results in the area of the association between improved sanitation and child development, there is a general consensus in the fact that there is an association between socioeconomic status and child development, however different degrees and aspects that correlate in its regards. This paper tested the association between socioeconomic status (SES), demonstrated in the existence of household improved sanitation with child development, indicated by children average cognitive scores.

Using data from Indonesia Family Life Survey (IFLS), this paper concludes that all socioeconomic variables are significantly associated with child development, contributing to the previous studies in this area supporting the association between socioeconomic status (SES) with child development.

This paper also concludes varying results in child development across regions in Indonesia. The data show that children living Java, as the most populated region in Indonesia, exhibit higher average cognitive scores in comparison to their counterparts in Sumatera, Sulawesi, and Nusa Tenggara and Bali. However, children in Kalimantan exhibit higher average cognitive scores in comparison to the children in Java. This paper concludes that the difference across regions may be subject to unobserved socioeconomic status (SES), health, and environmental variables.

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The Village Fund and Its Potential Role in Reducing Rural Urban Migration:

A Tale of Two Regencies

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ABSTRACT

There is general consensus that Village Fund (VF) is a promising tool for poverty reduction through accelerating development in underdeveloped villages. Despite its positive aspect, Village Fund still faces a number of challenges. These include the current formulation principles that arguably contribute to an increasing disparity. Its allocation which mainly for physical infrastructure and facilities development (around 84 percent) has also a relatively small impact on the village economy or poverty reduction. This paper explores some reasons why Village Fund has the potential to reduce rural urban migration, an issue closely link to poverty. On the basis of in-depth interviews, we examine how Village Fund can reduce urbanisation rate. It describes the case of successful attempts to establish a local empowerment program in the two regencies (Wonogiri, Central Java and Bantaeng, South Sulawesi). This study highlights that urbanisation is the result of combination of the push-and-pull factors. Push factors include poverty, lack of opportunities, and migration networks in source areas while pull factors such as job opportunities, social services, family members, and social networks in destination areas. We find that Village Fund has the potential to support local governments on dealing with poverty as one causal factor for rural-urban migration through community economic empowerment program such as thematic villages and rural tourism. We conclude that the main proportion of Village Fund should be allocated for local economic improvement by encouraging community participation in income generating activities and increasing the availability of basic services.

Keywords: Village Fund, rural-urban migration, poverty, economic improvement

INTRODUCTION

The Village Fund (VF), first launched by the government in 2015, aims to accelerate village development through both infrastructure projects and community empowerment with the hope could increase the welfare of rural communities. Since then, the VF has become an important instrument for strengthening rural economy. The role of village, as the lowest level of governmental admistraton unit, is important in providing the social safety net of rural social problems. One of them is the rural-urban migration. It is widely accepted that urbanisation is closely correlated with the country's economic development. The main reason for urbanisation is that rural areas unable to provide "employment opportunities and incomes" and there is a "large differences in income and amenity levels between urban

and rural areas" (Bilsborrow, 1987). The high rate of poverty in the rural areas causes villagers to seek a better quality of live by migrating. Rural-urban migration thus has become one of the most rational choice.

Article 82 of the Village Law states that village policy formulation should engage community members. The community engagement is not only in the planning phase but also in the implementation and in the reporting of the results. One estimate suggests that there are 12.450 Village-Owned Enterprises (BUMDes) in 2017. Hopefully, all of 74.954 villages in Indonesia have Village-Owned Enterprises as vehicle to accelerate local economic and social development. Against this backdrop, the purpose of this paper is to investigate the role of VF to support local governments on dealing with poverty as one causal factor for rural-urban migration. Taking Wonogiri and Bantaeng Regency as a case study, this paper investigates the push-and-pull factors of urbanisation and how local officials try to overcome these migration by using VF.

STUDY SITE

Wonogiri has 25 sub-districts, 43 kelurahan, and 51 villages. In general, agriculture is the major source of income. Its population exceeding 1.09 million in 2016 with an annual population growth of 1.5%. As for the second case study, Bantaeng Regency is located at South Sulawesi Province. This Regency has an area of 395,83 km². Bantaeng is currently divided into 8 sub-districts, 21 kelurahan and 46 villages. Bantaeng was inhabited by 183,386 people in 2015.

METHODS

Besides the reviewed literature and analysis of policy documents, this paper rely on data gathered through interviews with relevant respondents. The interview questions relevant for this paper include: (a) the rural-urban migration and its relation to poverty rate (b) the problems faced by local offcials in responding migration, and (c) the local efforts to overcome these problems.

POVERTY, OPPORTUNITIES, AND LOCAL ECONOMIC EMPOWERMENT

A wide range of studies (see Bilsborrow, 1987) suggest that rural-urban migration is caused by “high rates of rural natural increase, inequitable land distribution, inadequate rural employment opportunities and incomes, and large differences in income and amenity levels between urban and rural areas”. According to Tacoli (2009), “mobility, in conjunction with income diversifi cation, is an important strategy to reduce vulnerability to environmental and non-environmental risks – including economic shocks and social marginalization. In many cases, mobility not only increases resilience but also enables individuals and households to accumulate assets”.

Several studies conclude that there are three major prerequsites for developing village economic activities. First, the success of VF implementation will be determined by the ability and capacity of village governments to design their approach, especially how to increase the role and empower of SMEs. Secondly, there is an encouragement to invest to the local economic activities which is in accordance with the village’s needs and unique characteristics of the village. For example the development of tourist villages, industrial villages, and creative villages. These programs can create jobs and increase people's incomes. Thirdly, the increasing local initiatives and innovations (especially from micro-medium enterprises) in developing new economic activities based on modern technology such as the digital economy.

RESULT AND DISCUSSION

The results from key informant interviews, observations, and archival analyses will be divided into three topics. First, the driver causing urbanisation. Second, the impacts of urbanisation. Third, the strategies to address such urbanisation challenges.

There are two different kinds of urbanisation; intra districts and inter districts/cities. Intra-urbanization is the migration of villagers around the district capital within the same district, while inter-urbanization is the migration of villagers from one district to another districts/cities. The economic reasons (limited employment, low wages), the lack of public

services (health, education, transportation, and infrastructure), and geographical conditions (soil fertility, drought) is identified as an important driving force for rural-urban migration. While the pull factors include job opportunities and higher wages, the availability of public service facilities, invitation of friends /relatives who have been successful in their business in other cities.

the immediate impact of urbanisation in Wonogiri is the shortage of local labor supply (lack of human resources especially in agriculture and construction). In terms of education, many children receive less attention from their parents because they are raised by their grandparents. Early marriage among children was olso occurred, led to health problems (such as HIV / AIDS disease). Besides bringing negative impacts, urbanisation has a positive impact. For example in Bantaeng, there were significant increase of GRDP and increasing economic activity.

There were several efforts to decrease the rural urban migration. For example in Wonogiri, local government tried to attract investment. There is now three garment factories and two plywood processing factories. In addition, infrastructure development such as roads and bridges (through the "satu ruas tuntas" program) is also continuously promoted. VF has been mentioned as one of the good program to control urbanisation.

CONCLUSION

Rural infrastructure development and empowerment has been increasing in the last three years. As stated in Law No. 6/2014 (about the Village Law), the self-sufficient villages in terms of their economic and social aspect is the main goal of national development. In essence, Village Law is the implemention of the spirit of building Indonesia from the periphery. The VF, an integral part of Village Law, has a strategic role as a social safety net and as one alternative solution to control the rate of urbanization.

In the future, village development should be put into a broader strategic planning and has long-term goals. This is important to ensure that each village works collaboratively in order to avoid conflict and isolate each other. Village development based on cluster is needed to

build synergy and interaction among key actors in each cluster. In order to achieve the optimum result, the village officials should be able to design a development plan that is integrated with the existing village financial resources (for example one village, one plan and one budget).

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The Geography of Rural Inequality in Indonesia: What the Data Tell us?

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ABSTRACT

Rural inequality remains a widespread concern especially after the implementation of Law 6/2014, through which village governments are given broader authorities in an attempt to improve public service delivery, strengthen the poverty reduction as well as closing income gap among the rural population. However, the evidence on how inequality in rural Indonesia has changed over time is still limited, including how economic growth improves rural expenditure and affect income distribution. This study attempts to: (1) assess the picture of rural inequality in Indonesia over time using three measurements, namely Gini coefficient and expenditure-decile ratios (D9/1, D9/5, and D5/1); and (2) analyse the importance of economic growth in affecting rural inequality. Using SUSENAS 2010-2016 data, this study finds that rural inequality in Indonesia has increased, with the top rural population benefits more as reflected by higher and rising growth elasticity. Nonetheless, economic growth is still good for everyone.

Keywords: rural inequality, expenditure inequality

Introduction

Reducing both poverty and inequality is among the underlying objectives of the central government to further implement decentralisation down to the *desa* (village). The formal impetus began with Law No. 6/2014 followed by related regulations (i.e., PP 43/2014, PP 60/2014, PP 22/2015). Along with the implementation of the law, the government introduced a new intergovernmental transfer instrument called as "Village Fund/*Dana Desa*", in which the amount significantly increased from IDR 20 trillion in 2015 to IDR 60 trillion in 2018, comprising around 7.8 percent of the central government's transfer to regions. Furthermore, the government recently launched "*Padat Karya Cash* (cash for work)" as an integrated instrument within the village fund, in response to answering the critics on declining of purchasing power of the bottom population as well as jobless-infrastructure projects that in turns slowing down the effort to reduce poverty and inequality.

Figure 1 Poverty Rate and Economic Growth

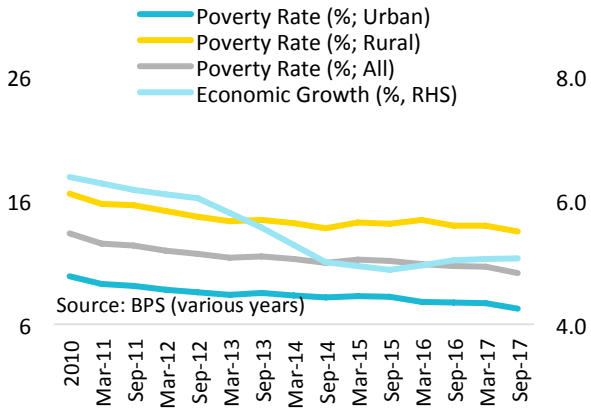
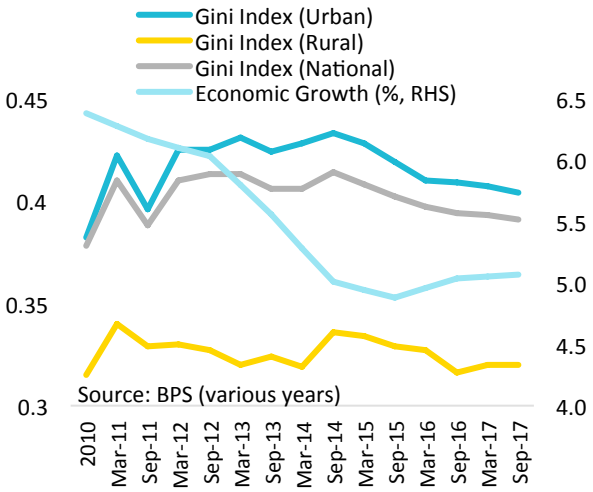


Figure 1 and Figure 2 illustrates the dynamics of economic growth, poverty, and inequality in Indonesia. Using conventional measures of headcount poverty and Gini index, poverty continues to decline for the past years in both rural and urban, though it varies in pace. Rural area consistently records higher share of the population living below poverty line with 13.47 percent in 2017, compared to urban 7.26 percent in the same year. Inequality, in contrast, persists at relatively similar level. Whereas populations in

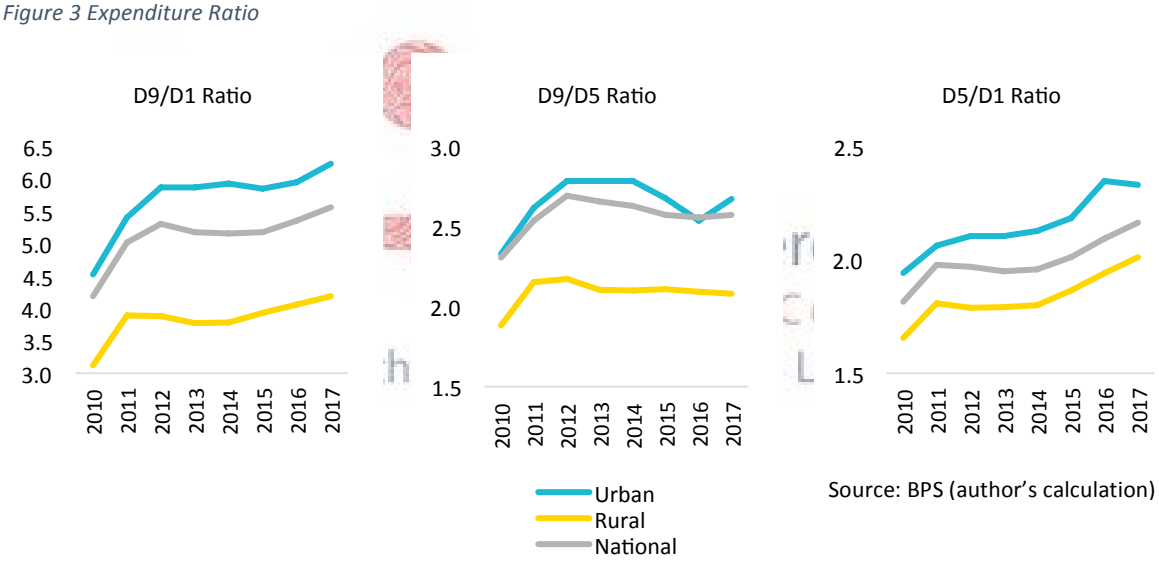
Figure 2 Economic Growth and Inequality



the rural area face fairer distribution than in urban, Gini coefficient worsened from 0.315 in 2010 to 0.32 in 2017. As such, a question arises: while growth might explain the effort to move people out from poverty, does it lift all Indonesian boats proportionately?

As is well known there are several limitations in measuring inequality using Gini index; I next examine in more detail the dynamics using different measures. Figure 3 shows inequality movement as measured using expenditure-gap of the population. Results are consistent with the Gini approach: the rural area is relatively more equal by any measurements. However, both the overall and lower tail rural inequality (as measured by the expenditure comparison of the 9th to 1st decile and 5th and 1st decile) worsens, while the upper tail rural inequality (as measured by the proportion of the 9th decile consumption to the 5th) stays the same.

Figure 3 Expenditure Ratio



In the heated debate over inclusive growth in Indonesia, it is surprising that the evidence on how inequality in rural Indonesia has changed over time is still limited, especially after the period of village law implementation. Apart from the fact that the policy is relatively new, scholars and various organisations still heavily focus to discuss the funds allocation that is claimed to favour more populated districts (e.g., Lewis, 2015; KOMPAK, 2017) or emphasise more on the funds management (SMERU, 2017).

In the context of economic growth impact on consumption dynamics and inequality in Indonesia, Suryahadi and Izzati (2018) found that during 2014-2017, growth elasticity of the bottom 20 percent of population reached 0.7, significantly lower compared to the period of 2009-2014 with 1. The top 20 percent, on the other hand, has a consistent elasticity growth of 1.2 in both periods. The middle two deciles experience higher growth elasticity in recent years, fostering the improvement in Gini coefficient. This finding reinforced the study of Yusuf and Sumner (2017) that found growth has been unequal, with growth of the top 5 percent of the population exceeds the average growth with 10 percent annually, partly contributed by the commodity boom.

Putting the discussion into context, this study aims to: (1) assess and compare the picture of rural inequality in Indonesia over time using three measurements, namely Gini coefficient and expenditure-decile ratios (D9/1, D9/5, and D5/1); and (2) analyse the importance of economic growth in affecting rural inequality. This paper argues that rural inequality tends to stagnate at particular level due to the fact that disproportionate impact of economic growth on each income group accumulates over the years and worsens inequality. This implies that rising inequality undermines the benefit of economic growth for the bottom population (Dollar and Kraay, 2002). This study employs Indonesian district-level data as a unit of analysis, correlating economic growth of rural districts to the real mean per capita consumption growth of each decile, drawing upon SUSENAS data from 2010-2016.

This study finds that rural inequality in Indonesia has increased between 2010 and 2017. Inequality outcomes are different, respective to the measurements used. The differences between districts are minute when measured by conventional Gini coefficient, although the difference can be seen when using the D9/D1. The top rural population benefits more from economic growth as reflected by higher and increasing elasticity. However, economic growth is still good for everyone.

This paper is structured as follows. Section 2 discusses the country context, theoretical underpinnings and empirical evidence within the nexus of poverty, rural inequality and economic growth. Section 3 is devoted to summarise the data and methodology employed in this research. Section 4 presents the analysis of the data and the estimation results. Section 5 concludes.

Theoretical Underpinnings and Country Context

The economic growth, poverty reduction and inequality nexus

Economic growth has been widely studied and unanimously acknowledged as a poverty-reducing activity, which to some extent, affect income distribution (Dollar et. al. 2013; Bhagwati and Panagariya, 2014). Growth is a "double-barreled assault", in which the increasing size of an economy implies more income to the whole society as well as provides more sources for government to fund wealth redistribution policies (Bhagwati and Panagariya, 2014; pp. xix). However, the causal relationship between economic growth and poverty reduction appears to convolute under several considerations. Current discourses include the difference in growth elasticity (Kraay, 2006), varying sectoral and distributional impact (Ravallion and Datt, 1996; Ali and Pernia, 2003) and significance of other government policies (Ferreira, et al. 2010).

Cross-country researches reinforce the justification. Dollar, et. al., (2013) confirmed a positive and equiproportionate impact of the rise of average income to the increase of both bottom 20 percent and 40 percent income in 118 countries within the last forty years. China in particular, has successfully reduced its poverty from almost half of the population to just slightly above 8 percent as it grew by 8.5 percent on a yearly basis. Another research also identified a one-to-one relationship between economic growth and poverty reduction of the poorest forty percent in developing countries population (Roemer and Gugerty, 1997).

However, the distributional impact of economic growth raises some concern as researchers found that growth does not necessarily impact every person in a similar magnitude. Within a more prosperous and unequal population, growth in median income should be cautiously examined. Increase in median income might either reflect the rise in overall income or might only favourable specific group, mostly on the right tail of income distribution (Perry et al., 2006). In the context of rural population, the disproportionate effect of growth stems from the fact that each income group

has different characteristics of livelihoods and asset ownership, in which Ali and Pernia (2003) broadly distinguished into (1) landless labours whose income depends on wage and; (2) land-owner farmers whose income comes from agricultural output. Economic growth that comes from the expansion of non-agricultural production tends to increase non-agricultural products' terms of trade relative to agricultural product; hence the non-agricultural poor experience more growth impact.

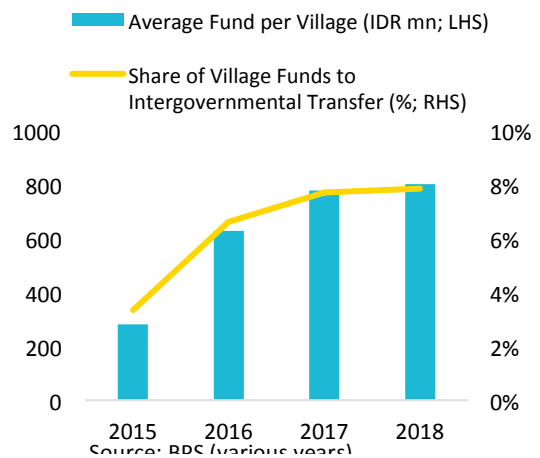
Indeed, some studies also argue that economic growth does not automatically link to both poverty reductions that ultimately lead to improvement in inequality. It interacts with other factors in the economy, both regarding policies and social characteristics that further determine the impact. For example, despite Brazil's modest growth at 1.25% during 1992-2005, its poverty gap index significantly declined from 16.47% to 12.72%. The success of poverty reduction amidst low economic growth was argued as a result of hyperinflation-taming policies as well as social security and social assistance programs (Ferreira, et al, 2010). On the other hand, Ravallion and Datt (2002) found that some Indian states experienced more impact (such as West Bengal and Kerala) while others were not (including Jammu and Kashmir), due to specific properties of the population.

The long-standing argument of economic growth to reduce poverty is irrefutable. The growth proponents mainly underpin their principles on the economic feature, where the prospect of 'trickle down' effect, coupled by 'lifting all boats' mechanism is claimed to occur within particular regions (Patridge and Rickman, 2006; p. 7). In that regard, the concept of growth has transformed from 'sustainable' to the emergence of 'inclusive' and later 'shared prosperity' (World Bank, 2015). Studies related to absolute poverty in developing countries frequently discover a positive correlation; the more a place experiences growth, the more poverty it reduces (Dollar et al., 2013; Bhagwati and Panagariya, 2014). Distribution and sectoral pattern of growth might result in different impact. Government measures including macroeconomic and social policies also play a significant role in affecting both poverty and inequality level.

Village law as an instrument to address rural inequality

Although Indonesia urbanises, rural population still contributes a significant share of the total population. Indonesia statistics (BPS) recorded people live in rural area were slightly more than half of the population with 50.2 percent in 2010. The number gradually declined to 46.7 in 2015 and projected to reach 43.3 percent in 2020.

Figure 4 Village Fund



Through the Law 6/2014, Indonesia further devolves particular authorities and responsibilities to the village (*desa*) level. The theoretical assumption of physical proximity between government to its citizen is projected to bring about positive benefits that stem upon improvement in accountability as well as better public service delivery (Smoke, 2001; Martinez-Vazquez and Vaillancourt, 2011). More formally, the government of Indonesia aims village decentralisation to: (1) Recognise the rights and duties of the village as an institution; (2) Strengthen service delivery, and; (3) Reduce inequality and poverty.

While several public services related to healthcare, education, and infrastructure are in the hand of the district; village, as the smallest unit of government, is expected to provide further support at the

grassroots level, including to deliver community-level services and infrastructure. The approach aims to attain the ultimate goal of both poverty and inequality reduction, as villages already have a decade-long experience of community development program (*Program Nasional Pemberdayaan Masyarakat*, PNPM). As Indonesia decentralisation mostly focuses on expenditures, the village law implementation is mainly financed by intergovernmental transfer. The two primary sources of village finance are the village fund (*Dana Desa*) that comes from the central government budget and the *Alokasi Dana Desa*, a share of the district revenue. Related regulations stipulate that village governments are obliged to allocate most of the funds for community development, and only 30 percent is allowed for operational purposes. Total number of villages receiving the village fund in 2018 is 74,958.

Although it is still too early to see the impact of village law implementation, recent studies come up with various reasoning why village law is still ineffective. Salim, et. Al. (2017) found that while the presence of village law, in general, strengthen village financing, the fact that each village has its own development priorities make the impact to local communities to diverge. In addition, additional administrative requirements those in turns divert the focus of village officials in conducting activities needed by the community. Other highlighted problems including staging disbursement of the funds that might affect village planning and reporting cycle, including cash shortage caused by delayed disbursement.

Methodology

In order to analyse the trend of rural inequality, this study employs different inequality measurements to observe over the period. Apart from the conventional Gini index, this study generates some other measurements based on the relative position of the population, which are the Decile 9/Decile 1, Decile 9/Decile 5, and Decile 5/Decile 1 ratios. This is done to take into account different value of point inequality that might not be captured by Gini measurement:

- Decile 9/Decile 1 ratio: reflects the income differentials among upper and lower tail population. It illustrates the expenditure gaps between the highest and lowest in each district.
- Decile 9/Decile 5 ratio: as the measurement of upper-tail inequality. This is the ratio of expenditure of the 9th and 5th decile, which also reflects the expenditure distance of top population to the median.
- Decile 5/Decile 1 ratio: as the measurement of lower-tail inequality. This is the ratio of expenditure of the 5th and 1st decile, reflecting the expenditure distance of bottom population to the median.

Secondly, to assess whether economic growth in rural district benefit particular expenditure group disproportionately that in turns affect inequality picture, this study follows the work of Dollar and Kraay (2002), that builds upon the following model:

$$y_{kt}^{d} = \alpha_0 + \alpha_1 Y_{kt} + \alpha_2 X_{kt} + \mu_k + \varepsilon_{kt} \quad (1)$$

Whereas d, k, and t are decile, district and years, respectively, and $\mu_k + \varepsilon_{kt}$ is a composite error term which also includes the unobserved district effects. y_{kt}^{d} is the logarithm of mean rural per capita expenditure of decile d in district k in year t, and X_{kt} is a set of additional control variable that are unique for district k in year t. The study is interested in obtaining the value of parameter α_1, an elasticity measurement of rural per capita expenditure of particular decile with respect to mean income. Secondly, the parameter α_2 is the impact of other variables on the rural per capita

expenditure of each decile, holding constant mean incomes. A set of control variable X_{kt} consists of the potential aspects that determine expenditure level of the decile: district's educational attainment and per capita village fund.

At the initial, this study estimates equation 1 using Ordinary Least Square (OLS) as well as panel fixed-effect estimation. As both Dollar and Kraay (2002) and Suryahadi and Izzati (2018) pointed out that the estimation is prone to reverse causality and heterogeneity problem, a first difference equation is constructed from equation (1):

$$y^d_{kt} - y^d_{kt-1} = \alpha_1(Y_{kt} - Y_{kt-1}) + \alpha_2(X_{kt} - X_{kt-1}) + (\varepsilon_{kt} - \varepsilon_{kt-1}) \quad (2)$$

The value of α_1 greater than one indicates that growth in mean income is translated to be more than one percent growth in rural per capita expenditure of the particular decile.

The unit of analysis in this study is district-level, whereas any districts with rural population exceed 80 percent in 2016 is considered as rural districts and hence, included in the sampling. While the number of districts grew from 2010 to2016, this study only includes those, which did not split which results to total districts included in the study to be 170. The primary source of data comes from the National Socio-Economic Survey (Susenas), a semi-annually household survey collecting primary demographic and household consumption. SUSENAS data is used to derive the inflation-adjusted, annualised per capita consumption, ranked by decile for each district. While SUSENAS is not designed to be a panel survey, the deciles might constitute of different households for each year.

Results and Discussion

This section discusses findings of the descriptive analysis of rural inequality by providing rankings of districts across different measures of inequality. The compiled SUSENAS data results to 514 cities and districts, of which 170 of them have the share of rural population of more than 80 percent between 2010-2016. Table 5 and Table 6 present inequality measured by the Gini coefficient, D9/D1, D9/D5 and D5/D1 for the ten rural districts at the top and bottom of the rank order on each variable.

Looking at first to the Gini coefficient measure, it is not surprising that rural districts in Papua can either be unequal or completely the opposite, amongst the most equal rural districts. Gini coefficients among the most unequal districts were significantly higher than the national average of 0.32. Inequality patterns using the D9/D1 ratio are similar to those using the Gini coefficient. Also, districts with high upper-tail inequality are mostly those with high rates of overall inequality (using the Gini and D9/D1 measures). The most unequal districts in 2017 had consumption at the 9th decile are more than eight times those at the 1st decile, with the upper-tail inequality was around 3 and lower-tail inequality was slightly around 2.4 in 2017. The results on lower tail inequality introduce rural districts with less pronounced differences in overall inequality but where median consumptions tend to be higher in comparison with the bottom.

While among the most unequal districts are mostly dominated with districts with high inequality between the top and middle population, the characteristics of the districts that come out as more equal are relatively consistent across measures (Gini coefficient, D9/D1, D9/D5, and D5/D1). Overall inequality was recorded at around 2.4 in 2017, whereas the upper and lower-tail inequality were just 1.6 and 1.4, respectively. The most equal districts are in Papua, Sumatera, and Java.

Inequality has risen between 2010 to 2017 among the most unequal rural districts, with the average of Gini coefficient increased from 0.37 to 0.41, except for 2 districts where inequality improved significantly: Manggarai Timur and Puncak Jaya. Along with the increase in Gini coefficient, it seems

that inequality was mostly contributed by worsening distribution of the top, whereas the expenditure gap between the lower tail stays the same.

Table 1 The ten most unequal rural districts

2017

District	rural share	Gini coefficient	District	rural share	D9/D1	District	rural share	D9/D5	District	rural share	D5/D1
Paniai	100%	0.48	Teluk Wondama	100%	8.28	Paniai	100%	4.47	Waropen	94%	3.33
Teluk Wondama	100%	0.44	Paniai	100%	8.14	Teluk Wondama	100%	3.32	Sorong	100%	3.17
Gorontalo Utara	93%	0.41	Sorong	100%	7.37	Deiyai	100%	3.32	Teluk Wondama	100%	2.50
Buton	90%	0.41	Waropen	94%	7.22	Mappi	87%	3.28	Yalimo	100%	2.47
Sorong	100%	0.40	Pokuwato	82%	6.17	Mamasa	97%	3.20	Tana Toraja	84%	2.37
Raja Ampat	100%	0.40	Deiyai	100%	6.09	Gorontalo Utara	93%	2.98	Pokuwato	82%	2.37
Pokuwato	82%	0.40	Raja Ampat	100%	5.98	Raja Ampat	100%	2.93	Konawe Selatan	92%	2.32
Waropen	94%	0.39	Keerom	100%	5.98	Dogiyai	100%	2.85	Wakatobi	86%	2.29
Mamasa	97%	0.39	Sorong Selatan	100%	5.71	Boalemo	88%	2.82	Konawe Utara	96%	2.28
Luwu	87%	0.39	Mamasa	97%	5.59	Buton	90%	2.80	Muna	82%	2.26

2010

District	rural share	Gini coefficient	District	rural share	D9/D1	District	rural share	D9/D5	District	rural share	D5/D1
Supiori	97%	0.44	Sorong Selatan	100%	7.15	Maybrat	100%	3.07	Supiori	97%	2.75
Sorong Selatan	100%	0.41	Supiori	97%	6.47	Sorong Selatan	100%	3.02	Lanny Jaya	100%	2.54
Maybrat	100%	0.41	Maybrat	100%	5.74	Mappi	89%	2.89	Kepulauan Mentawai	91%	2.54
Asmat	84%	0.39	Asmat	84%	5.72	Rote Nda	95%	2.85	Puncak Jaya	100%	2.52
Raja Ampat	100%	0.39	Rote Nda	95%	4.98	Raja Ampat	100%	2.50	Asmat	84%	2.44
Rote Nda	95%	0.37	Raja Ampat	100%	4.59	Supiori	97%	2.35	Sorong Selatan	100%	2.36
Membramo Raya	100%	0.34	Mappi	89%	4.45	Asmat	84%	2.34	Dogiyai	100%	2.22
Mappi	89%	0.34	Dogiyai	100%	4.44	Manggarai Timur	100%	2.32	Buru Selatan	98%	2.12
Manggarai Timur	100%	0.33	Kepulauan Mentawai	91%	4.34	Bima	92%	2.20	Membramo Raya	100%	2.06
Mukomuko	92%	0.33	Puncak Jaya	100%	4.25	Sumba Barat	82%	2.20	Teluk Wondama	100%	1.99

Table 2 The ten most equal rural districts

2017

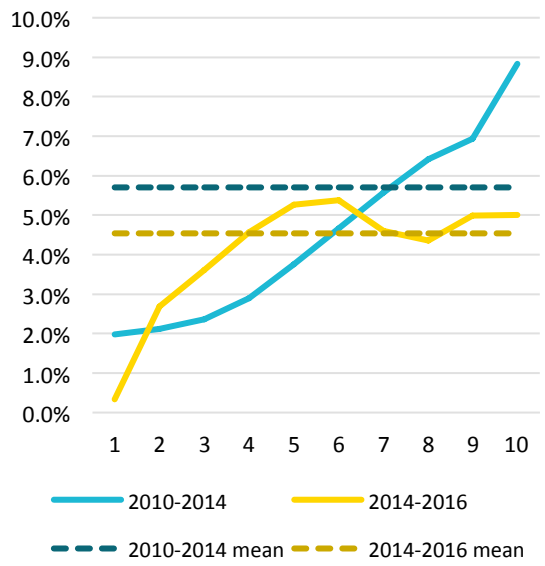
District	rural share	Gini coefficient	District	rural share	D9/D1	District	rural share	D9/D5	District	rural share	D5/D1
Manggarai Timur	100%	0.23	Pidie Jaya	91%	2.60	Pidie Jaya	91%	1.70	Tolikara	100%	1.46
Pidie Jaya	91%	0.22	Puncak	100%	2.51	Mandailing Natal	82%	1.69	Dairi	80%	1.45
Mandailing Natal	82%	0.22	Dairi	80%	2.47	Ngada	86%	1.66	Mandailing Natal	82%	1.44
Sumenep	81%	0.22	Kepulauan Sula	83%	2.44	Kepulauan Sula	83%	1.66	Batanghari	82%	1.43
Kepulauan Sula	83%	0.22	Mandailing Natal	82%	2.44	Membramo Raya	100%	1.62	Tebo	89%	1.42
Dairi	80%	0.21	Nduga	100%	2.41	Nduga	100%	1.55	Dogiyai	100%	1.41
Puncak	100%	0.20	Sumenep	81%	2.36	Lanny Jaya	100%	1.54	Nias	97%	1.39
Mamberamo Tengah	100%	0.18	Mamberamo Tengah	100%	2.29	Puncak	100%	1.51	Sumenep	81%	1.35
Nduga	100%	0.18	Puncak Jaya	100%	2.28	Puncak Jaya	100%	1.43	Asmat	83%	1.32
Puncak Jaya	100%	0.17	Membramo Raya	100%	1.92	Mamberamo Tengah	100%	1.43	Membramo Raya	100%	1.19

2010

District	rural share	Gini coefficient	District	rural share	D9/D1	District	rural share	D9/D5	District	rural share	D5/D1
Muara Enim (Liot)	80%	0.20	Muara Enim (Liot)	80%	2.32	Piddie	85%	1.57	Aceh Barat Daya	81%	1.42
Aceh Utara	82%	0.20	Piddie	85%	2.27	Tana Toraja	87%	1.56	Sumba Barat Daya	94%	1.41
Flores Timur	81%	0.19	Aceh Barat Daya	81%	2.27	Maluku Barat Daya	86%	1.55	Sampang	87%	1.41
Maluku Barat Daya	86%	0.19	Flores Timur	81%	2.26	Deiyai	100%	1.53	Maluku Barat Daya	86%	1.41
Aceh Barat Daya	81%	0.19	Sampang	87%	2.25	Yalimo	100%	1.52	Kolaka Utara	90%	1.40
Yalimo	100%	0.19	Maluku Barat Daya	86%	2.18	Sumba Barat Daya	94%	1.52	Nias Selatan	97%	1.38
Piddie	85%	0.18	Sumba Barat Daya	94%	2.15	Lanny Jaya	100%	1.49	Nduga	100%	1.37
Deiyai	100%	0.17	Deiyai	100%	2.02	Buru Selatan	98%	1.42	Deiyai	100%	1.32
Nduga	100%	0.13	Nduga	100%	1.83	Nduga	100%	1.34	Yahukimo	98%	1.31
Mamberamo Tengah	100%	0.09	Mamberamo Tengah	100%	1.39	Mamberamo Tengah	100%	1.26	Mamberamo Tengah	100%	1.11

The results do suggest three findings: (1) inequality outcome are different, respective to the measurements used. The differences between districts are minute when measured by the conventional Gini coefficient, although the difference can be seen when using the 9th/1st decile differential. (2) The exact rankings changes as inequality is measured using different approaches. Hence, it is not possible to determine a single most unequal rural district. Amongst the most unequal rural districts are those which have near-100 percent rural population share; (3) The magnitude of overall inequality has increased, with a more pronounced upper-tail inequality. This poses a fair

question: If economic growth is a source of welfare improvement of the society, which particular income group benefits the most relative to other?



I constructed a Growth Incidence Curve (GIC) of per capita rural household expenditure for two periods of 2010-2014 and 2014-2016. The GIC is always positive, meaning that people are getting better off each year, the average growth of per capita rural household expenditure declined from 5.7 percent to just 4.54 percent in the recent period. The GIC has a positive slope in 2010-2014, implying that as expenditure increases across groups, the higher the annual growth. This might partly explain why rural inequality increased as people in the bottom population were unable to catch up with the higher consumption decile. The shape of GIC during 2014-2016 shows that people in the middle expenditure group experience higher growth compared to those in the lowest and highest group, as well as compared to their respective growth in the previous period. However, the speeding up of consumption growth for the people in the middle distribution is not sufficient enough to alter rural inequality picture. Gini coefficient for the rural area increased from 0.319 in March 2014 to 0.327 in March 2016.

Table 3 shows the estimation results using OLS of the average decile per capita consumption on GDRP. The elasticities of per capita consumption of each decile to per capita GDP growth improved in recent years. However, it seems that growth elasticities increase along with consumption. For every 1 percent per capita GDP growth, per capita consumption of the first decile in rural area grows by 0.19 percent, while that of the 10th decile increases by 0.34 percent. This implies that although growth is good for every person in the economy irrespective of the consumption decile, the top population benefits more than the bottom. Including the per capita village funds of the districts gives an early indication that the funds benefit community members with particular expenditure level.

Table 3 OLS regression result

OLS	**Log of per capita rural household consumption**									
	2010-2014									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log of per capita GDRP	0.169***	0.186***	0.197***	0.207***	0.218***	0.227***	0.237***	0.244***	0.247***	0.258***
	(13.02)	(14.85)	(15.55)	(16.00)	(16.45)	(16.75)	(17.16)	(17.36)	(17.38)	(15.76)
Constant	11.75***	11.69***	11.65***	11.60***	11.53***	11.50***	11.47***	11.51***	11.67***	12.00***
	(54.43)	(56.07)	(55.38)	(53.99)	(52.43)	(51.17)	(50.05)	(49.24)	(49.46)	(44.10)
N	845	845	845	845	845	845	845	845	845	845
F	169.4	220.5	241.7	256.0	270.5	280.5	294.4	301.3	302.0	248.3
Adjusted R2	0.166	0.206	0.222	0.232	0.242	0.249	0.258	0.262	0.263	0.227

t statistics in parentheses
* p<0.05, **p<0.01, ***p<0.001

OLS	Log of per capita rural household consumption									
	2014-2016									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log of per capita GDRP	0.191***	0.218***	0.237***	0.249***	0.271***	0.284***	0.294***	0.305***	0.312***	0.340***
	(8.76)	(10.21)	(11.39)	(12.04)	(13.29)	(14.16)	(14.89)	(15.32)	(15.48)	(15.75)
Constant	11.46***	11.24***	11.06***	10.99***	10.75***	10.65***	10.62***	10.59***	10.68***	10.78***
	(31.47)	(31.51)	(31.67)	(31.75)	(31.47)	(31.69)	(32.11)	(31.75)	(31.61)	(29.80)
N	507	507	507	507	507	507	507	507	507	507
F	76.78	104.3	129.6	144.9	176.5	200.6	221.8	234.8	239.8	247.9
Adjusted R2	0.130	0.170	0.203	0.221	0.258	0.283	0.304	0.316	0.321	0.328

t statistics in parentheses
* p<0.05, **p<0.01, ***p<0.001

OLS	Log of per capita rural household consumption									
	2014-2016									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log of per capita GDRP	0.185***	0.215***	0.243***	0.259***	0.282***	0.293***	0.299***	0.307***	0.309***	0.330***
	(5.86)	(6.93)	(8.17)	(9.01)	(10.11)	(10.76)	(11.23)	(11.39)	(11.45)	(11.54)
District mean years of s	0.0123	-0.00322	-0.0190	-0.0239	-0.0112	-0.000279	-0.00146	-0.00277	0.0211	0.0669
	(0.20)	(-0.05)	(-0.34)	(-0.44)	(-0.21)	(-0.01)	(-0.03)	(-0.05)	(0.41)	(1.23)
Per capita VF	0.000617	0.000528	0.0111	0.0140	0.0238	0.0325*	0.0359*	0.0346*	0.0351*	-0.00660
	(0.03)	(0.03)	(0.65)	(0.85)	(1.49)	(2.08)	(2.35)	(2.24)	(2.27)	(-0.40)
Constant	11.53***	11.31***	10.89***	10.73***	10.31***	10.12***	10.10***	10.14***	10.28***	10.96***
	(21.01)	(21.00)	(21.06)	(21.50)	(21.26)	(21.38)	(21.81)	(21.63)	(21.94)	(22.06)
N	338	338	338	338	338	338	338	338	338	338
F	14.42	19.42	26.21	31.73	40.97	47.56	51.94	53.13	55.57	60.32
Adjusted R2	0.107	0.141	0.183	0.215	0.262	0.293	0.312	0.317	0.327	0.346

t statistics in parentheses
* p<0.05, **p<0.01, ***p<0.001

Conclusion

This paper has investigated the dynamics of rural inequality using various measurements. Rural inequality has increased between 2010 and 2017 with different magnitudes respective to the measurements used. The differences between districts are minute when measured by the conventional Gini coefficient, although the difference can be seen when using the 9th/1st. The average growth of per capita rural household expenditure declined from 5.7 percent to just 4.54 percent in the recent period, with the top rural population benefits more as reflected by higher and increasing growth elasticity. The shape of the growth incidence curve during 2014-2016 shows that people in the middle expenditure group experience higher growth compared to those in the lowest and highest group, as well as compared to their respective growth in the previous period. However, the recent changing picture has not altered the inequality within the last two years. The analysis also provides an initial indication that the recently implemented village law might benefit particular group in rural areas, especially those with certain consumption level. Nonetheless, economic growth is still good for everyone.

This paper has provided only a first analysis of inequality and the impact of economic growth in rural Indonesia and has a number of limitations. Firstly, the abovementioned estimation using OLS still suffers from reverse causality that in turns will result in estimation bias. Secondly, it only deals with expenditure inequality as opposed to wealth or income, in which the picture might be different. Thirdly, further study might investigate the impact of village law more thoroughly in a more detailed framework and time due to the fact that the actual impact of the policies might take some time to yield sizeable outcome on consumption.

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Potential of Basic and Social Infrastructure Investment on Economic Growth and Social Development in Urban and Rural of Indonesia

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Income Inequality issues need to be overcome by governments to create sustainable growth in Indonesia. Basic infrastructure investment and social has an important role in overcoming the income inequality by increasing economic growth and social development. The problems arising from the role of basic and social infrastructure in promoting economic growth and social development are caused by inequality and low-quality. The purpose of this study is to the appearance at basic and social infrastructure investments that can impact economic growth and rural and urban social development in Indonesia. Data used in this study are Indonesia Family Life Survey (IFLS) data with panel data in 2007 and 2014. Variables used as proxies of basic and social infrastructure are access to electricity, sanitation, access to education services and health services. In addition, this study also includes variable household characteristics to provide a detailed representation of the relationship of basic and social infrastructure with economic growth and social development. Economic growth and social development in this study are proxied by income percapita. Income percapita is used because by increasing the income per capita will be a driver of economic growth and social development. The analytical tool used in this study is the Least Square Panel (PLS) to see the relationship between basic and social infrastructure investments with economic growth and social development. The results of the analysis in this study indicate that basic and social infrastructure has a contribution in improving economic growth and social development. The role of government in improving basic and social infrastructure through the expansion of infrastructure access and providing quality in service.

Keywords: Basic and social infrastructure, Economic growth, Social development

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INTRODUCTION

Infrastructure development becomes the center of attention, both developing and developed countries to realize the Sustainable Development Goals (SDGS). Research conducted by Enimola, (2014); Ogun, (2010) and Raihan, (2011) explain that infrastructure has a positive relationship with economic growth. In particular, the infrastructure classified in the basic infrastructure and social infrastructure contributes to improving economic growth, social development, reduction of inequality and poverty (Ansar, Flyvbjerg, Budzier, & Lunn, 2016; Mendoza OV, 2017; Gnade, Blaauw, & Greyling , 2017; Calderón & Servén, 2008). The role of infrastructure in economic development towards the positive, due to changes in income per capita population (Charlery, Qaim, & Smith-Hall, 2015; Mendoza O. V., 2017). This is due to, the development of infrastructure can also increase the Human Development Index which will be a factor in encouraging economic growth (Kusharjanto & Kim, 2014; Mohanty, Nayak, & Chatterjee, 2016; Sapkota, 2014). Conditions that make infrastructure have an important role in economic development.

Infrastructure-based economic development still has constraints in its contribution. Problems that arise can be sourced from inadequate infrastructure development (Gnade, Blaauw, & Greyling, 2017, McRae, 2015). In addition, the inadequate availability and quality of basic infrastructure and social infrastructure in rural and urban areas leads to weak infrastructure contributions in economic development (Jerome, 2011; Bogetic & Fedderke, 2005). Feeble role of basic infrastructure and social infrastructure in economic development needs to be re-examined

Indonesia, which is a developing country, also undertakes infrastructure development in improving economic development. Infrastructure development in Indonesia has an influence on economic development (Makmuri, 2017; Setiawan, 2017). Nevertheless, based on a survey conducted by the International Institute for Management Development (IMD) in 2011 Indonesia's infrastructure is at a weak point in the level of competitiveness that position Indonesia at the rank of 47 out of 59 countries. Research conducted by McCawley, (2010); Brandies, (2004); Komarilzaman, Smits & Jong, (2014) and Son, (2013) confirm that access to electricity and sanitation in Indonesia is still weak accompanied by low quality of sanitation infrastructure. The weak infrastructure of electricity, sanitation, education, and health in Indonesia reflects the quality of human that can lead to the low competitiveness of the Indonesian economy as a whole. The potential of infrastructure in economic development in Indonesia makes this research aim to see the effect of basic infrastructure and social infrastructure on economic growth and social development through increasing income per

capita. Increased income per capita will be a driving force in economic growth and social development in Indonesia.

DATA AND METHODOLOGY

The type of data used in this study is the longitudinal data sourced from the Indonesian Family Life survey (IFLS). Indonesian Family Life Survey (IFLS) is a longitudinal data describing the socio-economic situation of households in Indonesia. IFLS data used in this study are IFLS 4 (2007) and IFLS 5 (2014) data. The model specifications used in this study were modified from a study conducted by Mendoza, (2017); Wicaksono, Amir, & Nugroho, (2017); Gnade, Blaauw, & Greyling, (2017) and Huchet-Bourdon, & Latruffe, (2014).

$$\ln(y)_{it} = a_1 + a_2 \sum_{j=1}^{7} household_{it} + a_3 \sum_{j=1}^{2} basic\ infrastructure_{it} + a_4 \sum_{j=1}^{2} social\ infrastructure_{it} + \varepsilon_{it} \quad (1)$$

equation (1) explains that basic infrastructure and social infrastructure affect per capita income. Per capita income is used as the dependent variable in this study as a proxy for economic growth and social development. Increasing individual per capita income will reflect the well-being which in this case will promote economic growth and social development. In addition, the vector of household characteristics is also incorporated into equation (1) in order to see the effect in per capita income which can then provide

$$\ln(y)_{it} = a_1 + a_2 age_{it} + a_3 age^2_{it} + a_4 gender_{it} + a_5 size_{it} + a_6 educ_{it} + a_7 educ^2_{it} + a_8 asset_{it} + a_9 wage\_earnes_{it} + a_{10} place_{it} + a_{11} sanitation_{it} + a_{12} elec_{it} + a_{13} infra\_eduction_{it} + a_{14} health_{it} + \varepsilon_{it} \quad (2)$$

equation (2) is the transformation of equation (1) which describes the detail of the vector used in this study. Basic infrastructure as one of the independent variables used in this research is access to electricity and sanitation access. The use of variable access to electricity (elec) and sanitation access (sanitation) as a proxy of basic infrastructure due to basic infrastructure needed by the community in Indonesia. In addition, the use of social infrastructure in this study is proxy with access to health (health) and access to school (infra_education). The proxy of social infrastructure is access to health and access to schools in this study due to the accessibility of health services and education will improve the quality of society in Indonesia.

On the other hand, household characteristics incorporated into this analysis with the aim of providing an overview of the per capita income dynamics in Indonesia are proxyed with the following variables

- Age that occurred in household in that year. The likelihood of non-linearity in the effect of age on income per capita, then do the quadratic on the age variable. In the age variable

is expected the younger age of head of household can give increase to income per capita. While the age variable that has been squared is expected to have a negative relationship caused by the older age head of the household will provide a reduction in income per capita.

- Gender is the sex of head of household. Household heads with male sex are expected to have positive outcomes to income per capita.
- The number of household members (size) is the total member of the household. The use of the number of household members is due to the higher number of household members can negatively affect income per capita.
- Education (educ) is the level of education of the head of the household. The non-linieritas identification on the relationship of a head of household education with income per capita hence the need of quadratic. Heads of households with a young education that can be seen with variables without quadratic education expected to have a negative relationship to income per capita. In contrast to the head of a household with a higher education in which the variables of education with the quadratic have a positive relationship to income per capita.
- Ownership of assets (assets) is all wealth owned by households by index. The index used to describe the total wealth of households using Principal Component Analysis (PCA). The ownership of assets can reflect the level of income per capita.
- Wage earners (wage_earnes) are household members who have worked. The more the number of family members who work, then give effect to income per capita.
- The place is the location of a household residence that lives in urban or rural areas. It is hoped that it can be a comparison of income per capita of people living in urban and rural.

RESULTS

Basic Infrastructure and social infrastructure is one of the drivers of Sustainable Development Goals (SDGS). This is because infastructure becomes a key factor in increasing economic growth in various countries (Vijil, Huchet-Bourdon, & Le Mouël, 2011; Agénor, 2010; Palei, 2015). However, the poor quality of infrastructure is an obstacle to economic development (Gnade, Blaauw, & Greyling, 2017; Ansar, Flyvbjerg, Budzier, & Lunn, 2016). The reasons for the contribution of infrastructure in economic development are caused by the uneven availability and quality of infrastructure (Gnade, Blaauw, & Greyling, 2017, McRae, 2015; Bogetic & Fedderke, 2005; Jerome, 2011). The weakness of infrastructure contribution

makes it necessary to reassess the infrastructure potential in contributing to economic development and social development, in particular reducing the inequality that occurs. The results of this study that tested the contribution of basic infrastructure with infrastructure social can be seen in Table 1.

Tabel 1. Hasil Analisis Panel Least Square (PLS)

Variables	Coefficient and Significant
Gender	0,184* (0,000)
Size	-0,115* (0,000)
Age	0,681* (0,000)
Age^2	-0,008* (0,000)
Educ	-0,004** (0,062)
$Educ^2$	0,004* (0,000)
Indek_asset	0,657* (0,000)
Wage_earnes	0,503* (0,000)
Electricity	0,811* (0,000)
Sanitation	0,229* (0,000)
Health	0,186* (0,000)
Infrastructure_education	0,216* (0,000)
Place	-0,146* (0,000)
Adj. R-square	0,302

Significant *α<1% and ** α<5%

The vector of household characteristics used in this study indicates that the overall effect on income per capita with significant value smaller than alpha (α = 1% and α = 5%). Gender of significant household head to income per capita can be interpreted as head of household with male sex having important factor in increasing income per capita related to ability to increase wage rate (Wicaksono, Amir, & Nugroho, 2017; Mensah, Huchet- Bourdon, & Latruffe, 2014). In the number of household members who have negative coefficients, it means that more and more family members will negatively affect income per capita (Wicaksono, Amir, & Nugroho, 2017; Peichl, Pestel, & Schneider, 2010). The positive coefficients to the youth variable of the

household head and the negative coefficient to the elderly age of the head of the household explain that the young age to the household has the ability to increase income per capita but is different from the age of the head of the household whose income per capita will remain and will depend on pension savings (Wicaksono, Amir, & Nugroho, 2017; Mensah, Huchet-Bourdon, & Latruffe, 2014; Brandolini & D`Alessio, 2001). Education levels of household heads are also an important factor in income per capita. Low-headed household education has a negative effect on income per capita due to skill ability. In contrast to households with a high level of education, they have skills that can provide changes in income per capita.

The positive coefficients on asset variables explain that the wealth of a household makes a reflection of the high income per capita (Mensah, Huchet-Bourdon, & Latruffe, 2014; Cowell, Nolan, Olivera, & Kerm, 2016). The number of families who have income or have gained employment also has a positive coefficient which in the results of this study shows that income per capita can be increased due to the number of household members who have gotten the job (Wicaksono, Amir, & Nugroho, 2017). Place variables that have negative coefficients indicate that urban residence has an effect on increasing per capita income rather than living in rural areas.

Contributions to basic infrastructure viewed through access to electricity and sanitation as a whole have an impact on per capita income. A significant relationship between basic infrastructure and income per capita is seen from a significant value of 0.000 which is smaller than the alpha value ($\alpha = 1\%$). Access to electricity with a positive coefficient indicates that people who have access to electricity can have an impact on per capita income. Research conducted by Kanagawa & Nakata, (2008) and Maryaningsih, Hermansyah, & Savitri, (2014) explain that the quality of life of the community can be increased due to the easy access of electricity services. Ease of access to electricity access services can lead to improved welfare through improved health, education and environmental quality improvement (Niu, et al., 2013; Mensah, Huchet-Bourdon, & Latruffe, 2014). The important role of ease in accessing electricity can be a solution in reducing poverty by increasing the quality of life of people in the region of pedasaan and industrial areas (Pereira, Freitas, & Silva, 2010; Mazur, 2011).

Quality of life of the community by getting a clean environment will give effect to the welfare of the community which by this can give the ability of people in obtaining high income. Thus, sanitation infrastructure aimed at maintaining a healthy environment poses a role in affecting income per capita. The results of this study addressing the positive coefficients of sanitation infrastructure are evidence that people who have access to sanitation have an impact on income per capita. Research conducted by Barufi, Haddad, & Paez, (2012) and Soares,

(2007) explains that the availability of sanitation can have an effect on welfare by increasing life expectancy and decreasing mortality. The high rate of life expectancy accompanied by the improvement of health caused by the easy access of sanitation will have an effect on the ability of the community to improve their standard of living through the increase of income.

On the other hand, the social infrastructure that is proportioned with access to health and education as a whole has an impact on income per capita with a significant value of 0.000 less than the alpha value (α = 1%). Health and education services undertaken aim to improve the quality of life and human capital of society. Research conducted by Maryaningsih, Hermansyah, & Savitri, (2014) explains that the quality of community life can be seen through the level of access to health services and education that will give an impact to the overall competitiveness of the economy. Ease of access to health services will have an impact on the high proportion of healthy people who are thus driving the rise of community productivity (Kurt, 2015, Saha, 2013). Government spending on improving health has an effect on high life expectancy in OECD countries and will be a factor in increasing economic growth (Aghion, Howitt, & Murtin, 2010; Piabou & Tieguhong, 2017).

Educational services as a proxy of infrastructure social have an influence on income per capita through the increased human capital. The significant value of the education variable of 0,000 which is smaller than the alpha value (α = 1%) in this study indicates that people with access to education services have an influence on income per capita. The dynamics of income per capita depends on the level of education achieved (Dissou, Didic, & Yakautsava, 2016; Breen & Chung, 2015). Education becomes a solution to prosperity and reduces poverty caused by increased productivity and individual efficiency and increased skills (Gnade, Blaauw, & Greyling, 2017).

The results of the analysis in this study indicate that basic infrastructure and social infrastructure that has an influence in income per capita that will contribute to economic growth and social development through improvement of the quality of life. Thus the need for policies that need to be done by the government on each infrastructure. At the ease of access to electricity infrastructure that can be reached by every society in Indonesia both in urban and in the depth. Government policies that can be done in the ease of access services electricity infrastructure as follows.

1. The government needs to expand the electricity in various regions so that all islands in Indonesia are affordable

2. The government do pre-electrified people living in the interior and accessed far from electricity installations. Pre-electrification that can be done by the government with the procurement of Solar Energy Saving Lamp (LTSHE).
3. The government also needs to develop micro grid-off grid, a solar power system used for communities with access to remote electricity installations, but to live together in one area.
4. Providing targeted subsidies to the poor.

on the other hand, the government's policy on improving sanitation can be through several things done as follows

1. Expansion of rural sanitation access with cooperation between central government, local government and the private sector.
2. Capacity building for clean water and clean water management.

Different government policy formulation on social infrastructure focuses more on the funding concessions for poor people, although the government also undertakes improvements and development in remote areas. Centralization on funding issues is caused by a large proportion of people in Indonesia unable to access education and health services due to costs. Thus, government policies in the field of health and education are more to increase the appropriate assistance for the poor.

CONCLUSION

Basic infrastructure and social infrastructure in Indonesia in the results of this study show has an influence on increasing income per capita. In addition, household characteristics are also a factor in changes in per capita income. This income per capita increase will lead to better economic growth and social development. As a form of effort in improving basic infrastructure and social infrastructure in Indonesia, the government needs to make policies that can provide ease of access to infrastructure in both rural and urban areas.

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The Effectiveness of Village Funds and Local Government Expenditure on Economic Growth in North Maluku Province

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Abstract

The research aims to investigate the effectiveness of village funds and local government expenditure on economic growth in the Noth Maluku. The method using ARDL and Granger causality model in order to measure whether the allocation of village funds and local government expenditure have impact on local economic growth. The result shows that the village funds and local government expenditure have a significant impact on local economic growth, however it have not influenced on multiplier effect of local economic development. The results suggest that local government should focuss on allocated the government budgetting into the trade sectors so that it will drive the creating of local employment and stimulate the other main sectors.

Keywords : Village funds, Government expenditure, and economic growth.

1. Introduction

The relationship between government spending and economic growth has been an ongoing issue in the debate on economic development. "Wagner's law ([1883] 1958)" postulated that a country's government expenditure is elastic to the increase in national income and the ratio of government spending to income tends to grow with economic development. In addition, public goods and services provided by governments for non-military purposes, such as education, infrastructure, and law, are often regarded as important factors for economic growth (Wu, Tang, & Lin, 2010).

A well-known study by (Dollar & Kraay, 2002) has found that economic growth is good for the poor. Another finding is that the income of the poor is systematically linked to macroeconomic policies perceived as pro-growth policies, such as macroeconomic stability, low inflation, moderate government, healthy in monetary, openness in international trade, fiscal discipline, and respect for clear rules of law.

The same previous study (Dollar & Kraay, 2002; Ravallion, 2001; Wodon, 1999) concluded that there was no systematic trade-off or relationship between per capita income growth and income distribution inequality. Since per-capita income on average increases, the distribution pattern does not change significantly. The growth is more neutral or proportionately the same for all population groups. In other words, on average, poverty is proportionately divided based on the achievement of economic growth. The unchanged income distribution is not identical with no decrease in poverty. The poverty rate continues to decline, but the rate of decline in speed decreases.

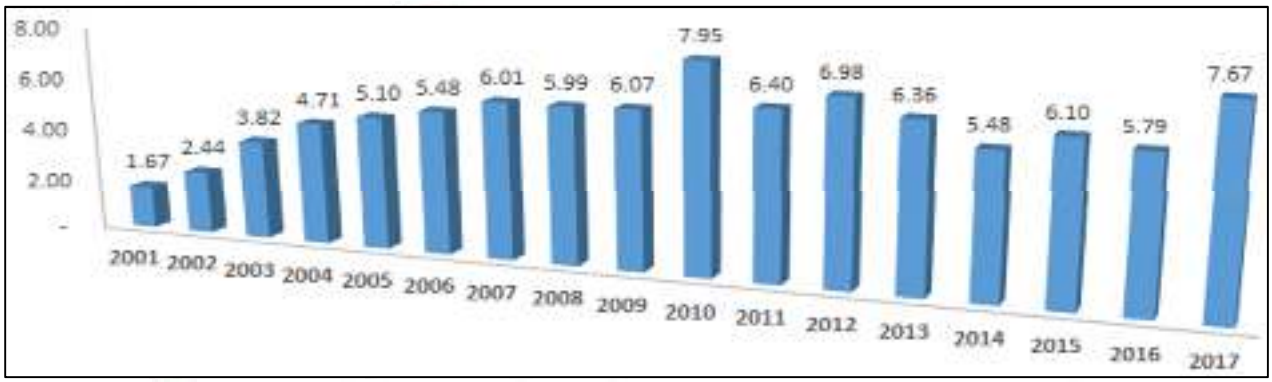
The Changes in social structure further require the involvement of public participation that will gradually strengthen social institutions in an effort to build community social resilience. Development activities should be accompanied also by the alignment of development budget allocation to support the progress of financing economic activities considered strategic. Selective

and measurable development expenditures are expected to be effective in mobilizing strategic economic sectors in increasing productive capacity in society as well as market catalyst instruments.

The market failure in allocating economic resources efficiently in generating public goods and services requires the government to take an active role through intervention. One form of intervention that can be done by the government is through budgeting policy mechanisms. According to (Musgrave, 1959), there are at least three objectives of budgeting policy through the use of fiscal instruments, namely ensuring regulation in resource allocation, the distribution of income and wealth, and economic stability.

In the North Maluku, there are various economic potentials either in the form of natural resources based on agriculture or marine and tourism. Much of these potentials have not been fully empowered in improving the region's economy. The various policies pursued through government expenditure allocations, including self-managed PNMPM funds, and more recently the village funds, have at least encouraged the economic growth of North Maluku to be relatively higher. This economic growth is above the average national economic growth. However, these figures are not fully followed by improvements in the socioeconomic real conditions of society.

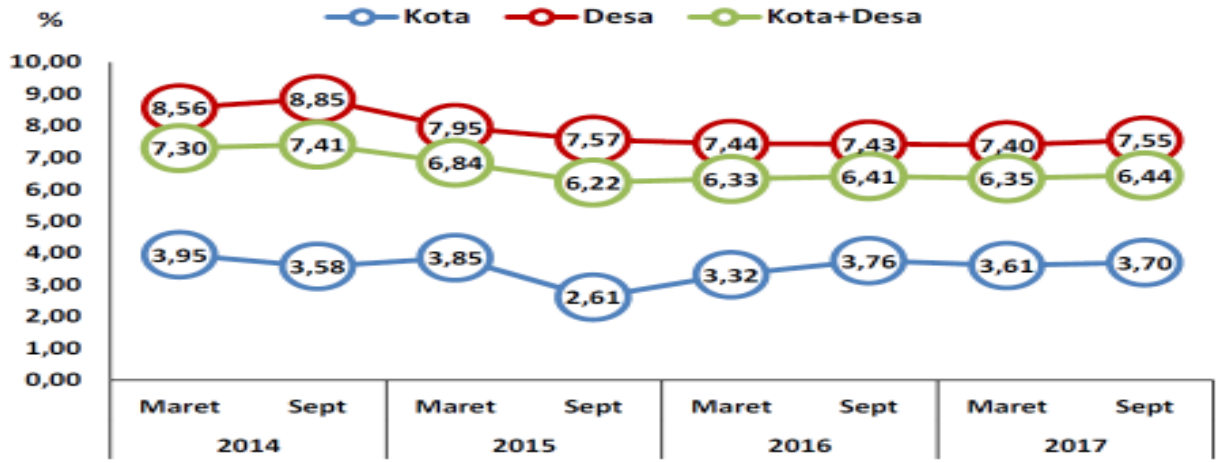
Figure 1. The Growth of PDRB



Source : BPS of North Maluku.

The pattern of relationships between government expenditure variables and economic growth has resulted in a number of diverse research findings. From the perspective of demand side, Keynes tends to see that public spending becomes a policy variable that can be used to influence economic growth (Ansari et al., 1997). In other words, government spending has a multiplier effect on income or output. While Wagner's Law (Wagner's Law), examining from the perspective of demand side and supply side, states that the increase in economic activity that occurred also affect the expenditure made by the government. Aspects of differences in each of the research findings are largely determined by location, type of data, method of study, as well as how the measurement of variables (Peacock & Scott, 2000).

Figure 2. The Number of Poverty Rate , City and Village



Source : Indonesia Bank, BPS of North Maluku Province.

Based on data from North Maluku BPS, the number of rural poor is still greater than in urban areas. The number of poor people who live in the village as much as 83.48% of the total number of poor people in North Maluku, or as many as 65.35 thousand people and the remaining 16.52% or as many as 12.93 thousand people live in urban areas. From that figure, the number of rural poor increased by 2.19%, while the urban poor increased by 3.86% compared to the previous year (Bank Indonesia, 2018)

2. *Literature Review*

The effort to measure the effect of Government activity on growth is demonstrated by Harrod (1939), which also provides some preliminary formal explanations of how this source of demand can affect the path of economic equilibrium growth. He stated that the government policy should be used both to stabilize the economy and to achieve higher growth (Salvadori, 2003).

As real income increases, in the long run, the share of public spending relative to national income increases. This public spending behavior is referred to as Wagner's law (Narayan, Rath, & Narayan, 2012). Following Keynes, public spending is seen as an exogenous factor that can be used as an instrument of government policy to influence economic growth. On the other hand, Wagner argues that government spending is an endogenous factor or a result, not a cause of national income growth (Ansari, Gordon, & Akuamoah, 1997).

The relationship between economic growth and government spending may be positive or there may be a negative or no dependence relationship from the effects of government spending as shown in the following table:

Table 1. The Relationship Between Government Expenditure and Economic Growth

Theories	Relationship	Reasons
Neo Classical	-ve sign of government expenditure	Due to crowding out of the private investment
-	+ve sign of government expenditure	If the govt. expenditure creates +ve externalities & linkages
New Classical	No relationship b/w govt. exp.& real income	New classical proposition of Ricardian equivalence hold

Source: (Attari & Javed, 2013).

(Wu et al., 2010), explains that a number of studies have been tested on the effect of government activities on economic growth on the assumption that there is an inverse U-link between the scale of government and economic growth (eg Ram, 1986; Dar & AmirKhalkhali, 2002). Hansson and Henrekson (1994) used separate data and found that government transfers, total consumption and spending had a negative effect, while education spending had a positive effect, and government investment had no effect on private sector productivity growth. Within the framework of endogenous growth, Barro (1990) predicts that unproductive government spending will lower GDP growth rates, while the effect of productive government spending on GDP growth rates is ambiguous, depending on how the government behaves and whether the spending ratios is too low or too much.

The two dominant main theories for seeing the link between government spending and economic growth are Wagner and Keynesian views. Starting a model that states that government spending is endogenous to economic growth, Wagner (1883) mentioned that economic growth can lead to expansion in government spending. Keynes (1936) on the other hand started the model by stating that during the recession period, economic activity can be driven by the use of fiscal policy. In other words, increased government spending, expansionary fiscal policies, among others, can spur economic growth. The Wagner model described the causality relationship from growth to government spending while the Keynesian model has the opposite view that the causality relationship starts from government spending on economic growth in the recession period (Anning, Haisu, & Riti, 2017).

3. Data and Methodology

The annual time series data covering the period 2001-2016 used in this study consisting of economic growth, measured by GDP growth that used the difference between GDP of the current year and the previous year at constant 2010 prices. Then the total data of public expenditure is the ratio of total local government expenditure to GDP expressed in terms of percent.

To estimate the relation between village funds and economic growth, we employ the annual time series data covering the period of 2007 - 2016. Due to the new village fund program was rolled out in 2015, the village fund data for the period prior to 2015 was proxy using BLM PNPM Mandiri fund covering period 2007 – 2014 while the village fund data covering the period 2015 - 2016.

3.1 The (ARDL) bounds test and ECM

According to Odhiambo (2010), The ARDL model used in this study can be introduced as follows:

$$\Delta Growth_t = a_0 + \sum_{i=1}^{K} a_{1i}\Delta Growth_{t-i} + \sum_{i=1}^{K} a_{2i}\Delta GE_{t-i} + a_3 Growth_{t-1} + a_4 GE_{t-1} + \varepsilon_t \quad (1)$$

where ΔGrowth is gross domestic regional product at constan price 2010; ΔGE is government expenditure of North Maluku Province and Δ the first difference operator; ε_t the error term.
The null hypothesis that implying no cointegration in the model is ($H_0 : \alpha_3 = \alpha_4 = 0$) against the alternative hypothesis ($H_1 : \alpha_3 \neq \alpha_4 \neq 0$). In the first step is tested by computing a general F-statistic using all the variables appearing in log levels. The calculated F-statistic is compared with

the critical value tabulated by Pesaran, Shin, & Smith (2001). The null hypothesis of no cointegration will be rejected if the calculated F-statistic is greater than the upper bound. If the null hypothesis rejected by bound testing and the existence of a long-run relationship between GDP and public expenditure confirm, we applied ECM model for determining the direction of causality between the variables. The direction of the causality is determined by the F-statistic and the lagged error-correction term. While the t-statistic on the coefficient of the lagged error-correction term represents the long-run causal relationship, the F-statistic on the explanatory variables represents the short-run causal effect (Odhiambo, 2009, 2010; Pahlavani, Abed, & Pourshabi, 2011).

3.2 The Toda-Yamamoto approach

To apply the Toda and Yamamoto (1995) version of the Granger non-causality test, we summarize the Growth–GE model in the following VAR system (Pahlavani et al., 2011):

$$y_t = \alpha_0 + \sum_{i=1}^{k+d\,max} \alpha_{1i} y_{t-i} + \sum_{i=1}^{k+d\,max} \alpha_{2i} GE_{t-i} + \varepsilon_t \quad (2)$$

$$GE_t = \beta_0 + \sum_{i=1}^{k+d\,max} \beta_{1i} GE_{t-i} + \sum_{i=1}^{k+d\,max} \beta_{2i} y_{t-i} + \varepsilon_t \quad (3)$$

The null hypothesis of no causality is not rejected if $\alpha_{2i} = 0$ and $\beta_{2i} = 0$, respectively. In The VAR system is estimated using a seemingly unrelated regression procedure (SUR). The lag structure of the VAR system is determined using Akaike Information Criteria and a standard Wald statistic, distributed as a Chi-square, is computed given a number of constraints (equal to the degrees of freedom) (Amiri & Ventelou, 2012; Pahlavani et al., 2011).

4. Empirical Results

4.1 Ordinary Least Square Model for Village Fund and Economic Growth

To measure the linkage between village funds and economic growth in North Maluku Province, a simple linear regression model is used.

$$Growth_t = \alpha_t + \beta_t Vfund_t + \varepsilon_t \quad \text{...} \quad (4)$$

Table 2. Ordinary Least Square Estimate for Growth and Village Fund

Dependent variable	Coefficient	t Statistics of Model	p-value	R^2
Growth	0.169	4.568	0.002	0.723

4.2 Ordinary Least Square Model for Government Expenditure and Economic Growth

$$Growth_t = \alpha_t + \beta_t GE_t + \varepsilon_t \quad \text{...} \quad (5)$$

Table 3. Ordinary Least Square Estimate for Growth and Government Expenditure

Dependent variable	Coefficient	t Statistics of Model	p-value	R^2
Growth	0.220	2.406	0.030	0.293

4.3 Stationary test

The time series properties of the variables in data, were checked through Augmented Dickey-Fuller (ADF) of Dickey and Fuller (1981) and Phillips and Perron (1988) unit root-testing procedures.

Table 4. Result of ADF unit root test

	ADF t-statistics			
Variable	Level	Inference	First differences	Inference
Growth	-2.895945*	S	-4.325377***	S
GE	0.017161	N	-3.211857**	S

***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.
Hypothetical experiment of ADF is based on the critical value of MacKinnon's (1990)
The lag length is based on Schwarz Info Criterion (1978)..
S shows stationary and N shows non-stationary

Table 5. Result of Philips-Perron unit root test

	Philips-Perron t-statistics			
Variable	Level	Inference	First differences	Inference
Growth	-3.548129**	S	-4.332392*	S
GE	0.039929	N	-3.217495**	S

***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.
S shows stationary and N shows non-stationary

In performing unit root tests, special care must be taken if it is suspected that structural change has occurred. When there are structural breaks, the various Dickey–Fuller test statistics are biased toward the nonrejection of a unit root (Enders, 2015). Perron (1989), for instance, has argued that the standard tests of the unit root hypothesis may not be reliable in the presence of structural changes (Gujarati & Porter, 2009).

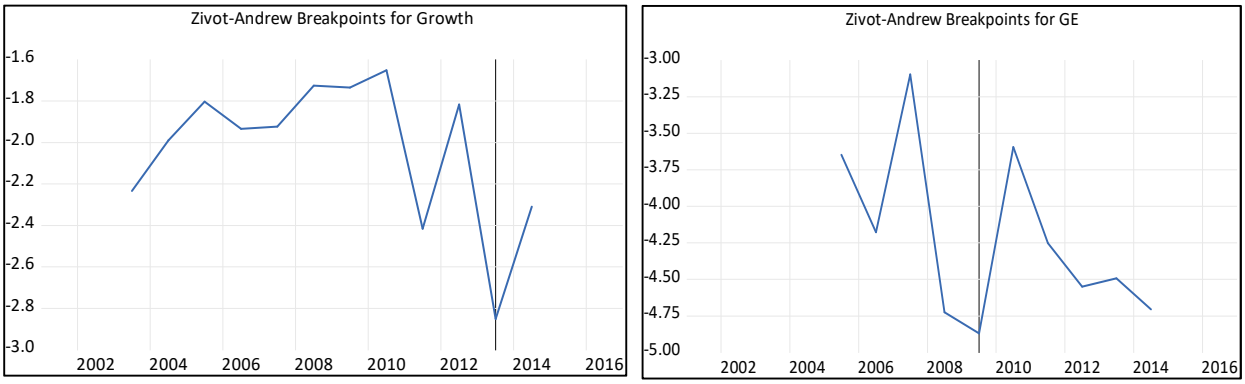
Table 6. Result of Zivot-Andrew unit root test (single break)

$$y_t = \mu^A + \theta^A DU_t + \beta^A t + d^A D(T_B)_t + \alpha^A y_{t-1} + \sum_{j=1}^{k} C_j^A \Delta y_{t-j} + e_t$$

Variable	Time break (TB)	Lag	t-statistics	Probability	Inference
Null hypothesis : Growth has a unit root with a structural break in the intercept					
Growth	2013	4	2.85	0.042137	N
Null hypothesis : GE has a unit root with a structural break in the intercept					
GE	2009	4	4.87	0.146445	S*

***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.
S shows stationary and N shows non-stationary

Figure 3. Time plot of t statistics



4.4 Cointegration test

Having determined that all series are integrated of order one (1), we proceed for the testing of cointegration in order to measure the long run relationship between government expenditure and economic growth. For this purpose, the ARDL-bounds testing is used to determine this relationship between two variables. The optimal lag for both equations (1) is obtained from using Akaike Information Criteria (AIC).

The cointegration test results reported in Table 5 show that economic growth as the dependent variable in equation (1) has an F-statistic value greater than the upper-bound critical value reported in Pesaran et al. (2001) which has a significance level of 5 percent. While the model that puts government expenditure (GE) as the dependent variable, the F-statistic count is also greater than the upper-bound critical value which has the 10 percent level. Thus based on the statistical rules, there is a long-term relationship between government spending and economic growth and otherwise at different percentages.

Table 7. Bounds F-test for cointegration

Dependent variable	F-test statistics	Long-run relationship	
Growth	6.209**	Yes	
GE	3.643*	Yes	
Breusch-Godfrey Serial Correlation LM Test:			
Obs*R-squared	1.444472	Prob. Chi-Square(2)	[0.4857]
Heteroskedasticity Test: White			
Obs*R-squared	4.136172	Prob. Chi-Square(9)	[0.9022]
Normality test: Jarque-Bera : 18.19704		[0.000112]	

***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

We tested the reliability of our models by applying a number of diagnostic tests, including tests of autocorrelation, heteroscedasticity, and normality. In general, we found no evidence of serious violation of all the above tests.

4.5 Analysis of causality test based on (ECM) for Economic Growth and Government Expenditure

According to Odhiambo (2010), after cointegration test and determining existence of the long-run relationship between variables in equation (1), we must capture the link of Causality between the variables by testing the significance coefficient of the lagged error-correction term (λ) and F-statistic. The ECM model can be estimated as follows (Pahlavani et al., 2011):

$$\Delta GE_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta GE_{t-i} + \sum_{i=0}^{n} \alpha_{2i} \Delta y_{t-i} + \alpha_3 ECM_{t-1} + \varepsilon_t \quad (6)$$

The results of estimated equation (4) are reported in table 8. The results show that there is no a causality flow from government expenditure (GE) to Economic Growth (Growt), that is, Wagner's law is not supported. However, show that there is a unidirectional causal flow from government expenditure (GE) to economic growth, that is, Keynesian view is supported.

Table 8. Causality test based on (ECM)

Dependent variable	Direct Causality	F Statistics of Model	t-test of ECM	R^2
GE	GE → Growth	2.298 [0.147]	-1.976	0.53
Growth	Growth → GE	7.47*** [0.008]	-3.696	0.58

*** denote statistical significance at 1% level

4.4 Non Causality test based on Toda-Yamamoto approach (1995)

Table 9. Toda-Yamamoto causality tests

Dependent variable	Excluded	Wald statistics (Chi-sq)	Prob.
Growth	Government Expenditure	0.375	0.5401
Government Expenditure	Growth	0.794	0.373

Table 10. Optimum order of the VARs (k)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-56.19625	NA	13.99197	8.313750	8.405044	8.305299
1	-38.67845	27.52797*	2.055204*	6.382636*	6.656518*	6.357283*
2	-35.12639	4.566934	2.308807	6.446628	6.903097	6.404373

Notes: AIC and SBC stand for the Akaike and Schwartz Information Criteria, respectively. Term k* is the selected order of the VARs. In the case of conflicting results between the AIC and SBC, we use the AIC results, as suggested by Stock (1994), Chiang Lee (2006) and Rufael (2010).

The results are reported in table 7 show that the null hypothesis that economic growth (Growth) does not Granger cause government expenditure (GE) is not rejected. Thus, Wagner's law and Keynesian views is not confirmed for North Maluku during the period of this study (not support).

5. Conclusion

In this paper, the cointegration and causality tests were applied to investigate the long-causal relationship between government expenditure and economic growth in order to investigate Keynesian view and Wagner's law in North Maluku on period 2001-2016. The bounds test approach to cointegration indicated that there was a long-run cointegrating relationship between public expenditure and economic growth. We then used three different long-run estimators, namely the ordinary least squares (OLS) estimator, Toda-Yamamoto (1995) non-causality test and using the bounds test approach to cointegration developed by Pesaran et al. (2001) to examine the impact of government expenditure on economic growth. We found that there is no a causality flow from government expenditure (GE) to Economic Growth (Growth). Our empirical fundings, not confirm validity Wagner's law in North Maluku economy. However, show that there is a unidirectional causal flow from government expenditure (GE) to economic growth, that is, Keynesian view is supported. There is an inconsistent relationship between cointegration and causality indicated by the Toda-Yamamoto non-causality test. It is caused by limitation in this study related to the number of samples and structural break problems in the observed data series.

for suggestion, the high economic growth that doesn't accompanied by structural improvements in the real sector of the economy lead to relatively high poverty and unemployment rates that is dominated by an educated workforce. It also indicates that there is a potential for mismatch skill in which a mismatch between the science in the world of education with the needs of the world of work. Therefore the growing quality economies should at least enhance employment accessibility, reduce inequality, increase per capita income and reduce poverty.

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MAPPING OF POTENTIAL ASSETS PANDANREJO VILLAGE: SUSTAINABLE LIVELIHOOD APPROACH (SLA)

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ABSTRACT

The Potential difference of each hamlet and being on the border of the urban growth center makes a shift in assets owned by the Village. It is important to know about 45% of households in Pandanrejo village livelihood patterns have changed. Because of this, the main purpose of this research is to know the potential of assets owned in developing regional and economic development in Pandanrejo Village, Batu, East java. This research uses quantitative method with Sustainable Livelihood Approach (SLA). Using this SLA, this research can reveal five aspects of capital from the entire household in Pandanrejo Village. Based on these five aspects, it will be known strategy in developing regional and economic development that is suitable to be applied based on the characteristics of the region in Pandanrejo Village. The main strategies that will be focused on : 1) institutional strengthening in optimizing the role of household Pandanrejo Village, 2) in the form of community empowerment through the potential and characteristics.

Keywords: regional development, sustainable livelihood approach, village potential, village characteristics

INTRODUCTION

Successful development at both national and local levels is an achievement of synergy between government and society. The synergy between the government and the community lies in the division of roles and work in planning and implementation in the field, so that the development process goes well. The success of such achievement will not be achieved optimally if there is no participation from the government and the community. Likewise on the contrary, the development process will also not be smooth if there is no government participation. The products of the resulting development must be perceived by the community. In addition to requiring participative participation from the community, the development process also needs the right strategy to achieve the achievement effectively and efficiently according to the development goals and can be sustainable.

Because, something that seems very good for the national is not necessarily good for the region, so is the opposite (Arsyad, 2009: 133).

In the implementation of the field, community involvement is the most dominant factor for the success of development. Society has a fairly central role as the subject of development and development object, so that its results will be felt well. Because society has a central role that is important enough, the government oriented its economic policy should be pro to the people, so that the benefits of development can be directly felt and can reduce poverty and inequality. Based on these macro conditions, pro economic policies to the people must touch down to the bottom of society in this condition is in rural areas. Pandanrejo village which has an area of 628,16 Ha is adjacent to downtown Batu. This provides a different condition than the surrounding villages far from the city, so Pandanrejo village into a region called rural-urban. The entry of Pandanrejo Village as a rural-urban area resulted in changes in social structures concerning livelihoods, social, and culture.

The number of population that reached 5,830 was recorded in this BPS, most of the livelihoods have shifted to non-farm. Comparison of agricultural area with non farm is 118 Ha and 134,30 Ha. The land for non-farming is 104.01, indicating that the land has become increasingly narrow for agriculture. Supported also with people's livelihood in Pandanrejo Village has many to self-employed, employees, and construction workers (Tukang). People who work as farmers live a little, because they want a certain income and large. However, when the survey obtained data that there are still people who are classified as less able (poverty). The hope of getting closer to the city can easily get better livelihoods. However, the poverty gap between communities in the region also still exists.

The closer to the city or the administrative center, the characteristics of the village will fade. Starting from economic, cultural, and social activities will be eroded by the influence of the city. The existence of Pandanrejo Village which is close to this city will affect the condition of the potential of capital owned in accordance with Sustainable Livelihood Approach (SLA) approach. The use of SLA is used because the community is the center of all activities to be able to have quality sustainability. Furthermore Oliver Serrat (2008) explains that, the sustainable livelihood approach (SLA) is the process by which rural families construct a diverse portfolio of activities and social support capabilities in their

struggle for survival and in order to improve their standards of livings. In the mid-1980s the Institute Institute of Development Studies (IDS) and the International Institute for Sustainable Development (IISD) developed the Sustainable Livelihood Approach (SLA) tool (DFID 1999). It is said that SLA is defined as the ability of social units to increase their assets under external influences (Castaneda 2000; Stephen et al., 2009). The SLA first sought to identify the important assets (physical, natural, human, financial, and social capital) associated with livelihoods (Masud et al, 2016).

With this SLA approach, community empowerment is carried out on a participatory basis by local communities who are moved to build their village. Potential region is the capital owned by the village include, human capital, financial capital, social capital, physical capital, and natural capital. Thus, SLAs should be seen in terms of a combination of local institutional design, developed more widely, structured, and as a basis for ideas (Hinshelwood, 2003). Each of the capital is a reflection of the SLA approach that will describe the condition of Pandanrejo Village in terms of poverty. Development programs that will be planned by the government should optimize and empower the potential of the region that refers to the culture and local wisdom to maintain harmony and harmony of development towards an independent village. Pandanrejo village that still exist elements of local wisdom is expected to be developed and harmonized with various communities in the region. Potential owned by Pandanrejo Village is divided into four hamlets located in Pandanrejo village. Each hamlet has its own potential adjusted to the characteristics of the region. Areas that are widely flowed by water, many agricultural areas and plants grown are vegetables. The existence of water as a source of agriculture is needed by citizens engaged in agriculture. Because it is the main source, the water used for farming each rice field alternates in flow. Some get the flow of water at night, some can turn in the morning, and some can turn the afternoon. Pandanrejo area for the three hamlets Ngujung, Dadapan, and Kajar has the potential of agriculture in the field of vegetables. Meanwhile, specifically for the hamlet Pandan specialization in the field of Strawberry. Even the hamlet of view is used as Strawberry tour.

Figure 1. The division of the region in Pandanrejo Village and its potential

Can be seen in the picture chart above, the division of potential areas in four villages pandanrejo village. In addition, in each hamlet there is a group of Farmers Group (Poktan) and a total of about 9 Poktans in Pandanrejo village (1 Gapoktan). Every citizen in the village is entitled to join or join in farmer groups in his area. In addition to farmer groups in this case is a group of farmers (gentlemen), there is also Kelompok Wanita Tani (KWT) which is a women's clothing farmer empowerment. Some move to secondary business (processing of agricultural products), some still retain primary (agriculture) with different fields of cultivation. Another characteristic of the pandanrejo village is that it is not a self-supporting village but a self-employed village, where there has been a flow of interaction from outside the village / city, labor, technology, outputs from the available.

RESEARCH METHODOLOGY

This study covers the scope of territory and material, the scope of the region includes Pandanrejo Village as the area under study. Meanwhile, for the scope of material covering the macro economic condition of Pandanrejo Village, its economic potential, and the problems of economic development in Pandanrejo Village.

The type of data used in this study is secondary data and primary data. Data collection method used by Documentation Technique, that is by collecting raw data obtained from organization and institution that exist in research area, both government and private (Muslimin, 2002: 23). Secondary data sources were obtained from the Central Bureau of Statistics and APBDes Desa Pandanrejo. while for primary data source through dept interview. In the implementation of the interview, the researcher uses interview guidelines to be directed and in accordance with the objectives. The method of analysis

used in this research is by way of expolrative and SLA approach to map the potential owned by Pandanrejo Village.

DISCUSSION

Description of Linkages Sustainable Livelihood Approach With Poverty in Pandanrejo Village (rural-urban)

Pandanrejo village when viewed from the style of life and its territory, the visible picture for poverty has begun to decrease. However, each hamlet area in Pandanrejo village has its own distinctive features and features in terms of rural poverty. When entering the hamlet pandanrejo, welcomed a banner that read "Welcome to the Village Tourism Strawberry Pandanrejo". Seeing such great writing in front of the entrance of Pandanrejo village, can represent the potential of the region in the village like what. The condition of the area in the hamlet of Pandanrejo is more towards urban rural, the resident community is already close to each other. In addition, community support facilities perform daily activities are also available. Thus, if we connect with the picture of poverty, it seems to be vague, and the standard of poverty will be different from other villages.

The community in the hamlet of Pandanrejo itself, in general from several samples of homes of people who visited, the condition of his house there are at least a motorcycle and television therein. Some residents also have a pretty good home in front of which planted hydroponic plants. It can be said that the shift of understanding of poverty in Pandanrejo village, especially the hamlets in Pandanrejo region is very different from the general village. Location pandanrejo which is the main route and to get to Batu Town, from there only 15 minutes. This is a very affect the condition of the village area pandanrejo. .

Communities in Pandanrejo village are mainly engaged in agriculture and trade and the private sector. Even in the hamlet of kajar, the farmers are getting fewer and can be counted on the fingers. They turn to trade, construction workers, or work in private. A lot of work in the agricultural sector is the community in the hamlet Ngujung and Dadapan. As for the income received the average population ranges from 1.500.000 -2.500.000 rupiah per month. Revenue of that size is used for daily consumption. For those who work in the

agricultural sector, such income can sometimes not be felt due to crop failure or selling price down.

Facilities for toilet and health support in the village area pandanrjo also been adequate. All houses in Pandanrejo village already have their own MCK. They went to the Puskesmas, but some of them were suitable at the doctor's practice or the mantri. Many of them prefer to pay rather than enjoy BPJS facilities. As well as the level of ability of the community to meet the clothing is also high, in a year they can buy more than 2 times the clothes.

Description of Mapping Suistainable Livelihood Approach Desa Pandanrejo (Rural Urban)

In order to illustrate how the condition and style of pandanrejo villagers, then in this case will be discussed about the five capital of the Sustainable Livelihood Approach (SLA). This general Gammbaran will be about the condition of the five existing capital and the factors that are the advantages possessed by the village area Pandanrejo. In terms of determining the five capital, this field study collects primary and secondary data. The main data were collected through questionnaires and interviews conducted to respondents who were family in the location where the field study was conducted.

Table 1. SLA Asset Levels Procession

No.	Asset of SLA	Prosentase
1	Human asset	90%
2	Financial asset	76,04%
3	Sosial asset	61,1%
4	Physical asset	79,2%
5	Natrual asset	89,3%

Source: data processed by researchers 2017

Based on data above the five capital depicts the efforts that can be done to integrate five models in order to be optimized by the empowerment of local communities. So when viewed based on pentagon SLA can be explained as follows in figure 2.

Source: data processed by researchers 2017

Figure 2. Potential of Pandanrejo Village With SLA

Based on the results of potential mapping with five capital from Sustainable Livelihood Approach (SLA), it is found that from the fifth highest capital is human capital with the highest level of 90%. This asset or human capital in the village of Pandanrejo is very prominent and is a major asset to develop the Pandanrejo Village area. Other capital with the highest capital is natural capital with 89.3% percentage followed by physical capital of 79.2% and financial capital 76.4%. Lowest is social capital with a value of 61.11%, this is very important for the city dwellers, villagers who have character. Furthermore Mardana (2014) explains that community empowerment with SLA culture culture is innovative and predictive in handling problems in the area. Addressing matters relating to issues that must exist in a robust strategy, can foster structural development, resource allocation, and empowerment of human resources (Sumodiningrat, 1999).

With the low value of the social community, the village of Pandanrejo began to decrease socialism with other societies. Things to do when conducting interviews with citizens, no information for public / defend. Compared to the villages that are still far from the city like in Gangsiran Puthuk Tlekung village, they are still very open and friendly in terms of information and information for information. This is in harmony with Per Becker (2017: 22) a familial attitude is very important and can not only help reciprocity and disseminated resources, but also for other work or contracts.

When viewed from financial capital with a value of 76.04% of villagers pandanrejo assume is able to meet the needs of life. However, the biggest income is from private workers or traders, so it has a fairly strong economy. Meanwhile, for farmers from the

financial side, it is found that their income is uncertain, so they besides working in the agricultural sector also work in other sectors such as trading, construction laborers, or farm laborers. Livelihood strategies tend to focus on income-generating activities and work patterns show that some respondents have more than one livelihood activity (Masud, 2016: 782). While in the natural capital sector, availability of land in some hamlets still exist, access to clean water is very affordable and easy. Consequently, this means ensuring that the assets and capabilities implicit in the SLA also imply the right to define sustainable livelihood goals, and not allow others to define this to adversely affect the local livelihood opportunities of people (Forsyth, 2007).

CONCLUSION

Based on the result of the research, it can be concluded that (1) the lowest potency of capital owned by Pandanrejo Village is 60% social capital, because the social structure of society has shifted its cause is the location of the village adjacent to the city, this can lead to the emergence of individual traits that later influence participative community in the development process. The highest potential of capital is human capital with 90%, it shows the ability of individual people in soft skill and hard skill is already owned because access to formal and non formal education very close to the area. (2) Community empowerment model is how to develop local community such as Kelompok Usaha Tani, Kelompok Wanita Tani, Karang Taruna, and other community organizations to support empowerment and economic development in Pandanrejo Village. This is in line with the SLA mapping results that those who should get serious attention are social capital whose value of the procession is below the other four capital.

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Impact Of Rural Development Program On Agriculture Production In Indonesia: IFLS Data Analysis

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Abstract

Indonesia is a very fertile agrarian country. Agriculture almost provides 40 per cent of jobs for the population. Ironically, agriculture is often identified with poverty. Farming is often engage with underemployment and become the last employment option for the job seeker. On the other hand, the ever-increasing numbers of Indonesian demand on food should be a potential market for the agricultural industry. However, domestic production and supply are often inadequate, forcing the government to import. The government is very vigorous in the construction of various infrastructure to support the development of agricultural field. Starting from the construction of supporting physical facilities such as irrigation to various training programs and capital. Therefore, this study will analyse the impact of various rural development programs that the Indonesian government has made on agricultural production in Indonesia. This study used two types of control variables to control the impact of the infrastructure development program. The first type is derived from the characteristics of farmers such as, various demographic characteristics and risk behaviour. Second is the control variable derived from the natural state such as geography and weather characteristics. The analysis used is panel data regression analysis on IFLS data. Based on the results of the analysis, we find that there is not enough solid evidence that various government programs are able to increase agricultural production. However, other results indicate that there is a tendency for people not to move to urban areas compared to before the program. This indicates a future opportunity to improve and resume various programs that have been implemented.

Keywords: impact evaluation, agriculture, development program, IFLS, regression

Introduction

Indonesia is a very fertile agrarian country. Agriculture almost provides 40 per cent of jobs for the population. Agriculture growth has a portion of about 13.56 percent of national economic growth. The portion is quite large to affect the change in economic growth significantly. But ironically agricultural business is often identified with poverty. Farmer often becomes last employment option for the job seekers.

Agriculture sector is deemed incapable of providing livelihoods, as is the case with existing industrial sector in urban areas. This then became one of the reasons for the migration of villagers to cities, from agricultural sector to industrial sector. Hetler (1989) states that with one family member working in the city, the household can change its economic level from poor to middle level. Maning and Pratomo (2013) also stated that the migrant population from the village first entered the informal business field in the urban area but then many of them were able to enter the formal business field, that successfully improve the family's economy.

On the other hand, the ever-increasing number of Indonesians needs enormous food that should be a potential market for the agricultural industry. But in fact domestic production and supply are often inadequate, forcing the government to import. The government is very vigorous in the construction of various infrastructures to support the development of agricultural business. Providing incentives to rural communities to do the agricultural business and not leaving the village to look for new jobs in urban areas. Various infrastructure development and supporting programs such as; irrigation to various training and capital programs have been conducted by the government.

The dependence on imported agricultural products has reached a very alarming level. The flagship program of the Government of the Republic of Indonesia in 2014-2019 is economic development starting from rural areas, which means the development of agricultural business. In order to support the government program to build Indonesia from rural area, we then study on the evaluation of development policies that have been done so far in the field of agricultural business.

The Data and Econometrics

Because of the focus of this research is the evaluation of infrastructure development program and financial aid program, the main data used in this research is micro data from Indonesian Family Life Survey (IFLS). The following is an explanation of IFLS data and econometric strategies for policy evaluation. IFLS data used in this study is from the fourth wave in 2007 and the fifth wave in 2014. IFLS data can be accessed via http://www.rand.org/labor/FLS/IFLS.html. Variables and data used in this research are as follows:

Table 1. Variable on IFLS Data

No	Variable	IFLS Data	Data Level	Section
1	Agriculture income	Book 2	HH	UT
2	Irrigation development	Book 1A	CF	D, E (E10)
3	Financial institution / programe	Book 1B	CF	G

4	Migration	Book 3A	Individual	MG
5	Agriculture income	Book 3A	Individual	TK

Based on two IFLS waves, we are then compiled panel data of individual level and household level (HH). The reason for the use of panel data between two periods (IFLS 4 and 5) is that most of the infrastructure development to be evaluated is the development undertaken during 2007 and 2014. Individual level of panel data will merge the Individual Revenue data from farming (TK) with irrigation development (D, E) at the community level, with the presence of financial institutions (G) also at the community level, and with migration decisions.

There are two econometric strategies used in this study, Instrumental Variable (IV), and Double-Difference (DD). The econometric strategies used in this study have been used in various impact evaluation literatures such as; Gertler et. Al, (2011), Khandker et al. Al, (2009), Angrist and Pischke (2009). The main strategy to be used in this study is DD, but specifically for the impact of the financial aid program will use IV. This strategy is used because farmers in choosing to use financial aid programs are not random. The regression equation for DD is as follows:

$$\boldsymbol{y = \beta_0 + \delta_0 d2 + \beta_1 dT + \delta_1 d2.dT + Others}$$

y = Desired results through Variable of Interest.
β_0 = Constants
δ_0 = After-Before effect on Control Sample.
δ_1 = Average Treatment Effect (ATE)
dT = Variable of Interest, 1= If there is an infrastructure development, 0= Others
d2 = Variable of Interest, 1= After treatment, 0=before treatment

Table 2 shows the number of funding developments in 2009-2013 for the 5 (five) programs, where the government allocates funds for supporting infrastructure development (Health Facilities, Education Facilities, Transportation, Sanitation, Agricultural Production and Agricultural Marketing) for villages through PNPM Infrastructure Rural (PPIP) and PNPM Regional Socio-Economic Infrastructure with total funds issued until 2013 amounting to 2.005 trillion rupiah for 188 sub-districts through PPIP program and 1.777 trillion rupiah for 237 sub-districts through the PNPM program of Regional Social Economic Infrastructure.

With such large funds allocated, rural infrastructure development is expected to improve the performance of the village economy, so that villagers can be comfortable in terms of community services as well as basic facilities such as road access facilities, sanitation facilities, educational facilities, health facilities and others impacts on improving business performance in rural areas that impact on the expansion of employment so that villagers can be empowered more and can help the village economy which will help to reduce the poverty rate in the village, so that villagers no longer see the city as the only place of prosperity to be but the village can also be viewed as a welfare place.

Table 2. PNPM Mandiri Funding 2009-2013 (Million Rupiah)

PNPM	Year				
	2009	2010	2011	2012	2013
PNPM Pedesaan	7.885.900	9.685.750	8.234.300	8.020.100	7.806.250
PNPM Perkotaan	1.849.615	1.156.425	1.218.600	1.414.733	1.391.317
PNPM Daerah Tertinggal Khusus	119.750	11.375	-	-	-
PNPM Infrastruktur Pedesaan	800.000	425.000	480.600	150.000	150.000
PNPM Infrastruktur Sosial Ekonomi Wilayah	355.500	355.500	355.500	355.500	355.500
Total Kecamatan	11,010,765	11,634,050	10,289,000	9,940,333	9,703,067
% PNPM Pedesaan	71.62	83.25	80.03	80.68	80.45

Source: *Pelaksanaan PNPM Mandiri Pedesaan, 2013*

Total infrastructure that has been built up to the year 2013 is 38,539 units with the allocation of funds from the government through the Community Direct Assistance (Bantuan Langsung Masyarakat) of 6.034 trillion rupiah and the fund

of village associations (swadaya masyarakat) amounted to 187.928 billion rupiah. Empowerment of rural communities from men, women and Poor Household Members (Anggota Rumah Tangga Miskin) to 44,467,075 people is empowered in village infrastructure development projects.

Through the publication of the Kementrian Pekerjaan Umum dan Perumahan Rakyat, through the PPIP and RIS-PNPM Program each program has handled 31,960 villages and 5,02 villages in terms of infrastructure development with details of the funds that have been conveyed during the period 2009-2013 as well as the Kementrian Pekerjaan Umum dan Perumahan Rakyat has informed the community and the stakeholders of the village (PPP) the results of the development of PPIP and RIS-PNPM programs and the community is expected to utilize and maintain the infrastructure already built, so that infrastructure can last long to spur the welfare of the villagers themselves.

The fifth IFLS, launched in 2014, discloses some data on rural development programs. Below is a list of government projects listed in the IFLS.

Developments (since 2007): Dummy Variable, 1 = yes, 0 no progress

1. Open a new roads
2. Construction of new roads
3. Construction of new health facilities
4. Construction of new schools
5. Introduction of electricity
6. Phone recognition (land line)
7. The phone can first be used in the village
8. Internet (eg opening of the first internet store)
9. Construction of irrigation
10. Market construction
11. Other infrastructure development

In addition to data on the types of development programs IFLS also notes on how the Village Development Fund is allocated in the relevant fiscal year (2014). Here is the type of village development:

1. Village company
2. Physical program

3. Social programs
4. Community Service Program
5. PKK
6. Others

Summary data on Village Development Funds allocated in the relevant fiscal year (2014) and dummy data of displaced persons from village kekota are presented in following Table 5.3.

Table 5.3. Summary of Migration and Logarithmic Variables Natural Village Development Funds

Variable	Obs	Mean	Std. Dev.	Min	Max
Migration to Urban	772	0.5505181	0.4977639	0	1
Ln(Village Expenditure)	772	19.7895	2.434404	4.584968	23.02585
Ln(Village Revenue)	772	13.33188	6.405486	4.584968	20.72327
Ln(Village BUMDES Revenue)	772	14.28952	1.519252	13.74294	20.72327
Ln(Village Phisical Prog.)	772	16.62712	1.723177	15.20181	20.72327
Ln(Village Social Prog.)	772	14.24769	1.97506	13.12236	20.72327

Impact of Financial Institutions and Village Development Programs

As has been disclosed in the research objectives that this study wants to know the impact of various government programs ranging from physical development to financial support to the development of the agricultural sector. Using the value data of the harvest (natural logarithm) as the dependent variable, the result of the OLS estimation is as shown in Table 5.4.

Table 5.4. Estimated OLS Determinant ln (farmers harvest value)

	(1)	(2)	(3)
VARIABLES	bols	bols1	bols2
Number of Financial Institutions	0.160***	0.129***	0.117***
	(0.0207)	(0.0210)	(0.0214)

Average distance between home and closest financial institutions	0.0294***	0.0306***	0.0330***
	(0.00377)	(0.00381)	(0.00396)
Various Variety of Village Development Program			
Ln(Vilage Exp.)			0.00775
			(0.0193)
Ln(pad desa)			0.00509
			(0.00751)
Ln(bumdes Revenue)			-0.0341
			(0.0300)
Ln(prog. Fisik)			-0.0511
			(0.0312)
Ln(prog. Social)			0.0220
			(0.0276)
Ln(Community prog.)			0.0525*
			(0.0279)
Ln(prog. Pkk)			0.0895**
			(0.0397)
Ln(Others prog.)			-0.0307
			(0.0284)
Farmer HH Characteristics	No	Yes	Yes
Constant	13.01***	11.09***	10.35***
	(0.148)	(0.621)	(0.854)
Observations	1,970	1,915	1,915
R-squared	0.064	0.086	0.096

standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

By using variables control of various characteristics of family workers in farming, it was found that the variable number of financial institutions and the average distance had a positive and significant effect on the value of farmers' harvests. This indicates the positive impact of the delivery of various final aid programs channeled through various financial institutions. However, the results

in Table 5.4 do not indicate any significant impact (only the PKK program) from various village assistance programs to support agricultural enterprises.

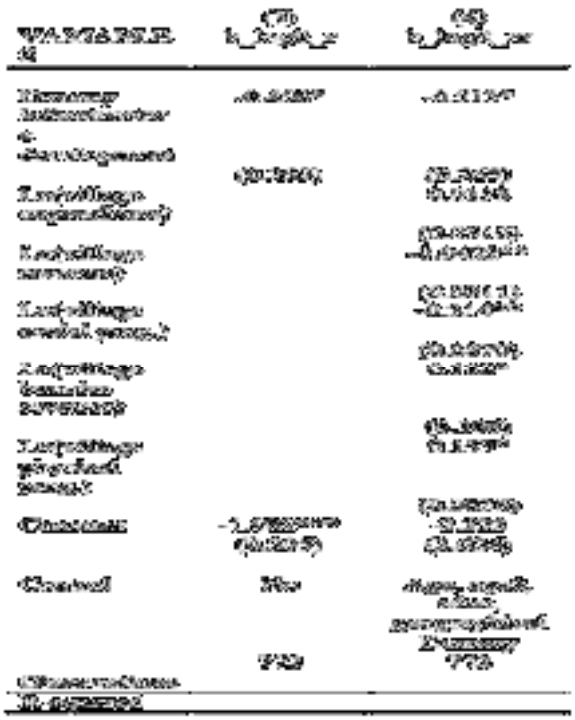
The Influence of Rural Development on the Probability of Population to Migrate

The results of estimates of various development programs especially those channeled through the villages, based on Table 5.4 have not shown the desired results. Therefore, in this research, it is also tried to see the impact of various programs on the tendency of the population to move / migrate out of rural areas. The results of estimates by regression and Probit and Logit are as follows:

Table 5.5. OLS Estimation of the Determinants To Move/migrate to Town

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5.6. Logit and Probit of the Determinant To Move/migrate to Town



Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5.4 shows the regression results with ols both with restricted and non restricted. Both models point to significant findings on infrastructure development that feeds on urbanization from rural to urban areas. Next use the probit and logit model as shown in Table 5.5. also found the existence of infrastructure development in a village causes the probability of the village community to move to the city, on average, reduced.

Conclusion

Based on econometric analysis that has been done can be drawn some conclusions about the findings of this research:

1. Infrastructure development has a significant negative effect on migration to urban areas, both in OLS and Logit models

2. Negative effects are also found on Social Programs, and Village income

3. Interestingly, BUMDES and physical programs have a positive effect

Suggestion

Based on the findings of this study, we can suggest that direct physical development programs undertaken for rural areas can be carried out or forwarded. However, although this study does not involve management variables and human resources managers, we can suggest that there should be improvements in the sector. The BUMDES variables and funding allocations to physical development that we have found have not been able to influence the population to move to the city or out of the agricultural field can be additional evidence to confirm the weakness of the country's direct development program.

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MODELING LOCAL GOVERNMENTAL EXPENDITURES FOR POVERTY ALLEVIATION IN INDONESIA

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ABSTRACT

The problem of poverty in Indonesia has become a classic issue that until now still needs to be explored to determine the solution of the response. The Indonesian poverty rate was 10.7% of the total population or approximately 27.76 million people in 2016. The poor of Indonesia live mostly in rural areas rather than urban areas. Until 2016, the proportion of the poor in rural areas reached 62.23% and urban areas by 37.77%. The Maluku and Papua islands are the highest percentage of poor people about 21.98%. This study examined the role of local government spending on poverty alleviation in their regions by used a quantitative approach. This explanatory research aims to find new ideas or relationships through hypothesis testing. The analysis involved variables of educational spending, health spending, infrastructure spending, as well as local revenues, gross regional domestic product with the dependent variable as the amount of poverty. The study used panel data from Local Budget Realization Report in 2011-2015. The results show that the government budget is still an important instrument for reducing poverty in Indonesia. Health spendings significantly affected the number of poverty in Indonesia during the study period with Prob>F=0.0240. This encourages the use of health spending more directed to the improvement of facilities, infrastructure, and health services. Education expenditure has no significant effect on the number of poverty in Indonesia with the value Prob> F = 0.975. The education system needs to develop an effective funding management and other stakeholder engagement. Infrastructure spending has no significant effect on the number of poverty with Prob> F = 0.7432. Implementation of compulsory infrastructure spending program that is allocated 25% from General Transfers Fund in 2017 still do not meet the mandatory spending of infrastructure.

Keywords: *Spending, Inequality, Prosperity*

I. INTRODUCTION

Indonesian poverty rate has reached in 10.7% of the total population or about 27.76 million people in 2016. Compared to 2015, the number of poor people is decreased by 0.25 million people. Furthermore, in 2014, the poverty rate also decreased about 0.75 million people compared to 2016. During September 2015 to March 2015 there was an increase in the number of poor people by 0.86 million. Dasgupta (2003) stated that poverty was a spiral path where a person trapped in the path of the path will be difficult to get out or even become inclined to enter.

The problem of poverty in Indonesia became the government program since several years ago. The government's commitment in the 5th Nawacita's agenda which was improved the quality of human life and the people of Indonesia. Subsequently reinforced by sub agenda of increasing prosperity of society through sustainable livelihood. The poverty involve various aspects such as social, economic, cultural, and other aspects that are multidimensional. Complexity extended to various community issues such as unemployment, social inequalities, and slums. So that, poverty was a difficult socio-economic problem (Gibsson, 2006).

The Indonesian poor people were living in rural areas is higher rather than urban areas. the number of poor people in rural areas reached 17.28 million while those in urban areas amounted to 10.49 million in 2016. Therefore, the government seriously solve the completion of poverty according

to the 3rd Nawacita by building Indonesia from the periphery with strengthening the regional area especially villages with the Unitary State framework.

Indonesia's diverse cultural characteristics and geographic contours have added the complexity of poverty. Poverty alleviation has been carried out by the government every year since the beginning of independence, but the issue still occurs. Poverty alleviation was a meta problem that required appropriate policies (Dunn, 2003). The Maluku and Papua regions have the highest percentage of poor people at 21.98%. Meanwhile the lowest percentage of poor people living in Kalimantan region was 6.45 percent. However, when viewed in number, Java region has the highest number for the poor population of 14.83 million people and the Kalimantan region has consistence of the poorest number of poor is 0.97 million people. Whereas Java region was the biggest contributor of Gross Domestic Product.

Regional characteristics across diverse regions resulted in the fulfillment of basic service needs not fully equitable resulting in high inequality. In principle, poverty alleviation efforts have been undertaken by governments with a variety of coping strategies. The trend of poverty figures for 2008 to 2016 shows a declining trend. Only in the period of March 2015, the percentage of poor people increased compared to the period of September 2104. The trend of poverty alleviation trend did not mean optimal poverty reduction strategy. However, at least government programs to tackle poverty have a positive effect on socio-economic conditions of the community.

The percentage of poverty in rural areas tends to decrease slightly compared to 2015 except for the area of Kalimantan which actually increased about 1.23%. The average percentage of poverty reduction in rural areas during the period 2015 to 2016 was about 0.64%. The government continued to build a commitment to poverty reduction and improving the welfare of communities in the periphery. One of them through the instrument of government expenditure in the form of distribution of village funds. The periphery was one of the development priorities to create income distribution.

For two years the implementation of village funds has at least provided fiscal stimulus for rural areas in carrying out the development and empowerment of rural communities so as to reduce socio-economic problems. Two priority using of village funds aimed at promoting the village economy and improving the welfare of the people. In other words, village funds are expected to become an instrument of poverty alleviation by suppressing unemployment and urbanization. Java

This study was an empirical study that aims to comprehensively review the related multidimensional poverty in Indonesia as well as its modeling with government spending. The government paid special attention to rural areas as areas with a greater proportion of the poor than urban. This step was also an effort to reduce the socio-economic imbalance of rural and urban so that can reduce the problem of poverty. Starting in 2015, the government has allocated village funds on the Village. Village Fund was one form of government efforts to build Indonesia from the periphery. His hope dissolved the socio-economic issues, the distribution of development and the improvement of the welfare of the village community. Until 2016, the proportion of the poor in the rural areas reached 62.2 percent and urban areas by 37.7 percent.

Poverty alleviation was still a government priority every year, including during the working Cabinet. Every citizen is expected to have a decent and dignified life. Measurement of poverty is an important factor as an effort to formulate poverty alleviation policies. Accuracy of poverty data was one of the supporting strategies of poverty reduction. Characteristics of poverty in the country of Indonesia stem from employment problems. The high level of unemployment in some areas triggered the problem of poverty.

The government budget is an important instrument in reducing poverty in Indonesia. The National Budget was focusing on poverty alleviation through social protection programs such as the hope family program, the expansion of non-cash assistance, welfare rice, food subsidies and the participation of state funds in supporting the business credit of the people. In addition to central government programs, transfers to regions and village funds included in the Local Budget are expected to be important instruments in reducing poverty.

Improving economic growth was expected to create an even distribution of income. These would encourage an increase in income per capita so as to reduce poverty levels. Based on data from BPS, approximately 63% of poor people feel in rural areas. Most of the poor work in the agricultural sector either as farmers or farm laborers. From the budget aspect, the Ministry of Agriculture have managed the largest assignment fund compared to other ministries. However, these allocations have not optimally created agricultural self-sufficiency and food security.

One indicator of the ineffectiveness of poverty alleviation programs was the deviation between the poverty budget allocation and the achievement of poverty reduction. One of the causes was that poverty alleviation programs spread in some ministries have not run optimally. Implementation of the program has not been separated from the issues of sectoral coordination, overlapping, partial, and management that need to be improved. Implementation of money follow program was expected to increase the synergy between ministries. Budgetary arrangements for local governments should also enforce the principle of money follow programs.

This review will examine the impact of local government spending on poverty reduction. Some of the research questions raised in this study include the following: whether education spending can reduce the level of poverty in the region, whether health spending can have an effect on poverty reduction, and whether infrastructure spending allocated to the local budget will reduce poverty. In addition to these matters, this study was expected to be able to answer questions related to the role of local revenue and Gross Regional Domestic Product in reducing poverty in Indonesia.

The issue of poverty has become an interesting issue for research. This issue continued to be the government's attention both at the central and regional levels. This study was expected to contribute to the authorized institutions of the central and local governments in evaluating poverty alleviation programs, consideration of the appropriate the local budget allocation policy to accelerate poverty reduction, as well as information and description to relevant agencies on the role of government spending to reduce poverty.

II. LITERATURE REVIEW

One of the variables in aggregate demand was government spending. If government spending increased, then the value of aggregate of demand increased (Mankew, 2000). Increased aggregate demand indicates economic growth. In developing countries, government spending still has limitations given the limited capacity of the private sector. One of the instruments to encourage economic growth is government spending. Improvement of economic growth was expected to reduce poverty. Economic growth was one of the indicators of community welfare. Adolf Wagner argued that there was an increasing trend of spending and government activities. Increased per capita income will be accompanied by a relative increase in government spending. Governments should regulate the relationships that arise in society, law, education, and culture.

Poverty described the condition of economic inadequacy in meeting the standard of living. The issue of living standards is related to the amount of income, inadequate housing, inadequate health care, and low levels of education resulting in low human resources and rising unemployment. One indicator of the standard of living of a country was gross national product. Causes of poverty boils down to the theory of vicious circle of poverty. The theory explains the underlying causes of poverty: backwardness, market imperfection, and insufficient capital. The low productivity has implications for the small income received. This condition would lead to weak investment and savings.

In general, the characteristics of poverty are characterized by the weakness of business ability and limited access to economic activities. This condition would lead to lagging of other societies that have higher economic potential. Supriatna (1997) suggests five characteristics of the poor who do not have their own production factors, have no possibility to obtain production assets with their own strengths, relatively low levels of education, generally no facilities, and lack adequate skills or skills. Understanding the characteristics of poverty aimed to determine the appropriate program strategy in tackling the problem of poverty. Efforts to reduce poverty should be aimed at cutting the cycle and trap of poverty.

Absolute poverty saw the minimum limit that must be had to obtain the minimum needs of a family. Families are categorized as poor if they have no income that can be used to meet their needs. The relative poverty compared the income of households or individuals with the average income of the population. This poverty illustrates the ratio of income imbalances. Poverty was characterized by an imbalance of income in society. This means that poverty persists as long as there is an imbalance in income.

Research on the role of government spending as a fiscal instrument in reducing poverty has become an interesting classic issue. Especially in developing countries in the world. Government spending has implications for the economic performance of the community. The framework raised diverse results about the impact of government spending. The result of Hermin Triyowati (2004) research showed that the expenditure of the infrastructure sector has a positive impact on the number of workers and has no effect on the decreasing of poverty level. This research used econometric model with multiple linear regression equation analysis. Variables used in the equation model are the number of poor people, infrastructure spending, agricultural expenditures, education expenditures, and health expenditures. The research was conducted in Province of Banten used the data range from 2001 to 2003.

Muana Nanga (2005) examined the effect of fiscal decentralization on poverty reduction in Indonesia. Poverty was a serious problem and was closely linked to economic growth and income distribution. The sample of study data was 25 provinces in Indonesia with the period of 1999 to 2002. The method used is the econometric equation which consists of six equation blocks namely fiscal instrument, output, labor, per capita expenditure, income distribution, and poverty. The results of the study indicated that fiscal transfers in Indonesia have an impact that tends to aggravate the inequality of income and poverty.

The research conducted by Usman (2006) analyzed the impact of fiscal decentralization policy on regional economic performance focused on income distribution and poverty level in Indonesia. The study sample included 308 areas aggregated into 26 provinces in Indonesia. The study data period was 1994 to 2003 which is divided into cross section data and panel data. Cross section data for 1994 and 2002 to determine the determinants of poverty, while panel data ranges from 1995 to 2003 to analyze the effect of fiscal decentralization on income distribution and poverty ralleviation. The equation used was econometric model consisting of 17 structural equations and 8 identity equations. The results of this study prove that government expenditure budget is the determinant of poverty reduction solution in Indonesia

Siregar and Faizah (2015) analyzed the effect of government spending and foreign investment on poverty levels in Indonesia. The study used secondary data for the period of 1970-2012. The analytical technique used is the vactor autoregression model (VAR). Granger causality testing showed that there was an influence of government spending on poverty. Government spending contributed 31 percent to poverty reduction.

III. RESEARCH METHOD

The study used secondary data that obtained by researchers indirectly and primary data to strengthen the results of secondary data analysis. The source of research data comes from publicly available and non-publicized information in the form of notes or reports submitted to authorized agencies. The researchers collected the data through the realization report of the local budget period 2011 to 2015. Research data included research variables, namely education spending, health, and infrastructure spending. While the poverty rate using data sourced from the Central Bureau of Statistics. Data collection is done by documentation through reports, publications, documents and other written reports.

The study population includes all local governments in Indonesia that manage local budget finances during the period 2011 to 2015 are a number of local governments. Determination of sample used method of full sampling. The sample was a total of 34 provinces that contain the entire district or city in Indonesia. The number of observation studied as many as 164 objects. The sampling

technique used non probability sampling in a way that did not provide the same opportunity or opportunity for each member of the population to be selected to be a sample.

This study used variables poverty, education spending, health spending, infrastructure spending, gross regional domestic product, and local revenue. Analysis used quantitative approach that is explanatory research to find new ideas or relationships through hypothesis testing. Tests used econometric model. The analysis technique used in this research was multiple linear regression testing to test the hypothesis. The results of multiple linear regression analysis were further interpreted in the discussion. Multiple regression models involved independent variables such as education spending, health spending, and infrastructure spending while the dependent variable was the amount of poverty. Based on the variables used, the equation model that is formulated was as follows:

$PR = \alpha + \beta_1 Edu + \beta_2 Hel + \beta_3 Ifr + \beta_4 Grd + \beta_5 LR + e.$

The amount of poverty represents the number of people who were below the poverty line. Education spending represented government spending on the education sector reflected in the local budget allocated to the education sector. Health spending reflected the amount of local government expenditure in the local budget allocated to the health sector. Infrastructure spending described the amount of government expenditure in local budget allocated to finance public works and infrastructure.

The Haussman test is used to determine the model including fixed effect or random effect model in panel data. The Fixed effect model indicates that the cross section unit was not correlated with other regressors. In contrast, the random effect model showed cross section units correlated with other regressors. The conclusion of this test was that if the value of significance was less than 0.05 then there was a significant influence between the independent variables to the dependent variable. Conversely, if the test results produce a significance value greater than 0.005 means there was no significant influence of independent variables on dependent

IV. RESULT

The variable of poverty has the lowest value of 152,388 and the highest score was 34,507,352 with the average value is 7,418,501 and the standard deviation level was 7,927,262. When compared to the standard deviation value with the mean value for that variable, the standard deviation has a value greater than the average value. Educational spending variable has an average value of 8,626,338 with the lowest value of 291,638 and the highest value of 30,887,647. This variable has a standard deviation value of 8,073,388.

Before performing regression analysis, classical assumption testing was required to determine the occurrence of violations of linear regression assumptions. This step was required to get Best Linear Unbias Estimator. Classical assumption tests would include testing normality, autocorrelation, heteroscedasticity, and multicollinearity. The normality test used The Shapiro Wilk Test gave the result of the calculation Prob> z is 0.057 or greater than 0.05. The conclusion was Ho accepted. This meaned the population data in this study was normally distributed. The sactter plot test showed the distribution of the data was located around the diagonal line region and followed the direction of the diagonal line.

Result of Shapiro Wilk Test

Var	Obs	W	V	z	Prob>z
e	164	0.90556	11.864	5.634	0.05741

Correlation test results with pearson product moment proved that between variables have correlation value less than 0.75. Based on the decision making criteria for the presence or absence of autocorrelation in the model, the result proved no correlation between variables. The conclusion was Ho accepted. These meaned no correlation problem occurs in the regression model. The result of Breusch Pagan Test to detect heteroscedasticity was Prob value> chi2 equal to 0.0617. This showed the value Prob> chi2 was smaller than 0.05. This meaned that Ho was accepted so that it could be

concluded there was no problem of heteroscedasticity on residual value. The conclusion that the research data was homocedasticity that meets the classical requirements of the regression model.

Result of Breusch Pagan Test

	Values	Decision
Chi2(1)	3.49	no heteroscedasticity

Overall for all independent variables in the regression model has VIF <10. The conclusion that Ho was accepted. The model did not contain multicollinearity between independent variables. The results of this test showed that the overall regression model avoids multicolinearity problems and meets classical assumptions. Hopotesis testing included two things namely partial statistical tests and simultaneous statistical tests for the overall research variables.

The result of testing of education spending variable to the amount of poverty resulted in the output Prob> F = 0.9756 or more than 0.05. The results of this test proved Ho accepted. This means no significant influence in the causal relationship. Education spending did not significantly affect the amount of poverty in Indonesia during the study period. Thus H_1 is not supported in this study. The coefficient of elasticity of education spending variable was -0.002 which shows negative value. This means that in the condition of ceteris paribus, the increase of education expenditure would decrease the number of poverty in Indonesia insignificantly throughout the study period.

Education spending continues to be developed to overcome the problem of poverty in Indonesia. The education system needs to receive adequate funding support from the government and other stakeholder engagements. Government funding support is reflected in the mandatory spending of education as follows :

Regional Composition of Mandatory Education Spending in 2017

Region	Numer of Regions	
	Less than 20%	More than 20%
Province	19	15
District	124	291
City	20	73
Total	163	379

Ministry of Finance, 2018

Currently, the regions that have complied with compulsory education expenditure of 20 percent of local budget were 379 districts. While regions that have not fulfilled the compulsory spending for education were 163 regions. Thus the proportion of regions that have met and not yet meet the compulsory education expenditure was 70:30. The largest area that has fulfilled the mandatory education spending was Sumatra region, while the least area that has not fulfilled mandatory spending in education was Java region.

Education spending has no significant effect on reducing poverty. Fulfillment of education spending at least 20 percent in the local budget needs to be pursued. The government has the freedom to create wider access for the community. Educated people will grow a professional workforce. This has implications for the addition of per capita income. Measurement of the quality of education not only stops at the size of the output of graduate students, but began to be developed towards outcome achievement.

Output of health spending testing with 95% confidence level is Prob value> F = 0.0240 or less than 0.05. The test results indicate Ho was rejected. There was a significant influence in the causal relationship of research variables. Health spending has a significant effect on the number of poverty in Indonesia during the study period. In other words H_2 was supported in this research. Elasticity coefficient value of health expenditure variable model is -0.211. The negative coefficient on ceteris paribus condition indicates that a one percent increase in health expenditure will reduce the poverty

rate in Indonesia as much as 0.21 percent. This study proves that the increase in health spending in the regions will affect the decrease of poverty in Indonesia.

Implementation of the health system would require funding support in the implementation. Based on Law No. 39 on Health, local governments are obliged to allocate 10% of total local budget for health spending. Local governments that have allocated compulsory health spending as much as 518 regions while local governments that have not allocated compulsory health spending amounting to 24 regions. Classification of local governments that have met or have not met the compulsory health expenditure are as follows:

Regional Composition of Mandatory Health Spending in 2017

Region	Numer of Regions	
	Less than 10%	More than 10%
Province	10	24
District	12	403
City	2	91
Total	24	518

Ministry of Finance, 2018

From the data we get that about 35 percent of the regions in Indonesia have fulfilled the health spending, while the remaining 65 percent have not met the 10 percent mandatory health spending in the local budget.

Health spending played an important role in reducing the number of poverty in Indonesia. Improving public health will encourage work productivity. This increase will increase the income of the people who ultimately reduce poverty. Governments should continue to drive the quality of health spending to produce better healthcare output. Increasing spending not only from the budget but also outcome achievement through several strategies. Social health insurance needs to be expanded so that people have easy access to health while taking into account the sustainability of medical personnel and paramedics.

The results of testing of infrastructure spending variables on the amount of poverty resulted in the output Prob> F = 0.7432 or greater than 0.05. Test results indicate Ho accepted. There wass no significant influence in the causal relationship of research variables. At a 95% confidence level, infrastructure spending did not significantly affect the poverty rate in Indonesia during the study period. In other words H_3 was not supported in this study. The infrastructure spending variable has a positive regression coefficient of 0.0297. The results of this study prove that infrastructure spending has no significant effect on the number of poverty in Indonesia throughout the study period. The implementation of mandatory infrastructure spending of 25% of the general transfer funds received by the region refers to the Law on National Budget Year 2017. Implementation has not been able to reduce the number of poverty during this year.

Local governments that have fulfilled infrastructure expenditures are 225 regions while local governments that have not fulfilled the compulsory health expenditure of 302 regions. The classifications of local governments that have met or not fulfilled infrastructure spending are as follows :

Regional Composition of Mandatory Infrastructure Spending in 2017

Region	Numer of Regions	
	Less than 25 % of GTF	More than 25% of GTF
Province	14	20
District	239	163
City	49	42
Total	302	225

Ministry of Finance, 2018

Based on the above table, as many as 43 percent of regions in Indonesia have fulfilled mandatory spending on infrastructure, while the remaining 57 percent have not yet fulfilled mandatory infrastructure spending of 25 percent of the General Transfers Fund.

Infrastructure spending still needs to get government focus to be able to contribute significantly in reducing poverty in Indonesia. The government's effort in requiring the local budget to allocate 25 percent of the revenue from the general transfer fund for infrastructure is the right step. Although only implemented in 2017, the government needs to oversee areas that have not met the minimum infrastructure spending. Should be in the medium to long term, infrastructure spending will have a positive effect on investment and economic stimulus. This will affect the welfare of the people and poverty reduction through the addition of employment and economic activity.

Based on the simultaneous test calculation, Prob> F value is 0.2019 or greater than 0.05. The conclusion that Ho is accepted. This means that variables of education spending, health spending, infrastructure spending, constant gross revenue domestic product, and local revenue did not have a significant effect simultaneously on the amount of poverty in the study period.

V. CONCLUSSION

The results of empirical testing conducted by using the OLS regression approach gave the government mandatory spending conclusion has an important role in reducing poverty in Indonesia, mainly the role of health spending. While education and health spending did not significantly affect poverty reduction during the study period. Education spending did not significantly affect the decrease of poverty in the study period with ceteris paribus condition. Education expenditure has a coefficient of elasticity of -0.002 with a 95% confidence level. A one percent increase in education spending would expect to reduce 0.002 percent of the total poverty in Indonesia.

At a 95% confidence level, health spending has a significant effect on the decrease in poverty in the study period under ceteris paribus conditions. Health expenditure variable test resulted elasticity coefficient value of -0.211. Every one percent increase in health spending is projected to reduce the poverty by 0.211%. Health expenditures could increase work productivity which implies an increasing income.

Infrastructure spending did not significantly affect the decreasing of poverty in the research period with ceteris paribus condition. Testing of this variable yields elasticity coefficient of 0.029. Infrastructure spending has not been able to reduce the number of poverty. These was due to the provision of infrastructure is still in the stage of development and implementation of mandatory infrastructure spending of 25 percent of the General Transfers Fund entered into force starting in 2017.

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THE ROLE OF SOCIAL CAPITAL IN POOR COMMUNITIES: A Case in Two Poor Rural and Urban Communities in Sragen and Surakarta

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ABSTRACT

This study came out from at least two opposite perspectives. On the one side, poverty seemed to be persistence in Developing Countries, specifically in Indonesia, and on the other side, social capital tend to be associated with various indicators of development. These two contrasting issues seemed to imply that a poor household or community might lack of sufficient level of social capital, and when it is true investment in social capital is a necessary policy recommendation

Based on this reason this study attempted to investigate the social capital of two poor communities both in a Surakarta's urban area and in a Sragen's rural area. By collaborating quantitative and qualitative approaches, this study identified following findings. First, bonding social capital in rural area tended to be stronger than urban area. This might represent the nature of social relationship between communalistic in rural area and individualistic in urban area, respectively. This strong bonding social capital has two contrasting effects of their poverty status. On the one hand, it was solid to mitigate rural poor into worse-off destitute status, and yet not strong enough to free them from poverty. Second, bridging social capital in urban area tended to be higher than in rural area. This showed that urban poor had a greater opportunity to be out of their poverty status should they be actively adjusted their attitude to positively responded to many poverty alleviation schemes offered by the government and other social institutions. However, urban poor had bigger risk to drop their status into destitute level in case they lost their jobs.

Keywords: *poverty, social capital, rural, urban*

INTRODUCTION

In recent decades, Indonesia has made level of economic growth as one of the benchmarks of development success. However, development-oriented economic growth could produce a biased result as to raise a new problem such as poverty (Kuncoro, 2010; Nasution, 2016).

In 2016, the Central Java Provinces' economic growth rate was 5.33% higher than the national level which was only 5.26%. However, success in achieving the rate of economic growth was not accompanied by a reduction in the percentage of the poor. The percentage of poor people in Central Java was 13.19%, significantly higher than the national poverty level of 10.7%.

The problem of poverty could be worsened due to differences in access to capital. Rustiadi et al (2011) illustrated that the role of the national as well as regional institutional arrangements were very critical. On the other hand, the capacity of community management in a region was determined by the levels of human as well social capita.

Institutional aspect was derived from the ability of the community to govern itself without any excessive government intervention. This was supported by the fact that social capital has proved to be able to improve the welfare and reduce the poverty of the community (Kamarni, 2012; Yamin, 2016). Social capital both structurally and cognitively owned by each region varied considerably (Lanno et al, 2012; Hofferth, 1998). This suggests that investment in social capital in every region might be an alternative policy in poverty alleviation.

LITERATURE REVIEW

Poverty is a social phenomenon, not only economic. It could be related to globalization, development, social and (Suharto, 2013). Therefore, efforts in poverty alleviation must be multidimensional.

Social capital as an institutional aspect becomes one of the efforts in overcoming poverty. Social capital is a social network that has value and social contact to influence individual and group productivity (Adler, 2000; Ostroom, 1999; Field, 2014).

Popular concept of social capital used by researchers is divided into two categories, structural and cognitive social capital (Uphoff, 1996; Bain and Hicks, 1998; Krishna and Shradder, 1999; Coletta and Cullen, 2000; Wiyono, 2013) and Bonding, Bridging and Linking (Szreter & Woolcock, 2004; Gitell & Vidal, 1998; Hasbullah: 2006).

According to Story (2013), Bonding, Bridging and Linking social capital is included in structural social capital. Meanwhile, according to Bain and Hicks (1998) the three forms of social capital is based on the value of solidarity so it included in cognitive social capital.

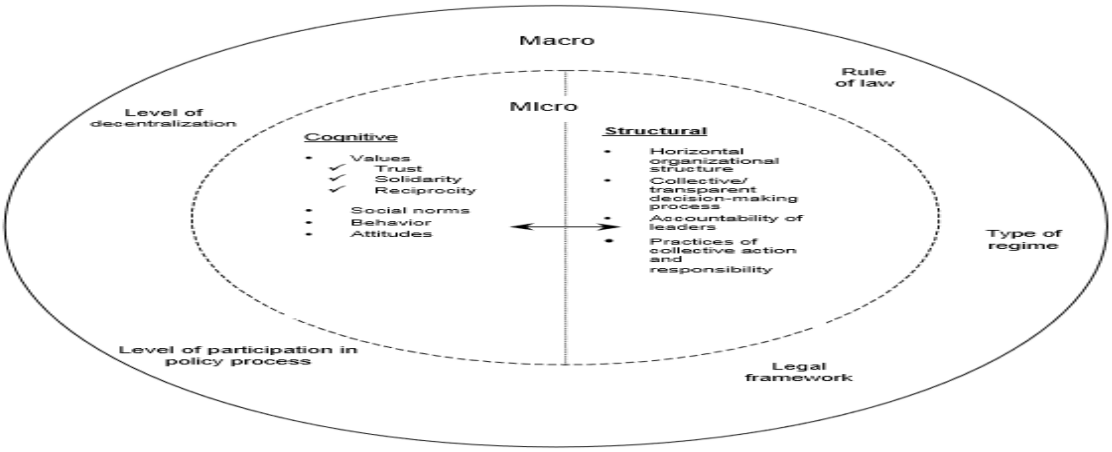
In contrast to physical capital and other forms of capital, social capital has an inexhaustible nature if used otherwise it will be exhausted when not in use, is not easy to observe and measure and has difficulty in establishing external intervention (Rustiadi et al., 2011). Therefore, the existence of social capital is important in the effort to overcome poverty problem.

This study uses the concept of Krishna and Shrader (1999) which is adopting the concept of Bain and Hicks (1998). In this study, Krishna and Shrader divide social capital into two levels: macro and micro. The macro level refers to an organizational institutional context that includes relationships and formal structures. While at the micro level refers to the potential contribution in horizontal organizations and social networks. This level has two types of social capital: cognitive and structural.

Cognitive social capital is the less apparent side of social capital, in social capital it refers to values, belief, trust, attitudes, behavior and social norms. While structural social capital includes the composition and practice of local institutions, both formal and informal, which serves as an instrument of community development.

Utilization of good social capital can help the government in overcoming poverty problem. Social capital has a positive effect in increasing per capita spending so as to reduce poverty. Social capital facilitates poor households benefiting from membership in social groups (Vipriyanti, 2007; Slamet, 2010).

According to Collier (2002) social capital can affect reduction in household poverty through three types of positive externalities. First, transmission of knowledge through others behavior, repeated interactions and mutual trust. Second, transmission of knowledge about technology and information failure. Third, reduce free rider problem.



Source: Krishna & Shrader (1999)

Figur 1. Concept of Social Capital in SOCAT

Not all parts of social capital can have a positive impact on life in society. Wiyono (2013) and Wiyono et al (2017) illustrated that social capital has both positive and negative sides. One of the causes of negative side of social capital is the existence of obligatory norms and behaviors. According to Portes (2000), value of solidarity requires community to behave according to prevailing norms. Continuous behavior can become a habit in a community. Thus, deviant behavior can also arise on the basis of existing habits in the environment.

RESEARCH METHOD

This study used a mixed methods with Concurrent Embedded approach. In this approach, quantitative method could either be the primary method or secondary method. This study chose Central Java as a province that has a fairly high percentage of poor people in Java. Research sample is poverty that happened in Rural and Urban area. Researchers selected Rural areas with the highest poverty cases from the six *subosukawonosraten* areas by looking at data on poverty over the past few years.

This process resulted in Sragen regency as the elected district, with poverty percentage 14,38% higher than Central Java poverty percentage 13,27%. Pursuant to purposive sampling, researcher chose Ngargosari Village as poor community in Sragen regency.

The Urban Area of Surakarta has the highest percentage of poor people in 2016 as much as 10.88%, when compared to other cities, Surakarta has the highest percentage of poor people than other cities in Central Java. Based on the 2011 Social Protection Program Data Collection (PPLS11), researchers chose Semanggi Pasar Kliwon villages as the poorest village in Surakarta City.

The type of data in this study consists of quantitative data and qualitative data. Quantitative data are structured interviews from 114 households in poor rural and urban communities. While qualitative data are results of in-depth interviews to specific and concerned informants.

Operational description of social capital refers to "Social Capital Assessment Tool" by Anirudh Krishna and Shrader.

RESULTS AND DISCUSSION

Structural Social Capital

A. Density and Organizational Characteristics

The type of organization that dominated in rural poor and urban communities was the credit / finance group in form of regular gathering of household. The group has a homogeneous character based on the same gender. The value of participation in rural poor community organizations is 48% and in urban poor community organizations is 44%.

The existence of such leaders raises top down decision-making. In contrast, urban poor community uses deliberation in decision-making. This makes the organizations' benefit in urban poor community is 98%, while in rural poor communities only 77%.

Therefore, the value of density and organizational characteristics in urban poor communities is 69% and the rural poor communities only 65%.

B. Networks and Supporting Organizations

Level of carefulness in rural poor communities is 90% and in urban poor communities areas is 94%. Supporting organizations that have the most role in overcoming theft problem in rural areas are the administrators of RT / Kelurahan by 58%. Jogoboyo ruled by village apparatus have a role in maintaining security and initiative to become a leader.

While in urban areas, all populations are the most supportive organizations providing a role in overcoming theft problems. However, the RT / Kelurahan administrator acts as an initiative to become a leader.

In dealing with the fight problem, both communities have similarities in assuming that the party who has initiative to become a leader is the village apparatus either in the form of RT / kelurahan or security officers..

C. Exclusion

Both poor communities are hardly any to consider that there are differences in group in community. Poor households in rural areas answered no more than 10%, while urban poor households answered no more than 15%..

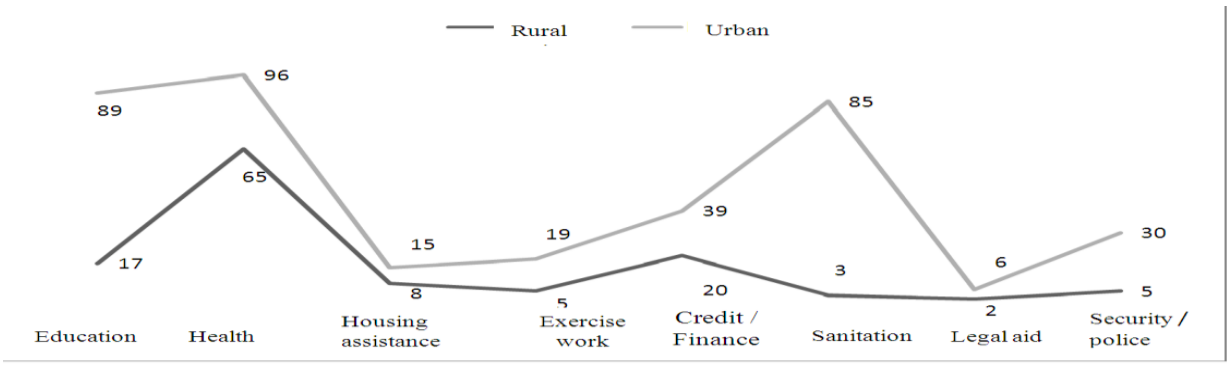


Figure 2 Differences in Group

Based on Figure 2, it can be seen that from all existing public services, urban areas are relatively better at access to public services than those in rural poor areas. The most accessible services in both communities are health services. This indicates that health

services in both communities are good enough because they can cover to all elements of society.

Access to education and sanitation from both communities has contrasted results. The obstacles faced by the community are not from school fees but from the affordability location of schools that exist only in Sumberlawang village. In addition, the motivation of the local community to follow the education is very low.

Access to sanitation facilities, most people in Rural areas do not have WC, but they use latrine *jumbleng*[1]. According to Wardhani (2016), the cause of Sambirobyong households cannot make latrines due to money issues.

D. Previous Cooperative/Joint Activities

The level of knowledge of submitting proposal in rural poor community area is 67% and in Urban poor community area is 62%. From each proposal submission, not all demands can be realized. From 90% of informants in poor rural communities, 42% responded that the demands of the proposals could all be realized. Meanwhile, from 69% informants in the urban poor communities, 43% responded that all claims filed can be realized.

In social activities, 28% of rural poor communities received invitations, and 10% of urban poor communities received it. Whereas in attending these activities, 27% of rural poor communities attend it, and 37% of urban poor communities attend it. This shows that the level of awareness of urban poor households in attending social activities is relatively better than rural poor communities.

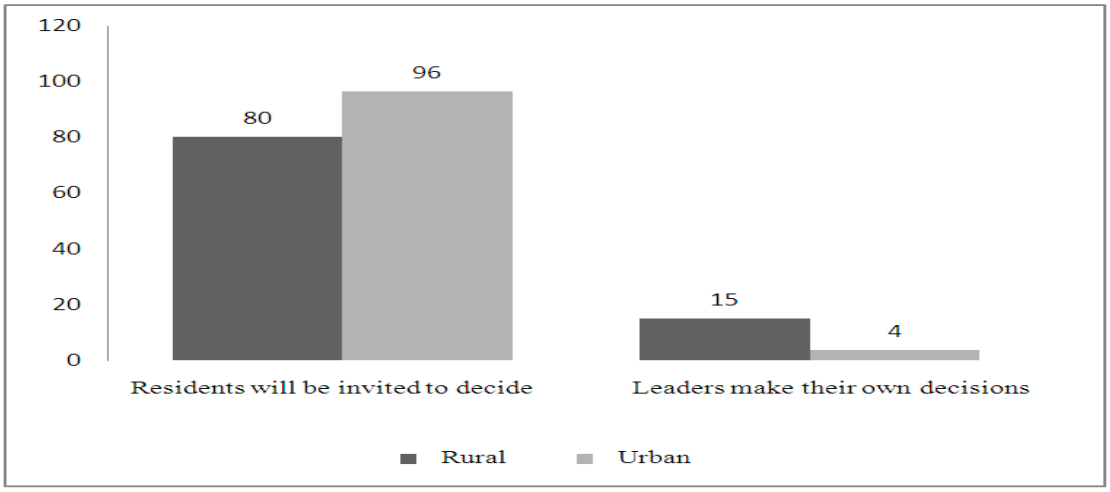


Figure 3. How to decide a cooperative/joint project

The way in deciding a policy can reflect the role of citizens in a cooperative/joint project. Based on Figure 3 it can be recognized that in deciding such a project, the urban poor community is relatively better than the rural poor community.

[1] Jumbleng: Simple self-made latrines in the form of hollowed soil and topped with wood or bamboo as a footing ground during a bowel movement.

Participation of community in previous cooperative/joint activities in rural poor areas is 61% and in urban poor areas is 72%. While the role of each household in maintaining the environment in both poor communities is 67%. Thus the value of previous cooperative/joint activities in rural poor communities was 51% and in urban poor communities was 54%.

E. Hypothesis Testing

Based on the normality test, the value of structural social capital in rural poor communities is 0.648> 0.05, it means that the data in the population has a normal distribution. Similarly, the value in urban poor communities is 0.710> 0.05, it means that the data in the population also has a normal distribution.

Whereas in homogeneity test, structural social capital has significant value of 0.698> 0.05, it means that both rural poor and urban poor community have same variant, so the hypothesis testing will use Independent T-test.

The result of the Independent T-test test, the value of structural social capital of signification (2-tailed) column for two side test is 0.590, where the probability is far above 0.05 or greater than 0.05.

F. Implementation of Structural Social Capital in Poverty

Structural social capital owned by the urban poor communities is relatively better than the rural poor. Communities with higher structural social capital make them to be wiser and comprehensive in decision-making process.

In terms of access to public services, communities with higher structural capital tend to have good access to public services. Whereas in terms of previous cooperative/joint activities, the urban poor communities are superior. This shows that the enthusiasm of community in general problems and social activities is relatively better.

On the other hand, if a community has a low structural social capital then the coordination in achieving village development goals will be hampered. The low structural social capital that exists in rural poor communities causes the resources of the government tend to not reach all elements of society.

In addition, the problems that exist in poor communities will be difficult to detect because the existing organizations in the community only comes from compulsory organization of the government, so that when the problems occur, people tend to be closed and in accordance with the government.

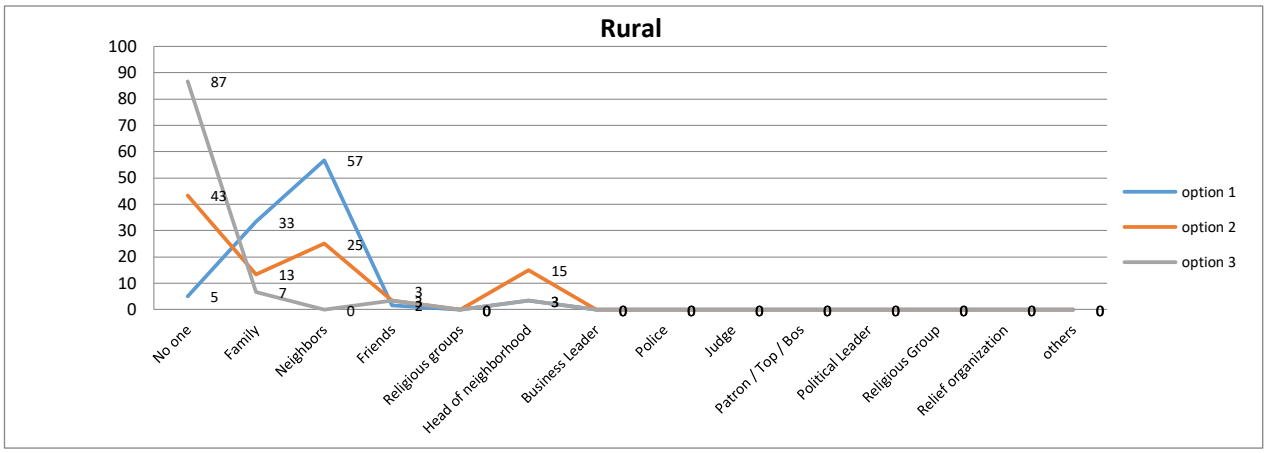
The lack of local organizations as a forum for the community to interact and discuss common problems is increasingly clarified with the conditions of rural communities who are busy with their activities.

Cognitive Social Capital

A. Solidarity

Almost all households in both communities indicated that there was a party to be assisted in cases of sudden death. While only 5% in rural poor communities and 2% in urban poor community assume that no one can be asked for assistance in this case. This shows that in both communities have a high level of solidarity.

In this case, 57% of households in rural poor community areas in first choice consider neighbors as a party to be consulted. While in the second and third choices the majority of



answers respectively by 43% and 87%. Parties who can be asked for help in cases of sudden death can be seen in the Figure 4.

Figure 4. Choice of Parties in Providing Assistance

Based on these three options, can be concluded that the neighbors become the most reliable party. The existence of neighbors as the *Bonding*[2] shows that the solidarity that exists among the people in the rural poor community is narrower.

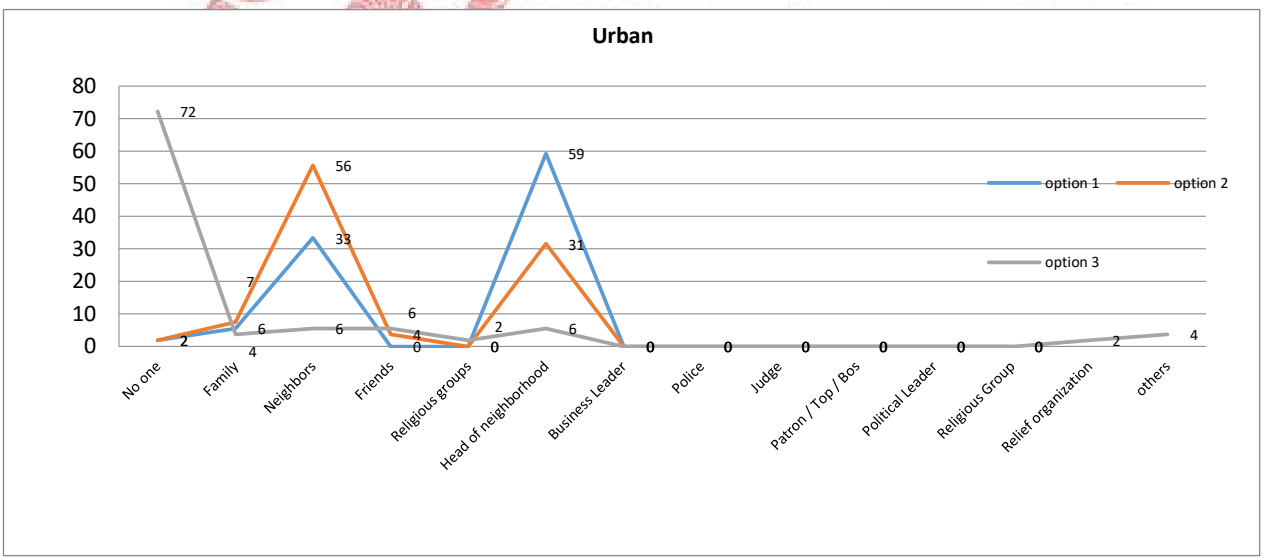


Figure 5. Choice of Parties in Providing Assistance

Whereas in urban poor communities the majority choice of first, second and third respectively by 59% of environmental group, 56% of family, and 72% of nobody. Based on Table 5 it can be seen that the head of the neighborhood becomes the majority answers in the choice of one in case of sudden death. The head of the environment is included in the

[2]*Bonding :* a social capital bond that shows people's relationships in similar situations like close relatives, ethnic groups, denominations, close friends and neighbors. (Woolcock and Narayan, 1999)

Linking[3] typology, resulting in relatively broader range of solidarity that exist in urban poor communities.

B. Trust and Cooperation

In case of borrowing money, the confidence level of rural poor households is 74%, relatively larger than the urban poor community of 64%. The high trust in rural is due to the close relationship and the same sense of equality among the people in the community.

The level of cooperation can be seen from peoples' behavior when leaving home and children due to traveling. Majority of households in rural poor communities or 46% of them entrust their homes to neighbors and not to anyone. While the majority of households in urban poor communities or 46% of them more entrust their homes to neighbors.

The level of cooperation in the rural poor communities rely less on neighbors in entrusting their homes, they prefer not to entrust their homes to anyone.

In addition, the bonds of cooperation that exists in community can be seen from the trust of citizens to entrust their children. Based on Figure 6, it can be seen that most households entrust their children to other family members. In this case, both communities show strong bonding.

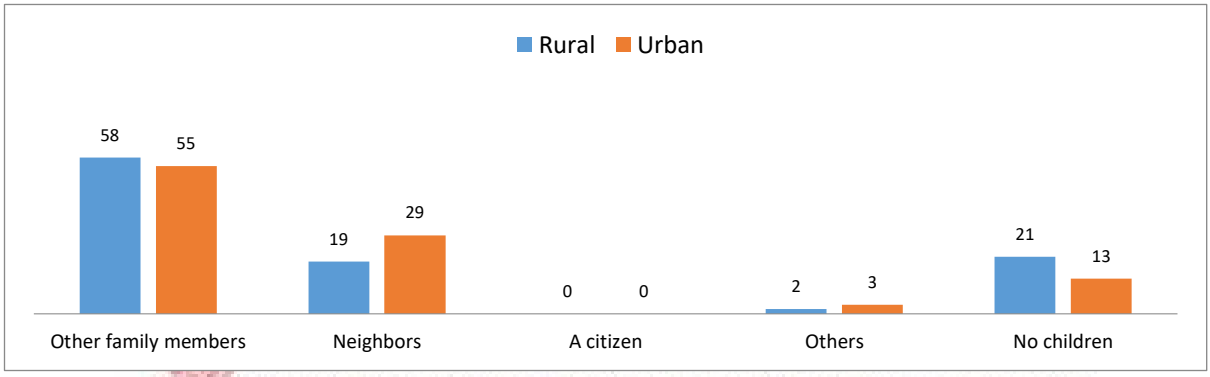
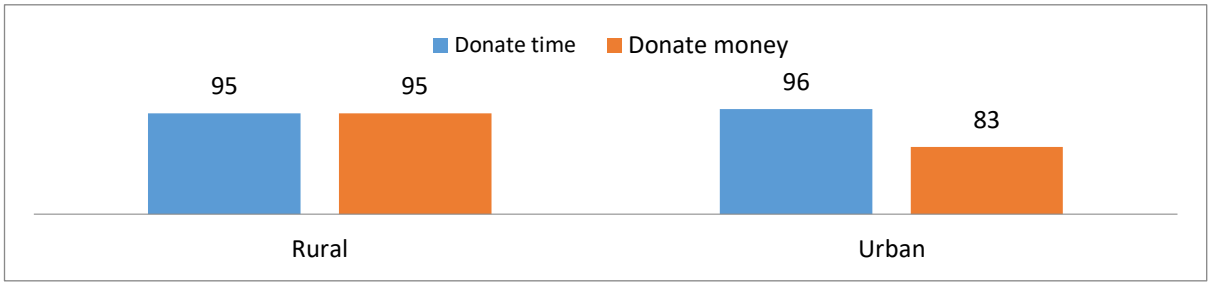


Figure 6. Choice of Parties in Cooperation

The value of unselfishness in rural communities is 60% and in urban community is 47%. In rural poor community, 70% of them consider people in community care about the environment. While in urban poor communities only 46% of them who are available to contribute time and money for projects that are useful for the community.



[3]*Linking* : the bond of social capital that reaches people who are very different, even outside their community. This form is usually provide access to organizations or systems that will assist communities in obtaining resources for change (Woolcock and Narayan, 1999).

Figure 7. Contribution for Donating

Based on Figure 7 it can be seen that households in rural poor communities are relatively more consistent than households in urban poor communities. Thus, households in rural poor communities are relatively more loyal than households in urban poor communities.

The highest level of mutual relationships in rural poor communities is accepted in RT members and trust in returning the falling wallets. Furthermore, the lowest act of mutual relationship is the level of selfishness that can be seen from the level of personal welfare awareness.

The highest level of mutual relationships in urban poor communities is the acceptance of membership in the RT. Furthermore, the lowest mutual relationship is apathetic to opinions that can be seen from the level of unresponsiveness to others opinion.

C. Conflict Resolution

The level of concord in rural poor communities by 78% is relatively larger than in urban poor communities of 74%. Rural communities consist of indigenous people who inhabit the area so tend to have a homogenous characteristic. The background similarity makes the same mindset, so the conflict or argument between people is minimal.

In terms of contributing time and money to joint projects, both communities showed similarity in the level of consciousness for donating, which is by 69%.

Based on Figure 8, shows that if there is an argument between people, rural poor communities rely less on internal parties such as family members and neighbors, but they rely more on others. While urban poor communities rely on family members by 11% and neighbors by 24%.

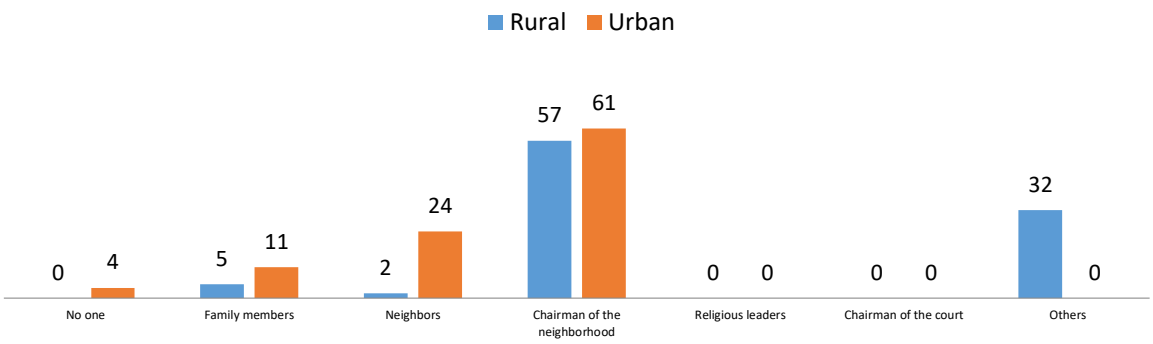


Figure 8. Consciousness for Donating

What is interesting for researchers is that in both communities nobody chooses to rely on religious leaders and court leaders to address the issue.

D. Hypothesis Testing

Based on the normality test, the value of cognitive social capital in rural poor communities is 0.157> 0.05, it means that the data in the population has a normal distribution. Similarly, the value in urban poor communities is 0.114> 0.05, it means that the data in the population also has a normal distribution.

Whereas in homogeneity test, cognitive social capital has significant value of 0.431> 0.05, it means that both rural poor and urban poor community have same variant, so the hypothesis testing will use Independent T-test.

The result of the Independent T-test test, the value of cognitive social capital of signification (2-tailed) column for two side test is 0.855, where the probability is far above 0.05 or greater than 0.05.

E. Implementation of Cognitive Social Capital in Combating Poverty

Cognitive social capital in rural poor communities are relatively larger than in urban poor communities. This benefits the rural poor community because high cognitive social capital causes the depth of poverty to be more stable. In this case, a sense of empathy and a sense of compassion helps the poor community in their difficult times.

In the context of development, cognitive social capital can be utilized in conducting village development. With high sense of empathy and awareness, then coordination to conduct the development will be easier, so that development will become more effective.

While in communities with low cognitive social capital tend to be difficult to intervene by the government. This because of the cognitive social capital is related to the sense, mental and consciousness that exist in each individual, so to improve this cognitive social capital takes a long time.

F. Negative Eksternalities of Social Capital

This study found that in both communities there was a negative form of solidarity in the case of the distribution of *raskin*[4] and *raskinda*[5]. The distribution process was conducted equally to all households in its area. They claimed that the distribution of *Raskin* and *Raskinda* was included in the form of solidarity between people in maintaining harmony. This form of solidarity could be regarded as the negative side of social capital, as the amount that should be accepted by poor families is reduced to create equality for others.

According to Portes (2000), the value of solidarity also requires people to behave according to the norms that exist in society. In this case, the head of *PKK* considers the distribution of aid was a demand of the majority community so that by distributing the aid equally will reduce conflict in community. Even so, this makes some people to feel disadvantage.

CONCLUSION

Statistically both communities both in terms of structural and cognitive social capital have no difference. However, when viewed in terms of qualitative conditions of poverty in both communities have differences. In terms of structural social capital, urban poor communities are relatively better than poor rural communities. The high structural social capital can coordinate easier for the community.

In terms of cognitive social capital, rural poor communities are relatively higher than urban poor communities. High cognitive social capital causes the depth of poverty to be more stable.

[4] Raskin : a program of poverty reduction and social protection in the field of food aimed at reducing the burden of household expenditure targets in meeting basic food needs in the form of rice. This program division is only addressed to RTS-PM listed in the Beneficiary List (DPM)..

[5] Raskinda : subsidized rice program, similar to Raskin, but managed by the Municipal Government (Pemkot) of Surakarta. Raskinda is a work program Municipal Government of Surakarta under the lead of Mayor F.X. Hadi Rudyatmo which was launched by the end of 2013

POLICY IMPLICATION

The government in providing assistance to poor communities should look at the spatial approach in existing community. In communities with higher structural social capital, it is required a regulation and sanctions to bind people in the context of social control.

In communities with higher cognitive social capital needs to be maintained and managed well, because cognitive traits can accelerate development in the community.

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Performance of Deconcentrated Funding to Support Regional Quality of Life: Evidences from Java and Sumatera Island

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ABSTRACT

One of the Indonesia government priority agenda in the National Medium-Term Development Plan (RPJMN) 2015-2019 is to improve the quality of life of Indonesia citizens. A main instrument of government presence is budgeting system. Indonesia Central government still has a good control for certain programs named deconcentrated program. This funding program could support regional development as far as there is a strong local government involve.

This research was conducted in two methods. The first method is descriptive quantitative method which elaborated the pattern of deconcentrated fund utilization and its relationship with the Human Development Index (HDI). The method used by describing at the scatter pattern of deconcentrated fund with HDI. The patterns are mapped in four quadrants showing areas of high deconcentrated fund and high HDI, high deconcentrated fund but low HDI, low deconcentrated fund and low HDI, and areas with low deconcentrated fund but HDI is high. These findings imply the presence of appropriate fiscal policy to promote the best outcomes.

The second method is done by examining the performance of deconcentrated fund to support regional development. Performance measurements apply the Data Envelopment Analysis (DEA) model. This technique is applied to obtain the optimum performance weight of deconcentrated fund and fiscal capacity of the region to obtain high HDI and low poverty level. The results show different performance weight variations across regions. In the DIY region, the performance weight varies from 73.90 to 100. The performance weight variation in East Java areas reaches 33.30 to 100. In South Sumatera Province, the performance weight reaches 35.50 to 100 and the performance weight in West Sumatra Province reaches 69 - 100. Measurements in each province are conducted to see the specific behavioral characters in each region. These findings indicate that regional fical capacity still varies greatly.

An important issue that must be considered in the development of the region is related to how increase local revenue capacity. Regions that have geographic advantages should be able to advance these potential for fiscal strenghtening. The efficiency of deconcentrated fund allocation also still requires further sustain management. The combination of regional fiscal capacity and deconcentrated fund should be able to push regions better over time.

Keywords: fiscal, regional development, intergovernmental funding

1. Background

The presence of government to support local government is very necessary considering the fiscal strength in the region has various power. Musgrave and Musgrave (2000) emphasize that the government is obliged to carry out its role for three things namely to distribute income, create stabilization and provide public goods. Fiscal strength is one of the important instruments to provide good and quality public goods / services. On the other hand, public goods and services will contribute to the creation of welfare through the opening of wider opportunities and access for all citizens.

The central government provides support to regional development through public finance. One of the most popular forms is to give wider authority called fiscal decentralization. The vastness of Indonesia and various programs / activities make the central government still desperately needed its

presence especially in supporting the fiscal area. There are several known forms of transfer in Indonesia in the form of general allocation funds, special allocation funds, tax-sharing, village funds, special autonomy funds, and deconcentration funds. The section to be studied in this paper is a deconcentration fund that is recognized as a central government instrument to oversee its programs in the region. Deconsetration funds are a new form of extension assistance by the central government to support efforts to achieve national development objectives. Almost all transfers in the form of deconcentrated funds require the active involvement of local governments.

In practice, it can not be denied that there has been a bias implementation of this central and regional relationship. There are ministries / institutions that implement / fund decentralized affairs to the regions and vice versa there are also local governments that fund regional vertical institutions underlying the emergence of policies in the field of fiscal decentralization as set forth in Law 33/2004, article 108, as follows: deconcentration fund and the co-administration fund, which is part of the ministry / agency budget used to carry out matters of statutory law, is gradually transferred to a special allocation fund. Therefore, it is necessary to review the performance of deconcentration tasks especially related to the implementation of the decentralization principle through the mechanism of deconcentration tasks. It is an urgent scheme to synergize intergovernmental efforts, maintaining the achievement of national targets, especially aspects of improving the quality of life for all Indonesian citizens.

2. Aims

This paper is prepared for the following purposes:

1. Provide a detailed description of the relationship between deconcentration funds and the achievement of regional quality of life in cases in Java and Sumatra.
2. Measuring the regional fiscal performance represented by deconcentrated funds variable in supporting the quality of life.

3. RESEARCH METHODS

The scope of research

The limitations of this study consist of boundaries of objects and research areas. The intergoverntal transfer object is the deconcentration fund in the region. The choice of location of the region namely the districts in Java and Sumatra, considering the two islands into the western part region of Indonesia as the center of growth in Indonesia. On the other hand, in some of these areas also still have a proportion of uneven regional development which is characterized by the existence of areas that are categorized as underdeveloped regions. The selected areas to be the object of this study include the Provinces of South Sumatra and West Sumatra (representing the island of Sumatra) and the Special Region of Yogyakarta (DIY), and East Java Province (representing Java Island).

Method of collecting data

The data used in this paper are secondary data derived from regional financial statistics and literature in the form of documents of regional planning and central government. The collected data are then grouped, the reduction for a number of irrelevant data and information to the study and then presented in the form of matrices and graphics to be processed and analyzed.

Data analysis method

Data that has been grouped and organized by category is analyzed by two methods. The first method by applying descriptive statistics to show the relationship patterns presented in the scatter diagram. The pattern is to identify the relationship between the size of the de-concentration fund and the low Human Development Index which is an important indicator to measure the welfare of the region. In the second stage, the measurement of budget allocation of dekon using the data envelopment analysis using DEA Software Software (DEA-OS) is used. This performance measurement uses multi input and output
DEA can also be used in public policy performance analysis. The basic principle of the model is the ratio of output to the input which is then processed with linear programming dual model. The basic principle of the model used is the output optimization (HDI and poverty level) as an indicator of the

quality of life in the region by using input that is the fiscal capacity of the region (as measured by the ratio of income to expenditure) and the allocation of deconcentration funds in each region. The assumption used is the optimization of output ie the higher the achievement of HDI and the lower with limited resources region is said to be able to achieve optimal performance. Performance measurements will result in a 0 (inefficient perfect) weight of up to 100 (efficient). Measurements with this model will provide direction to regional performance with the concept of comparison between regions (peer groups per each province zone). Areas that achieve efficiency weights can be a reference for the region in each provincial group. Comparisons are always needed in regional development so that the region can be better over time in the management of fiscal policy. The basic equations of the dual model with the linear programming approach introduced by Charnes, Cooper, and Rhodes (1978) are as follows.

$$\text{Max} \quad \sum_{r=1}^{s} u_r y_{ro}$$

$$\text{Subject To} \quad \sum_{j=1}^{s} v_j x_{jo} = 1$$

$$\sum_{r=1}^{s} u_r y_{rj} - \sum_{j=1}^{m} v_j x_{jo} \le 0$$

$$u_r, v_j \ge \varepsilon > 0$$

This method is one of the evaluation tools to examine the performance of an activity in a unit of economic activity both in the private and / or public sectors. Sebayang (2005); Nugroho and Erwinta (2006); Kurnia (2004) suggests DEA is a mathematical programming technique used to evaluate the relative efficiency of a set of decision-making units (DMUs) in managing resources of the same type so that it becomes output the same type. The basis of this approach is derived from the thinking of the production function model in which each output achieved is influenced by the input. In principle, DEA method adopts a non-parametric approach based on linear programming (linear programming). DEA method is used to evaluate the performance of various units simultaneously by bringing peer group as reference(s) for units that have not achieved optimal performance.

4. RESULT AND DISCUSSION

The discussion will be divided into two parts. Firstly, the pattern mapping of high relationship low de-concentration funds with the achievement of HDI region. In the second part will display performance measurement results in each zone region. In the first part there are some findings that there is no definite pattern of positive relationship between deconcentration funds with the high HDI in the region in the short term. The areas that obtain higher deconcentration funds tend to be areas with HDI achievement below the provincial average in the case of Sumatra Island. Different patterns occur in Java where areas with high deconcentration funds also achieve high HDI. There are some indications of sustainability of deconcentration fund optimization to encourage the territory ie; the strong will of local governments, the availability of real local government support and regional planning integrated with the central government. Deconcentration funds are indeed extensions of the central government in the regions, but the sustainability of the program is heavily dependent on local government.

a. Role of Deconcentration Fund on Quality of Life in Sumatera Island

The achievement of quality of life in South Sumatera Province is already in good category with the achievement of HDI already above 70. The existing pattern shows that variation of deconcentration fund has not encouraged higher quality of life in the region. The regencies / municipalities in South Sumatera Province have above average HDI but with the Dekon Funds below average are Musi Banyuasin Regency, Ogan Komering Ulu Regency, Oku Selatan, Pagar Alam City, Prabumulih City, and Palembang City. While Kabupaten / Kota which has below average IPM and Deconcentration Fund is below the average is Ogan Komering Ilir, Lahat, Muara Enim, Musi Rawas, Banyuasin, Lubuk Linggau, Ogan Ilir, Oku Timur and Empat Lawang. Musi Banyuasin Regency is in quadrant 1, meaning that this district has above average IPM with deconcentration fund below average. Deconcentration fund pattern pattern with quality of life in the region can be seen in Figure 1 below.

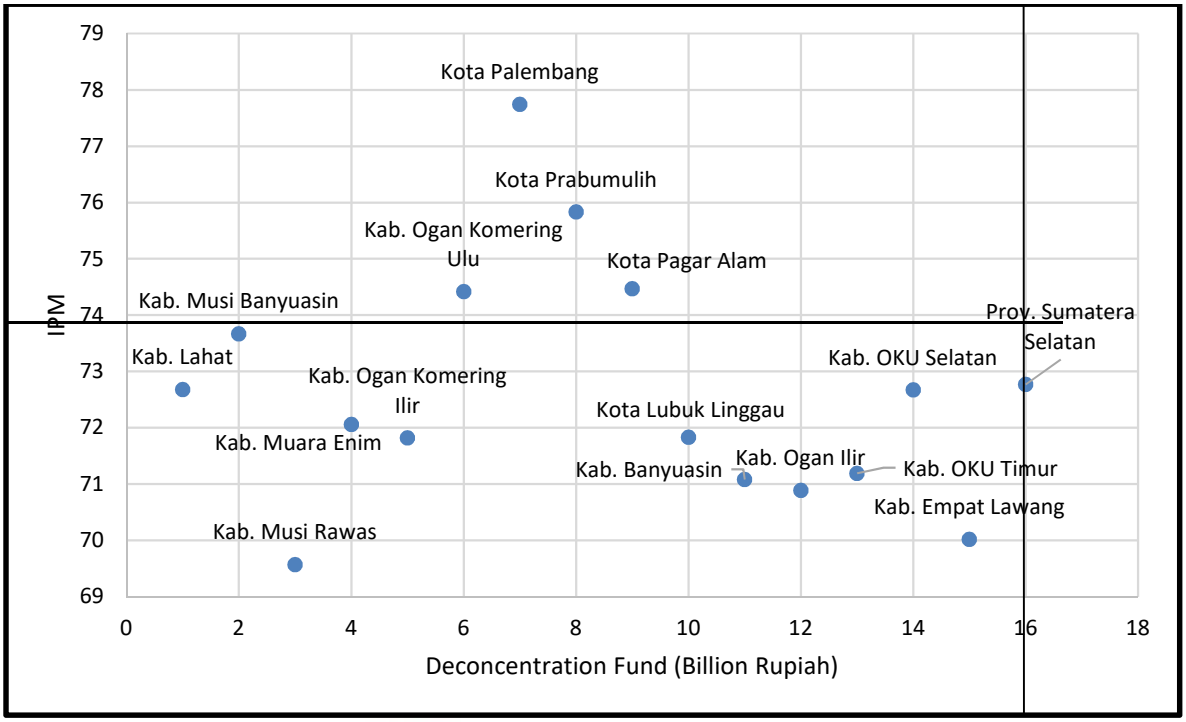


Figure .1
Pattern of Deconcentration Fund Relation with HDI in South Sumatera Province
(Source: Analysis Result, 2016)

Different patterns can be seen in West Sumatera Province. There is one city that is quite interesting namely the city of Padang. In this area deconcentrated funds are followed by achievements of quality of life near the very good category (almost 80). This region seems very attractive in the development of the region compared to other areas in West Sumatra Province.

Districts / Cities in West Sumatera Province which have above average HDI with deconcentrated funds above average are Agam District, Padang City, and Tanah Datar. Regency / City in West Sumatera Province with above HDI average with below average deconcentrated funds is Bukit Tinggi, Padang Panjang, Payakumbuh City, Solok, and Sawahlunto. Districts / Cities in West Sumatera Province which have below HDI average with deconcentrated funds above average are Padang Pariaman, Limapuluh Koto Regency, Pesisir Selatan Regency, Pasaman Barat. Districts / Cities in West Sumatra Province with below average HDI with below deconcentrated funds are also Pasaman, Pariaman, Sijunjung, Dharmasraya, Solok Selatan and Mentawai Islands. Pesisir Selatan District is a district located in quadrant 3, meaning that this district has below HDI average but deconcentrated fund above average. The pattern of relation between deconcentration fund allocation and quality of life in West Sumatera is

resented in Figure 2 below.

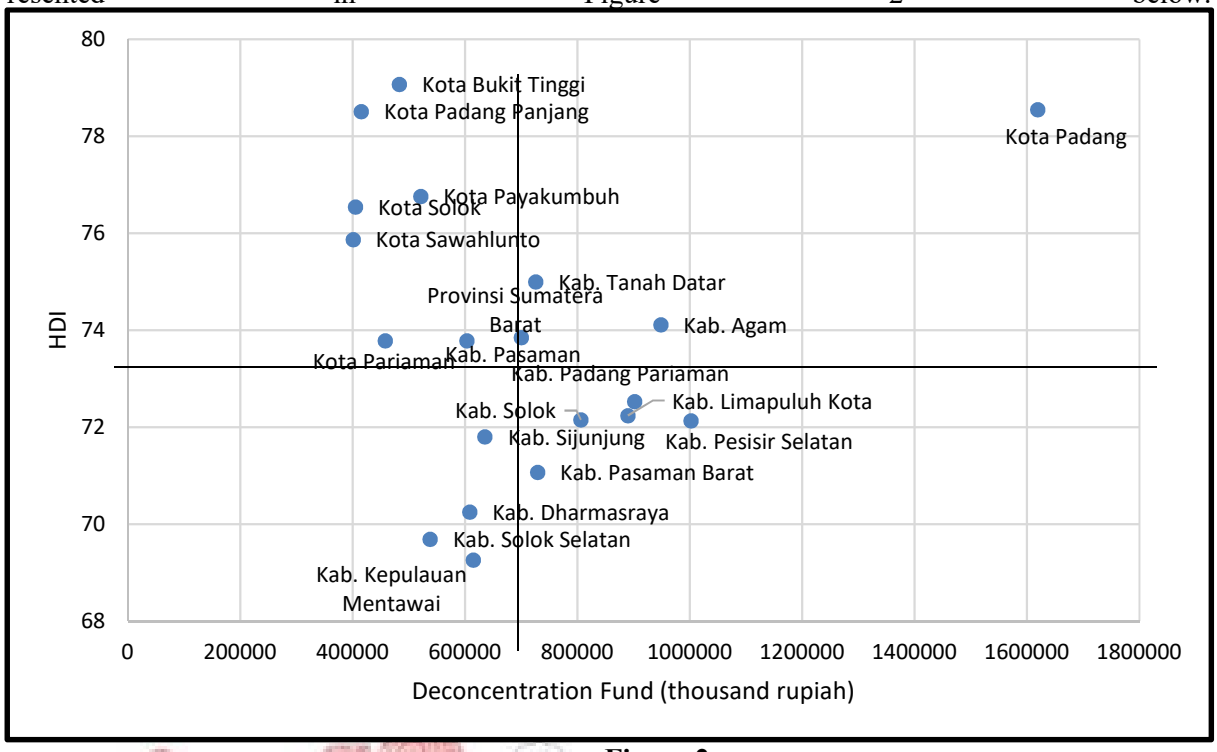
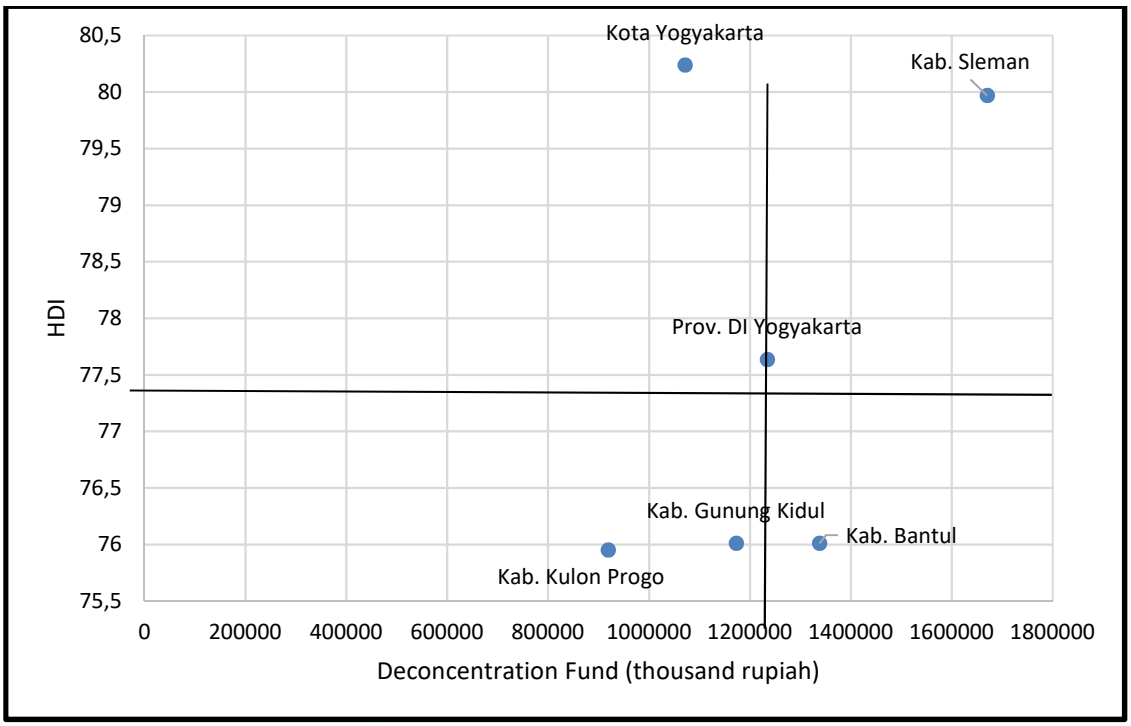


Figure 2
Pattern of Deconcentration Fund Relation with HDI in West Sumatera Province
Source: Analysis Result, 2016

b. Role of Deconcentration Fund on Quality of Life in Java Island

Java as the center of growth is an important barometer of economic progress in Indonesia. The high concentration of investment and population in Java makes this island as the largest agglomeration in Indonesia. Central government financing support is still needed in various regions in Java Island since the welfare gap aspect is still as major issue. In the case of Yogyakarta Special Region (DIY), concentration fund support is still relatively high with followed high achievement of HDI. It can be seen in Sleman Regency. Deconcentration funding support seems to be very well utilized to support the quality of life of the people of Sleman Regency well.

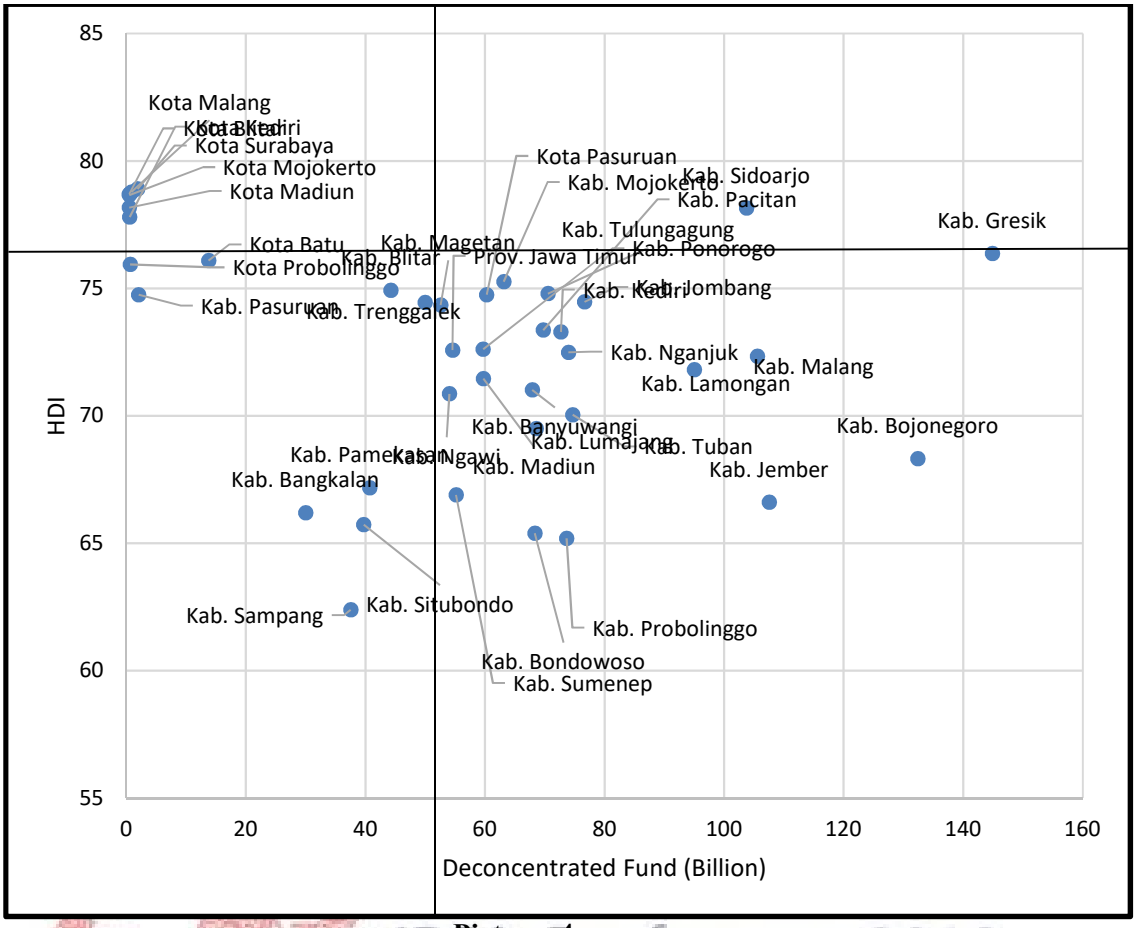
Regency / Municipality in Yogyakarta Province which has below HDI average with deconcentration fund above average is Bantul regency. Districts / Cities in the Province of DIY that have below HDI average with deconcentrated funds below the average is Gunung Kidul Regency and Kulon Progo Regency. Kulon Progo Regency is a district located in quadrant 4, indicating that Kulon Progo Regency has HDI and deconcentrated fund is below average. A description relationship of deconcentration and HDI in DIY Province is presented in Figure 3 below.



Picture. 3
Pattern of Deconcentration Fund Relation with HDI in Yogyakarta Province
Source: Analysis Result, 2016.

The figure indicates that the ability of deconcentration fund management to encourage regional development is still indispensable in various regions in DIY. Deconcentration fund is not the only aspect that supports the improvement of quality of life but the region can take advantage of the opportunity that good relationship with the central government as an alternative to build synergy development. Therefore, good vertical communication is required.

In the case of East Java Province, the area that is attractive enough to utilize deconcentration fund is Gresik and Bojonegoro regencies. This condition can support the improvement of the quality of life in the area indicated by the achievement of HDI which is relatively higher than the average of East Java Province. At the same time there are areas that are not so attractive using deconcentrated funds for regional development with HDI achievement below the provincial average such as Sampang and Sumenep. This requires a strong effort for local governments to build strong relationships with the central government to support regional development. The pattern of relation between deconcentration fund and HDI in East Java Province is presented in Figure 4 below.



Picture. 4
Pattern of Deconcentration Fund Relation with HDI East Java Province
Source: Analysis Result, 2016.

The pattern of the relationship between deconcentration fund and HDI in the regions resulted in several lessons. Firstly, there is an attractive area utilizing deconcentration funds that have an impact on improving the quality of life well. In the first pattern, the key success factors are; the ability to build good communication with the central government, the introduction of regional capacity well, local leaders understand what to do to boost the quality of life in the region, as well as effective management of deconcentration funds. The second pattern, the area moving around the average line. In these positions, regions tend to be moderate and relatively waiting to innovate and build networks with the central government. The areas in the quadrant tend not to risk too much by managing central funds in the region. The third pattern is the areas that tend to be apathetic in managing deconcentration funds by avoiding the risk of managing deconcentration funds. As a result, these areas have fewer de-concentration funds and HDI outcomes are still below the provincial average. This condition needs to solve with a relatively strong leadership capacity resulting in innovative programs. Under these conditions, it is necessary for regional leaders to have strong development financing networks so that alternative financing with central government support becomes a strong potential to encourage quality of life in the region.

c. Performance of Intergovernmental Transfer Governance to Support Regional Quality of Life

Measuring the performance of budget allocations in the regions is needed so that a development is ensured to achieve a good impact, not just achieving output. Good macro impacts will be reflected in the better community quality of life of the long-term. This study uses the HDI and poverty indicators as a reflection of impact achievement (in the DEA model called output) and two inputs, namely deconcentration and fiscal (expenditure expenditure). The basic principle of the model used is the best

area is the region that has the highest ability to optimize the achievement of HDI and the level of poverty with deconcentration funds and fiscal capacity owned. There are two categories of regions that belong to categories having good performance. Firstly, regions which have deconcentrated funds and high fiscal capacity and able to optimize the quality of life in regions. Secondly, regions with small deconcentration funds and smaller fiscal capacity but are able to achieve better quality of life compared with the regions surrounding. In the second condition, the non-fiscal factor impulse appears to be the main factor of good performance performance.

The measurement results result in different performance weights both within the island and between islands. Case studies in a number of areas on the island of Sumatra and Java show different variations. The performance weights of quality of life governance with the source of deconcentration fund input and the fiscal capacity of the higher regions in Java is higher than that of Sumatra Island. The average weight of performance in Java reached 87% while on the island of Sumatra reached 77%. These different variations greatly depend on the governance capacity of both central and local governments. Details of the performance weights in each location are shown in Table 1 and Table 2 below.

Table 1
Fiscal Governance Performance Measurement Results in the Region: Case Study of Sumatra Island

South Sumatera			West Sumatera		
No	**Regency / City**	**Performance Weight**	**No**	**Regency / City**	**Performance Weight**
1	Kab Lahat	45,90%	1	Limapuluh Koto	100%
2	Musi Banyuasin	68,70%	2	Agam	69%
3	Musi Rawas	42,40%	3	Kepulauan Mentawai	100%
4	Muara Enim	35,50%	4	Padang Pariaman	89,90%
5	Oki	52,30%	5	Pasaman	85%
6	Oku	76,80%	6	Pesisir Selatan	76%
7	Kota Palembang	54,10%	7	Sijunjung	80,10%
8	Prabumulih	100%	8	Solok	81,70%
9	Lubuk Linggau	100%	9	Tanah Datar	84%
10	Banyuasin	75,90%	10	Pasaman Barat	92,40%
11	Ogan Ilir	50,30%			
12	Oku Timur	58,10%			
13	Oku Selatan	100%			
14	Empat Lawang	100%			
	Weight Average	**68,57%**		**Weight Average**	**85,81%**

Source: Measurement results, 2016.

Performance weight variation in South Sumatera looks sharper than West Sumatra. Regions that achieve 100% weight can be used as a reference to learn more in public governance. In West Sumatra, these areas are Empat Lawang, South Oku, Lubuk Linggau, and Prabumulih. In West Sumatra, the region that reaches 100% weight is Limapuluh Koto and Mentawai Islands. These areas with limited financial capacity tend to be better able to optimize the achievement of HDI and poverty in their respective regions (according to their capacity).

Smaller variations occur in Java Island where the average performance weight in DIY reaches 92.76 which is considered high. The DIY region tends to be able to optimize its fiscal resources to support the quality of life in the region. There are three areas that have achieved 100% performance weight in DIY namely; City of Yogyakarta, Gunung Kidul, and Kulonprogo. These areas can be a reference in fiscal optimization efforts to support quality of life. Measurement results indicate that the source of inefficiency is the ability to manage deconcentration funds. In areas receiving higher deconcentration

funds such as Sleman and Bantul have not been able to encourage better quality of life compared to the other three regions of DIY. That is, the source of funds obtained to strengthen the fiscal capacity impact is higher in the other three areas so it is still needed various programs that synergize with the quality of life in the region.

The result of performance weight measurement in East Java Province indicates a relatively high difference between regions. Performance weights vary from 33.30 to 100%. This high variation shows different capacities between regions in managing deconcentration funds and fiscal capacity. Inefficiency in the calculation of performance in 14 regions to produce three areas that can be a reference that is; Bangkalan, Blitar, and Sampang. The source of this position in a number of regions comes from fiscal management. In Kabupaten Pamekasan, for example, fiscal capacity is still very limited. The Regional Original Revenue (PAD) in the area can only finance 14.7% of direct regional costs. When compared with other regions in East Java, the achievement of the efficiency of deconcentration fund is only 19.58%. All performance weights for case studies in Java are presented in the following table 2.

Table 2

Fiscal Governance Performance Measurement Results in the Region: Case Study of Java Island

DIY			East Java		
No	**Regency / City**	**Performance Weight**	**No**	**Regency / City**	**Performance Weight**
1	Bantul	73,90%	1	Bangkalan	100%
2	Gunung Kidul	100%	2	Blitar	100%
3	Kulon Progo	100%	3	Gresik	33,30%
4	Sleman	89,90%	4	Jombang	77,40%
5	Yogyakarta	100%	5	Kediri	83,90%
			6	Lumajang	82,40%
			7	Ngawi	83%
			8	Pacitan	74,20%
			9	Pamekasan	98,20%
			10	Ponorogo	72,50%
			11	Probolinggo	79,90%
			12	Sampang	100%
			13	Sidoarjo	67,10%
			14	Sumenep	77,90%
	Weight Average	**92,76%**		**Weight Average**	**80,70%**

Source: Measurement results, 2016.

In general, there are various patterns related to the management of relief funds (deconcentration) in the regions. The various problems between regions are generally influenced by the main factors namely; first, the limited human resources with a high capacity to improve the quality of life in the region especially in fiscal management. Poverty reduction agenda needs a lot of fiscal capacity. Various problems in the region require strong leadership that can mobilize internal resources and external funding sources in order to improve the quality of sustainable living. The limits of intervention through fiscal powers need to find creative solutions so that people can enjoy high standards of quality of life. Sources of development financing is now starting to grow by involving third parties namely the private sector and the community. Financing sources could be sourced from corporate social responsibility and crowd funding become new alternatives without reducing the role of government budget.

Another major problem is found a geographic position. The trap of geographical position is one of the important challenges for the region. Geography positions cause various obstacles associated with certain cultural system, accessibility and connectivity with a number of central areas of growth.

Distance factor is still very important considering the flow of resources entering and leaving the area of disadvantaged areas is still limited. Geographic traps can be overcome by providing good public infrastructure with high innovation capacity. The problem is that limited government budgets are an obstacle to adaptation to new technologies and the development of connectivity in various underdeveloped regions in Indonesia.

To make breakthroughs in the region requires creative leadership and acting out of the box so as to cut through these limitations and turn them into a source of excellence. The state must be present to mobilize all resources and funds as optimal as possible because with effective programs. The government in this case does not only allocate state revenues also ensure the presence of cross-regional equity functions including the equitable distribution of resources and fund management capacity. Understanding the philosophy of good public financing governance needs to be translated in real terms in the programs and activities of the government. The diverse performance in deconcentration fund management to support quality of life needs to be further considered by using impact evaluation. Regions that can optimize deconcentration funds should be supported by better fiscal incentives so that other regions will be encouraged to support the central government program.

5. Conclusions

From the findings related to the regional strategic issues, policies and results of public finance performance measurement in the regions, the following conclusions are drawn up.

1. Different regional conditions contribute to the achievement of different quality of life. The result of pattern identification indicates that fiscal support in the form of deconcentration fund has not become an important alternative to encourage the quality of life in the region. The ability of regions to manage fiscal capacity is still indispensable. The application of two different methods with additional measurement variables yielded some contradictory findings. Regions that receive higher deconcentration funds are not always followed by the ability to create higher impacts.
2. Districts / Municipalities in Yogyakarta Province that have HDI below average with deconcentrated fund above average is Bantul regency. The weight of the aid expenditure management performance is 79.30-100. Kulon Progo Regency has relatively relatively efficient allocation of aid expenditure compared to Bantul and Sleman.
3. Districts / Municipalities in West Sumatera Province with HDI below average with above average deconcentration funds are Padang Pariaman District, Limapuluh Kota Regency, Pesisir Selatan Regency, Pasaman Barat, Solok. Performance of transfer expenditure governance 68,7-100 indicating the existence of various capacities in fiscal management in the region. Pesisir Selatan Regency has a management performance of 76%.
4. In South Sumatera province, districts / municipalities have HDI above average, but with deconcentrated funds below the provincial average is Musi Banyuasin Regency, Ogan Komering Ulu Regency, South Oku, Pagar Alam City, Prabumulih City, and Palembang City. The performance weight of transfer expenditure management reaches 35% -100% indicating the disparity of fiscal governance in the region. Musi Banyuasin Regency achieved a performance weight of 68.7%.
5. Regency / City in East Java Province which has HDI below average with above average deconcentrated funds is Sumenep Regency, Bondowoso Regency, Probolinggo Regency, Banyuwangi Regency, Lumajang Regency, Tuban Regency, Jember Regency, Malang Regency, Bojonegoro District, Lamongan Regency, Madiun Regency, and Nganjuk Regency. The performance weights of aid expenditure management reached 33-100%.

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Big enough to disinherit poverty yet too little to upgrade your class?

The story of intergenerational economic mobility from five waves of Indonesia Family Life Survey (IFLS 1993-2014)

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ABSTRACT

Despite wealth of extant research on inequality based on a repeated cross-sectional household data in Indonesia, there is so little known whether persistent (or change) of inequality indicating stickiness (or reshuffling) of one's position in the income ladder of society. To unravel this so called inequality-mobility dynamics one would need a longitudinal data which has been a rarity if not luxury in Indonesia. Using a newly released IFLS-5 combined with the other preceding IFLS-1 to 4, we construct a sample consists of 4523 adult-sons aged 33 years in average, paired with their respective fathers aged 65 in average. This allows us to explore for the first time the story of economic mobility in Indonesia during period of 1993-2014, by using a four-step analytical framework. First we found upward intra-generational mobility, both in relative and absolute terms, which resulted in a reduction of inequality between father generation. Second, we estimate intergenerational elasticity (IGE), a mobility index at aggregate level, which can be better interpreted if compared to other countries. We plot IGE into the well-known GGC (great Gatsby curve) along with 22 other countries and observe two key points. Point one, son's earning in our sample is correlated with their father's earning, but with lower coefficient relative to that of other countries. This leaves us wonder as to what other variables might be at play. We investigate this in the third step by augmenting Becker-Tomes (1979, 1986) and Solon (2004) model to include potential determinants of son's earning other than their father's earning. Our OLS regression suggest that, among else, government educational expenditure, living in urban area during childhood, and father's education are estimated to have a positive and significant explanatory power on son's earning. Point two from GGC is that our sample position depicts a relatively high intergenerational mobility, however, because IGE is an aggregated index, we need another step to figure out as to which kind of high mobility is that. We found answer to this in our fourth step by estimating two disaggregated measures of intergenerational mobility: father-son transition matrix of poverty status and father-son income comparison (absolute mobility) and father-son transition matrix of between-class movement (relative mobility). We found a strong evidence of absolute upward mobility: more than 80% of sons of poor fathers have made themselves free of poverty when they become adult-son and more than 60% of son generation have achieved a higher income level than that of their father. However, there is a mixed result in relative upward mobility measures. Our main sample (n=4523) exhibits an equal measure between upward and downward mobility but when we work with the subset of married and moving sons only (n=2296), a sign of upward mobility is more pronounce. Finally, we conclude that son's earning is substantially dependent to father's earning but in a relatively low level comparing to other countries for the reasons that might be in part due to progressivity in government educational expenditure. Son generation also exhibits a higher absolute income level than that of their father generation which leads them to disinherit poverty and become a nearly poverty-free generation. However it probably takes more than economic performance for son generation to be at higher income class than that of their father, with potential mechanism for that are through married and moving out of parent's house.

Keywords: intergenerational mobility, Great Gatsby Curve, longitudinal, IFLS, government educational expenditure

1. INTRODUCTION

Mobility, a topic of interest in economics and sociology, is a study on the nature and dynamic of individual, household, and society as a whole in going through progress (or lack thereof) over time (intra-generational) and over generation (intergenerational). Mobility has taken a centre stage in recent years in part due to the facts that inequality has been on the rise all over the world and there is claim that persistent inequality may hamper mobility. It is perceived that high and/or persistent inequality is an indication that economic conditions have worsened for the poor in an absolute sense, and on average, the initially rich seemed likely to experience more favourable mobility than the initially poor. In other words, high inequality is claimed to skew mobility to only those who initially rich.

To check validity of the claim one would need to go beyond repeated cross-sectional data which usually anonymous and ignore the reshuffling of households and individuals in the income distribution over time even over generation ((Jenkins & Kerm, 2003), (Gangl, 2008)). However, it is well known that longitudinal data is a rarity if not luxury in less-developed economies. This paper, benefitted from the Indonesia Family Life Survey (IFLS) wave 5 first published in May 2016, tries to contribute to the limited literatures of empirical research on inequality-mobility dynamics in emerging economies. Using IFLS, this paper tries to dismantle inequality-mobility dynamics in Indonesia during period of 1993-2014 where inequality was evidently rising (see for instance (Atkinson & Morelli, 2014) and (The World Bank, 2015)).

Given novelty of mobility research in Indonesia, it is decided this paper takes an exploratory approach rather than, for instance, cause-effect analysis. We perform a four-step analysis in this exploration. First we ask whether father generation exhibit income equalizing intra-generational mobility during the 21 years period? Second we estimate Intergenerational Elasticity (IGE) as an aggregate measure of intergenerational mobility and plot it into the Great Gatsby Curve (GGC) to figure out the level of mobility, compare it with other countries, and contextually interpret it. Third we explore possible determinants of intergenerational earning mobility other than father's earning. Fourth we estimate a disaggregated measure of intergenerational mobility to characterize whether our sample exhibit upward or downward mobility.

Our results show a positive intra-generational mobility within father generation, both in relative and absolute terms, which resulted in a reduction of inequality between them. Our IGE estimate indicates less sticky relationship between son-father earning comparing to other countries in the GGC which signals for other variables might be at play. We include these other variables in the third step where we perform OLS regression on our Becker-Tomes-Solon extended model and found that government progressivity on educational expenditure and father's characteristics are among the possible determinants for son's earning. Finally, we found a strong evidence of absolute upward mobility but a mixed result in relative upward mobility measure.

The rest of the paper organized as follows. First, theories and empirical patterns of mobility will be discussed. Second, analytical framework will be presented. Third, data and variables used in this paper will be described. Fourth, the results and findings will be discussed, and finally the brief conclusion.

2. ECONOMIC MOBILITY: THEORIES AND EMPIRICAL PATTERNS

Central attention of intergenerational mobility study is to understand whether, how much, and how parental (dis)advantage transmitted to their children, grandchildren, grandchildren's children, and so on so forth. This has been a topic of interest of great scholars and social scientists for a long time, no less since Ibn Khaldun (1332-1406) wrote in his famous *Muqaddimah*. Khaldun introduced the rule of four (generations) with respect to prestige which asserts that prestige usually lasted at four generations in one lineage. The four generations can be explained as the builder, the one who has personal contact with the builder, the one who relies on tradition, and the destroyer (Khaldun, 2004).

In the modern day, Sir Francis Galton (1822-1911) was the first to apply statistical techniques

to measure and estimate correlation between parent and children characteristics. His interest on intergenerational transmission documented in several publications from 1865 to 1897, of which one to be singled out here is entitled *"Regression Towards Mediocrity in Hereditary Stature"* (Galton, 1886) where he studied the correlation of height of 930 adult children with that of their respective parentages. While the subject matter itself, height, might not be much of relevant to economic analysis, his technique though, considered as a foundation for modern statistical analysis in general and intergenerational study in particular. He was the first to coin the concepts of correlation, standard deviation, percentiles, and regression to the mean.

Fast forward a century later, Becker and Tomes ((Becker & Tomes, 1979) and (Becker & Tomes, 1986)) built a theoretical framework of inequality and intergenerational mobility. At the heart of their model is altruistic parents whose behaviour is to maximize their utility function by deciding how much of their income would be allocated for own consumption, how much for making financial transfers to their children, and how much to invest in children human capital as their potential earnings. It is assumed that children's endowments, parental investment in human capital, rate of return to human capital (market), and government spending on education determine how much human capital the children will have which in turn determine their adults' earning (see also (Solon, 2004), and (Becker, Kominers, Murphy, & Spenkuch, 2015)).

Following those theoretical works, there has been plethora of research on mobility-inequality dynamics albeit dominated by developed countries contexts due to limited longitudinal data in developing countries. Based on these literatures, there are three empirical patterns emerged. The first is pertaining to relationship between intra-generational mobility and long-run inequality which hypothesised that long-run intra-generational mobility equalizes income. Several authors have argued for this hypothesis, for instances Shorrocks (Shorrocks, 1978), Atkinson et. al (in (Fields, 2010)), Jarvis and Jenkins (Jarvis & Jenkins, 1998), and Krugmann (in (Fields, 2010)).

The second empirical pattern is concerning relationship between intergenerational mobility and cross-sectional inequality of parental generation, known as The Great Gatsby Curve (Krueger, 2012). It shows that in countries with lower inequality, like Finland, Norway, Denmark, Sweden, the tie between parental economic status and the adult earnings of children is weakest: less than one-fifth of any economic advantage or disadvantage that a father may have had in his time is passed on to a son in adulthood whereas in countries with higher inequality, like Italy, the United Kingdom, and the United States, roughly 50 percent of any advantage or disadvantage is passed on (Corak, 2013).

The third empirical pattern is pertaining to several covariates of intergenerational mobility. Although they do not necessarily demonstrate causation, nevertheless they exhibit strong correlation with intergenerational mobility hence they might be the possible forces behind it. More recent research of (Kourtellos, Marr, & Tan, 2016) and (Chetty, Hendren, Kline, & Saez, 2014) identify nine possible determinants of intergenerational mobility. Their studies are particularly distinct since they use tax income data of both children and parent generation and their sample size is more than 40 millions pair of children and their parents. The potential determinants for intergenerational mobility are racial and income segregation, income inequality, school quality, social capital, and family structure (Chetty et al., 2014). Where additional four are access to college, local tax, migration, and local labor market (Kourtellos et al., 2016).

3. ANALYTICAL FRAMEWORK

Following the aforementioned theory and three empirical patterns, we ask four guiding questions and describe analytical methods to explore our data as follow.

1) Whether father generation exhibit income equalizing intra-generational mobility?

This question is concerning mobility-inequality dynamics between fathers within their generation from 1993 until 2014. We will use transition matrices for intragenerational mobility measures as described in Fields & Ok (Fields & Ok, 1999) and Jantti & Jenkins (Jantti & Jenkins, 2014). A transition matrix, M, is constructed by first dividing the income range of each marginal distribution

into a number of categories and cross-tabulating the relative frequencies of observations with each matrix cell: typical element m_{ij} is the relative frequency of observations with period-1 income in range (group) *i* and period-2 income in range *j* (Jantti & Jenkins, 2014).

Transition matrices provide a simple picture of the "movement" of the individuals among the specified income classes, although they neglect the individual income variations that take place within the specified classes. Transition matrices have been used in many mobility studies, for instance Hungerford (2011), based on Panel Study of Income Dynamics, estimated inter-decile mobility in USA from 1979-1988 (Hungerford in (Jantti & Jenkins, 2014)), and Dartanto & Otsubo estimated changes of poverty status over time (Dartanto & Otsubo, 2016).

In this paper, two type of intra-generational mobility will be estimated: dynamics of one's position in the distributional ladder (relative mobility) as well as change of their poverty status and comparison of own income over period 1993-2014 (absolute mobility). In addition, we also estimate dynamics of inequality between father generation during the same period. Two measures of inequality will be used: Gini index and proportion of income accrued to 90 percentile and 10 percentile (p90/p10).

This first analytical work would give us answer on question whether father generation exhibit income equalizing intra-generational mobility. Understanding the characteristics of income distribution and its dynamics among father generation will give us hints on what to expect about the same issues for son generation. This is because intergenerational mobility theory asserts that father or parental earning is a key determinant for son or children earning. For example, we'd probably expect a low income level of children generation should their father generation has a low ability to invest on their future due to low income level or economic contraction they experienced.

2) What is the status of intergenerational mobility in Indonesia?

Having estimated intragenerational mobility, in the second step we will estimate intergenerational mobility at aggregate measure and compare it with other countries. We begin by estimating a common measure of intergenerational mobility namely intergenerational elasticity (IGE). The IGE is derived from a regression-to-the-mean model, usually as the least-squares estimate of the coefficient β in the equation

$$ln\, \bar{y}_{i,g}^{son} = \alpha + \beta\, ln\, \bar{y}_{i,g-1}^{father} + \varepsilon_{i,g} \quad (1)$$

where $\bar{y}_{i,g}^{son}$ represents mean economic outcome of sons in generation g, and $\bar{y}_{i,g-1}^{parent}$ is the mean economic outcome of fathers in period g-1, $\varepsilon_{i,g}$ represents all other influences on the adult-son's outcome not correlated with father income. The constant term α captures the trend in average outcome across generations, due, for example, to changes in productivity, international trade, technology, or labor market institutions. In equation 1, by design, known causal factors are omitted in the regressions (Becker and Tomes 1986).

The coefficient β indicates the degree to which outcome are "sticky" across generations within the same family, the percentage difference in son's outcome for each percentage point difference in father's outcome. The higher the value of β, the more that knowing a father's place in the outcome distribution will tell us about where we can expect the son's place to be; the lower the value, the less stickiness so that a father's relative outcome are a weak predictor of the son's position on the outcome ladder of their own generation (Corak, 2013).

Our IGE estimation strategy in equation 1 will address the challenges usually faced in measuring it by applying the required solutions. First we use permanent component of economic outcomes rather than a single data point to avoid measurement bias due to transitory shocks of economic outcomes. Second, average year of sons generation in our data is 33 close to 34 years old, (see in the next section) corresponds with a relatively empirically stable age from lifecycle bias of earning, according to previous studies (Black & Devereux, 2010).

Having generated IGE estimate, we will then plot it in to the GGC from previous work of Miles Corak (Corak, 2013). For inequality measure (x-axis of GGC), we followed the original GGC which used national Gini in the year of formatives age of the son generation, hence in our case we use Gini coefficient of Indonesia in year 1993 taken from Yusuf et.al. (Yusuf, Sumner, & Rum, 2014). The position of Indonesia in the GGC will give us comparative perspectives about the level of intergenerational mobility.

3) What are possible determinant of son's earning other than father's earning as implied by IGE?

Back again to our equation 1, which by design does not include possible causal factors from the original theoretical model of Becker-Tomes (Becker & Tomes, 1986), Solon (Solon, 2004), and (Becker et al., 2015). In this third step of exploration we will include possible determinants of son's earning other than their father's earning. They consist of variables reflecting characteristics of the region where the son lived in their childhood nurtured by their father, and socio-economic characteristics of father, apart from his earning. We augment our equation 1 in to equation 2 as follow.

$$ln\,\bar{y}_{i,g}^{son} = \alpha + \beta_1 ln\,\bar{y}_{i,g-1}^{father} + \beta_2 R_{i,g-1}^{father} + \beta_3 X_{i,g-1}^{father} + \varepsilon_{i,g} \qquad (2)$$

where $R_{i,g-1}^{father}$ represents spatial characteristics of the region where father nurtured sons during their childhood, including level of government educational expenditure, dummy Java or non-Java and dummy urban-rural. $X_{i,g-1}^{father}$ represents characteristics of the father including his educational attainment, occupation, sector in which he works, and pluriactivity or multiple-jobs holding he experienced, migration history, household size, and number of son a father has.

By design we exclude variables belong to the sons which indeed have a strong theoretical and empirical grounds in determining son's earning, such as their own education, etc. This is because our interest in intergenerational mobility study is to explore as much as possible the sources of potential determinant of son's earning that belong to the father's characteristics, government, market, and environment.

4) What type of intergenerational mobility characterized in our sample?

While much of the literature has focused on estimating the IGE, this summary measure may conceal interesting detail about intergenerational mobility at different points of the joint distribution of father and son economic outcome. An alternative strategy is to study mobility matrices and examine the quantile of the child's earnings conditional on the parent's earnings quantile. In practice, researchers often group quantiles (Black & Devereux, 2010).

In our analysis we will focus attention to determine, if possible, whether our sample can be characterized as upwardly or downwardly mobile, or even stagnant. To this end, we will estimate absolute and relative measures of mobility. For absolute mobility measures, we will estimate percentage of sons of destitute fathers who succeeded to move out of poverty (by 2014). We define a father as a destitute if he experienced three times of being poor out of five times surveyed in IFLS or he was recorded as poor in the latest survey (2014). In addition, we will also estimate percentage of sons with better income than that of their father.

For relative mobility measures we will provide four estimates based on comparison between son's position versus father's position in the income ladder of their respective generation. We will compare their position based on: quintile, decile, percentile, and ranking. We use these four different estimates because the estimation result is sensitive to the choice of number of class or cut-point, hence we hope to see, if any, a stable pattern of mobility if we use different number of classes.

4. DATA AND VARIABLES

The main source of data used in this paper is Indonesian Family Life Survey (IFLS), a continuing longitudinal socioeconomic and health survey. It is based on a sample of households representing

about 83% of the Indonesian population living in 13 of the nation's 26 provinces in 1993. The first wave (IFLS1) was administered in 1993 to individuals living in 7224 households, followed by IFLS2 (1997), IFLS3 (2000), IFLS4 (2007), tracking on the same 1993 households and their split-offs which by IFLS5 (2014) totaling: 16,204 households and 50,148 individuals interviewed (Strauss, Witoelar, & Sikoki, 2016).

For this paper, we use each and all wave of IFLS to construct a pair of father-son sample which will enable us to conduct intergenerational analysis of economic outcomes, as well as intragenerational mobility of father generation. The usual economic outcome used in intergenerational mobility is actually individual earning or labor income. However, this paper will also use per capita household expenditure (pce) for comparison purpose, as well as for defining poverty rate. All economic outcomes are deflated temporally (basis year 1993) and spatially (basis urban).

Our aim is to construct a sample constitutes a pair of fathers and their biological sons. First we identify a full list of household member and their status (head, spouse, etc.) in each and all households registered in IFLS-1. Then we identify respondents in that list whose status is a father with son(s). We counted a total of 2860 fathers and named this list of fathers as father generation, or we can also say that we have a total of 2860 dynasties in father generation. Next we match this father generation with their biological adult-sons and resulted in a total of 4523 adult-sons, named as son generation. This implied that a father might has more than one son which is indeed normal and in fact our sample shows there are fathers with only one or single son up to those with seven sons.

Here at this step we have two options either to choose only one sons if a father has more than one and work only with a pair of 2860 father-son or we keep all the sons intact and work with a pair of 4523 father-son but noted that the son generation is actually coming from only 2860 dynasties. We may choose the first option if for instance, not all sons from a dynasty registered earning data as our main variable of interest. But even if that is the case with our data, if we choose option one our data will automatically suffer a selection bias because we will not have sufficient reason as to why we select particular son of the dynasty over the others. Above all, if we choose option one , we will also lose the chance to examine the potential differences of economic performance of the sons with different position or order in the dynasty (e.g. difference between a single son of the dynasty with a third sons, etc.). These ultimately leads us to choose a second option hence we have a total of 4523 pair of father-son for our analysis.

It turns out that the richness of our sample is not only about having a difference son's order in the dynasty but also we have more information about their status: whether they have married by 2014 and whether they have moved out to live in their own household. This two information will be kept in check throughout our analysis and most of the time we always split our sample in to two: the main sample of 4523 pair of father-son and the subset of 2296 married and moving son paired with their respective fathers. The subset of 2296 married and moving son is instrumental to inform us if being married and moving out of parent's house to make any difference in mobility rate comparing to our main sample.

In our next step of data mining, we extract earning data from each and all wave of IFLS. We aimed to have a proxy of lifetime earnings by extracting them from each and every wave of IFLS, not only from a single point of observation. This step gives us earning data for all 2860 individual fathers and all 4523 individual sons. We then extract data on pce (per capita expenditure) and yields the same results. We also work on some other variables representing individual socio-economic characteristics namely highest attained education, years of schooling, occupation, history of occupational change, job, history of multiple jobs holding, sector, history of sectoral change, age, cohort, historical records of migration, marital status, and split or moving out status (see table 1 for summary statistics).

In addition to individual socio-economic characteristics, we also need variables representing regional characteristics in which the son generation spent their childhood. We collect three variables for this purpose namely government expenditure on education, dummy urban, and dummy Java. The variable of government expenditure on education is to follow the abovementioned previous studies which stated that government expenditure potentially increase mobility or reduce intergenerational

persistence. This paper benefitted from DAPOER (Database for Policy and Economic Research) and DJPK (General Directorate of Local Government Budget Management) to extract government expenditure on education spent in each and all district/city administered by district (Kabupaten), city (Kota), and provincial government in Indonesia from 1994 until 2012 (data for 1993, 2013, and 2014 did not available).

A couple of notes worth-mentioning here. First, we disregard government expenditure on education administered by central government because it is designated to have equal effect on national population unlike district-city-provincial administering budget which is unique in their own. Second, we collect district-city-provincial education expenditure for all years coincide with IFLS surveys not only a single or few years point. This is because we expect that a longer period of observation would better capture true government behavior on how they invest in education than a single observation does. To allow for totaling budget data across the years, we deflate them by temporal deflator using basis year 1993.

Having collected the data we then create a variable named 'gov_edu_exp'. It is a total annualized local (district and municipality) and provincial government expenditure on education, presented in log term. This variable is a final variable attributable to parent generation. From the abovementioned steps, we finally have our final data to be used in our analysis, as summarized below.

Table 1. Summary statistics of data for intergenerational analysis

Variable	Father generation					Son generation				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
earning	2860	11.7	1.1	5.8	17.7	4523	11.9	1.0	6.8	17.5
n_earning_data	2860	3.4	1.3	1	5	4523	1.9	1.0	1	5
pce	2860	11.2	0.6	9.1	13.1	4523	11.5	0.7	7.2	16.5
n_pce_data	2860	4.9	0.4	1	5	4523	3.2	1.7	1	5
gov_edu_exp	2860	27.0	0.6	24.1	28.3	4523	nr	nr	nr	nr
education	2860	3.9	2.0	0	8	4520	5.8	1.9	1	8
years_of_schooling	2860	7.1	4.0	0	23	4520	10.7	3.5	0	19
occupation	2860	1.7	0.8	0	9	4248	1.9	0.6	1	9
occupational_change	2860	0.4	0.7	0	3	4523	nr	nr	nr	nr
job	2860	3.0	1.7	0	9	4248	4.3	2.0	1	8
multiple_jobs_holding	2860	1.1	1.3	0	5	4523	nr	nr	nr	nr
sector	2860	3.8	3.1	0	10	4247	5.2	3.0	1	10
sectoral_change	2860	0.4	0.7	0	2	4523	nr	nr	nr	nr
age	2860	65	10.9	39	107	4523	33	7	21	66
cohort	2860	3.6	0.6	1	4	4523	1.2	0.4	1	4
urban	2860	0.5	0.5	0	1	4523	0.6	0.5	0	1
Java	2860	0.5	0.5	0	1	4523	0.5	0.5	0	1
migrate	2860	0.6	0.8	0	4	4523	nr	nr	nr	nr
married	2860	nr	nr	nr	nr	4523	0.6	0.5	0	1
split	2860	nr	nr	nr	nr	4523	0.6	0.5	0	1

Source: author calculation from IFLS1-5, DAPOER, and DJPK.
Note: nr = not relevant.

5. RESULTS AND FINDINGS

We describe our results in pointers as per guiding questions discussed in previous section.

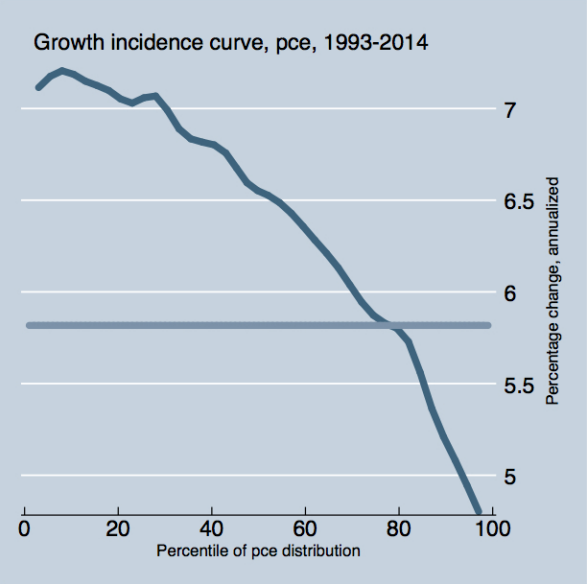
1) Father generation exhibit absolute and relative upward economic mobility that resulted in poverty alleviation and more equal income during period 1993-2014

All income level (percentile of pce) seen a positive growth during period 1993 to 2014, at average of 5.82% (see graph 1). The growth pattern across percentile shows that lower percentiles has accrued higher growth rate. Father generation has seen an absolute upward mobility as indicated by measures in table 2. Ninety percent of fathers who were poor in 1993 alleviated by 2014, in fact, 96% fathers have a better pce in 2014 comparing to their own in 1993, as well as 65% fathers with

better income in 2014 than their own in 1993. In addition to absolute upward mobility, there is also a clear sign of relative upward mobility both in terms of pce and earning as summarised in table 3.

These absolute and relative upward mobility have an equalizing effect as indicated by 24% and 49% reduction in Gini index and in p90/p10 ratio respectively (see graph 2). We may conclude that there is a reshuffling of position between fathers in their generation. Now we wonder about relationship of the father generation with their off-springs. We turn to intergenerational analysis in the next paragraph.

Graph 1. All income level of father generation has seen a positive growth



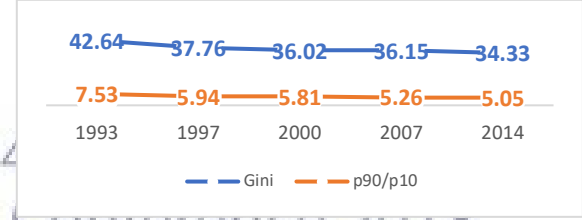
Source: author calculation
n=only observation with complete data in both 1993 and 2014 (2688 out of 2860 fathers)

Table 2. Father generation exhibit absolute upward mobility

Measure of absolute intragenerational mobility	%
% of poor fathers in 1993 who moved out of poverty by 2014 (n= 2688)	89.9
% of fathers with better pce in 2014 than their own pce in 1993 (n= 2688)	95.9
% of fathers with better earning in 2014 than their own earning in 1993 (n= 1057)	64.8

Source: author calculation
n=only observation with complete data in both 1993 and 2014 (out of 2860 fathers)

Graph 2. inequality has been reduced



Source: author calculation
n=only observation with complete data in each and every year from 1993 to 2014 (2522 out of 2860 fathers)

Table 3. There is a clear sign of relative upward mobility within father generation from 1993 to 2014

Measure of relative intergenerational mobility	pce (n=2688)	earning (n=1057)
fathers with better percentile position in 2014 than in 1993	49.4	56.2
fathers with worse percentile position in 2014 than in 1993	49.3	42.9
fathers with better ranking position in 2014 than in 1993	53.7	85.4
fathers with worse ranking position in 2014 than in 1993	46.2	14.6

Source: author calculation
n=only observation with complete data in both 1993 and 2014 (2688 & 1057 for pce & earning data respectively out of 2860 fathers)

2) Indonesia position in the Great Gatsby Curve indicates a relatively less elastic relationship between father-son earning

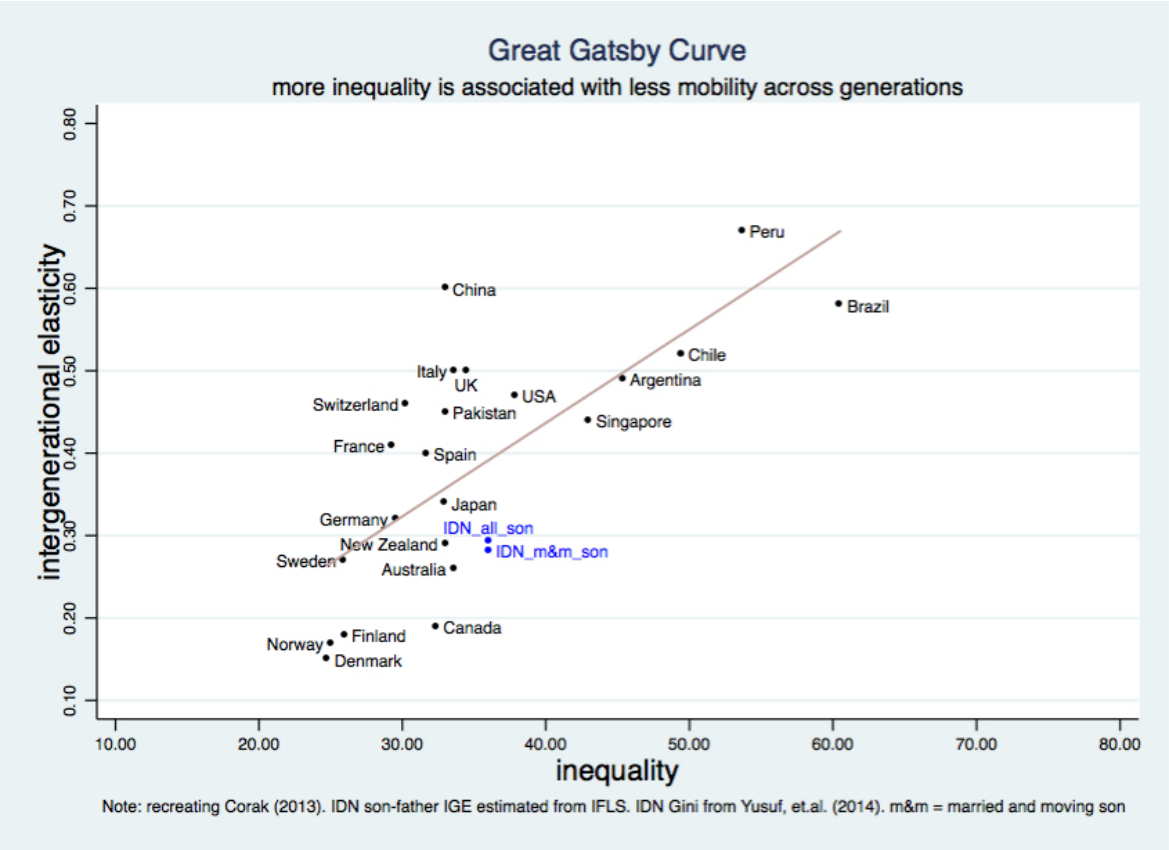
We estimate IGE by using simple OLS between log-income of sons (dependent variable) and log-income of father (independent variable) where IGE is a β in abovementioned equation 1, plot the IGE as a y-axis in the GGC curve where the x-axis is Gini coefficient of the society of father generation ((Corak, 2013), pp.82), and observe two key points (see graph 3).

Point one, son's earning in our sample is, as expected in theory, dependent to their father's earning, but at lower dependency level relative to other countries in GGC. This leaves us wonder as to what other variables might be at play. According to the intergenerational theories we discussed in previous section, there are three possible factors at play: heritability of talent from father to son, returns to human capital, and level of public investment in human capital. We will investigate this in the third step by augmenting Becker-Tomes (1979, 1986) and Solon (2004) model to include potential determinants of son's earning other than their father's earning.

Point two from GGC is that our sample position depicts a relatively high intergenerational mobility, however, because IGE is an aggregated index, we need another step to figure out which kind

of high mobility is that. We will explore this in our fourth step. As for now our data confirm that in general, IGE estimated from our sample are lower than most of the country. The IGE for our main sample (29) is one point higher than that of our married and moving son subset (28). In other words a group of married and moving out sons has a slightly more mobility level than the main sample.

Graph 3. Our sample exhibits higher mobility than other countries



Source: author calculation

3) Having lived in the region with progressive government, lived a childhood in urban area, and born to a more educated father correlated strongly and positively with son's earning

We run OLS regression to estimate coefficient in the abovementioned model 2 and the results are presented in table 4. On top of father's earning there are three variables with high coefficient, positive sign, and significant in explaining son's earning. The first is government educational expenditure which indeed is directly related to increase son's education which in turn increase their access to jobs and finally their income. This role of government is especially important for those whose parents have a constrained ability to finance children education by their own money.

The second variable is father education which may facilitate son's earning in at least two possible ways. First, educated father nurture their children with more skills and ability needed or suitable for jobs. Second, and it is even more pronounce, educated father tends to provide networks to their children to enter and win jobs market. Both ways in turn might have positive effect on son's earning.

The third variable is about living a formative ages in urban area. This must explains difference of educational infrastructure and market jobs between urban and rural area in Indonesia in early 90s. In those years, people lived in urban area benefitted more from access to education and jobs which in turn correlate positively with earning.

The next variable interested to be discussed is sector in which father works. Its sign is both positive, negligible in the main sample but sufficiently large and significant in the second subset. Noting that our model does not intended to draw causality, we may safely say that married and

moving sons tend to work in the related or similar sector as father does and in turn it is correlated with their earning. Or the other way around, to be able to marry and move out of parent's house you may start with working in the same sector as your father.

There is also another interesting variable named pluriactivity which indicate incident of father holding multiple jobs at times. It has negative sign in both sample but with larger and significant coefficient in main sample. Taking it at face value we should interpret that having a pluriactive father correlated negatively with son's earning, but why? Shouldn't we expect that one taking more jobs would potentially yield more income which means more money to invest on their children, more education for them, and in turn increase their potential earning? Thus we should expect positive and even significant correlation between pluriactive father and son's earning? One explanation on this may be taken from Martinez Jr., et.al (Martinez, Western, Haynes, Tomaszewski, & Macarayan, 2014) who found that pluriactivity in Indonesia is to some extent a necessity just to make ends meet, to protect from income shortfalls, or to cope against the risk of unemployment. Unlike in developed countries, pluriactivity is not necessarily a means to improve welfare or to move into better occupations. In addition to that, there could also be the case that the pluriactive fathers are those who have less time to nurture their children. Bearing this in hindsight, it is reasonable to observe negative coefficient on father pluriactivity in relation to son's earning.

Table 4. Estimation results

Variable	All sons	Married and moving sons
earning_f	0.2021042*** [0.0174958]	0.171995*** [0.0204289]
gov_edu_exp	0.0828789*** [0.0255638]	0.0915459*** [0.0304947]
urban_f	0.0676545** [0.0312411]	0.1198635*** [0.0381638]
Java_f	-0.0284811 [0.03133]	0.0364625 [0.0382117]
education_f	0.0754964*** [0.0085063]	0.100326*** [0.0109551]
occupation_f	0.0198623 [0.0224341]	-0.0010023 [0.0344315]
sector_f	0.0079218 [0.004894]	0.0149051** [0.0062565]
pluriactive_f	-0.0199358* [0.011653]	-0.0226838 [0.0145557]
migrate	0.0234876 [0.016882]	0.0182709 [0.0206083]
hhldsize	0.0021398 [0.0081415]	-0.0003594 [0.010784]
son_number	-0.0148762 [0.0137747]	-0.0162592 [0.0175017]
R-squared	0.1323	0.1724
observation	4523	2296
son's age	33	34

Source: author calculation from IFLS1-5, DAPOER, and DJPK.
Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

The rest of the variables are of low and insignificant coefficient. But final note worth mentioning here is that the three above-discussed variables -government educational expenditure, father education, and being from urban area- behave similarly both in our main sample as well as in our subset of married and moving sons, but the coefficient is always slightly higher in the subset of married and moving sons. This again a precursor for our future analysis on how being married and living independently from parent may facilitate mobility, or the other way around, something that is beyond the scope of this paper.

4) Our sample exhibits absolute upward mobility but being married and living independently strongly correlated with more than that

Recall on finding number two in the GGC that our sample exhibit higher mobility relative to other countries (graph 3). Here we present our estimates to explore as to which kind of mobility is that. First we estimate two measures of absolute upward mobility as presented in table 5. The first measure is incident of sons who succeeded to disinherit poverty by 2014 given their father was a destitute during their lifetime. We define destitution as being poor in at least three times out of five surveys or being poor in the last survey. Out of this measure, 81.6% of our sample have succeeded to disinherit poverty from their father and even more so in the subset of married and moving sons (95.5%). Similar pattern found in the second measure namely incident of sons with better income than

that of their father, at the rate of 61.4% and 68% respectively. Notice again that being married and moving out has a stronger correlation with upward mobility.

Table 5. Our sample demonstrates absolute mobility and even more pronounce in the subset of married and moving out sons

Measure of absolute mobility	All sample (n=4523)	Married&moving son (n=2296)
% of sons of destitute fathers (1993-2014) who succeeded to disinherit poverty (by 2014)	81.6	95.5
% sons with better income than their father's	61.4	68.0

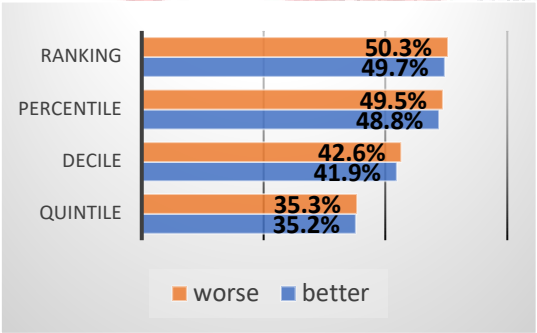
Source: author calculation.

In table 6 we present our estimates of relative upward mobility measures. We provide four comparisons in order to reveal consistent pattern, if any, of son's position relative to father's position in their respective generation. Unlike in the absolute upward mobility estimates, this time we have different pattern between the main sample and the subset of married and moving son. In the former, we don't have sufficient evidence of upward mobility although it is clear that the sample demonstrates process of exchanging position. However, in the latter, there is a very clear and strong indication of upward mobility: son's position is consistently and systematically better off than their father's position in all four measures (see right hand panel of table 6). This is a very interesting finding that leads us to ponder whether it takes assortative mating to uplift your class? A topic beyond this paper.

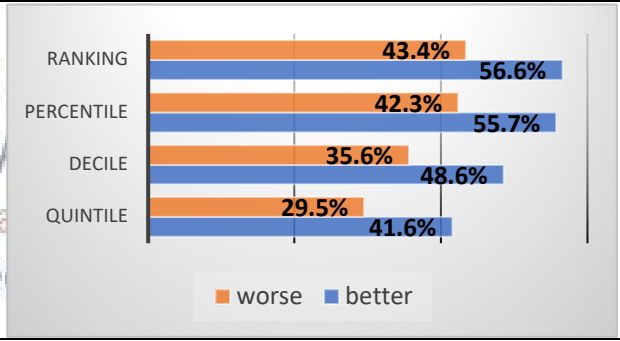
Table 6. Subset of married and moving out sons exhibits stronger indication of uplifting their class

Son's position vs father's position in the income ladder of each own generation

main sample (n=4523)



married and moving sons (n=2296)



Source: author calculation.

6. CONCLUSION

Our sample exhibits less sticky relationship between son's and father's economic outcomes relative to other countries for the reasons that might be in part due to progressivity in government educational expenditure. Son generation exhibits a higher absolute income level than that of their father generation which leads them to disinherit poverty and become a nearly poverty-free generation. However it probably takes more than economic performance for son generation to be at higher income class than that of their father. One potential 'mechanism' to uplift your class way beyond your class of origin (i.e. your father's class) is probably via married and moving out of parent's house.

Finally, it is way ahead of this paper to provide recommendation on redistributive policy, nevertheless it may pave the way to get there. As Piketty suggests on how understanding mobility (i.e. not only inequality) is essential for redistributive policy (Thomas Piketty, 1995).

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THE EFFICIENCY OF INDONESIAN LOCAL GOVERNMENT SPENDING ON HUMAN DEVELOPMENT

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ABSTRACT

Since Indonesia has implemented fiscal decentralization in 1999, the local governments are more responsible to develop their local economy and also their local human development. The main goal of the fiscal decentralization is to increase the efficiency of the local governments in spending their budget. The local governments are assumed to have more information of their own needs than the central government, so every spending is expected to reach the target more precise. This paper tries to analize the efficiency of local government spending especially on Human Development Index (HDI). In this paper we investigate the efficiency of local government spending in health, education, and social protection on HDI by using Data Envelopment Analysis (DEA). DEA uses linear programming methods to construct a non-parametric piecewise surface (frontier) over the data, and calculate efficiencies relative to this survace. There are three input variables and one output variable. The input variables are local government spending in health, education, and social protection, the output variable is HDI. This study uses input and output variables of 33 provinces in Indonesia for 2014-2016. The result of the study shows that Kalimantan Utara and Sulawesi Barat provinces have the most efficient health, education, and social protection spending on HDI. So the provinces should become the benchmarks for other provinces in HDI optimizing. The result doesn't mean that the provinces have the best HDI. Rather, their government spending in health, education, and social protection have been optimized to increase HDI.

Keywords: Local government spending, Human Development Index, Data Envelopment Analysis

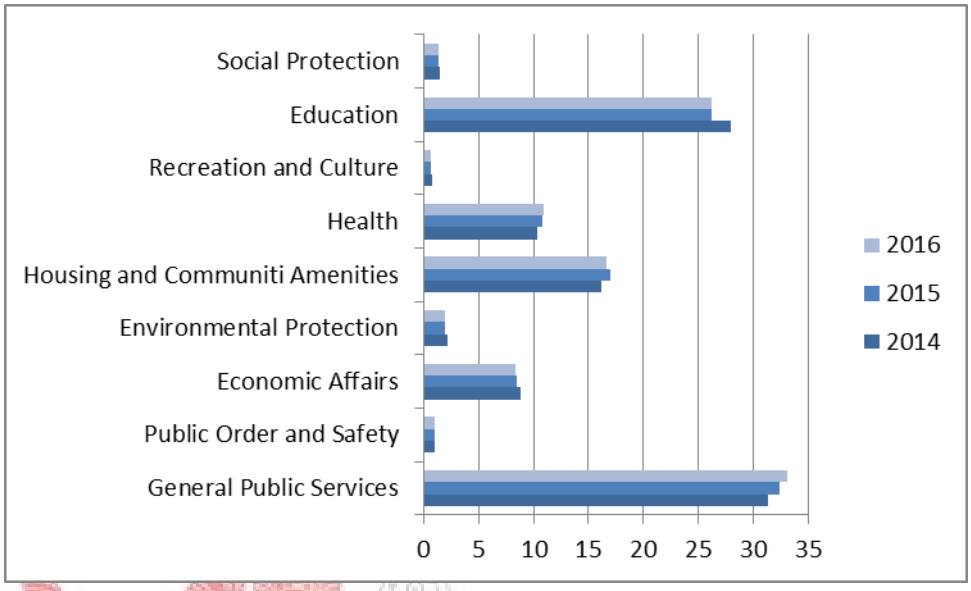
INTRODUCTION

Government spending can be a tool for governments to influence an economy. Governments influence economy by determining the number of their spending. The spending is used to purchase goods and services, pay salaries, and transfer payment. These activities have direct and indirect influences to economy.

Indonesia has implemented fiscal decentralization since 1999, so local governments have authorization to manage their own spending. Local government must allocate them to spending types carefully. Each local government has different composition type of spending. This allocation should consider development priorities of the region and of course their revenue. Composition of spending type determines efficiency of the spending to regional development and welfare of the society. Based on the functions, classifications of local Indonesian government spending are spending of general public services, public order and

safety, economic affairs, environment protection, housing and community amenities, health, recreation and culture, education, and social protection.

Figure 1. Percentage of Local Governments Spending Classification Based on Functions 2014 – 2016 (%)



Local governments allocated the spending to general public services approximately 50% during 2014 – 2016; it was the biggest allocation compared to other spending. The smallest allocation was spending for recreation and culture; it was below 1% every year. General public services spending consists of spending for development planning, regional autonomy and general government, communication and information, staffing, archives, statistics, etc. So it was natural that it had the biggest percentage of spending. As mandated by the law that the spending for education be 20% and health be 10% to total spending, spending for the two classifications are above 20% for education spending and 10% for health spending during 2014-2016. Education and health spending should be kept in the position in order to improve access and quality of education and health services. Education has major impact on improving the quality of human resources. Education and health are closely related to economic development which would ultimately improve welfare of society.

One of the indicators that can be used for measuring welfare of society is Human Development Index (HDI). The HDI is a summary measure of average achievement in key dimensions of human development; a long and healthy life, being knowledgeable and have a decent standard of living. Provinces in Indonesia that have HDI above 75 are e.g. Daerah Khusus Ibukota (DKI) Jakarta and Daerah Istimewa (DI) Yogyakarta, and the province that has HDI below 60% is Papua.

EMPIRICAL REVIEW

Ahmad and Ubaidillah (2013) investigate the efficiency level of government expenditure per capita in health and education sectors and transfers and subsidies in 81

countries towards the human development DEA approach during 2006-2010. They found there are countries that always being positioned in the efficient frontier during the sample period.

Okafor, et al. (2017) examined the long run relationship between the governmental expenditure in education and health and Human Capital Development in Nigeria. The result of the VAR model shows that the tests point out that HDI is significant in the current year (-1) but tends to converge insignificantly in the previous years. Value of governmental expenditure in education and health are the most influencing factors that determine the HDI current value (-1). So Human Capital Development in Nigeria is influenced by nature, pattern and level governmental expenditure in education and health.

Razmi (2012) examined the effect of government health expenditure on HDI by using Ordinary Least Square (OLS) method over the period 1990-2009 in Iran. The result shows a positive and significant relationship between government health expenditure and HDI. Granger Causality Test indicates that there is no bilateral relationship between the government health expenditure and HDI in Iran.

METHODOLOGY

In this paper we investigate the efficiency of local government spending in health, education, and social protection on HDI by using DEA of Indonesia during 2014-2016. We use government spending in health and education based on previous empirical literatures. We add social protection spending in our research. Because the 3rd basic dimension of HDI is feasible living standards, with an indicator of the ability of people's purchasing power against a number of basic needs that are seen from the average amount of per capita expenditure. We consider that social protection spending has a role in influencing people's purchasing power. Because social protection spending consists of spending for woman's empowerment and child protection, social, population and civil registration, etc, and the social spending here improve people's welfare that can affect their purchasing power.

Regional government spending data that we use in this paper are province spending plus its districts spending. We exclude Daerah Khusus Ibukota (DKI) Jakarta because we can't access the districts data. Besides that if we use DKI Jakarta there will be outlier spending data because DKI Jakarta as the state capital has very large spending compared to other provinces. It will cause the research to be invalid, so we exclude it.

There are three input variables and one output variable in this paper. The input variables are local government spending in health, education, and social protection while the output variable is HDI. This study uses input and output variables of 33 provinces in Indonesia during 2014-2016 period.

DEA is a linear programming based technique for measuring the relative performance of organizational units whereby the presence of multiple inputs and outputs makes the comparisons difficult. DEA is a multi-factor productivity analysis model for measuring the relative efficiency of a homogeneus set unit (Decision Making Unit/DMU). DEA is developed based on two scale of assumption; Constant Return to Scale (CRS) model and Variable Return to Scale (VRS) model. The CRS model is designed with the assumption

of constant returns to scale. This means that there is no assumption that any positive or negative economies of scale exist. It is assumed that a small unit should be able to operate as efficiently as a large one – that is, constant returns to scale or called CCR model, because Charnes, Cooper and Rhodes (CCR), in 1978 developed the model. CRS model consists of CRS input-oriented model and CRS output-oriented model. Output-oriented model emphasizes by how much output quantities can be proportionally expanded without changing the input quantities being used. Input-oriented model emphasizes by how much input quantities can be proportionally reduced without changing the output quantities being produced. This paper uses CRS input-oriented model because we focused on efficiency in budget usage, so each classification spending optimally reaches the desired target.

Reffering to CRS input-oriented model, DMU(s) with the best inherent efficiency in converting inputs $X_1, X_{2, \ldots}, X_n$ into outputs $Y_1, Y_{2, \ldots}, Y_n$ is identified, and then all other DMUs are ranked relatively to that most efficient DMU. For DMU 0, the basic CRS input-oriented model is calculated as follows:

$$max\, h_0 = \frac{\sum_r u_y y_{rj_0}}{\sum_i v_i x_{ij_0}}$$

subject to

$$\frac{\sum_r u_r y_{rj_0}}{\sum_i v_i x_{ij_0}} \leq 1$$

for each unit j

$$u_r, v_{i \geq 0}$$

The interpretation of u_r and v_i is that they are weights applied to outputs y_{rj} and inputs x_i and they are chosen to maximize the efficiency score h_0 for DMU_0. The constraint forces the efficiency score to be no greater than 1 for any DMU. An efficiency frontier is calculated, enveloping all data points in a convex hull. The DMU(s) located on the frontier represent an efficiency level of 1.0, and those located on the frontier are operating at a less than full efficiency level, i.e. less than 1.0.

RESULT

During the sampling period there is one province that was considered to be efficient in managing the government spending to maximize its HDI, namely Sulawesi Barat. Kalimantan Utara has 100% efficiency during 2015-2016 while the other provinces that had 100% efficiency are Maluku Utara in 2014 and Kepulauan Riau in 2016. It doesn't mean that the most efficient provinces have the highest HDI but the provinces have used government spending on education, health and social protection optimally so they could reach their HDI. They became benchmark for other provinces because of their spending efficiency related to HDI. Kalimantan Utara and Sulawesi Barat are the newest provinces in Indonesia, so their government spending is not big. HDI value of Kalimantan Utara is slightly different from that of Jawa Timur but the Jawa Timur's number of government spending on health, education,

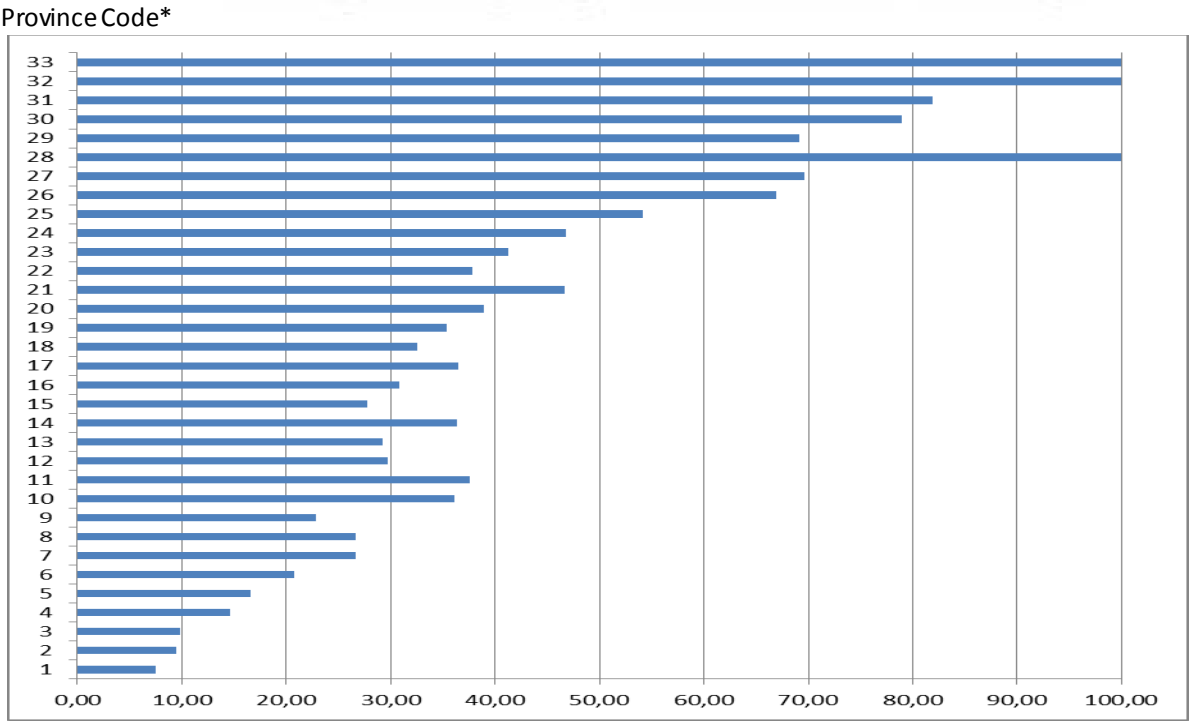
and social protection are much bigger than Kalimantan Utara. That is why its spending efficiency is 100%.

Gorontalo, Kepulauan Bangka Belitung and Maluku Utara have average efficiency approximately 80% during 2014-2016 period. This means the provinces should reduce their spending by 20% to reach the same HDI. Kepulauan Riau has average efficiency of 75% during the sampling periods. Bengkulu, Papua Barat, Daerah Istimewa Yogyakarta and Maluku have average efficiency of 50 to 70%, and the remaining have average efficiency below 50%. Overall average local government spending efficiency in Indonesia (except DKI Jakarta) is 40%.

Jawa Tengah, Jawa Barat and Jawa Timur have the lowest efficiency level during 2014-2016 periods. If we look at their HDI, Jawa Tengah, Jawa Barat and Jawa Timur have HDI below 70% in 2014-2015 periods. Jawa Tengah and Jawa Timur still have HDI below 70% in 2016 but Jawa Barat has improved its HDI by 70,05%. The provinces have higher government spending in education, health, and social protection compared to other provinces. Jawa Timur has the highest health and social protection spending during the sampling period and Jawa Barat has the highest education spending in the period. They have spent the spending in large quantities but their HDI are below 70%. This is the cause of spending inefficiency related to HDI.

The average of local government spending efficiency on HDI period 2014 is 41%, in 2015 there is an efficiency decline to 39%, but in 2016 increased to 43%. So there is inefficiency in government spending above 50% during sampling period which means budget allocation can be reduced by 50% with the same HDI gain.

Figure 2. Local Governments Spending Efficiency related to HDI



*Province code can be seen in Table 1

The provinces that do not have 100% efficiency will have referral province in order to establish 100% efficiency. The provinces should determine their spending with a structure close to their reference provinces' spending structure. In this case we do not consider other factors like capacity of human resources, socio-cultural condition, demographics, etc. because this paper focuses on local government spending only in determining HDI. The provinces that become bencmark or refference are Sulawesi Barat, Kalimantan Utara, and Kepulauan Riau.

Tabel 1. Referral Province

PROVINCE CODE	PROVINCE	REFFERAL PROVINCE					
		2014		2015		2016	
1	ACEH	31		29	23	23	
2	SUMATERA UTARA	29		29		29	23
3	SUMATERA BARAT	29		29		23	29
4	RIAU	29		23		23	10
5	JAMBI	29		29	23	23	10
6	SUMATERA SELATAN	29		29		29	23
7	BENGKULU	29	31	29	23	23	10
8	LAMPUNG	29		29	23	29	23
9	KEP. BANGKA BELITUNG	29	31	23	29	23	
10	KEP. RIAU	29	31	23		10	
11	JAWA BARAT	29		29		23	29
12	JAWA TENGAH	29		29		29	
13	DI YOGYAKARTA	29		29		29	
14	JAWA TIMUR	29		29		29	
15	BANTEN	31	29	29		23	29
16	BALI	29		29		23	29
17	NUSA TENGGARA BARAT	29		29		23	29
18	NUSA TENGGARA TIMUR	29	31	29	23	23	29
19	KALIMANTAN BARAT	29		29		29	23
20	KALIMANTAN TENGAH	29	31	29	23	23	10
21	KALIMANTAN SELATAN	29	31	23	29	23	29
22	KALIMANTAN TIMUR	31	29	29	23	23	29
23	KALIMANTAN UTARA	29	31	23		23	
24	SULAWESI UTARA	29		29	23	10	
25	SULAWESI TENGAH	29	31	29	23	23	29
26	SULAWESI SELATAN	29		29		23	29
27	SULAWESI TENGGARA	29		29		23	29
28	GORONTALO	29	31	23	29	23	29
29	SULAWESI BARAT	29		29		29	
30	MALUKU	29		29	23	23	10
31	MALUKU UTARA	31		23		23	
32	PAPUA BARAT	31		23		23	
33	PAPUA	31		23		23	

CONCLUTION

Local governments should reduce the budget allocation of education, health, social protection by 50% to save the budget, because they can get the same HDI as the lowered budget. So the budget can be allocated to other functions. But the reduction must consider government regulation that is mandated that the state shall prioritize the education budget at least 20 percent of the state budget as well as local budget, and at least 10 percent of its expenditure on health budget.

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Do Increases in Local Government Spending Lead to a More Equitable Education Access?

Muhammad Hazmi Ash-Shidqi[1], Lourentius Dimas Setyonugoroho[2], Ratih Dwi Rahmadanti[3]

Education access is one of basic right mandated from article 31 in Indonesia constitution. Indonesia has successfully achieved the 9-year compulsory education (*Wajib Belajar 9 Tahun*) when the enrollment rate reached 96 percent for primary education and 78 percent for junior secondary education in 2014. In contrast, the senior secondary enrollment is still lagging, where its enrollment rate was only 59 percent in 2014. High primary and junior secondary enrollment rate motivates the Government launch the 12-year Compulsory Education Program (*Program Menengah Universal*, PMU) with an ambitious target of achieving 97 percent of senior secondary enrollment rate by 2020. The challenge with secondary education is not only in expanding the access, but more importantly, in making the access more equitable. Although the Indonesia central government has done some reform in education budget and raise it up to 20 percent of total government spending and give school operational fund (Bantuan Operasional Sekolah), only 48 percent of children from the bottom 20 of income quintile families who attend senior secondary education, in contrast with 78 percent of children from the 20 percent richest families. Our research investigates whether government spending in education can lower the access gap between the poorest and richest families. Using district-level data from SUSENAS, PODES, Education Statistics of MoEC, and Regional Finance Information System of MoF during 2006-2014 and panel data regression, we find that increases in education spending reduces the gap in accessing senior secondary education, especially in eastern part of Indonesia. While public expenditure is one of the important key factor, we also find that general infrastructure for education is as important, especially in Sulawesi. Further, we encourage future research to find the variable that took important role on reducing educational inequality, especially at the region where all traditional variables that being used in this study showed unclear impact.

Keywords: education, access, inequality, budget, spending

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Introduction

Indonesia has seen fast improvements in access to education. Net enrollment rates have increased for all levels of post-primary education. The net enrollment rates for primary education have been quite stable, growing from 94 percent in year 2006, to 96 percent in 2014. In contrast, the senior secondary (equivalent to SMA/SMK/MA) enrollment has been the fastest growing sub-sector in terms of coverage, from 44 percent to 59 percent between 2006 and 2014. Despite being the fastest growing, enrollment at senior secondary level is still very lagging, with only less than 6 out of every 10 teenagers aged sixteen to eighteen who are in school. This motivated the Government to launch the 12-year Compulsory Education Program (*Program Menengah Universal*, PMU) with an ambitious target of achieving 97 percent of senior secondary enrollment rate by 2020.

Expanding enrollments in post-basic education is necessary for Indonesia, especially to move the country's status from middle-income to high-income country, because as the country develops, the jobs available become more complex and demand a higher level and complexity of skills from the workforce. Increasing access to senior secondary education is also equitable, since most of the drop-outs are from the lowest income quintiles and from rural areas. However, achieving near universal senior secondary education by 2020 will be a challenge, particularly because access to senior secondary education is still unequal. There are large disparities in enrollment rates between the poor and the rich: by 2014, only 48 percent of children from the bottom 20 of income quintile families who attend senior secondary education, in contrast with 78 percent of children from the 20 percent richest families. Because enrollment in senior secondary education is still concentrated on children from socioeconomically better-off households and from urban areas, therefore, making a more equitable access to senior secondary education will contribute to reducing income inequality in the country.

Literature Review

The effect of public spending on education outcomes in Indonesia has been studied by van de Walle (1992), using school enrollment data between 1978 and 1987. She finds that standard-of-living increases among households, pro-poor public spending (particularly on primary education) and an improving attitude toward education affect the enrollment rates. Public spending on primary

education is often deemed as pro-poor (Sparrow et al, 2001), in contrast to spending on secondary education, because secondary education is mostly attended by children from non-poor households.

When investigating causes of low secondary school enrollment in Indonesia, Suryadarma and Sumarto (2014) finds that household welfare, proxied by consumption expenditure, significantly affect children's probability in continuing their education. This represents the demand-side of education. At the same time, the supply-side also plays an important role, as Suryadharma and Sumarto also confirm that building more schools increases children's probability of continuing to secondary school. Whereas, Suryadarma et al (2006) examines the unequal distribution of education outcomes between western and eastern region of Indonesia. Study about regional disparity in Indonesia's education access is also conducted by Azzizah (2015) who analyzes the discrepancy of net enrolment ratio in western and eastern parts of Indonesia.

Data

As for empirical analysis, this paper uses district (kabupaten/kota) data level in 2006-2014 from several data sources. The difference of net enrollment, urban dummy, gini ratio, and population data are extracted from Survei Ekonomi Nasional (Susenas). The education spending data are sourced from Regional Finance Information System of MoF. The population and real GDRP data is extracted from Badan Pusat Statistik (BPS). While number of school data are extracted from PODES and Education Statistics of MoEC. In order to create a balanced Indonesia's district panel data, we use 2006 district classification for our data unit. We have 440 district data each year and 3960 data in overall. Below is definition of each variable used in this paper:

1) The difference of net enrollment ratio

   The difference of net enrollment rasio is difference between net of enrollment ratio (NER) in high school level between top quantile income and bottom quantile of income based on Susenas.This variable shows us the inequality of education attainment and become our main focus in this paper.

2) Growth of District Education Spending

Growth of district education spending is extracted Regional Finance Information System of MoF. We will examine the affect and effectiveness of education spending to education inequality in Indonesia.

Control Variables:

3) Urban Dummy

The urban dummy is a dummy variable which categorized whether a district is dominantly an urban area based on Susenas (1=dominantly urban area, 0=otherwise). A district is coded as a dominantly urban area when more than 50% of its population live in urban area in Susenas data.

4) Gini Ratio

Gini ratio shows the income inequality in each district every year. Gini ratio is extracted from Susenas data. Income distribution in Susenas is proxied by the spending distribution. We adopt direct method of gini coefficient from Deaton. Mathematically, the direct method states that the income gini is defined as "the ratio to the mean of half of the average over all pairs of the absolute deviations between [all possible pairs of] people" (Deaton 1997). The gini coefficient is formulated as follows:

$$Gini = \frac{1}{\mu N(N-1)} \sum_{i>j} \sum_{j} |y_i - y_j|$$

5) Real GDRP per Capita

Real GDRP per Capita is a variable is extracted by divide GDRP value by the number of population in a district. Real GDRP per capita shows us the average purchasing power in a district. Real GDRP per capita is one of important economic indicator which affect education condition in a district.

6) Number of Senior High School

Number of Senior High School shows the number of high school in a district. It becomes important indicator of mid-high education access in a district.

Methodology

We examine the impact of education spending to education inequality in Indonesia. Instead using gini coefficient of education as education inequality, we use the difference of net enrollment ratio between in high school level between top quantile income and bottom quantile of income. High school level is choosen as indicator since Indonesia's central government only give mandatory for 9-year compulsory education (*Wajib Belajar 9 Tahun*). It is a local government discretion to intervene the high school education access and quality.

We use fixed effect panel data regression to examine impact of education spending to education inequality in Indonesia. We also use fixed effect panel data regression by five regions in Indonesia: in Sumatera, Jawa-Bali, Kalimantan, Sulawesi, and Eastern Indonesia to know the detail effect of each region in Indonesia. Our regression model is formulated as follows:

$$Ine_{it} = \beta_0 + \beta_1 Edu_{it} + \beta_2 Urban_{it} + \beta_3 Gini_{it} + \beta_4 Y_{it} + \beta_5 School_{it} + \alpha_i + u_{it}$$

Ine_{it} = *Difference of NER between top quantile and bottom quantile*

Edu_{it} = *Growth of education spending (in percent)*

$Urban_{it}$ = *Urban dummy variable (1=urban dominated, 0=otherwise)*

$Gini_{it}$ = *Gini Ratio*

Y_{it} = *GDRP Per Capita*

$School_{it}$ = *Number of Senior High School*

α_i = *Unobservable heterogenity*

u_{it} = *Error term*

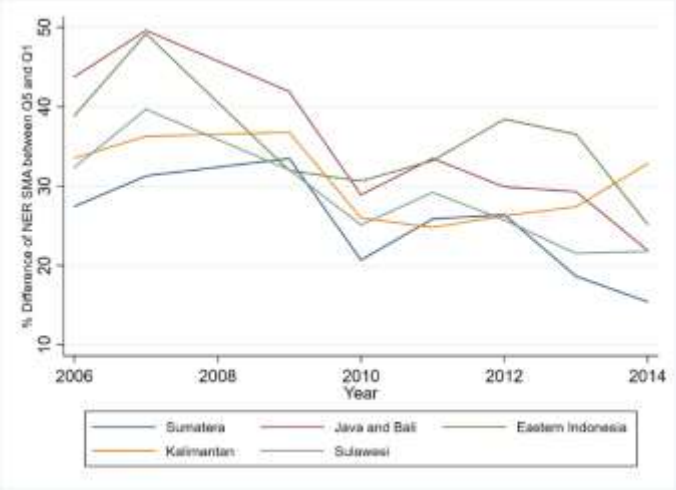
We use fixed effect panel data regression to fulfill strict exogenity assumption in panel data regression ($Cov(\alpha_i, u_{it}) = 0$) so our regression result will not generate a biased regression coefficient. We also use robust standard error to get the best standard error estimation and minimize error in inferencing the regression result.

Result

From 2006 to 2014, almost all regions in Indonesia depicted sign of more inclusive educational access. Figure 1 shows how the gap of net enrollment ratio in secondary high school level between the lowest 20 percent and highest 20 percent has decreased in Indonesia.

Figure 1

Difference of NER for Senior High School between Q5 and Q1



Source: Author's calculation, Susenas

From the Figure 1, we can see that Java-Bali which used to be the most inequal area consistently reduced its disparity. The same trend can be found in Eastern Indonesia, Kalimantan, and Sulawesi. In Kalimantan, the disparity tended to get smaller until 2010. However, the disparity was soaring up again from 2010 to 2014. Despite pattern uniformity across regions in Indonesia give a good signal about fairer access to upper-middle education between the rich and the poor, it is important to know how government, through its educational spending, took their part during the period of inequality reduction in 2006 to 2014. The following section will discuss about the role of government (and another relevant variable) in affecting the educational inequality in upper-middle level education in Indonesia.

Using ordinary least square regression with district-level fixed effect, we found that growth of government educational spending tends to reduce the inequality in high school education level in

the national level. Table 2 depicts the complete result of panel data regression in national level and across regions in Indonesia.

Table 2

Panel Data Regression Result

Dependent variable: ***Difference of NER for SMA between Q5 and Q1***							
		Indonesia	**Sumatera**	**Java-Bali**	**Eastern Indonesia**	**Kalimantan**	**Sulawesi**
Educ. Spending Growth		-0.000298***	0.0169	-0.000303***	-0.0553***	0.00647***	-0.00164
		(1.41e-05)	(0.0116)	(7.52e-06)	(0.0163)	(0.000689)	(0.00236)
Urban Dummy		-19.02	-33.97	-84.61***	48.84**	5.578	-31.40
		(12.04)	(21.01)	(26.01)	(19.21)	(26.50)	(30.41)
Gini Index		-49.29***	-17.70	-50.64**	-73.12	-45.66	-53.73**
		(11.67)	(25.28)	(20.57)	(44.00)	(38.56)	(26.50)
Number of Senior High School		-0.0795**	-0.0408	-0.0462	0.0551	0.296	-0.688***
		(0.0356)	(0.108)	(0.0455)	(0.141)	(0.316)	(0.209)
Real GDP per Capita		0.0230***	-0.354	0.0288***	-0.120	0.0534	0.750***
		(0.00673)	(0.496)	(0.00211)	(0.0863)	(0.438)	(0.200)
Constant		53.34***	51.60***	95.28***	47.14***	28.31	60.11***
		(5.001)	(13.18)	(13.69)	(15.19)	(17.11)	(8.648)

Source: Author's calculation

Although educational spending growth from government shows negative association with difference of NER for senior high school level between Q5 and Q1 of the society, which indicate that acceleration in government spending for education sector plays an important role in educational inequality alleviation for senior high school level, the association itself is quite doubtful since the coefficient is relatively small (-0.000298, which means that 1% increase in growth for educational spending will be translated to 0,000298% reduction in difference of NER for senior high school level between Q5 and Q1). The relatively small impact in national level then leads to the next question: is the small impact spreads equally or the impact tends to vary across regions in Indonesia?

Across five regions in Indonesia, educational spending growth from government made the most noticeable impact in Eastern Indonesia. In this area, 1% increase in growth for educational

spending will be translated to 0.055 reduction in difference of NER for senior high school level between Q5 and Q1. In Java-Bali, the impact is as relatively low as impact in the national level. In Sumatera and Sulawesi, the impact is not clear enough. In Kalimantan, it seems that educational spending growth from government tend to increase educational inequality in senior high school level. Thus, it seems that educational spending growth from government affects educational inequality in senior high school level in different ways across regions in Indonesia.

For set of control variable in the model, each variable affects educational inequality alleviation in different ways across regions. For urban status effect, more urbanized areas in Java-Bali significantly have lower level of educational inequality. In the other hand, more urbanized areas in Eastern Indonesia significantly have higher level of educational inequality. For economic inequality, as indicated by gini index, the effect is quite unique. As depicted in Table 2, higher state of economic inequality has strong correlation with educational inequality reduction, both in Java-Bali and Sulawesi. That kind of relation might be explained through the triangulation that involving poverty reduction process. From 2007 to 2012, Indonesia performed unique relation between inequality and poverty. During that period (see Appendix for further explanation), worsening economic inequality was being accompanied by fast poverty reduction progress. We suspect that fast poverty reduction progress lifted the lower quantile up and then improve their participation in senior high school level. For number of senior high school, Sulawesi is the only region where higher number of senior high school significantly reduces education inequality. For economic indicators, as represented by real GDP per capita, it seems that higher economic well-being does not correlate with more inclusive educational access.

Those findings show that increase in educational spending from government is not a one-size-fits-all solution to provide more equitable access in education, especially for senior high school level, in Indonesia. Although several regions like Eastern Indonesia and Java-Bali depict the negative association between increase in educational spending from government and difference of NER for senior high school level between Q5 and Q1, region like Sulawesi shows that higher number of high school provided is more related with more equitable access in education at senior high school level rather than government spending in education. A region like Kalimantan even shows that more expansive educational spending from government leads to less equitable access in education.

Policy Recommendation

This study suggests Government of Indonesia to extend the effectiveness of government spending on educational inequality on reducing educational inequality to the whole nation, not only in the eastern part of Indonesia, i.e. using education budget to increase number of senior high school in Sulawesi, as number of senior high school in Sulawesi has negative and strong correlation with more equitable access to senior high school level. Further, we encourage future research to find the variable that took important role on reducing educational inequality, especially at the region where all traditional variables that being used in this study showed unclear impact, i.e. Sumatera and Kalimantan.

Conclusion

This research aims to assess the impact of government spending on educational inequality, especially at senior high school level. Using district-level fixed effect regression, this study found that higher growth in educational spending from government led to more equitable access to senior high school level in the national level, even though the impact was quite small. Further, this study found that the impact was concentrated at Eastern Indonesia and another area showed ambiguous effect or even worsening the educational inequality. The main policy suggestion of this study is to extend the effectiveness of government spending on educational inequality on reducing educational inequality to the whole nation, not only in the eastern part of Indonesia, i.e. using education budget to increase number of senior high school in Sulawesi, as number of senior high school in Sulawesi has negative and strong correlation with more equitable access to senior high school level.

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TRANSFER FUND, REGIONAL EXPENDITURE, POVERTY, AND INCOME INEQUALITY: EVIDENCE FROM BANTEN PROVINCE

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ABSTRACT

Transfer fund from central to local government have been allocated since 2001 and annually increase significantly. However, the decreasing level of poverty rates and income inequality in the region over the last decade tends to deliberate. Various researches which have been conducted only measuring direct effect of transfer funds to poverty and income inequality and ignoring transmission of transfer fund through regional expenditure and public service. The purposes of study are to analyze regional expenditure pattern and to estimate direct and indirect impact of transfer fund on poverty and income inequality through regional expenditure and public services in Banten Province. The descriptive analysis and dynamic simultaneous equation models using data panel for 2010-2015 was employed in this study. Econometric model is constructed by 4 equation blocks, consisting of regional income, regional spending, public services, and poverty and income inequality. The results indicate that the dependence of local governments on transfer funds is still high at 64.69%, with the average of personnel budget allocation is 50.01%. The largest personnel expenditure is allocated by Pandeglang Regency at 65.29% while the smallest personnel expenditure is allocated by South Tangerang City at 35.44%. The second largest expenditure allocation is the capital expenditure allocation with the average of 25.05%. Meanwhile, the average allocation of goods and services, and administrative expenditures are 23.67% and 21.64%, respectively. The result also shows that general allocation funds significantly affect the increase of personnel expenditure, capital, goods and services, as well as grants and social aid. In addition, specific allocation funds only affect the increase of capital and education expenditures, while revenue sharing funds show a positive effect on personnel expenditure. Local generated revenue (pendapatan asli daerah/PAD) has positive effect on capital expenditure, personnel, and goods and services. Furthermore, transfer funds through health, education, and public works expenditures tend to significantly reduce poverty, but cannot be able to reduce income inequality yet.

Keywords: Regional income, regional expenditure, public services, dynamic simultaneous model

BACKGROUND

The policy of central to regional transfer funds is one form of fiscal policies. According to Musgrave and Musgrave (1989), fiscal policy has three main functions: allocation, distribution, and stabilization. Referring to Law no. 33 Year 2004 on Fiscal Balance between Central and Regional Governments, the objective of balancing funds is to

foster fiscal performance and regional development, such as regional financial self-sufficiency, poverty reduction, and income distribution.

Transfer funds to the regions and villages continue to increase. During the period of 2010-2016, it is recorded that transfer funds increased by an average of 19.99% per year, while the poverty rate slowed down by 0.42% per year, and income inequality decreased by 0.003 points per year. Such phenomenon also occurred in Banten Province, where transfer funds in the same period increased by an average of 39.49% per year, while the poverty rate decreased by 0.26% per year, and income inequality dropped by 0.005 points per year.

Studies on the impact of fiscal decentralization have been widely performed, as by Khan *et al.* (2015), who found that public expenditures tend to increase an income inequality, while public sector investments tend to lessen it. According to Shen (2012); Goerl and Seiferling (2014), there is a trade-off trend between fiscal policy and income. Meanwhile, Gallo and Sagales (2012) conclude that the distributions of expenditures and direct taxes significantly reduce income inequality. Another study, conducted by Jutting *et al.* (2004); Steiner (2005); and Lisna *et al.* (2013), found that transfer funds can reduce poverty. In contrast, the results of studies conducted by Kuncoro (2004); Kusumadewi and Rahman (2007); and Murniasih and Mulyadi (2011) instead found the flypaper effect phenomenon.

So far, studies that were performed put forward more on the impact of fiscal decentralization funds on macroeconomic indicators, ignoring the transmission through regional spending and services. According to Suzetta (2008) and Yustika (2013), the easiest parameter to assess the success of decentralization is by checking the extent to which the quality of public services is provided and the accountability of local governments. The abovementioned facts signify that it is necessary to examine the impact of transfer funds on the income inequality and poverty through the behavior of regional spending and public services.

METHODS

This study was conducted in Banten Province using secondary data from 2010-2015. The data that were sourced from BPS and Directorate General of Fiscal Balance were in the form of panel data from eight regencies/cities in Banten Province. The secondary data consists of General Allocation Funds (DAU), Revenue Sharing Funds (DBH), Specific Allocation Funds (DAK), Locally-Generated Revenue (PAD) and its components, and other Transfers. Regional Expenditures consist of capital expenditures, personnel expenditures, and the expenditures on goods and services, subsidized items, and grants. Expenditures by function are those spent on educational affairs, health purposes, and public works. Development performance is assessed using poverty and income inequality, which refers to one of the objectives of data transfer that is to reduce the gaps in income and poverty. Poverty data provides the percentage of impoverished people, whereas data on income inequality per regency is measured using the Gini index.

The data is processed using simultaneous equation model which is constructed to four blocks, namely; regional revenue block, regional expenditure block, public service block (health, education, public works), and income inequality & poverty block. Furthermore, these four blocks consist of 23 structural equations and 3 identity equations. Regional revenue block is reflecting the revenues obtained from transfer funds, PAD, and other types of transfers. The behavior of regional income will affect the expenditures made by said regions; such expenditures, either directly or indirectly through public services, will have an

impact on the income inequality and poverty. The simultaneous equation model is projected using Two-Stage Least Square (2SLS) which is processed using Eviews9 software.

RESULTS AND DISCUSSIONS

Figure 1 illustrates the regional revenues of the regencies/cities in Banten Province, which in general indicates an increasing trend. In 2010, regional revenue of Banten Province was recorded to be Rp 2,377.32 millions, and then went up to Rp 7,644.63 millions in 2015. Tangerang is recorded to be the regency with the highest regional revenue compared to other similar regions. Its revenue has doubled in 2015 from Rp 2,191.93 millions in 2010. On the contrary, Serang is the city with the lowest regional revenue recorded.

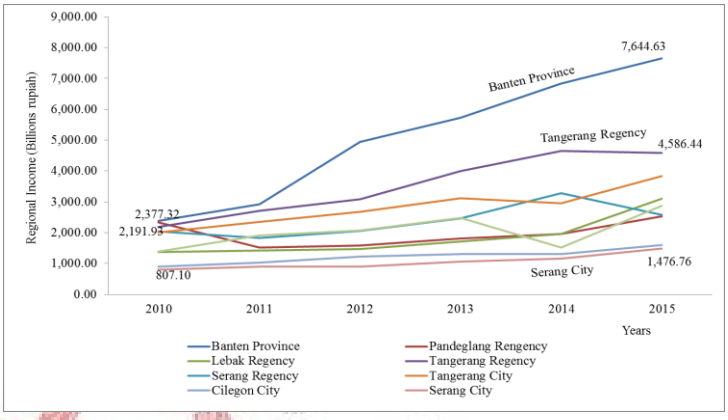
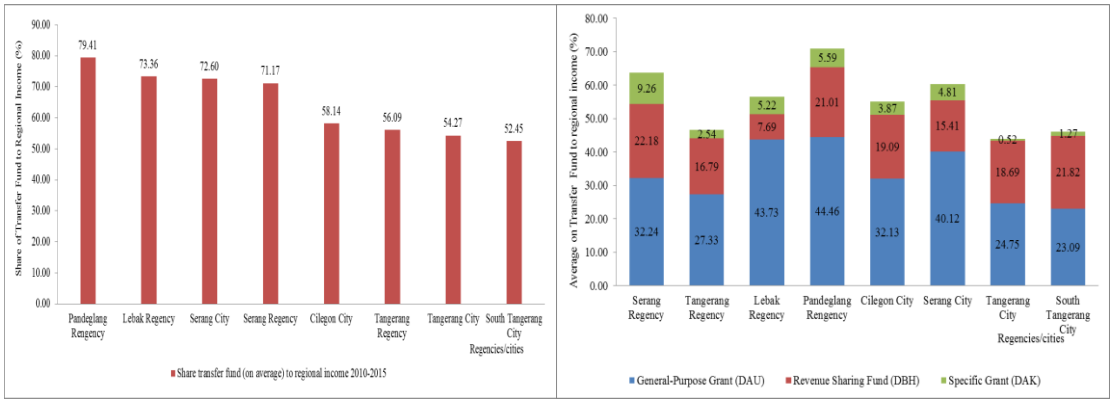


Figure 1 Regional Income in Banten Province 2010-2015

Figure 2.a provides an illustration on how the role of regional financial transfer funds in the regional revenue during the period of 2010-2015 was still relatively vital, which contributed 64.69% on average. The analysis result points out that in general, the cities of Banten Province have lower fiscal dependency compared to its regencies; except for Serang City, which still has an average of 72.60% fiscal dependency. South Tangerang City and Tangerang City, playing the role as the buffer cities for the nation's capital, have fiscal dependency of 52.45% and 54.27% respectively. The high rate of dependency in a number of regencies/cities indicates the low rate of their regional fiscal self-sufficiency, which results in the high level of financial risks (Sukanto dan Mukhlis 2013).



(a) (b)

Figure 2(a) Average share of transfer funds on the regional revenue in Banten Province during 2010-2015, (b) Contributions made by DAU, DAK, and DBH to regional revenue in Banten Province during 2010-2015

Transfer funds in the form of balance funds consisting of DAU, DBH, and DAK are still the main sources of regional revenue for regencies/cities in Banten Province. The highest proportion of regional revenue in each regency/city still comes from DAU, with DBH comes second. The largest contribution of DAU to regional revenues, which is 44.46%, is recorded by Pandeglang Regency, followed by Lebak Regency, which is 43.73%. At the same time, the smallest DAU contribution to regional revenue is recorded in South Tangerang City, at 23.09% (Figure 2b). The high number of DAU contribution to regional revenues that is still recorded in several regions serves as an indication of their low financial capacity.

Vasquez and Yao (2009) argue that it is undeniable that fiscal decentralization increases the number of workers in public sectors. This is also implicitly occurring in the regencies/cities of Banten Province, where the phenomenon of regional expansion has an impact on the increasing number of local government personnel. As a result, more money needs to be allocated for personnel expenditure. The pattern of regional spending in all regencies/cities is dominated by personnel expenditure, with the allocation averaging on 50.01% over the period 2010-2015. The largest personnel expenditure allocation was recorded by Pandeglang Regency (65.29%), Lebak Regency (54.25%), Serang Regency (54.15%), and Serang City (55.12%). Furthermore, the percentage of personnel expenditure allocation in several other regions is as follows; Tangerang Regency (38.71%), Tangerang City (48.59%), Cilegon City (48.51%), and South Tangerang City (35.44%)(Figure 3). The study conducted by Liddo *et al.* (2015) found that a less than 30% public expenditure rate gives positive effect to the economic activities. The results of the study seem to confirm as to why public spending of the regencies/cities in Banten Province has no positive effects on economic activity. The data shows that the allocation for personnel expenditure is still more than 30%, while the average allocations for expenditure of goods and services and for administration are 23.67% and 21.64% respectively.

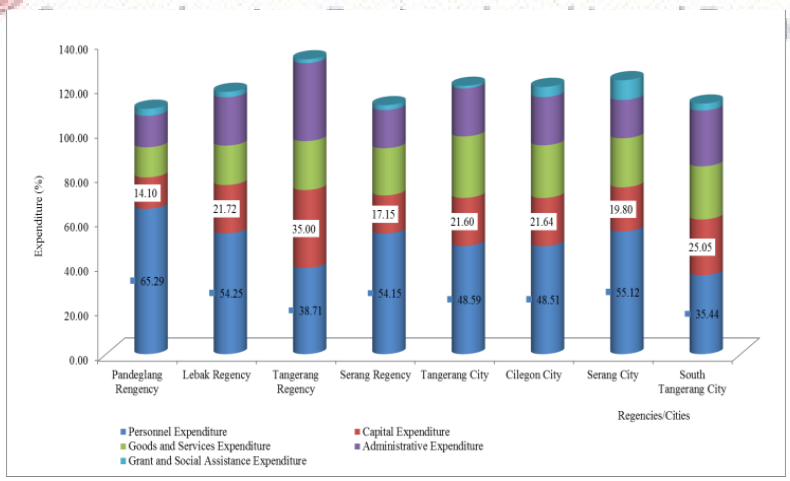


Figure 3 Composition of Regional Spending in Banten Province

Capital expenditures such as infrastructure development for roads for farming, retention basins, and irrigation canals are believed to be able to improve regional development performance (Rahmadi and Safri 2014). The analysis shows that the average share of capital expenditure of the regencies/cities in Banten Province is 22.01%, still below the expectation from the central government, which requires that at least 25% allocation goes to capital expenditure (Budiarso 2016).

The Impact of Transfer Funds on Regional Expenditure

In general, the estimation results show the model meets both the economic criteria (theoretically meaningful) and the statistical criteria (goodness of fit). Transfer funds to the regions affect the behavior of regional spending. DAU and PAD variables give positive influences to capital expenditures, personnel expenditures, goods and services expenditures, educational affairs expenditures, health expenditures, and public works expenditures.

Table 1 Estimated Transfer Fund to Local Expenditures

Independent Variables	Dependent Variables						
	Good and Services Expenditures	Capital Expenditures	Personnel Expenditures	Grant and Social Aid Expenditures	Education Expenditures	Public Works Expenditures	Health Expenditures
Contansta	0.07	-12.621***	1.001	12.834**	-43.736	-43.091	-30.398
General Allocation Fund (DAU)	0.460***	0.830***	0.683***	1.048***	7.329***	6.832***	6.960***
Specific Allocation Fund (DAK)	0.001	-0.01	0		-0.032	-0.017	0.054
Revenue Sharing Fund (DBH)	-0.072	-0.018	0.024	0.142	-0.628	-0.71	-0.584
Locally-Generated Revenue	0.349***	0.457***	0.033	0.086	3.490**	3.432**	3.770**
Province and Vilage Fund	-0.2285	-0.0956	-0.0470	0.9673	5.6212	4.7445	5.9356
Civil Servants (PNS)	-0.1826		0.114*	-1.617***	-1.186	-0.672	-1.922
Other Transfers	0.526**	0.27	0.239**	-1.232*	-13.532**	-12.210**	-14.066**
Lag Good and Services Expenditures	0.008						
Lag Capital Expenditures		0.042***					
Lag Personnel Expenditures			0.0001				
Lag Grant and Social Aid Expenditures				-0.026			
Lag Education Expenditures					0.867***		
Lag Public Works Expenditures						0.892***	
Lag Health Expenditures							0.887***
Adj. R-squared	**0.913**	**0.801**	**0.955**	**0.222**	**0.708**	**0.73**	**0.735**
Durbin Watson	**1.569**	**2.449**	**0.866**	**1.806**	**2.189**	**2.208**	**2.143**

Table 1 provides information on the results of structural equation regression showing that goods and services expenditures are significantly affected by DAU, PAD, and other legitimate incomes. The DAU parameter coefficient of 0.4603 means that every 10% increase in DAU will increase the spending on goods and services for as much as 4.6%. The allocation for goods and services spending in the APBD (Regional Budgets) of each regency/city in Banten Province is 21.46% on average, relatively similar to that for capital expenditure. PAD has significant effect on goods and services spending in regencies/cities, where the PAD coefficient of 0.3488 means that the increase in PAD will encourage the increase of goods and services spending (Table 19). For some regions, such as South Tangerang City, Tangerang City, Cilegon City, and Tangerang Regency, PAD has contributed more than 20% to local revenue. The increase in PAD encourages regional expenditures, including goods and services spending. Whereas DAK, DBH, other joint funds (provincial transfers, village funds), and the number of civil servants have no effect on the goods and services expenditure.

The analysis results also show that capital expenditures are affected by DAU, PAD, and capital expenditure from the previous year. At the same time, DAU has a positive effect on capital expenditure with a coefficient of 0.8302, which means that every 10% increase in DAU, there is an 8.3% increase in capital expenditure. In addition, positive effect on capital expenditure is also seen in PAD, with the parameter coefficient of 0.4569; whereas DAK, DBH, provincial transfers and village funds, and other regional revenues have no significant effect on capital expenditures.

Personnel expenditure is a component in both direct spending and indirect spending. In indirect spending, personnel expenditure is used for payment of salaries, honorarium, and allowance; while in direct spending said component is used in the payment for non civil servants. Regression results show that personnel expenditure is influenced by DAU, civil servants, and other regional income. The DAU coefficient is 0.6829, meaning that every 10% increase in DAU will increase personnel expenditure by 6.82%. This is because the civil servant indicator in the DAU formulation is used as the basic allocation component in determining the amount of DAU to be received by the region.

The result of the research shows that DAU significantly gives positive impact to the spending for grants and social assistance, with variable coefficient of 10.48, which means that every 1% increase in DAU has the potential to increase the funds for grants and social assistance by 10.48%. In addition, the results of the analysis in the previous section show the huge contribution of DAU to regional revenues, meaning that the dependence on DAU as a source of financing is very high. On the other hand, the number of civil servants and the other income have negatively affected the spending for grants and social assistance. The analysis shows that the configuration of the expenditures for grants and social assistance in districts/cities during the period of 2010-2015 was 3.41% on average, with Serang City being the region with the largest allocation (8.88%).

Regression results indicate that the factors significantly influencing the spending for educational affairs are DAU and PAD, each with coefficients of 73.29 and 34.90 respectively. While DAK, DBH, Funds transfer and village funds (other combined funds), civil servants, and other regional income have no noteworthy effect. It can be explained that the allocation of spending for educational affairs has been stipulated in the 1945 Constitution article 31, paragraph 4 which reads "the state prioritizes education budget at least twenty percent of the state budget revenue and expenditure, as well as from the budget of regional income and expenditure to meet the needs of the implementation of national education". The provisions of this legislation require that the government provides a 20% expenditure allocation from the pure APBD (Regional Budgets). One implication of this provision is the priority arrangements in regional budgets, where the prepared program is sometimes only a copy of the previous year without any regards to the urgency of a program, as long as it meets the required 20% allocation for educational budget.

Health spending should refer to the provisions of Law Number 36 Year 2009 on Health, especially article 171 paragraph (1) which reads "the amount of health budget allocated by the government is at least 5% of the state budget (*APBN*), excluding payroll". Moreover, in paragraph (2) it is stated that the health budget of the provincial, regency/city government is allocated at least 10% of the regional budget (*APBD*), excluding payroll. Based on the provisions of said legislation, the amount of health care spending depends on the amount of APBD. Regression results point out that the factors affecting health care spending are DAU, PAD, and the spending in the previous year. In addition, DAU and PAD are the largest components in the APBD structure, thus the increase in these two variables will lead to an increase in the health budget. Studies also show that the amount of expenditures for Public Works affairs is positively and significantly influenced by DAU, PAD, and the spending in the previous year. The coefficient of DAU is 69.60%, meaning that a 1% increase in DAU will also increase public works expenditure by 69.60%. Meanwhile DAK, DBH, provincial government transfer funds and village funds (other joint funds), civil servants, and other regional revenues have no significant effect.

The Impact of Transfer Funds on Inequality of Income and Poverty

A study by Lisna *et al.* (2013) found that an increase in the fiscal capacity of local taxes and profit-sharing taxes have the greatest impact in reducing poverty, especially in agricultural households. This study also shows that the increase in General Allocation Fund (DAU) has a negative impact on agricultural poverty. According to Jutting *et al.* (2004), the impact of decentralization on poverty depends on the physical condition of a country, such as the availability of infrastructure, capacity, and the willingness of public officials to conduct pro-poor programs.

Inequality among classes of income becomes the focus of the current government, where increases in inequality indicate an increasingly widening inequality among said classes. Fiscal policy and educational improvement are the important factors in reducing inequality (Norris *et al.* 2015). The study found that the poverty rate and income inequality in the previous year had a negative effect on current income inequality. The coefficient of poverty is -0.0067, which means the poorer a person is, the higher the inequality will be .

Table 2 Estimated Transfer Fund to Income Inequality and poverty

Variable	Gini Ratio	Poverty
Constanta	0.3007	-7.5484
Log Health Expenditure	0.0077	
Log Education Expenditure	-0.0015	
Log Public Works Expenditure	-0.0061	
Regional Dummy	0.0192	
Poverty Rate	-0.0067**	
Log Net Enrollment Rate of Senior High School (APMSMA)	-0.0117	
Log Grant and Social Assistance	-0.0018	-0.0178
Log GDRBCapita	0.0004	-0.3329**
Sanitation		0.0407**
Drinking Water		-0.0647***
Imunitation		0.0011
Log Capital Expenditure		-0.2579**
Log Average School Life Expectancy		-1.5930
Consumers Price Index		0.0481**
Construction Cost Index		-0.0492
Unemplomen t		0.0436
Lag Gini Ratio	0.3478**	
Lag Poverty		0.9462**
Adj. R-squared	**0.6446**	**0.9398**
Durbin Watson	**2.0863**	**2.4470**

*** indicates α < 0.01

** indicates α < 0.05

Expenditures on educational affairs and public works have contributed to a decrease in income inequality, indicating that regional spending in education has the potential to reduce such inequality. Improving the level of education will also improve the quality of human resources (Sylwester 2000), so much so that it can also break the chain of poverty. Improving access to lagging and outlying regions through public work expenditures tends to

lower the income inequality (Harun *et al.* 2012). In addition, grants and social assistance focusing on those who are really in need will also tend to lower the level of inequality. Another finding is that there is a positive relationship between per capita GRDP with inequality, indicating that per capita GRDP is not inclusive.

Poverty is a multidimensional problem, in the sense that many factors influence and relate to one another. According to Sagir (2009), the poor are trapped in a cycle of poverty, and one way to break the poverty chain is to improve the quality of education (Zhang 2014). Education and health expenditures play an indirect role in influencing poverty alleviation (Widodo *et al.* 2011). Studies conducted by Aquilar *et al.* (2017) has stated that education and health spending will help bring down the inequality and poverty. The results of this study also found that drinking water, capital expenditure, and per capita GRDP have negative effects on poverty. This drinking water has a coefficient of -0.0647, meaning that at every 10% supply of drinking water, there is a 0.6% decrease in poverty. Additionally, capital expenditure has a coefficient of -0.2579, which can be interpreted as every 10% increase in capital expenditure tends to reduce the poverty rate by 2.5%. The results of this study also show that per capita GRDP tends to decrease the poverty levels, so efforts are needed to increase per capita income. Pro-poor policies that can expand public access are urgently needed (Montiel 2014), which can be done through empowerment and incentives for MSEs, thereby increasing community revenues.

The consumer price index has a positive and significant effect on poverty. An increase in this consumer price index will lead to a hike in poverty rate. Such CPI increase will also greatly affect households in the third and fourth deciles (almost poor and vulnerable poor). Everytime there's a price increase, there will be a decrease of purchasing power in the community, which consequently brings down the status of the households in those deciles into the category of poor households. Therefore, it is necessary for the government to maintain price stability, so that the almost poor and vulnerable poor households do not fall into the category of poor households. In the mean time, the unemployment rate is positively related to poverty, where every increase in the unemployment rate will most likely mean an increase in the poverty rate.

Table 3 Pro-poor Budget in Banten Province for the Year of 2014-2016

Year	APBD (in billion Rupiah)	Pro Poor Budget (in billion Rupiah)	Ratio of Pro-Poor Budget to APBD (%)	Poverty rate (%)
2014	7,870	601.85	7.65	5.51
2015	9,150	893.53	9.76	5.75
2016	8,810	948.25	10.76	5.42

Source: TKPK of Banten Province, 2018

Table 3 provides an illustration that the pro-poor policies are reflected in APBD fund allocations that are in favor of the poor. The analysis shows that the APBD (Regional Budgets) of Banten Province, which was Rp 7,870 billion in 2014, has increased to Rp 8,810 billion in 2016. Additionally, the pro-poor budget in the same period has also increased from Rp 601.85 billion to Rp 948.25 billion. The percentage of pro-poor expenditure to the Provincial Budget of Banten has increased significantly, from 7.64% in 2014 to 10.76% in 2016. The increase in the pro-poor budget has been linearly reducing the poverty rate, since it was noted that in the same period the poverty rate has decreased by 0.09%.

CONCLUSION

Transfer funds to the regions are still the main source of revenue for regencies/cities in Banten Province, which unfortunately still cannot be matched by the increase of locally-generated revenue, thus causing the low level of regional financial independence. The Regional Budgets of regencies/cities during the period 2010-2015 have been largely allocated to personnel expenditures, goods and services spending, and grant and subsidy spending, as a result pro-poor budgetary allocations are still relatively small compared to other budget allocations. Transfer Funds through education expenditures were able to increase the net enrollment rate at various levels of education, while public works expenditures proved to improve services in the field of sanitation and drinking water supply. Expenditures on educational affairs, health, and public works proved to still be incapable of reducing income inequality. Increases in capital expenditure and drinking water tend to decrease poverty.

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IMPACT EVALUATION OF BANTUAN SISWA MISKIN (BSM) ON CHILD LABOR IN INDONESIA

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ABSTRACT

BSM is a national program aimed at eliminating the impediment of poor students to school, where the majority impediment is to being child laborers to help the family economy. This study aims to examine the impact of the BSM on child labor, which will be seen whether this policy can reduce the number of hours worked per week from child labor. This research use PSM (Propensity Score Matching) with data source from wave 5 IFLS 2014. The results showed that the BSM had a significant impact on reducing the number of working hours of child labor by 3,74 hours per week.

Keywords: Bantuan Siswa Miskin, Child labor, Propensity score matching, Impact evaluation

1. INTRODUCTION

Indonesia has ratified the ILO's convention on the minimum age for a workforce of 15 years. One reason for the prohibition of child labor according to the ILO is that child labor will cause poverty. In addition, child labor is closely linked to low levels of education, and will also impact on the low quality of the workforce in the future. The relationship between the current level of child labor and poverty in the future is through low levels of education. Children who spend a lot of time working will have little chance of getting a decent education. Consequently the child will grow into a low-educated workforce with a low skill level so that his productivity is low and his wage rate is also low. Therefore, children who are forced to work on the grounds of poverty will have little chance of escaping poverty in adulthood. Even possibly in the future, their own children will also work because of poverty. This means that poverty produces child labor, while child labor causes poverty in the future (Priyambada, Suryahadi, and Sumarto 2005, 1-2).

The linkage between child labor and poverty can be cut off by providing strategies for providing access to education for children from poor families (Priyambada, Suryahadi and Sumarto 2005, 26). To that end, the government developed the BSM Program (Bantuan Siswa Miskin) (TNP2K, 2015). The BSM Program is a National Program aimed at eliminating the barriers of poor students to school, preventing dropping out, attracting poor students to return to school, helping students meet the needs of learning activities, and supporting the Nine Years Basic Education Compulsory Education program (TNP2K, 2015). Through

the BSM Program, it is expected that school-aged children from poor households / families can continue to attend school, so they do not need to be child laborers who can eventually break the poverty chain that their parents currently experience.

There have been previous studies of child labor and subsidies for poor households. Research in Indonesia found that the problem of child labor is closely linked to poverty. Some children who drop out of school then work due to family economic reasons (Priyambada, Suryahadi, and Sumarto 2005, 2). The Social Safety Net Program (JPS) has the greatest impact on child labor on poor households than non-poor households (Sparrow 2007, 29). Research on child labor and subsidies for poor households in other countries shows that cash assistance to poor households can reduce the involvement of school children working in poor households (Maluccio and Flores 2005, 56-57) (Edmonds and Schady 2012, 120).

School subsidies can increase school participation, but not necessarily affect child labor (Ravallion and Wodon 2000, 173). The observed households in Guatemala use child labor to respond to socioeconomic shock and natural disasters, in fact no evidence of observed households reduces the child's schooling time to respond to socioeconomic shock (Vásquez and Bohara 2010, 182-83) (Bessell 2009, 538) (Priyambada, Suryahadi, and Sumarto 2005, 26).

This study wanted to examine the significance of the impact of BSM delivery and how much impact the BSM had on child labor. As a child labor proxy variable, the number of working hours per week of child labor will be used.

The policy impact will be seen from whether this policy can reduce the number of hours worked per week from child labor. The results of the study are expected to contribute to policy makers on poverty alleviation particularly in the Poor Student Assistance program. Where to date is still limited research related to the evaluation of the impact of providing tuition assistance for children from poor households in Indonesia.

2. RESEARCH METHODS

2.1 Research design

To estimate the impact of the BSM program on child labor, a proxy variable of working hours per week of child labor is used. Impact evaluation of BSM policy was observed by looking at the outcomes of whether the number of hours worked per week of child labor can increase or decreases after receiving BSM, by estimating the difference in the average number of hours worked per week between individuals receiving BSM and individuals not receiving BSM.

Specific impact evaluations calculate changes in outcomes from a group receiving the program. To calculate the change of outcome it is necessary to have a comparison group as counterfactual. Counterfactual is an estimate of the outcomes of the program participant groups in case the group does not receive the program. The problem of biased selection arises because it is impossible to observe the difference in outcomes of program participants who received treatment with those who did not receive treatment, where it is impossible to observe both outcomes from one individual at a time. The main models used in

this study consist of outcome treatment and outcome control of individuals. The observable outcomes of individuals i are formulated:

$$Y_i = D_i Y_{1i} + (1-D_i) Y_{0i} \quad (1)$$

where:

D_i = Individual treatment indicator i with value of 1 (one) if receive BSM and 0 (zero) if not receive BSM
Y_i = potential individual outcome i is the number of hours worked per week
Y_{1i} = potential individual outcomes i when receiving BSM (treatment outcome)
Y_{0i} = potential individual outcomes i when not receiving BSM (control outcome)

In fact it is not possible to observe Y_{0i} if individual has in fact received program benefits. To overcome these obstacles used method Prospensity Score Matching (PSM). The basic concept of PSM is to build a comparison group based on a person's propensity score to receive BSM. The magnitude of the impact of treatment (Average Treatment Effects on the Treated / ATET) was estimated by calculating the difference in the average number of working hours per week between individuals who received BSM ($Y_{1i} \mid D = 1$) with individuals who did not receive BSM ($Y_{0i} \mid D = 0$) both of which share the same propensity score in receiving BSM.

$$\tau ATET = E(Y_{1i} \mid D = 1) - E(Y_{0i} \mid D = 0) \quad (2)$$

The impact study using the PSM estimation method is done with five steps: 1) propensity score estimation, 2) selection of matching algorithm model, 3) checking for common support, 4) evaluation of matching quality and impact estimation, 5) sensitivity analysis (Caliendo and Kopeinig (2005, 2).

Building a comparison group first built binary model. Selection of appropriate models and variables is needed to estimate the propensity score (Caliendo and Kopeinig 2005, 5). Model selection is not critical when treatment variables are binary variables, whereas for the selection of variables must be based on earlier empirical theory and invention. In this study we selected the logit model commonly used in previous research and the selection of variables based on literature such as the definition of poor households according to BPS and technical guidance of BSM program implementation. The independent variables on the logit regression model used to estimate the propensity score include household conditions, poverty conditions and individual conditions. Variables representing household conditions are 1) number of family members, 2) duration of school head of household, 3) sex of head of household, 4) marital status of head of household, 5) residence location. The variable of household poverty condition is the sum of 10 poverty indicator which mostly adopted from definition of poor household according to BPS. The ten indicators are 1) the type of residential floor, 2) the type of residential wall, 3) the status of residential ownership, 4) the origin of the drinking water source, 5) the ownership of the toilet facility, 6) the source of the cooking fuel, 7) ownership of television, 8) ownership of SKTM (Statement of Unsufficiency), 9) received BLSM (Unconditional Cash Transfer), 10) had PPP (Social Protection Card). The variables that represent the individual condition are: 1) the child's age and 2) the child's gender. The logit model for the estimated propensity score is formulated:

$$logit\ bsm_{hi} = \alpha_0 + \beta X_h + \gamma X_m + \delta X_i \quad (3)$$

where:

bsm_{hi} = receive BSM, yes=1
X_h = Household *h* conditions
- *hhsize* = number of family members
- *hhheduc* = years of school of household head
- *hhhfemale* = female household head, yes=1
- *hhhsingle* = head of household is not married / widow / widower, yes=1
- *rural* = households live in rural areas, yes=1

X_m = poverty conditions of household *h*
- *miskin* = the number of poor indicators
  - *dirtfloor* = dirt floor, wood or bamboo, yes=1
  - *woodenwall* = wooden wall or bamboo, yes=1
  - *rentedhouse* = the residence does not belong to itself, yes=1
  - *wellwater* = drinking water comes from wells / rivers / rainwater, yes=1
  - *notoilet* = does not have a toilet facility, yes=1
  - *nogas* = cooking using kerosene, firewood or charcoal, yes=1
  - *notv* = no television, yes=1
  - *sktm* = have SKTM, yes=1
  - *blsm* = received BLSM, yes=1
  - *kps* = have KPS, yes=1

X_i = individual *i* conditions
- *cfemale* = the child's gender is female, yes=1
- *cage* = child age

After the propensity score is estimated, then the matching process between the treatment group and the control group that has the same value of propensity score. There are several matching algorithms such as Nearest Neighbour (NN), Caliper and Radius, Stratification and Interval, Kernel and Local Linear and Weighting (Caliendo and Kopeinig 2005, 9). In large samples the choice of the matching algorithm is not critical because it will result in almost the same estimation (Smith 2000, in Caliendo and Kopeinig 2005, 11). However, in small samples the choice of the matching algorithm can be important, where usually a trade-off between bias and variance arises (Heckman, Ichimura, and Todd 1997,

in Caliendo and Kopeinig 2005, 11). It should be clear that there is no 'winner' for all situations and that the choice of the estimator crucially depends on the situation at hand.

The next step is to check the overlap and region of the common support between the treatment group and the control group. Common support is the area of intersection of the propensity score distribution density between the treatment group and the control group. The most immediate examination is the visual examination of the propensity score distribution density between the two groups as in Figure 2.1 (Caliendo and Kopeinig 2005, 12). Implementing the common support condition ensures that any combination of characteristics observed in the treatment group can also be observed among the control group (Bryson, Dorsett, and Purdon 2002, in Caliendo and Kopeinig 2005, 12).

The next stage is assessing the matching quality. Since we do not condition on all covariates but on the propensity score, it has to be checked if the matching procedure is able to balance the distribution of the relevant variables in both the control and treatment group. The basic idea of all approaches is to compare the situation before and after matching and check if there remain any difierences after conditioning on the propensity score. If there are difierences, matching on the score was not (completely) successful and remedial measures have to be done (Caliendo and Kopeinig 2005, 15).

Assessing the matching quality can be done with standar bias test, t-test, joint significance test and Pseudo-R^2 (Caliendo and Kopeinig 2005, 15-16). *Standar bias test* and *t-test* are used to see the quality of matching for each

variable, while to see the overall matching quality can be used *joint significance test* or pseudo-R^2. In standard bias test, the matching process is said to succeed if standar bias after matching decrease. There is no clear indication for the success of the matching procedure, even though in most empirical studies a bias reduction below 3% or 5% is seen as sufficient. T-test is used to see the mean equality before and after matching, whereas joint significance test is used to see the mean equality simultaneously of all variables before and after matching. The hotelling test can be used on a joint significance test and this test is said to succeed if the null hypothesis is not rejected after matching. Pseudo-R2 is used to see the overall matching quality before and after matching, the test is successful if the pseudo-R2 value after matching is lower than before matching. In conclusion on the t-test, joint significance test and pseudo-R2, the matching process is successful if there is no significant difference in the covariates. If good matching results are obtained, the impact of treatment (Average Treatment Effects on the Treated / ATET) is estimated by equation (2). The last stage is the sensitivity analysis to see the hidden bias using Rosenbaum bounds from Wilcoxon's signed rank test (Rosenbaum 2002, in Sulistyaningrum 2016, 47). The estimated value of PSM that has passed the five stages can be used to see the impact of the BSM program on child labor.

2.2 Definition of operational variables

Model (1) is used to measure the difference in the average number of working hours per week between individuals who get BSM and individuals who do not get BSM which both have the same propensity score. The number of working hours

per week is the number of hours of child labor per week in hours. Child laborers are children under 15 who work according to the criteria of child labor by BPS, ie 1) all persons aged 5-12 years without looking at working hours, 2) all persons aged 13-14 who work more than 15 hours per week. The age limit below 15 years is due to limited data available on IFLS-5, where the IFLS-5 book 5 on child labor data is targeted only to children under 15 years of age. The meaning of work is individuals who work in the wage employment sector and work on family businesses (agriculture and non-farm), while for individuals working in the household (household work) is not defined as working.

Individuals who receive BSM are individual in the household receiving BSM regardless of the size of the assistance. In the IFLS-5 data the question of whether a household receives a BSM is answered yes or no, and a dummy variable is used to include it into the model. Model (3) used for the estimation of propensity score includes variable aspects of household conditions, poverty conditions and individual conditions. Numeric variables entered into the model without adjustment. Qualitative variables adjusted into dummy variables according to descriptive status. Definition of operational variables can be seen in Table 2.1.

2.3 Data Collection and Analysis Techniques

The data source is the IFLS-5 survey. IFLS-5 is a longitudinal survey with follow-up samples from previous period IFLS. In IFLS-1 sampling is stratified by province and urban / rural location. The selected sample is 13 provinces from 27 provinces that can maximize the representation of cultural diversity and socio-

economic diversity of Indonesian population. The scope of this sample is 83% of the population. In each sample of the province, the enumeration area was randomly selected from the national representative sample framework used by SUSENAS in 1993. The result selected 321 enumeration areas from 13 provinces. The sample selection is quite representative of the population in Indonesia. STATA version 13.0 is used for analysis tools. The dataset created contains the variables required in the model. The data outlier is cleared in the dataset. Then the PSM estimation is done with certain commands.

3. RESEARCH RESULT AND DISCUSSION

3.1 Data Description

Table 3.1 is a descriptive statistic of equation (3). The average age of individuals observed is 10.52 years, the younger age is 5 years old and the oldest age is 14 years old. The average number of working hours per week of child labor is 12,1 hours per week, the minimum number of working hours is 1 hour per week and the maximum is 60 hours per week. The average number of family members is 6,74 people, minimum is 1 people and maximum 25 people. Another household characteristic is mean years of schooling household head, the average is 9,27 years, the minimum is 0 years and the maximum is 22 years. The average mean years of schooling household head 9,27 years indicates that the sample observed has an average mean years of schooling equivalent to Junior High School (SMP) ie 9 years. The average household poverty condition variable is 2,3 indicator from 10 poor indicators, the minimum value is 0 indicators and the maximum value is 9 indicators.

3.2 Discussion

3.2.1 Estimate propensity score

Model (3) used for the estimation of propensity score includes variable aspects of household conditions, poverty conditions and individual conditions. Elimination of three independent variables (child gender, years of school of household head, location of residence) is necessary to achieve an estimate that meets the Conditional Independent Assumption (satisfied). The result of the propensity score estimation using logit model is shown in Table 3.2.

The result of the propensity score estimation using logit model indicates a household's poverty condition significantly affects the probability of an individual receiving BSM. The number of family members and the child age also significantly affects the probability of individuals receiving BSM.

3.2.2 Choosing matching algorithms

Nearest Neighbors (NN) matching is used because the distribution of propensity score between the treatment group and the control group is only slightly different where the distribution of the propensity score of the treatment group is higher than the control group in Figure 3.1.

3.2.3 Checking the common support

The most immediate common support examination is the visual examination of the propensity score distribution density between the two groups (Caliendo and Kopeinig 2005, 12). There is an overlap area between the densities of the distribution of propensity scores the two groups in Figure 3.2.

3.2.4 Assessing the match quality

There is bias reduction after matching on all variables in Table 3.3. There is no clear indication for the success of the matching procedure, even though in most empirical studies a bias reduction below 3% or 5% is seen as sufficient (Caliendo and Kopeinig 2005, 15).

Before matching, two variables have different mean between treatment group and control group that is family member variable and household poverty variable. After matching all variables showed mean equality between treatment group and control group, where p-value of t-test was greater than p-value at α = 5% in Table 3.4. The matching quality test with t-test showed good result.

The result of hotelling test in Table 3.5 shows that p-value of F-test is greater than 5%, ie 0,318 so the null hypothesis is not rejected. These results indicate that the mean between the two groups is simultaneously equivalent after matching. Table 3.6 shows pseudo-R2 after matching lower than before matching. In conclusion the overall matching quality is good.

3.2.5 Result

Estimated results with NN without replacement showed that BSM significantly reduced the number of working hours by 3,74 hours per week, with 367 observations in the control group and 105 treatment groups. To see the robust of calculation result, in Table 3.7 also presented the estimation result with other matching method as comparison. The estimation result by other methods shows the variation of ATET but not much different from the NN without replacement

method, where the result is consistently negative between -3,376 to -4,314 and statistically significant.

3.2.6 Sensitivity analysis

Table 3.8 shows the results of sensitivity analysis using Wilcoxon's signed rank test. In gamma = 1 the value of Hodges-Lehman point estimate is -3. This value is close to the estimation result with NN without replacement method that is -3,74 and both are significant at α = 5%. A gamma increase of 0,2 will increase p-value lower bound to 0,056 above the 0.05 p-value significance limit. Hidden bias of gamma 1,2 is sufficient to explain the observed differences in the number of working hours of children between children receiving BSM and children not receiving BSM. Two child laborers with the same covariate could have a difference in receiving BSM as much as a factor of 1,2 and since its value is small, the study is still sensitive to hidden bias. Hodges-Lehman point estimate interpretation is that child labor paired between those receiving BSM and those not receiving BSM may have a difference in the number of working hours between -4 and -2,5 with a factor of 1,1 due to a hidden bias.

4. CONCLUSION

Bantuan Siswa Miskin program has a significant impact on reducing the number of work hours the child laborers by 3,74 hours per week. The results of this study are in line with the design of Bantuan Siswa Miskin program, one of which eliminates the impediment of poor students to school, where the majority impediment is to being child laborers to help the family economy (Edmonds and Schady 2012, 102). The implications of this program need to be continuously

implemented and increasing the amount of BSM funds is deemed necessary to increase the impact of BSM programs on child labor.

The limitation of this study is the limited number of samples so that the impact of BSM on child labor can not be determined on the basis of gender, age group and location of residence. Limitations of the number of samples occurred because the BSM program was launched in 2008 so it is not possible to use IFLS data wave 4 of 2007. Limitations of data used in this study can be refined in the future by using more complete data. It will result in more detailed research and produce more targeted recommendations for future BSM policy evaluations.

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Table 2.1 Definition of variables based on IFLS-5 data

Variabel	Definition	Note
timew	Number of working hours per week of child labor version of BPS	Number of hours worked per week from: 1) all persons aged 5-12 years without looking at working hours. 2) all persons aged 13-14 who work more than 15 hours per week. 3) work in the wage employment sector and work on family businesses (agriculture and non-farm)
bsm	Receive BSM	Dummy=1 if receive BSM
cage	Child age	In Years
cfemale	Child gender	Dummy=1 if female
hhsize	The number of family members per household	
hhheduc	Years of school of household head	In Years
hhhfemale	Gender of household head	Dummy =1 if female
hhhsingle	Status of marriage of householdhead	Dummy=1 if not married/widow/widower
dirtfloor	Type of floor	Dummy =1 if dirt/wood/bamboo
woodenwall	Type of wall	Dummy =1 if wood/bamboo
rural	Residence location	Dummy=1 if rural
rentedhouse	Status of residential ownership	Dummy=1 if rent
wellwater	Source of drinking water	Dummy=1 if well water/water springs/river/rain water
notoilet	Has a toilet	Dummy=1 if public toilet
nogas	Cooking fuel	Dummy=1 if kerosene/firewood/charcoal
notv	Has a television	Dummy=1 if it does not have a television
sktm	Has a SKTM	Dummy=1 if it has SKTM
blsm	Receive BLT/BLSM	Dummy=1 if receive BLT/BLSM
kps	Has a KPS	Dummy=1 if it has KPS
miskin	The number of 10 poverty indicators	

Table 3.1 Descriptive statistics

Variabel	Observation	mean	Std. Dev	Min	Max
Timew	473	12,107	12,889	1	60
bsm	3030	0,145	0,352	0	1
cage	3032	10,528	2,571	5	14
cfemale	3032	0,601	0,489	0	1
hhsize	3032	6,746	3,074	1	25
hhheduc	3032	9,276	3,818	0	22
hhhfemale	3032	0,106	0,308	0	1
hhhsingle	3032	0,083	0,276	0	1
rural	3032	0,480	0,499	0	1
miskin	3032	2,399	2,068	0	9

Source: IFLS-5 (Strauss, Witoelar and Sikoki 2016)

Table 3.2 BSM logit model

Dependent Variabel = bsm	Parameter Estimation	
	Coefficient	Std. Error
cage	0,116***	0,022
hhsize	0,053***	0,016
hhhfemale	0,129	0,209
hhhsingle	-0,302	0,239
miskin	0,353***	0,024
constant	-4,432***	0,291

Note: dependent variable is bsm=1 if receive BSM and bsm=0 if otherwise
*significant at 10%, ** significant at 5%, *** significant at 1%

Table 3.3 Standardised bias from NN matching without replacement

Variable	% bias before matching	% bias after matching	% reduct bias
Timew	-10,3	-30,5	-194,8
cage	12,7	-17,9	-41,1
hhsize	38,9	18,7	52,0
hhhfemale	0,6	-6,5	-1022,7
hhhsingle	1,8	0,0	100,0
miskin	78,1	0,0	100,0

Source: IFLS-5 (Strauss, Witoelar and Sikoki 2016)

Table 3.4 Test for equality of the mean before and after matching (t test)

Variable	p-value of t-test	
	Before matching	NN without replacement
Timew	0,372	0,031
cage	0,269	0,190
hhsize	0,000	0,164
hhhfemale	0,958	0,654
hhhsingle	0,871	1,000
miskin	0,000	1,000

Source: IFLS-5 (Strauss, Witoelar and Sikoki 2016)

Table 3.5 Hotelling test after matching

	Mean for bsm=1	Mean for bsm=0
Timew	11,038	14,780
cage	10,838	11,209
hhsize	8,038	7,458
hhhfemale	0,095	0,114
hhhsingle	0,076	0,076
miskin	3,961	3,961
Hotelling p-value H0: vectors of means are equal for the two groups		0,318
Observation	105	105

Source: IFLS-5 (Strauss, Witoelar and Sikoki 2016)

Table 3.6 Pseudo-R^2 from NN without replacement

Pseudo-R^2	
Before matching	**NN without replacement**
0,115	0,025

Source: IFLS-5 (Strauss, Witoelar and Sikoki 2016)

Table 3.7 The effect of BSM on numbers of working hours of child labor

Matching Method	Effect	Std. Error	t-stat
NN without replacement	-3,742	1,727	-2,17**
NN with replacement	-4,314	2,067	-2,09**
Radius Caliper	-3,417	1,360	-2,51**
Kernel	-3,376	1,359	-2,48**

Note: *significant at 10%, ** significant at 5%, *** significant at 1%
Source: IFLS-5 (Strauss, Witoelar and Sikoki 2016)

Table 3.8 The Rosenbaum Sensitivity Analysis

Gamma	p-value of Wilcoxon's signed rank test		Hodges-Lehman point estimate	
	Upper bound	Lower bound	Upper bound	Lower bound
1	0,008	0,008	-3	-3
1.1	0,002	0,024	-4	-2,5
1.2	0,000	0,056	-4,5	-2
1.3	0,000	0,107	-5	-1,5

Source: IFLS-5 (Strauss, Witoelar and Sikoki 2016)

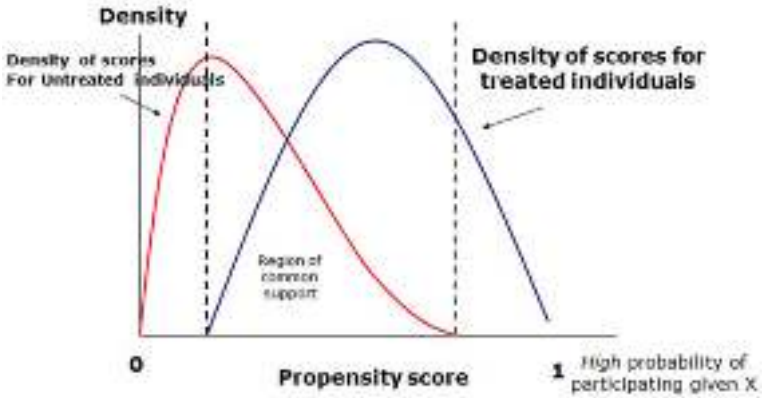

Figure 2.1 Common support region (Sulistyaningrum 2016)

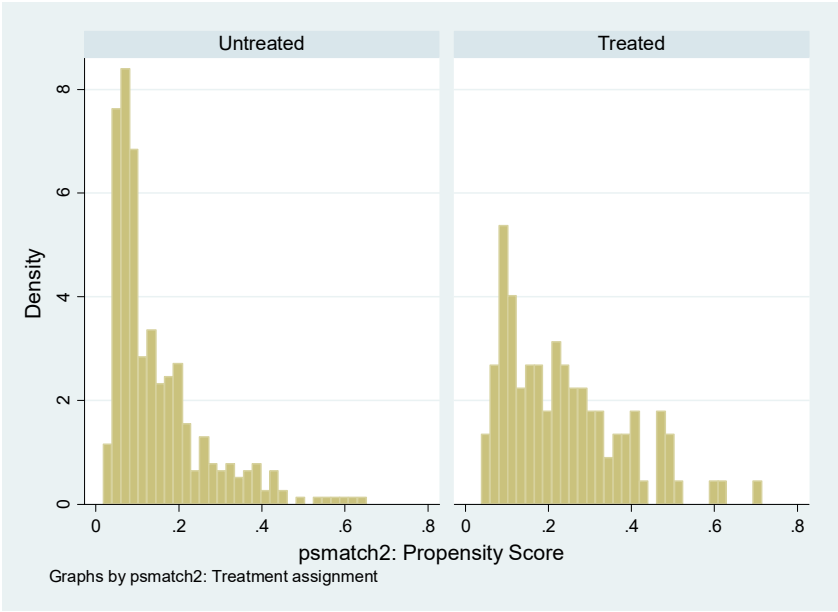

Figure 3.1 Comparison of distribution of propensity score before matching (Strauss, Witoelar and Sikoki 2016)

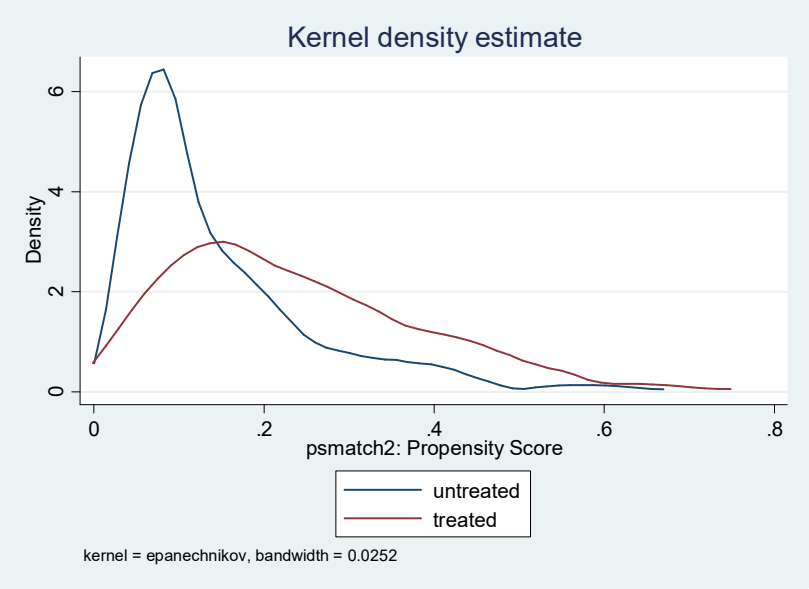

Figure 3.2 Distribution and common support propensity score (Strauss, Witoelar and Sikoki 2016)

CONCENTRATION AND SPATIAL DISPARITY ON MANUFACTURING INDUSTRY (JAVA AND SUMATRA ISLAND)

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ABSTRACT

The concentration of spatial economic activity, especially in the manufacturing industry, has become an interesting phenomenon to be analyzed. The phenomenon of spatial concentration can be found in most developing countries where population distribution and industrial concentration are concentrated in large cities. In Indonesia the concentration of industry is mostly occur in cities on the island of Java and second in Sumatra.

The manufacturing sector is seen as a strategic sector, in which the industry is seen as the main driver of the regional economy. In fact, some differences such as, regional potential, economic growth, investment (domestic and foreign), industrial concentration, transportation, and education cause regional disparity and become a problem in equitable development and regional growth.

This study aims to analyze the spatial concentration of industry manufacturing in Java and Sumatra Island. The data used in this study are; labor, labor costs (salaries), output, FDI, economies of scale (SE), a dummy for regional. The processing data apply OLS method for panel data by using industry survey data from BPS in 2000 - 2014 with ISIC 3 digits. The potential contribution which wants to be achieved is to find out the industry growth at spatial concentration of Java and Sumatra.

Keywords: manufacturing industry, output, spatial disparity.

A. BACKGROUND

In the increasingly of global competition, a country's manufacturing industry is required to be able to produce output efficiently in order to survive. Efficiency in production can be achieved if the available resources can be allocated effectively and efficiently. (Porter, 1990). The manufacturing industry produces export value in 2017 of USD125 billion. This amount contributed 76 percent of the total value of Indonesia's exports reached 73 billion. One of the important factor to push the growth of the industry is the easy access to expand the market, both in domestic and export. The commodities that dominate the top five export manufacturing industries in 2017 are palm oil, food industry worth Rp272 trillion, followed by apparel products donated Rp 90 trillion. Where the food and clothing industry are concentrated in Java while palm oil in Sumatra.

The development of manufacturing industry, spatial and regional oriented policies is one of the key factors that can support central and local governments in formulating and implementing development policies (Kuncoro, 2002). In reality, regional disparity and equity of development are the main problems

in the region's growth. Some differences between regions can be seen from several issues such as regional potential, economic growth, investment (domestic and foreign), area, industrial concentration, transportation, education.

The manufacturing sector is seen as a strategic sector, in which the industry is seen as the main stimulation of the regional economy. The phenomenon of spatial concentration can be found in most developing countries where population distribution and industrial concentration are concentrated in large cities. In Indonesia, the concentration of industry is mostly in cities of Java Islands and second in Sumatra, but in terms of employment and value added contribution, Java Island is much greater than Sumatra Island.

This study aims to analyze spatial concentration in Java and Sumatra Islands between 2000 to 2014 period. In addition, this study will also examine the determinants of spatial concentration of large and medium manufacturing industry. The output expected from this research is the publication in national accredited journal or international reputed journal.

B. LITERATURE REVIEW

Spatial Concentration which Krugman proposes is an emphasized aspect of geographic economic activity which is crucial in determining the location of the industry. Krugman states that there are three related things in the concentration of spatial economic such as; interaction between economies of scale, transportation costs and demand. The increasing of economies of scale, companies concentrate spatially and serve the entire market at a location. To minimize transportation costs, companies will be located in areas that have big demand. Large inter-industry demand locations will be located in concentrated areas of economic activity such as industrial and urban areas (Krugman , 1991 : 14-15). The concentration of spatial economic activity suggests that industrialization is a process that industrialization occurs only at a particular location when viewed in geographical terms.

The effects of technological development, capital stock growth, and labor in determining regional growth differences have been investigated by Hulten and Schwab in 1984 for nine regions in the United States (Armstrong and Taylor, 1993). Hulten and Schwab calculated earnings growth in the manufacturing sector with three main factors: employment growth, capital stock growth, and residual components stating technological developments. The findings from the Hulten and Schwab studies stated no differences in productivity growth between the regions, the growth differentials in the United States due to differences in labor growth and in capital stocks growth.

Geographical externality generated in economic activity is called economic agglomeration. The greater the economic activity in a particular location will make the industry or labor will move to a location where activity in that location can improve productivity and quality of life.

The existence of economic agglomeration can provide facilities for knowledge improvement between companies and ultimately can encourage the diffusion of innovation. As well as industry, a region also grows based on interaction among the population and they will learn from each other. The exchange of knowledge is not always to be paid by the recipient so that it is an externality (*knowledge spillover)*.

Externality knowledge can occur to the fellow industry (*inter-industry*) which is known as a localization advantage**.** Glaeser, *et al*, (1992) describes the distribution of knowledge that involves the effect of

distribution among firms in industries that transfer ideas and techniques in an industrial cluster. This opinion is based on first the MAR view of knowledge distribution (*knowledge spillover*) happen in between company adjacent and then encourage industrial growth. This distribution knowledge is obtained from communication which takes place between companies allows for imitation and transfer of skilled labor between companies.

The spread of inter-industry (*intra-industry*) according to Glaeser , *et , al.,* (1992) is also called the advantage of urbanization. According to Jacob (1969, 1985) Externality of knowledge comes from the outside of main industry. In his view industry diversification will encourage the growth of the industry through the transfer of technology from other industries related to the industry.

Porter stated that industry growth is stimulated by the spread of knowledge in industries that specialize in specific products and are spatially concentrated. According to Porter, the local competition will accelerate imitation and innovation.

According to Fujita, agglomeration is a process of grouping from spatial economic activity, which occurs cumulatively. (Fujita et al 1999: 1) Agglomeration is concerned with the concentration of some supporting facilities serving industries. The existence of this facility will encourage spatial concentration.

The concept of economic agglomeration comes from a real phenomenon and is preceded by Weber's location theory (Fujita and Thiesse, 2002: 1-23). According to Weber, there are 3 factors that become the firm's reason in determining the location of the industry, such as:

1. Difference in transportation costs.
   Manufacturers will seek a location that provides transportation cost savings that can stimulate production efficiency.
2. Differences in wage costs.
   Manufacturers will look for locations with lower wage rates in economic activity. The workforce will look for locations with higher levels of wage. This phenomenon encourages the workforce to move to areas with high wage rates so that the workforce will be concentrated in areas with higher wages.
3. Saving Agglomeration
   Saving agglomeration is a savings due to the concentration of spatial economic activity. Fujita and Thesse (2002) have two agglomeration savings such as; saving localization and saving urbanization.

Localization savings occur due to the concentration of the same industry in a region, resulting in transfer savings that will lower production costs of the industry. The savings industries occur when industries in a region associated in any levels of economic activity.

According to Marshal (Krugman, 1991) the existence of externalities encourages the concentration of industry spatially. The proximity of the location with the same industry, the easy access to obtain specialized workforce, thus give benefit the company and the workforce. In addition, the gathering of interconnected companies or industries will improve efficiency in meeting the needs of better specialized and cheaper inputs.

C. RESEARCH METHODS

1. Data and Model Specifications.

The study used industry survey data from BPS in 2000 - 2014 with ISIC 3 digits. The data to be used are; output (Y), labor (L), labor cost/salary (LC), Foreign Direct Investments (FDI) , economics of scale (SE), dummy area. This research will be used panel data approach with OLS (*Ordinary Least Square*).

The panel model specifications that will be estimated in this study are as follows:

$$Y = C + L + LC + FDI + SE + D \qquad (1)$$

Where:

Y = Log Output (in rupiah)
L = Log Labor (in person)
LC = Log Labor Cost (in Rupiah)
FDI = Log Foreign Direct Investment (in percent)
SE = Log Economics of Scale
D = Dummy
D = 1: Java Islands
D = 0 : Sumatra Islands

D. RESULTS AND DISCUSSION.

1. Descriptive Analysis

The descriptive analysis showed that labor distribution to all provinces in Java and Sumatra islands both in terms of value added and employment experience positive. Several Provinces and cities in Java showed high industrial density levels which are seen from the point of employment and the resulting value added, while the others have low industry density. On the island of Sumatra, there was a decreasing in labor absorption and there was a change in the spread of labor although North Sumatra Province still remains the concentration of industry.

Table 1. Spatial Distribution of Large and Medium Industries According to Manpower in Sumatra, 2000-2014

Province	Total (th2000)	%	Total (th2014)	%
Aceh	12,848	2.56	3,433	2.03
North Sumatra	166.913	33.25	81,848	48, 49
Subar	18,071	3.60	6,410	3.80
Riau	170.438	33.95	17,912	10.61
Jambi	28.892	5.75	8,478	5.02
South Sumatera	49.841	9.93	17.983	10.66
Bengkulu	3.228	0.64	778	0.46
Lampung	51.788	30.68	31.932	18.92

In table 1 showed that the IBS labor force in 2000 was concentrated in Riau and North Sumatra Province. In 2000, the number of workforce absorbed in Riau Province reached 33.95%, 33.25% in North Sumatra Province and 30.68% in Lampung Province. The concentration of industry was in North Sumatra Province and Lampung Province.

Within 2014, industrial concentrations remain in North Sumatra Province and Lampung Province. Changes that occur in the percentage of employment for North Sumatara Province has increased to 48, 49% and a decrease in Riau and Lampung provinces . When viewed from the concentration the amount of labor of industry there is a change of concentration from North Sumatra province and Riau became the province of North Sumatra and Lampung.

Table 2 . Spatial Distribution of Large and Medium Industries According to Manpower in Java islands, Year 2000-2014

Province	Total (2000)	%	Total (2014)	%
Banten	411,326	12.17	182.499	10.07
Jawa Barat	1,649,118	48.78	707,711	39.07
DKI	585,733	17.33	383,292	21.58
Jawa Tengah	42,337	1.25	24.025	1.33
Jawa Timur	872,032	25.80	514,028	28.37

Table 2 showed that the IBS workforce in 2000 was concentrated in West Java and East Java Provinces In 2000 the number of workers absorbed in West Java Province reached 48.78% and 25.80%. The concentration of industry was in Java Province West and East Java. While in 2014, the concentration of industry remained in West Java and East Java Province not give significant changes either on the percentage of labor absorption and industry concentration. This showed that the Province of West Java and East Java was the concentration of industry.

2. Panel Data Regression Analysis

The characteristics of the panel data regression model is the presence of individual effects and time effects that appear together. Several methods are commonly used to estimate regression of data panel model, such as *Pooled Least Square* (PLS), *Fixed Effect Method* (FEM), and *Random Effect Method* (REM). To determine the best model to be used, the best model selection was applied and chosen based on *Chow Test, LM Test* and *Hausman Test*. The best model selection result in this research was FEM, with technique of OLS *(Ordinary Least Square)*

In Table 3, the result of panel data regression for Java and Sumatra Province in 2000-2014 showed positive coefficients and significant on variable (labor, FDI, SE) only variable expenditure for labor in this case wage (LC) that was negative and significant.

The amount of output (Y) had a positive and significant relationship with the amount of labor, foreign direct investment and economies of scale. This provides empirical support for model output (Y), based on variable, number of labor, labor cost (LC), foreign direct investment (FDI), economies of scale (SE), dummy crisis (D) provincial areas in Java and Sumatra.

The number of workers had a positive and significant relationship, indicating that the higher the output will increase the number of workers in the manufacturing sector.

Foreign Direct Investment (FDI)) indicated a positive and significant relationship. This indicated that the higher the foreign direct investment will encourage the growth of manufacturing industry output.

Labor costs / wages (LC) showed a negative and very significant relationship. Remind that wage is production costs which have negative relationship with output then the higher wage will cause an increasing on production costs.

The economics of scale (SE) had a very positive and significant relationship, indicating that the higher the economics of scale will increase the output of the manufacturing industry. Furthermore, the foreign direct investment will further encourage employment absorption and increasing the economics of scale of manufacturing industry growth.

Dummy crisis (D) showed a positive and highly significant, indicating that there was a potential difference between industrial output in Java and Sumatra Province. Dummy coefficient was interpreted that manufacturing industry output of Java islands was higher than manufacturing industry output of Sumatra islands. The positive coefficient indicated that the output of the manufacturing industry was influenced by the location of the Java and Sumatra islands.

Table 3. Results of panel data regression with FEM method of model specification (1);

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28.99758	0.720797	40.22987	0.0000
LABOR	0.334616	0.068770	4.865749	0.0000
LC	-0.667830	0.040079	-16.66289	0.0000
FDI	0.046899	0.029815	1.573023	0.1175
SE	1.276103	0.064149	19.89266	0.0000
DUMMY	2.162643	0.185610	11.65153	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.963619	Mean dependent var	23.04740
Adjusted R-squared	0.960125	SD dependent var	2.506605
SE of regression	0.500536	Akaike info criterion	1.541491
Sum squared resid	44.34492	Schwarz criterion	1.843614
Log likelihood	-132.2954	Hannan-Quinn criter.	1.663817
F-statistic	275.7779	Durbin-Watson stat	1.129981
Prob (F-statistic)	0.000000		

Spatial concentration occurred will create agglomeration advantages. Agglomeration advantage were implied by location saving and urbanization saving. Location saving related to externality which occur when one industry encourage a phenomenon of industrial cluster.

Krugman (1991) stated that, a group of industry in one region occurred due to the location saving and urbanization saving where some industries were in the same region. This thing occurred if there was efficiency growth as a result of production growth and all companies efficiency in the same region.

Specialization employment availability in one region will encourage industry transformation in that region. Specialization employment availability was an advantage determinant that encourages the region to be advantage competitive. Besides, proponent facility such as harbor and airport also became the main factor for a region to be a central of big manufacturing industry.

Java Island had industry growth central in Jawa Timur and Jawa Barat province. Jawa Timur province itself had industry growth central on Surabaya, Kediri and Malang-Pasuruan. Jawa Barat province had industry growth central on BOTABEK region (Bogor, Tangerang, Bekasi) and Bandung.

By specialization employment availability, proponent facility (harbor, airport) and Surabaya as well as Bandung as the central of government become the central of financial, trade and service will encourage industry growth in Java islands. Furthermore, Jawa Timur province was one of the central of manufacturing industry in Indonesia.

Potential Contribution

To find out the growth gap of industry and the influencing factors of the spatial concentration in Java and Sumatra islands.

E. CONCLUSIONS AND RECOMMENDATIONS

1. Conclusion

Based on the spatial analysis of the large and medium manufacturing industry of the provinces in Java and Sumatra in 2000 – 2014 period showed that there was uneven across regions, both from labor and output value. Manufacturing industry was spatially concentrated in Java especially on Jawa Barat and Jawa Timur, when viewed from the number of labor and value added.

The result of the study used panel data regression analysis to observe factors of output growth for manufacturing industry in Java and Sumatra islands. Estimation was done by using equation model employed independent variable such as ; labor (labor), labor costs/wage (LC) , foreign direct investment (FDI), economics of scale (SE), dummy area in Java and Sumatra islands (D) and output (Y) as the dependent variable. Hypothesis testing results indicated that the effect of the variables were significant to the output of manufacturing industry sector.

2. Recommendation

The industry concentration in certain provinces, while some provinces had a low manufacturing industry output, this situation will eventually increasing the gap between regions. This thing occurred between Java and Sumatra. This condition needs to be a concern of local and central government as a policy maker

To obtain location externalities with agglomeration of economy for industrial location, stakeholders of policy should;

1. Pay greater attention to the development of infrastructure (*infrastructure*) that has an important role in creating an agglomeration economy.
2. Adequate accessibility to both market and production factors.
3. Improvements to infrastructure and accessibility allow industry to be located in smaller areas or even in rural areas.

Furthermore, government needs to pay attention to the reason that cause industries located and growth only in one region. This situation will be a basis thing for government to make a proper development strategy for manufacturing industry. The development strategy was expected can create activity system which relate both in terms of industry itself (horizontal relationship) and inter-industry (vertical relationship).

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THE ANALYSIS OF EDUCATED WORKERS IN INDONESIA:

UNDEREDUCATION, WELL-MATCHED, AND OVEREDUCATION

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ABSTRACT

The aim of this paper to determine the socio-economic conditions of the educated workers in Indonesia. In this case, the status of educated workers in Indonesia divided into three categories which are undereducation, well-matched, and overeducation. The multinomial logit model is used to examine the effects of socio-economic condition on the educated workers. Using the National Labour Force Survey (Sakernas) of 2016, this paper finds that 22% of educated workers is overeducated, 9% of educated workers is undereducated, and 69% of educated workers is well-matched in Indonesia. Based on the estimation, age, gender, level of education, field of education, marital status, residence location and experience have a significant effect on undereducation. Furthermore, age, gender, level of education, field of education, experience and wage have a significant effect on well-matched. And finally, age, gender, level of education, field of education, marital status, residence location, experience and wage have a significant effect on overeducation.

Keywords: Mismatch education; Overeducation; Undereducation; Well-matched; Educated workers

INTRODUCTION

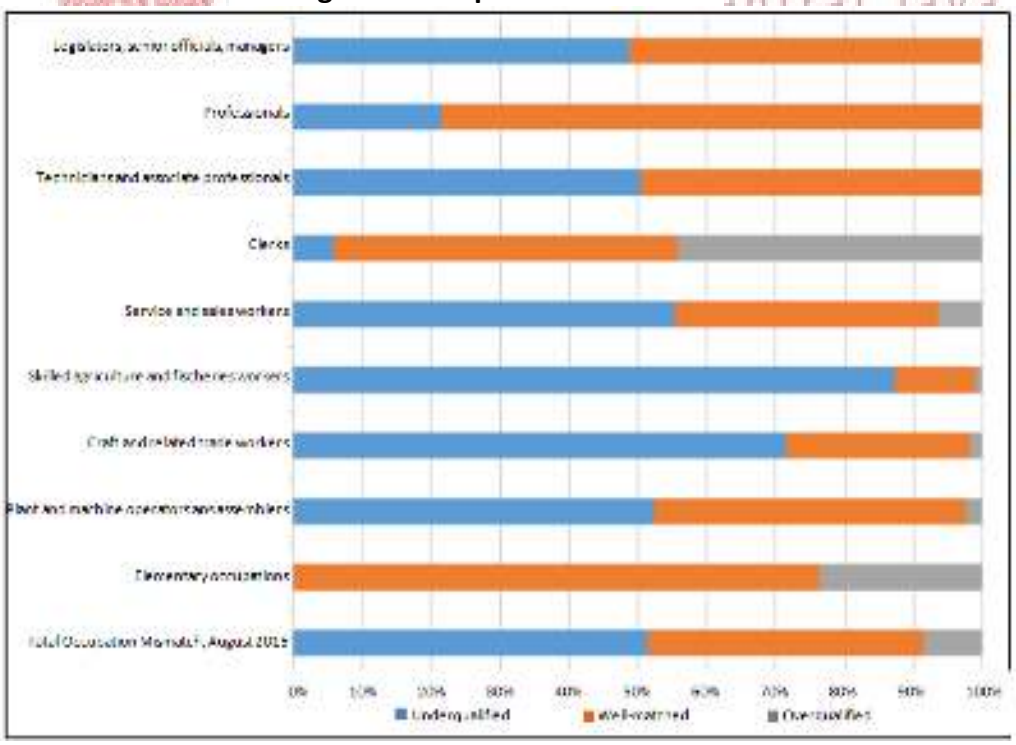
The demographic dividend is gained by Indonesia in 2020-2030 which means the share of the working-age population (15-64) is larger than non-working–age population. In the other words, it is an economic gain that can boost the economic productivity in Indonesia. The increasing number of working-age population means increasing number of labor force and it will increase number of labor supply in the labor market. But if the increasing number of labor supply is not equal with an increase in labor demand, an excess supply of labor will exists.

Education as human capital investment is an important factor to expand and extend knowledge. Highly educated workers have the possibility to improve job skills then get higher earnings so it can increase economic growth through additional spending. In Indonesia there has been many well-educated workers, which is among people with a high school or vocational or bachelor education. However many of them are included as a utilized inadequately workforce. Based on the search and match theory, that condition is a consequence of imperfect information on the demand and supply side in the labor market (Hartog, 2000). In addition, that condition is related to the quality of the labor and the limited job opportunity in Indonesia.

In fact, the job opportunity in Indonesia has not been comparable with the rapid growth of educated workforce in Indonesia and this causes phenomenon of utilized inadequately workforce. One of the phenomenon related to employment and education is mismatch education. In some literatures, the phenomenon of mismatch education can be divided into undereducation and overeducation (Duncan &Hoffman, 1998; Dolton & Vignoles, 2000; Safuan & Nazara, 2005). Mismatch education indicates that educational factors are often not considered in labor market. According Safuan and Nazara (2005), overeducation in labor market illustrates the decline of economic return in education. While undereducation is a phenomenon that has a close relationship with the national education planning strategy and will affect earnings in each individual. The utilized inadequately of educated workforce can give a disadvantageous to the labor market and individuals itself. Safuan and Nazara (2005) also said that phenomenon of mismatch education indicates the imbalance of demand and supply in labor market performances.

According to Allen's research (2016) in figure 1, it is found that mismatch education in Indonesia tends to be associated with the level of work productivity. Based on Allen's research, it is estimated that 51.5% of labor force are undereducation, 40% of labor force are well-matched, and 8.5% of labor force are overeducation. The high proportion of undereducation labor may therefore be one reason for slow transition to higher value activities throughout economy and weaken labor productivity growth. In some developing countries, the overeducation phenomenon which range from 10–40 percent and undereducation phenomenon which range from 20-40 percent in labor market (Groot and Maassen, 2000). Thus, it can be said that phenomenon of mismatch education in Indonesia is relatively high.

Figure 1 Occupational Mismatch



Source: Labor Force Situation 2015 (Allen 2016).

Some economist and sociologist according to Farooq (2011) have consigned the mismatch education phenomenon as a serious efficiency that concern with socio-economic costs at individual, firm and national level. At individual level, mismatch education phenomenon will decrease the marginal product of the individual. The lower return to education/overeducation phenomenon may also incur some non-transitory cost at individual level i.e frustration, low level of job satisfaction and high turnover rate. At the firm level, mismatch education is related with low productivity and low levels of job involvement. In case of high turnover rates caused by mismatch education, firms may have to prepare extra cost on screening, recruiting and training (Tsang, 1987 and Sloane et al, 1999). While at macro level, there will be a decrease in monetary and non-monetary welfare level by the mismatch education phenomenon especially undereducation (Mc.Guinnes, 2006).

Using the National Labor Force Survey (SAKERNAS) 2016, this study aim to determine factors that affect the labor status of educated workers in Indonesia based on their type of job and level of education. The study is expected to provide recommendations for policy makers that related to labor market performance and education issues in Indonesia.

BRIEF REVIEW OF THE EDUCATION-JOB MATCH LITERATURE

Theoritical foundation of mismatch education

The basic assumption of the theory of human capital by Simanjuntak (1998) stated the higher level of education will improve individual's skills and productivity, then it will automatically increase individual's income. On the other side Becker (1975) said that human capital investment is not only through formal education but also working experience. Work experience was gained through working for long periods of time on particular job. So it can be said that overeducation is a consequence of the lack of skills that can only be gained through work experiences. In the fresh graduate workforce, although they have higher level of education but working experience is still low, so they are very vulnerable with mismatch education.

Search and match theory is a theory that focused about imperfect information on the labor market that will cause a mismatch education phenomenon (Hartog, 2000). Based on this theory, labor market entrants who has a little information on labor market will take up jobs for which they are overeducated. As time goes by they collects information on the labor market, they will tend to move to jobs that are a match to their educational attainments. So, overeducation will decline as the labor market experience increased. Underducation phenomenon can also arise due to lack of information on the firm.

Job competition theory (Thurow, 1975) found that the most of job skills are not obtained before entering a job but through on-job-training, so it can be said that education only as an intermediary to get a job. In contrast Mincer model (1974) said that wage competition where individuals compete on the basis of willing to accept while the job competition where individuals compete on the based of fixed wage. Thurow (1975) assumed that education attainment is not always improve productivity, but only as a way to get a job.

The Theory of Occupational Mobility assumed that educated individuals may choose a lower entry level with the higher probability of promotion than there is feasible entry level (Sicherman and Galor, 1990). Thus, it is quite rational for some individuals to spend some of their career time working in jobs that require lower education than their education level (overeducated) to gain benefit in long-term.

The Empirical Literature on Mismatch Education

In some literatures, mismatch education phenomenon is divided into two namely "overeducation" and "undereducation" (Duncan and Hoffman, 1981; Dolton and Vignoles, 2000; Safuan and Nazara, 2005). Some researchers such as Freeman, Dore, Hofman and Rumberger in Green et al (1999) defined overeducation as a condition where labor possesses a level of education in excess of which is required for a particular job. While undereducation is a condition where labor level of education is lower than that required for a particular job. Freeman and Dore in Green et al (1999) are the two economists who first noticed an excess of investment in higher education. This is seen a very large decline in the rate of return to education as it has been in the U.S at 1970s. That condition raised an excess supply of labor.

Some empirical literatures focuses on factors that may affect education-job match. Farooq (2011) found that the average rate of overeducation is ranged between 11 to 40 percent, while undereducation is ranged from 20 to 44 percent in some countries. In Canadian 64.9 percent of labor force are well-matched, 22.5 percent of labor force are somewhat related and 12.6 percent of labor force are mismatched (Boudarbat and Chernof, 2009). In U.S, it is found that there are 53 percent of men and 58 percent of women perfectly matched between level of education and occupation. And there are 28 percent of men and 21 percent of women somewhat related, while for completly mismatch is 19 percent of men and 21 percent of women (Robst, 2007). Safuan and Nazara (2005) found that overeducation rates in Indonesia always increase from 1996, 1999 until 2002, which are 23.93 percent, 26.74 percent and 34.70 percent.

Ordine and Rose (2015) found there is gap gender in overeducation, which is women have a higher probability of overeducation. Robst (2007) also showed similar result that 21 percent of female workers are educated mismatch in U.S. Age is significant affect overeducated labor based on Bender and Heywood (2006), which range from 18 to 29 years old (Moullet, 2001). Wirz and Atukeren (2005) found that university degree has a tendency towards overeducation in Switzerland. Furthermore study by Caroleo and Pastore (2017) also found that master degree has a significant effect on overeducation but between social and science has the same probability toward overeducation in Italy. On the other side, the result of study by Bender (2006) showed that married workers have a tendency to mismatch education than unmarried one. Buchel and Battu (2003) argued that location with low density is sufficient potential for mismatch education. An educated labor force with 1 to 5 years experiences turned out to have a tendency of overeducation are 26.44 percent and well-matched are 71.53 percent (Voon and Miller, 2005). And the last, mismatch education phenomenon does not direct affect wages in individuals (Safuan and Nazara, 2005).

METHODOLOGICAL FRAMEWORK AND DATA DESCRIPTION

The aimed of this paper to determine the characteristic of the employment status of educated workers in Indonesia using multinomial logit method. Educated worker is measured from people that have a minimum education of higschool degree or vocational degree in Indonesia. Dependent variable is divided into three categories; that are undereducation, well-matched, and overeducation. The employment status itself is measured through of cross tabulation between the educational attainment and occupational group, as follows:

Table 1. Cross Tabulation of Major Group of Occupation and Educational Attainment

No.	Major Group of Occupations (KBJI 2002)	Educational attainment				
		Highschool	Vocational	Diploma	Bachelor	Master
1.	Managers	*Under*	*Under*	*Under*	*Well-matched*	*Well-matched*
2.	Professionals	*Under*	*Under*	*Under*	*Well-matched*	*Well-matched*
3.	Technicians and Associate Professionals	*Under*	*Under*	*Well-matched*	*Over*	*Over*
4.	Clerical Support Workers	*Well-matched*	*Well-matched*	*Over*	*Over*	*Over*
5.	Services and Sales Workers	*Well-matched*	*Well-matched*	*Over*	*Over*	*Over*
6.	Skilled Agricultural, Forestry and Fishery Workers	*Well-matched*	*Well-matched*	*Over*	*Over*	*Over*
7.	Craft and Related Trades Workers	*Well-matched*	*Well-matched*	*Over*	*Over*	*Over*
8.	Plant and Machine Operators and Assemblers	*Well-matched*	*Well-matched*	*Over*	*Over*	*Over*
9.	Elementary Occupations	*Over*	*Over*	*Over*	*Over*	*Over*
0.	Armed Forces Occupations	-	-	-	-	-

Source: processed data based on KKNI and KBJI 2002

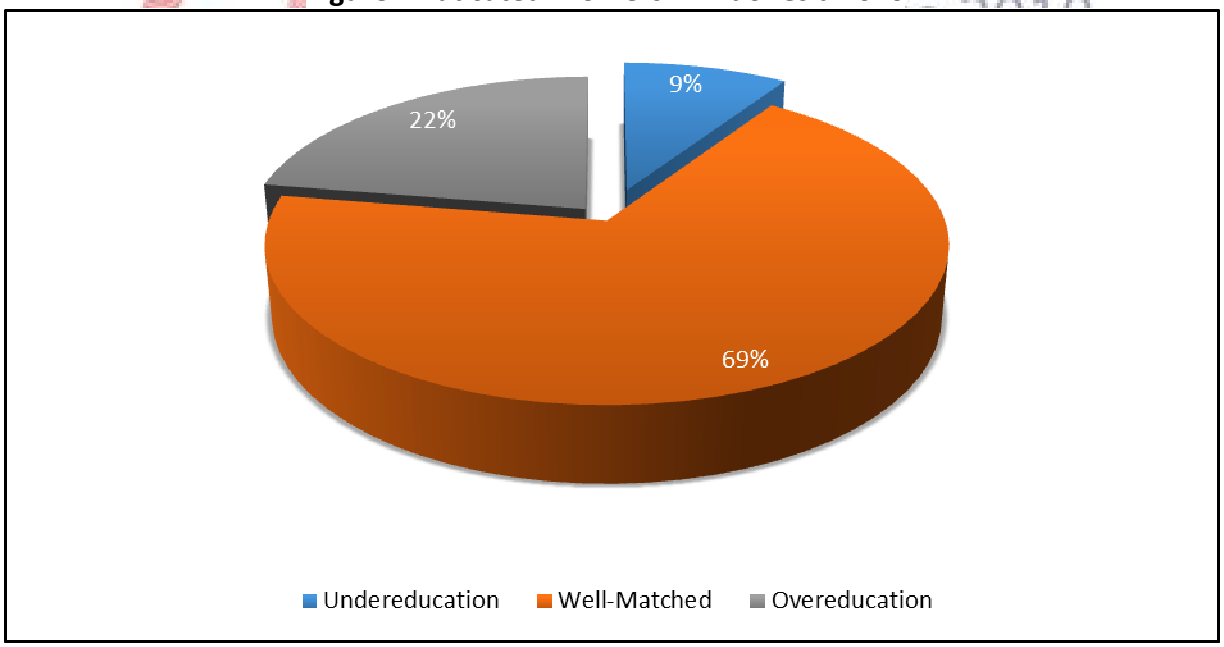
Independent variables consist of age (continuous), gender (1=male and 0=female), level of education (continuous), field of education (1=social and 0=science), marital status (1=married and 0= unmarried), residence location (1=urban and 0=rural), experience (1=having experience and 0=no experience) and wage (numerical). Based on the estimation using multinomial logit method, then proceed with marginal effect. Marginal effect is used to determine the factors that effect on each category of employment status of the educated workers.

This paper uses data of National Labor Force Survey (SAKERNAS) in 2016. For the purpose of the study, we focus only on educated workers which is workers with educational attainment minimum high school degree or vocational degree. In total, 22.561 workers meet these criteria.

EMPIRICAL RESULTS AND DISCUSSION

Using National Labor Force Survey (SAKERNAS) 2016, this study found that 9% of educated workers are undereducated, 69% of educated workers are well-matched, and 22% of educated workers are overeducated in Indonesia. Overeducation rates in the world rates is ranges from 11 to 40 percent, while underducated rates is ranges from 20 to 40 percent (Farooq 2011). This study showed that mismatch education phenomenon is relatively high especially overeducation in educated workers in Indonesia.

Figure 2 Educated Workers in Indonesia 2016



Source : National Labor Force Survey (SAKERNAS) 2016

The multinomial logit results are presented in Table 2. In this study, age significantly affect the undereducation, well-matched and overeducation among educated workers in

Indonesia. Increasing age reduced the likelihood of overeducated, while decreasing age reduced likelihood of match and underducation. Voon and Miller (2005) in Search and Match Theory showed that phenomenon of mismatch education in an individual caused by imperfect information on labor market. The initial studies also perceived the mismatch education as a temporary phenomenon (Freeman, 1976). The fact that youth age is fresh graduate and tend to have a minimum experience, so they have a limited information on labor market. And this caused tendency to be overeducated.

Table 2 Multinomial Logit Estimation Result

	Undereducation		*Well-matched*		*Overeducation*	
	dy/dx	**P>|z|**	**dy/dx**	**P>|z|**	**dy/dx**	**P>|z|**
Age	0,0020699	0,000*	0,0022255	0,000*	-0,0042954	0,000*
Male	-0,0619007	0,000*	-0,04662	0,000*	0,1085207	0,000*
Level of education	-0,0233095	0,000*	-0,0461005	0,000*	0,06941	0,000*
Field of education	-0,0745932	0,000*	0,0486075	0,000*	0,0259857	0,000*
Married	0.0236105	0,000*	0,0139661	0,075	-0,0375766	0,000*
Urban	-0,0370274	0,000*	0,0051915	0,432	0,0318359	0,000*
Experience	-0,0242686	0,000*	-0,0384289	0,000*	0,0626975	0,000*
Wage	0,0000398	0,986	0,0134936	0,000*	-0,0135333	0,000*

* = significant at 5% ; p <0,05

In this study, female slightly likelihood to be match and undereducation whereas male has a greater likelihood to be overeducation. This is consistent with some studies that found being female increase the likelihood of match (Wolbers 2003; Witte and Kalleberg 1995; Robst 2007). However, other studies showed that males with the higher match than females (Krahn and Bowlby 1999). Basically, the gap between the number of educated labor force male and female is not high in Indonesia, which is 12.156 are females and 19.046 are males. This is also shows that Indonesia in the process of achieving Sustainable Development Goals (SDGs), including gender equality and women's empowerment. Thus, between educated male and female workers have equal opportunity to become well-matched workers.

The level of education was seen to be another important determinant of mismatch education in this study. As mention earlier, we focus exclusively on educated workers (high school, vocational, and tertiary level). In level of education, the result suggested that the higher the degree will increase likelihood of overeducated. While lower level of education will increase likelihood of match and undereducated. In some developing country, overeducation was caused by individual did not have much choice or even opportunity to work according to their educational attainment. So they prefer to work than unemployed, even though their level of education is higher than required for a particular job (Safuan and Nazara 2005). This condition is suitable for Indonesia, where the number of workers always increase while job opportunity is limited. And finally, educated workers cannot choose many jobs and impact higher mismatch education in Indonesia. Becker (1975) also found that human capital investment is not only through formal education but also through working

experience. So it can be said that the phenomenon of overeducation is a consequence of the lack of skills that can only be gained through working experience.

Field of education is one of the important factor because it allows for analyzing different types of skills (Robst 2007; Van de Werfhorst 2002). The study breaks down field of education into two categories, which are social and science. Social major has higher overeducated than science major. The reason is because they tend to have of higher general ability so it will be easier to adapt in some particular job (Hejike, Meng and Ris 2003).

Based on estimation, marital status significantly affect undereducation and overeducation, but marital status not significantly affect well-matched. The overeducated workers is dominated by unmarried workers. Unmarried workers are usually young workers (single) who have no responsibilities to the family, so the probability of becoming overeducated workers tends to be higher.

Rural educated workers have a higher probability of undereducation while urban educated workers have a higher probability of match and overeducation. As mention earlier on table 1 that undereducation consists of middle educated workers while overeducation consists of highly educated workers. In Indonesia, highly educated workers is mainly centered on urban areas. This is because the educational facilities and infrastructure in rural areas is not as good as in urban areas. So it's reasonable that in rural areas has a higher probability of undereducated. While well-match and overeducated workers in urban areas, this is because in urban areas tends to have higher probability to choose particular job according to their educational attainment (Costa and Kahn 2000).

In contrast to theory and some empirical studies that found overeducation will decline as the labor market experience increases (Hartog 2000), this study showed that higher experience does not reduce the likelihood of overeducated. One of the reason is about "internal connection" in labor market of Indonesia. The existence of an "internal connection" is an important factor in getting job without look at of the experience workers in Indonesia (Hastuti, et al 2011).

Wages and level of education basically have a positive relationship. The higher level of education will improve productivity so it can increase income on individuals (Simanjuntak 1998). Based on the study of Safuan and Nazara (2005) found that the impact of overeducation was negative which is overeducation will reduce return of education. While the impact of undereducation was positive which is undereducation will increase return of education. But in this study found that wage is not significant to undereducated workers.

CONCLUSIONS

This study aim to determine the employment status of educated labor force in Indonesia which is divided into three categories namely undereducation, well-matched, and overeducation. Based on data of Sakernas 2016, using multinomial logit method the estimation shows that overall variables have significant effect on the employment status of educated workers in Indonesia. The results showed that the variables age, gender, level of education, field of education, marital status, residence location and experience have significant effect but variable wage has no significant effect on undereducated workers.

Furthermore, the second category showed that the variables of age, gender, level of education, field of education, experience and wage have significant effect, while for marital status and residence location have no significant effect on well-matched workers. The third category showed the result that all of independent variables have a significant effect on overeducation workers.

One of the policy implications to reduce mismatch education in Indonesia is the need for synchronization between the Ministry of National Education and Ministry of Manpower in order to mapping the existing labor force. So as to create a link and match program that can control the balance between the number of educated workers who are ready to enter the labor market and the educated labor force required by the industry or firms. On the other hand, government also need to strengthen policy about level of education and training in the province and district levels.

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Sustainable Livelihood Index: Liberating The Poor with Contextual Indicators and Measurement in Indonesia

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ABSTRACT

Poverty measurement in Indonesia is carried out by National Board of Statistics (BPS) and the National Population and Family Planning Board (BKKBN). Both of these institutions use different approach in measuring the poverty. BPS uses basic necessity approach and determines the level of poverty based on poverty line while the BKKBN uses the welfare necessity approach and determines the level of poverty based on the fulfillment of categorical indicators from pre prosperous family into prosperous family. It is important to better reflect the poverty outlook based on community perspective that is absent from BKKBN and BPS poverty measurement. Both the poverty measurements of BKKBN and BPS are analyzed in terms of the strength, weakness, threat, and opportunity. By applying SWOT analysis, some notable strength of both BKKBN and BPS are listed. They include accuracy in obtaining numbers of poverty, people who are affected by poverty and the regions that have severe poverty level. The result of BPS particularly can be compared across regions, province and country, while BKKBN can better describe the poverty in Indonesia with strong qualitative description. Weaknesses of those two measurements are also noted including the absence of community participation so that the poverty outlook does not necessarily reflect the concept and the condition of the community. In fact, there is a room for improvement by integration of BPS and BKKBN data and promoting subjective measurement even though there is still challenge in terms of the different tendencies between government professionals and the community about poverty. Therefore, a subjective measurement, Sustainable Livelihood Index (SLI) is proposed to measure the poverty and to support the measurement of the government. It is based on the core concept of Sustainable Livelihood Analysis that put the community on the center of development. It can measure the poverty based on the livelihood deprivation threshold and community deprivation threshold. This measurement also analyzes the strategy to deal with the poverty and the barriers that entraps the community under the poverty.

Keywords: Poverty Measurement, SWOT, Sustainable Livelihood Index, Indonesia

1. Introduction

The accurate and meaningful measurement of poverty is essential for Indonesia in evaluating the impact of development programs initiated by the government. In Indonesia, poverty measurement is carried out by The National Board of Statistics (BPS) to obtain the macro poverty outlook and The National Population and Family Planning Board (BKKBN) to obtain details description about family welfare. The annual macro poverty outlook of Indonesia from 1999 to 2016 showed a positive trend in poverty eradication. Poverty declined from 47.97 million people in 1999 to 28.01 million people in 2016 (BPS, 2016, p.25).This significant reduction is closely related to the effectiveness of the development program, government intervention and a closed monitoring from government in conducting poverty measurement through survey. Poverty measurement in Indonesia is carried out by BPS and the BKKBN. Both of these government institutions, in fact, have different lenses in determining and quantifying the poverty.

To understand poverty, it is important to grasp the essence of poverty: culture of poverty, poverty based on cultural perspective, and concept about deprivation, livelihood and vulnerability. Poverty is defined as insufficiency in physical necessities, asset and income (Chambers, 1995, p. 175). Poverty might exist into three forms namely absolute, structural poverty and cultural poverty. Absolute poverty is incapability of a household to meet the basic necessities such as food, clothes and shelter (BPS, 2016, p.7). Incapability to meet basic needs might be related to the structure and the social construction of community. This barrier in social structure shapes the form and essence of structural poverty. The structural poverty can be defined as the absence of productivity in a community despite the availability of the source and this poverty is related to social construction that entraps the poor (Siahaan, 2011, p.221). This kind of poverty is related to the social actors that might strengthen the social structure that put some members of the community in poverty. In addition, the poverty can be closely related to culture. If the culture of a community becomes the factor that entraps community member in poverty, it means cultural poverty exist (BPS, 2016, p.9). Culture plays a key role in shaping the community values and perceptions about the poverty. The poverty that is based on cultural perspectives might have a different notion with the concept of development than actors such as government, international development agency and non-government organization. In fact, the community conceptualization about poverty varies and is different between one community and other communities in Indonesia so that the poverty measurement used by the government might not be able to better describe the poverty due to lack of input and involvement from the community (Siahaan, 2011, pp. 226-227).

Furthermore, deprivation, livelihood and vulnerability have different meanings from the poverty as they are closely connected with the livelihood asset and strategy to deal with shock, stress and risk. Deprivation is insufficiency in meeting the needs for wellbeing and it includes physical, social, economic, political, and psychological/spiritual dimensions as well as any form of disadvantage such as vulnerability, weakness, poverty, powerlessness and isolation (Chambers, 1995, p. 174). It is clear that the poverty is a form of disadvantage that affects the capability of a household to move out from deprivation. To be able to move out from

deprivation, the community might maximize their livelihood. Chambers and Gordon (1992, p. 7) state that livelihood covers four main elements: people's livelihood capabilities, their activities, assets (tangible and intangible) and gains or outputs that they obtain from their activities. The capability to effectively maximize livelihood means the community is more sustainable to deal with risk and stress. Sustainable livelihood is the capability of the community to satisfy welfare and to sustainably enhance local livelihood natural resource use, and capability to cope with stress, risk and to sustainably explore, adapt and create opportunity and security to assure sustainability (Chambers and Gordon, 1992, pp.9-11). The concept signifies the fact that both poor and not poor communities might be vulnerable to the risk, uncertainty and stress. Chambers (1997, p. 175) adds that vulnerability is condition where a community does not experience lack or want but they are exposed to external disturbance (shock, stress, and risk) and they cannot sufficiently defend themselves because they do not have internal element to deal with the external disturbance. By understanding and assessing the vulnerability of the poor community, the poverty eradication might be more effective and meaningful.

This paper will critically discuss the strength and the weakness of poverty measurement conducted by the government of Indonesia through BPS and BKKBN. The analysis of the existing BPS and BKKBN measures reveal current inadequancies in delivering the whole picture of poverty in Indonesia. This paper seeks to address the gap. The aim of the paper is to suggesst an alternative measure that benefit both government, community and individual needs. To that end, the paper will critically explain the alternative measure called Sustainable Livelihood Analysis (SLA). It critically explains the opportunity and the practicality of proposed poverty measurement called SLA which is then formulated into Sustainable Livelihood Index (SLI) to improve the government poverty measurement.

2. Methods and Materials

The method used to analyze the model of poverty measurement used by BKKBN and BPS is SWOT (Strength, Weakness, Opportunity and Threat) analysis. It is done by outlining and scrutinizing the internal factors: the strength and weakness of the poverty measurement. The opportunity and the threat (challenges) are also analyzed as the external factors. After analyzing the internal and external factors, a picture emerges of two measures that are well intentioned but which fail to offer a comprehensive measure. The first measure addressed is the BKKN, which seeks to assess family welfare.

3. Results

As the SWOT is utilized to analyze the measurement, it is essential to clearly identify the variables namely: the internal factors (strength and weakness of the poverty measurement) and the external factors (opportunity and the threat for the poverty measurement). The identification and analysis of these variables is important to formulate best strategy to effectively maximize the strength and the opportunity to minimize and overcome the weakness and the threat.

3.1. Strengths of BKKBN Poverty Measurement

The poverty measurement of BKKBN has several substantial strengths. First, the poverty is analyzed from family welfare perspective. The family welfare is grouped into fulfillment of basic necessity, fulfillment of psychological needs, needs for development, and need for self-actualization (Sardjunani et al. 2010, p. 10). A family level of poverty is then categorized based on the capability to fulfill the basic needs and socio-psychological needs. This level reflects the focus of BKKBN which is not only on the physical quality of the family but also the satisfaction obtained from social sphere by active contribution and religious activity. Second, the BKKBN poverty measurement is able to portray the religious capital, human capital, social capital, physical capital, economy capital, and the diets of family and participation of the family in family planning by utilization of contraception. The religious capital is reflected on indicators 6 and 15. The human capital is presented on the indicators 13, 12, 20, and 10. The social capital is shown on indicators 17, 18, 22, and 23.The physical capital is given by indicators 9 and 4. The economy capital is shown on 8, 11, 19, and 16. The diets of the family and the food intake are shown on 2, 7, and 17. The information about the participation in family planning program is shown on indicator 14.

Another strength of BKKBN poverty measurement relies on the aim and the size of the sample which almost covers all families and regions in Indonesia. The aim becomes one of the strengthening families and communities in the long run as BKKBN long term goal (vision) is to establish quality family units across Indonesia (CIFOR, 2004). This vision is in fact articulated in the sample used by BKKBN. CIFOR (2004) points out that the sample used by BKKBN to measure poverty is within 95 percent to 100 percent. This near universal sample might answer the question about poverty regarding the area where the poverty exists and the family who are under poverty. However, strong funding and man power are required to carrying out the survey, as the data collection is conducted and updated annually. The annual data collection, is not limited to the provincial level but also covers the regency, the village, and even the small groups of community called the neighborhood group (Rukun Tetangga/ RT) (CIFOR, 2004). Even though, it covers regencies in Indonesia, the result of the measurement might be inadequate in capturing the concept of poverty from the community.

Apart from having complete data collection from the provincial level to village level, the strengths of BKKBN poverty measurement also relies on the method and the benefits of the complete data collection. The method used by BKKBN to collect the data is census (Thabrany et al. cited in Kurnianingsih, 2013). Census requires family units in Indonesia tobe the target for data collection. In collecting the data, BKKBN relies on qualitative approach as there are indicators related to socio-psychological condition which might be hard to be converted in real numbers. Using qualitative approach also means that the calculation of the subjective indicators is categorical without monetary quantification (Thabrany et al. cited in Kurnianingsih, 2013). Without monetary quantification, the quality of data relies on deep written description about the family welfare against the poverty indicators. The description of the welfare is likely to be richer and meaningful as it might capture the social context. Thus, the data about poverty measurement from BKKBN is able to benefit and to support the implementation of government program for the community (Thabrany et al. cited in Kurnianingsih, 2013).

3.2. Strengths of BPS Poverty Measurement

BPS poverty measurement has several strengths. First, BPS has strength in indicators and questionnaires. BPS utilizes indicators and questionnaires that accommodate basic need fulfillment and right based fulfillment of basic needs to measure poverty. Siahaan (2011, p.225) states that since 2004, as required by the Indonesian Constitution, UUD (The Principle Law) 1945, BPS uses rights based fulfillment of basic necessity as the indicators to quantify the poverty. By using these indicators, the poverty is not solely centered on basic necessity but also on the performance of government in fulfilling the rights of the community to access basic necessities such as employment and education.

Second, BPS has strength in method of data collection. BPS uses quantitative approach, survey and interview in collecting data about the poverty so that it might sufficiently provide accurate and objective information about the poverty. Westat (2002, p.44) points out that quantitative method provides benefits in terms of providing more objective and accurate information because the standardized methods are used to collect the data, which can be replicated and analyzed statistically. This approach is in line with the approach in collecting data as BPS uses survey. The survey covers sample of 300,000 households in 34 provinces and 511 regencies in Indonesia and this sample represent geographical condition, urban and rural areas (BPS, 2016). Using survey for data collection is relative inexpensive and effective in collecting descriptive data, accommodating a wide range of topics and the data can be analyzed using different types of statistical software (Westat, 2002, p.50). In conducting the survey, the BPS employs trained data collectors to interview the household. An Interview is essential to obtain rich data and details as the interview time enables face to face contact, flexibility, depth topic exploration, explanation about the questions, higher useful responses, affective and cognitive responses (Westat, 200, p.52).

Third, BPS has strength in the practicality of data usage as it provides baseline data and data about the change in poverty indicators. BPS poverty measurement is unique as it is closely related to the purpose of survey, the availability of data and the usage of the data. The purpose of the survey in general is the provision of data about household welfare such as education, health and purchasing power ability (Suryono, 2016). Availability of data is also assured by BPS as it has specific objectives in the provision of basic data and detailed data about community welfare that is needed for planning, monitoring, and evaluation of development success (Suryono, 2016). Thabrany et al. 2013 (as cited in Kurnianingsih, 2013)mention that data obtained from the BPS poverty measurement can be utilized for planning, analysis, and evaluation of poverty programs with geographic targets. To achieve these objectives, the national socio-economic survey (core) is conducted every year while the national socio economic survey (module) is conducted every three years so that the output obtained is the annual macro poverty outlook of Indonesia. The national socio economic survey (core) is utilized to obtain baseline data and poverty indicators that change every year such as consumption and expenditure while the module one is utilized to obtain specific data that are not monitored annually like government intervention (Furuta, 2014). The uniqueness of BPS poverty measurement, is that it has several notable strengths.

Finally, the poverty threshold (poverty line) used by BPS enables macro poverty outlook comparison across provinces, regions and countries. The poverty line is

measured in quantitative manner which is done objectively by utilizing the monetary values of the non-food commodity and food commodity (Thabrany et al. cited in Kurnianingsih, 2013). The monetary values of non-food commodity are articulated into nonfood poverty threshold while the values of food commodity are articulated into food poverty threshold. The non-food poverty threshold (GKNM) is the minimum requirement for housing, clothing, education and health, while the Food Poverty threshold (GKM) represents the minimum food expenditure that is equivalent to 2100 kilocalories per day and these two thresholds addition establishes poverty line (BPS, 2017). Utilization of these poverty thresholds enables annual quantification of poverty line which is reflected in numbers. The poverty line number can be used for comparison of macro poverty outlook at provincial, national and regional level because the thresholds are focused on consumption of foods (commodities) and income to fulfill basic needs. Chamber (1997, p.181) explains that income poverty and consumption poverty need to be measurable so that they can enable comparison of household income and consumption at regional, provincial, and countries level.

3.3. Weaknesses of BKKBN Poverty Measurement

There are several notable weaknesses of BKKBN poverty measurement. According to BPS (2016, p.16), the BKKBN poverty measurement is considered to be less realistic because the concept about prosperous family I are normative and more suitable with small families and as the indicators are considered centralistic, they are not relevant to the local context and culture. This weakness is likely to be associated with lack of community participation in determining the indicators. The indicators address the welfare of the family in terms of the socio-psychological needs but they are determined in a top-down approach. To some extent, this top-down approach is essential in supporting the vision of BKKBN in creating the quality family unit. Accordingly, the qualitative approach is utilized to describe the welfare of the family under the census. The utilization of this approach to some degree might give richer description but it might not necessarily depict the poverty based on the community perspective. Another problem of utilizing qualitative approach is that it is difficult to specifically mention the commodity being measured in the census (Thabrany et al. cited in Kurnianingsih, 2013). The indicators lack clear quantifier to determine the poverty line as the poverty is based on the fulfillment of the criteria classified into pre prosperous family and prosperous family. The indicators also do not include monetary quantification and it is subjective and categorical. It is different from the BPS poverty measurement that utilizes poverty cut off in food based poverty line and nonfood based poverty line. In addition, as the sample of the census is within 95 percent to 100 percent, it might take longer time compared to BPS poverty measurement that uses purposive sampling. With this huge number of sample, it is expected that BKKBN can better portray the poverty, but BKKBN might not effectively describe the barriers that entrap the community under the poverty as well as the strategy and assets used by the poor to deal with the poverty. BKKBN lacks insight on both the barriers and strategy (which are different among the communities), which might significantly upgrade the perspective about poverty. Thus better planning for development and establishment of quality family units are drafted based on the nature of the community and the magnitude of the poverty.

3.4. Weaknesses of BPS Poverty Measurement

Similar to BKKBN poverty measurement, the BPS poverty measurement also experiences several notable weaknesses. In terms of the sample, BPS utilizes purposive sampling to carry out national socio economic survey. The sample covers 300,000 households in 34 provinces and 511 regencies in Indonesia. With less number of samples, BPS still can have the macro outlook of poverty in Indonesia and with a relative shorter time. However, this sample cannot be used to detect complete outlook about the place where the poverty exists and the all households that are under poverty because not all Indonesians are surveyed (Thabrany et al. cited in Kurnianingsih, 2013). Another weakness is related to the top down approach used by the BPS in determining the indicators of poverty (food poverty line and nonfood poverty line) which is not done by prior consultation with the community. Chambers (1995, p. 181) emphasizes that the utilization of income poverty and consumption poverty will give unquestioned status quo for the "central placed professionals" so that "what is measurable and measured then becomes what is real, and what matters, standardizing the diverse, and excluding the divergent and different". Even though, the approach used to determine poverty is based on basic necessity fulfilment and right entitlement based indicators, it might not completely portray the poverty from the community perspective. As Siahaan (2011, p.221) points out, the indicators used by BPS in measuring the poverty are less effective in determining the dimensions of poverty particularly for cultural and structural dimensions of poverty, so that the results can be misleading as they can either exaggerate or underestimate the poverty. Indeed, if the reference used to determine poverty is not in line with the community concept, the outcome of the measurement is biased (Kurnianingsih, 2013). The poverty indicators of BPS also more focus on the poverty line instead of analyzing the structural causes of the poverty, as well as the culture of society in dealing with the poverty. Accordingly, "it is held that the worse-off people are, the more they are preoccupied with income and consumption, with the need to gain subsistence food and basic goods in order to survive" (Chambers, 1997, p. 181).

In summary, both BPS and BKKBN focus more on the poverty but neglect the cause of poverty and barriers that entrap the community into the poverty. The strategy used by the community to move out from the poverty is understudied.

3.5. Opportunity for Improvement

There are several opportunities for improvement. First, there is opportunity to combine the data from BKKBN and BPS. As the census from BKKBN and survey of BPS are conducted annually, the data collection can be integrated and compared to obtain better outlook about the poverty in Indonesia. Second, the poverty outlook from BPS can better portray the poverty especially about the threshold in the food line and income line, while the poverty outlook form BKKBN can provide description regarding the areas in Indonesia where the poverty is severe and the family units that are deprived in socio-psychological needs and basic needs. Third, there is an opportunity minimize the cost of total collection by co-joining data collection which could lead to better a measure of the poverty in Indonesia.

3.6. Threat (Challenges)

There are several challenges. As the poverty indicators of both BKKBN and BPS are designed in top down mode, there is possibility that these indicators are too rigid and less flexible to effectively portray the real dynamic of poverty at the community level. As an example, in the Javanese traditional community, the poverty is conceptualized as being insufficient not deprived accross all aspects (*kesakrat*) and it is still not included into the government measurement (Siahaan, 2011, p.219). The top down mode poverty measurement also might not be able to unite the perception of both the government and the community about the poverty as they may have different focus and needs. Accordingly, the result of poverty measurement from both BPS and BKKBN might cause misallocation of funds in poverty eradication because those who are considered poor might not consider themselves poor. Table1 below highlights the different emphasis of the professional and the poor people, and gives an indication how data can be misinterpreted.

Table 1 Contrasting Tendencies in the Reality of Professionals and the Reality of Poor People (Chambers, 1997).

NO	Professionals	Poor people
1.	Universal	Local, specific
2.	Simplified	Complex
3.	Reductionist	Holistic
4.	Standardized	Diverse
5.	Physical	Experiential
6.	Quantified	Unquantified
7.	Income Poverty	Multi-dimensional deprivation
8.	Employment	Livelihood

Another remaining challenge is related to poverty measurement, particularly the non-uniformity in determining the measurement of threshold, and the resource to be quantified. Williams et al (2016, p.267) states that in identifying the poor, there is a "three legged stool" of measurement that should be considered: choosing the resource to be quantified, choosing whose resource to be count, and determining the threshold used to determine level of poverty. This tripartite consideration creates a challenge to the approach used by BPS and BKKBN. BPS uses basic necessity while BKKBN utilizes welfare approach, but unfortunately, there is no room for the commuity to give input regarding the treshold of poverty and meaningful resource to be counted. As a consequence, the BPS and BKKBN measures might be less effective in identifying the poor.

The different in approaches might potentially create ambiguity in the interpretation of poverty. BPS, on the other hand, provides macro poverty outlook but it does not obtain data from all households in Indonesia. In contrast, BKKBN carries out census on most of the family of Indonesia with sample within 95 percent to 100 percent, but it lacks clear threshold as the threshold is categorical and is difficult to be measured. In addition, it might be hard to combine and to balance top down and bottom up approach in poverty measurement as it might require time, cost, and more man power. As the community culture and condition vary, the scale of measurement and indicators might be not universal. Furthermore, both the poverty measurement of

BPS and BKKBN cannot explain the causes of poverty because it is not included in their indicators.

4. Discussion

It is obvious that both the poverty measurements of BKKBN and BPS have strength and weaknesses and it is clear that there is room for improvement. As both BPS and BKKBN measurement are carried out in top-down mode, a better way to improve them is by considering subjective measures. Subjective measures provide opportunity to the community to give input regarding the poverty treshold, meaningful resources that describe level of poverty. Bradshaw (2001, p.3) states that subjective measure focuses on the community as the source of information in determining the poverty threshold and this threshold is then used to quantify the poverty in the community. Using subjective measures demands direct consultation and participation from the community. Direct participation and involvement of community mean that there will be additional cost and time frame in carrying out the consultation with the community in order to obtain poverty threshold based on community. However, by promoting community involvement in poverty measurement, the government is likely to obtain more meaningful data about the poverty, the livelihood, the vulnerability and the perception of the community towards poverty. It is also likely that workable, and possibly cost effective solutions, will be discovered. Therefore, the sustainable livelihood index is proposed to improve the poverty measurement of BPS and BKKBN. This section will present the community concept about poverty causes, a poverty definition, the barriers that entrap the community under poverty, and the mechanism of sustainable livelihood index to assess the likely use of this index in measuring poverty.

4.1. Community Perception about Poverty: Lesson from Indonesia

The community perception about poverty is essential in determining poverty treshold and meaningful resource that need to be counted to determine level of poverty. It has cultural meaning that community embraces. This cultural meaning is complex and unique as the culture, livelihood, and social constructs shape the meaning of poverty. The cultural meaning varies between one community and other communities, and while some communities may be similar, there will always be distinguishing differences. To exemplify the diversity, the concepts of poverty in in Aceh, Malang, Lombok, Kutai Barat, Maluku, Papua and Papua Barat are presented.
Community in Aceh associates poverty with pain, stress, and unfavorable conditions as they are caused by deprivation. The deprivation that impacts on crucial community aspects such as, education, housing, and income, are likely to downgrade the community capacity to fulfill the basic necessities. Table 2 below presents the perception of Acehnese about poverty and seeks to show the cause and the relationship to cultural poverty.

Table 2 Perception of community at Aceh about poverty (Yusri, 2009).

NO	Perception	Cause of Poverty	Cultural Poverty

1	Living in poverty is synonymous with distress, pain, and so on.	Deprivation in all aspects such as income, education, employment, shelter, and other important needs causes the community to not meet the necessary needs to support their life.	1.The habit of drinking coffee in a stall or coffee shop. It is considered as cultural value that hampers the community to be more productive due to waste of money and waste of time that can be utilizes for more productive activity.
2	Poor is a condition in which a person does not have necessary needs to support life and if they are available they cannot meet necessary needs to support life.		2. Consumptive lifestyle. It is considered as the value that hampers the community to move out from the poverty because they spend more money not based on their need and the money is not managed carefully for future needs.
3	Poverty is characterized with deprivation in all aspects such as income, education, employment, shelter, and other important needs.		

The table above shows that the poverty in Aceh is multidimensional as it is not only about minimum standard of consumption and income but it is also related to cultural barrier. The cultural values may play significant role in entrapping the poor people, even though there is strong awareness about the poverty. For the Aceh case, the perception about poverty is not sufficient to describe the poverty as it is interrelated with other multidimensional factors including cultural values and deprivation. These multidimensional factors are hard to identify in the current poverty measurement. The BPPS and BKKBN tools are too rigid and insufficiently flexible to accommodate the Acehnese perception.

The multidimensional factors that affect poverty in Aceh are also reflected on the community of Malang, East Java. The poverty is not always associated by income but also by access and control of assets. The case study in Malang is unique as the female head of households becomes the main focus. Table 3 below presents the poverty based on female head of household in Malang.

Table 3 Perception of female head of household in Wonorejo village, Malang about poverty (Ahmad et al. 2015, pp. 224-226).

No	Perception	Cause of Poverty	Strategy to deal with Poverty
1	"Do not have land assets (paddy fields)"	Economic Factors: Uncertainty of land assets in the form of rice fields - Minimal venture capital that is currently executed, economic activity is done with capital potluck. - There is no means of business, poor female heads of household only rely	1. Conduct a very simple attitude of living by trying to reduce household expenses to a minimum. Expenditure is focused only on food consumption needs, while non-food needs in the form of clothing and housing fulfillment is not done or reduced in intensity.

		on their own power capital and social networking. - Does not have much work options	
2	"Circumstances that are not appropriate / different than others (more capable)"	Socio-cultural factors: -Attitude "nerimo ing pandum" (satisfied with whatever the results obtained), poverty is regarded as Fate. - Married under the hand (marriage series). - Habits: Women stop working when they have married and have children. - The system of barter or debt in economic activity, so there is no effort to do to escape the poverty. - Living in an environment where the average condition is poor.	2. Consumption activity is preferred for daily staple food needs, where in the fulfillment process is obtained from the surrounding environment (especially vegetables obtained from plants grown or planted around the house).
3		Structural Factors: -Do not get full access to accepted social assistance (the system for sharing). - Not involved in village structural activities such as PKK and Posyandu.	3. Involve family members in work (household, non skill work)
4		Natural Resources: - Living in dry farming / plantation areas, with main results of sugar cane and corn farming. - Frequent drought when the dry season.	4. Taking care of livestock owned by others. It is used as a savings.
5		Human Resources: -Low education - Age is old (unproductive age)	5. Being a casual worker, especially during the growing season or harvest.
6			6. Make debt when forced

The table above shows that the female heads of house consider access and control of land as valued more compared to other assets, and the poverty is related to resource scarcity and social culture. Land as asset is considered crucial to support female head of household life in more sustainable manner. From the output of privately owned land, it is likely that the female of household might have more stable food source and income to support their family. It is also reflected that the

poor natural environment, belief and the cultural construction might contribute in the deprivation of the female head of the households in Malang.

If the previous case in Malang puts land ownership as one of the means to escape the poverty, the community at Sekotong Barat, Lombok, put more value on fulfillment of the basic needs such as food, house, occupation, education and health as well as access to the city. Table 4 below shows the Lombok community perception about poverty.

Table 4 Perception of Community at Sekotong Barat, Lombok about Poverty (Paramita, 2014, pp. 26-27)

NO	Perception	Indicators	Causes of Poverty
1	The Ugly House/ The house is not habitable	The quantity and quality of the meal are insufficient	1. Inadequate health services/ Public health level is low
2	Income is not enough to buy clothing and food/ Lots of debt	Very low income	2. Low income
3	Cannot meet life necessities and lack of food and clothes	Cannot meet primary and secondary needs	3. Spending a lot
4	Unexpected circumstances	The condition and facilities of the house are unfit for habitation	4. Not having a fixed and decent job
5	Do not have the capital, the savings and the place of business	Uncertain job and not having steady job	5. Heredity
6	Education is lacking and underdeveloped	Less attention from the surrounding environment	6. Laziness
7	Not getting noticed	Never been to town and got entertainment	7. Do not havecapital
8	Do not have a steady job	Low level of education	8. Education and skills are lacking
9	Insufficiency in cleanliness and health	Poor health and insufficient access to health facilities and services	9. Destiny
10		Get help from various parties	10. Never /get too little help
11			11. Unconducive environment and far away from the city

The table above depicts the fact that there is strong relationship between community attitude, belief, environment, and perception about poverty. The fulfilment of basic needs, education, and health service as well as access to the city is considered important for the communityand incapability to fulfill these needs means poverty.

The poverty concept for the community at Kutai Barat, East Kalimantan province, is related to the basic necessity fulfilment and cultural idea about bad life (*bolupm data*). The following table presents the poverty perception of community at Kutai Barat.

Table 5 Perception of community at Kutai Barat about poverty (Haug, 2007).

NO	Perception	Indicators of not being poor
1	Generally, someone considered 'poor' if they lack material and difficulty to meet needs such as food, housing and clothing, and are considered 'rich' if they have wealthy visible properties.	1. Food: enough rice, meat and vegetables, the frequency of eating
2	They also have concept about bad life (*bolupm daat*). It is characterized by lack of all means, including not being able to meet basic needs, old and sick, do not have income and employment, socially isolated, have no husband or wife, and feel weak or threatened.	2. Housing: owns houses, roofing materials, walls and floors, painted walls, glass windows, number of kitchen appliances, and general home cleanliness
3		3. Clothing: all kinds of clothes, quality of clothes, and frequency of buying clothes
4		4. Health: health condition, ability to utilize medical services
5		5. Education: the level of education and traditional knowledge
6		6. Natural Wealth: having livestock, fields, gardens (especially rubber gardens)
7		7. Physical Wealth: has various machines: chainsaws, sewing machines, grind mill machines, etc.
8		8. Vehicle: has a pancal bike, motorcycle, or car
9		9. Luxury goods: have gold, TV, VCD Player, refrigerator, and other luxury goods.
10		10. Money: the amount of cash income, the stability of the source of income, the number of sources of income, and savings
11		11. Social relations: good relationships with family, friends and neighbors

It is clear from the table above that the idea of poverty is conceptualized in the culture and it deals with physical, social and psychological needs. This idea shapes the community perception about poverty. The poverty is considered as incapability of a family in fulfilling basic needs, natural, social, psychological, and physical welfare, and education, the possession of luxury goods, transportation and saving. The need of means of transportation such bike, motor bike and car might be closely related to the culture value about social isolation.

In contrast to the poverty in Kutai Barat, the poverty in the villages Purpura and Oirata Barat, tends to have dimension of structural poverty. The structural poverty relates to the lack of government policy. As a result, insufficient government programs and the social factors become the major causes of poverty for the community. Table 6 below presents the poverty from the perception of community at village Purpura and Oirata Barat, Maluku Barat daya.

Table 6 Perception of the community of Village Purpura and village Oirata Barat, Maluku Barat Daya (Kaplale, 2010)

No	Perception	Causes of Poverty
1	The concept of poverty derived based on the results of research that is poverty not only an inability to meet food needs (rice) and food but also other productive needs such as productive assets (livestock, skills) and productive and non-productive work such as decent housing, access to clean water, electricity, information, health and education. P.334	The factors causing the occurrence of poverty in the Village Purpura and Oirata Barat are internal factors such as culture, nature and character as well as external factors such as natural factors, social factors, and factors related to government policies and programs, education and health. P.334

The table above presents the poverty barriers in the community of Purpura and Oirata Barat which are not only contributed from the internal factors but also from the external factors. The internal factors are more related to the cultural and natural resource, while the external factors are related to the government performance in providing policy and programs that target poverty alleviation.

As could be expected, the poverty perception of the community on Buru Island is different from the people on the community of Maluku Barat Daya, even though they share similar geographic areas. The poverty perception of the community on Buru Island is likely to be shaped by the remoteness of the area. Table 7 describes the community perception about the poverty.

Table 7 Perception of the community of Buru Island, Maluku about poverty (Pattinama, 2009)

No	Perception
1	Among the people on Buru Island, an indicator of poverty including shifting subsistence land patterns, limited access to capital and improved agricultural technology and isolation in the sense of high transportation costs (time and effort) that hampers them to sell their product into the market.

The table above indicates that the community perception about the poverty is related to natural source and the geographic position of the area. The natural resource and cultural practice might cause the community to shifting subsistence agriculture and it is worsening with incapability of the community to access markets due to isolation. The isolation of the area means a higher expense on transportation and less frequent of productive mobilization to other areas. This area isolation together with high expense on transportation may indicate that there is minimum government intervention and government monitoring in community development.

Similarly, the poverty in Papua and Papua Barat province is also caused by the isolation even though the natural resource is abundant. Table 8 shows the poverty perception of the community in Papua and Papua Barat Province.

Table 8 Poverty Perception of community of village Waisa, Jayapura, village Fairusi, Biak Numfor in Papua province and village Tanjung Kasuari, Sorong, Papua Barat Province (Rumbewas, 2008).

No	Perception	Cause of Poverty

1	The community of the villages namely Waisa, Fairusi, and Tanjung Kasuari perceive poverty as incapability to meet need in land, sago forest, house and garden. They do not consider themselves as poor even though they have small income.	Lack of information, isolation, insecure feeling

The table above depicts the fact that the abundant resource is not synonymous with the quality of transport. The communities in Papua and Papua Barat provinces define poverty in terms of the assets and not the income. Having steady income is not considered important as the access and control over land and natural resources are more valuable. The cause of poverty is driven by the external factor including lack of information and internal factor such as geographic isolation and feeling of insecurity. As the examples show, poverty is defined differently by each community in Indonesia as it is related to culture, perception, internal factors such as geographic location and security and external factors such as ineffective government policy and program. Having a better understanding about local context of poverty is important to effectively eradicate the poverty. The current poverty eradication programs by the government might give positive outlook. However, this positive outlook tends to diminish the meaningful concept, magnitude and complexity of poverty in the communities. As a consequence, a more subjective measurement that grasps the meaningful concept and the local context is needed. The subjective measurement proposed by this paper is the Sustainable Livelihood Index (SLI).

4.2. Sustainable Livelihood Index (SLI)

The framework used to establish SLI is Sustainable Livelihood Analysis (SLA) which provides more comprehensive analysis about poverty compared to BPS poverty measurement or the BKKBN poverty measurement. SLA is centered on people, livelihood assets and livelihood strategy. As Krants (2001) points out, there are three essential elements about poverty that generate the SLA. First, the realization that economic growth is not always synonymous with poverty reduction as the capabilities of the poor in maximizing economic opportunity also plays key role. Second, the realization that poverty as conceived by the poor is not merely about income and food, but also about other dimensions such as insufficient social service, illiteracy, felling of powerlessness and vulnerability. Third, involving the poor in project and policy design is essential because the poor understand their condition and needs best. DFID (1999) explains that the core concepts of SLA are people centered, holistic, dynamic, and focusing upon strengths, macro-micro policy links and sustainability. Embracing these concepts is likely to give more positive outcome on poverty reduction because poverty is not only approached from top-down mode but also from the community perspective. The role of community is reflected in the resulting sustainable livelihood framework. The framework consists of livelihood assets, vulnerability context, transforming structures and process, livelihood strategies and livelihood outcomes (DFID, 1999). This framework puts the community in the focus as the community is involved to constructively define and evaluate their asset and livelihood strategy to better maximize structure and process related to government and policy. Evaluating the asset and strategy is important to better define and to deal with vulnerability. In fact, SLA has been utilized by several international organizations namely, DFID (Department for International Development), OXFAM International, UNDP (United Nations Development Program), and CARE. The utilization of the SLA accomodates the mission of the

organizations such as livelihood improvement, livelihood protection and poverty eradication. DFID, for example, utilizes SLA also to analyze the magnitude of the poverty and to eradicate the poverty. The SLA as theoritical concept is used as foundation to construct an alternative way to measure poverty in Indonesia called Sustainable Livelihood Index (SLI).

SLI, a new approach, builds upon the robustness of sustainable livelihood which is then translated into subjective approach to measure the poverty in Indonesia. SLI indicators of poverty are derived from community considerations about livelihood assets, strategy and vulnerabilities. The community conception of these will be broader and more multi-layered compared to poverty measurements that are based only on consumption and income. As it focuses on community and enhances bottom up approach, the SLI poverty indicators should better reflect the context and locality of community in Indonesia. SLI utilizes census instead of survey in collecting the data. Census is more expensive than survey but it provides more details description of poverty compared to survey that only provides macro poverty outlook for the selected sample. The advantages of census in this form is evident in the outcome of SLI: the description about barriers of poverty, cause of poverty, strategy to deal with poverty, and the level of poverty based on the indicators given by the community.

4.3. How to Calculate SLI

The SLI consists of several main variables namely the cultural (relative) deprivation indicators, livelihood empowerment, and livelihood engagement, barriers of poverty, and strategy used by the community to move out from poverty. Cultural livelihood deprivation indicators are related to the community concept about the poverty. The concept about poverty is essential to better understand the context, and the meaningful idea from the community that defines the poverty. The meaningful idea is obtained from the community about the poverty level, indicators and definition of poverty. This is obtained from the interview with the community regarding the concept that defines the poverty. Based on this meaningful idea, the community is ranked based on their wellbeing. Based on the ranking, the barriers of poverty and the strategy used by community to move out from the poverty are assessed to have better livelihood empowerment and livelihood engagement.

4.3.1. Cultural (relative) Deprivation Indicators

There are several stages to set up cultural livelihood deprivation indicators. To obtain these indicators, the community (especially the poor) are involved in defining and determining the poverty indicators. Based on their concept, the community is asked to rank the indicators based on their priority. The result is then given weight. The indicators with given weight are then distributed to the community so that individuals can rank the indicators from glitch to emergency. The following tables depicts the process of utilizing the community concept about poverty and it is then translated into SLI.

Table 9 Poverty Indicators Based on Community at Sekotong Barat Village, Lombok (Paramita, 2014, pp. 26-27)

Indicators	Number of Poor Who choose selected indicators	Percentage
The quantity and quality of the	10	41.6

meal are insufficient		
Very low income	5	20.8
Cannot meet primary and secondary needs	5	20.8
The condition and facilities of the house are unfit for habitation	4	16.6
Uncertain job and not having steady job	4	16.6
Less attention from the surrounding environment	5	20.8
Never been to town and got entertainment	3	12.5
Low level of education	2	8.3
Poor health and insufficient access to health facilities and services	3	12.5
Get help from various parties	2	8.3
Total	43	100

From the table, the indicators are transferred into the following table with weight and scale. The following table also highlights the calculation of the relative deprivation indicators.

Table 10 Cultural (relative) Deprivation Indicators Based on Community at Sekotong Barat Village, Lombok

Poverty		Scale of Poverty		Calculation
Indicators	Weight	Scale	Weight	
The quantity and quality of the meal are insufficient	41.6	Emergency	5	(Scale of Poverty * Poverty Indicators weight)/5
Very low income	20.8	Gigantic Problem	4	
Cannot meet primary and secondary needs	20.8	Big Problem	3	
The condition and facilities of the house are unfit for habitation	16.6	Medium Problem	2	
Uncertain job and not having steady job	16.6	Little Problem	1	
Less attention from the surrounding environment	20.8	Glitch	0	
Never been to town and got entertainment	12.5			
Low level of education	8.3			
Poor health and insufficient access to health facilities and services	12.5			
Get help from various parties	8.3			
Total	100			Total= Sub tot 1+Sub tot 2+ Sub tot 3+Sub tot 4+ Sub tot 5+Sub tot 6+ Sub tot 7 + Sub tot 8+ Sub tot 9+ Sub tot 10

If the total calculation is at scale 25 out of 100, there is a tendency that some indicators are considered as big problem. If there is an indicator that is considered big problem, a follow up is needed to address that issue.

4.3.2. Livelihood Deprivation Indicators

It is important to obtain exact deprivation in order to provide meaningful and useful data about poverty. The exact deprivation is assessed based on the family performance on livelihood elements namely the social capital, economy capital, physical capital, natural capital, spiritual and human capital.

Table 11 Livelihood Deprivation Indicators

Livelihood Capital	Deprivation		Scale of Deprivation		Calculation
	Indicators	Weight	Scale/ Weight	Description	
Social	-No affiliation for community organization -Incapability to regularly donate meaningful contribution (time, sources, money) in social activity	1/12 1/12	Emergency/ 5	0.86-1	(Deprivation weight * scale weight)/5
Economy	- no access to bank - no access to market - no access to saving - no access to credit	1/24 1/24 1/24 1/24	Extreme/4	0.66-0.85	
Physical	-no access to electricity -no access to communication device - no access to information device - no access to transportation	1/24 1/24 1/24 1/24	High/3	0.46-0.65	
Natural	- no access to clean source of water - no access to land - no access to common sources	1/30 1/30 1/30	Significant/2	0.21-0.45	
Spiritual	-no access to spiritual consultation -Incapability to regularly donate meaningful contribution (time,	1/30 1/30	Moderate/1	0.11-0.20	

	sources, money) in religious activity				
Human	-no access to health facilities -no access to health insurance - malnutrition - no access to education -active school enrollment for children is less than 9 years - No or shared toilet -income less than minimum regional salary	1/42 1/42 1/42 1/42 1/42 1/42 1/42	Low/0	0.0 – 0.10	
Total		1			Total= (total social+total economy + total natural + total spiritual + total human) * 100

Based on the table above, if the result of the measurement ranges between 0 and 10, the deprivation is low. Deprivation is considered moderate if the result is between 11 and 20. Deprivation is classified significant, if the result is between 21 and 45. Deprivation is classified high, if the result is between 46 and 65. Deprivation is categorized extreme if the result is between 66 and 85. If the result exceeds 85, deprivation is classified emergency.

4.3.3. Livelihood Promotion and Livelihood Protection

It is important to measure livelihood assets and livelihood promotion in order to more fully asses the capacity of family in pursuing better livelihood and the role of key agency intervention, including the government and the independent agency, in providing enabling condition to empower the community. The livelihood assets and livelihood promotion are then transferred into sustainable livelihood matrix. The following tables present the measurement of livelihood assets and livelihood promotion. The tables are constructed to accomodate livelihood promotion and livelihood protection. Both livelihood promotion and livelihood protection are essential to minimize poverty in table 3 above which presents perception of poor female heads of household in Wonorejo, Malang. The table below presents livelihood protection to deal with poverty on female head of household in Wonorejo village, Malang.

Table 12 Livelihood Promotion

Livelihood Capital	Indicators		Response		Calculation
	Indicators	Weight	Scale	Weight	
Social	-Access to local organization (PKK) - Access to marriage	1/12 1/12	Very good	5	(Indicators Weight * Response

	consultation				weight)/5
Economy	-Access to credit with low interest -Access to pro poor market	1/12 1/12	Good	4	
Physical	-Access to transportation -Access to electricity -Access to communication device -Access to information about legal marriage and benefits of it - Access to water storage	1/30 1/30 1/30 1/30 1/30	Average	3	
Natural	-Access to land -Access to common property area -Access to source of water	1/18 1/18 1/18	Bad	2	
Spiritual	-Access to religious service -Regular donation	1/12 1/12	Very bad	1	
Human	-Access to health care unit -Access to consultation with health professionals - Access to occupation -Access to free education -Access to training and capacity building -Access to family planning program	1/36 1/36 1/36 1/36 1/36 1/36			
Total		1			Total=(total social total economy + total natural + total spiritual + total human) * 100

The table above presents the livelihood promotion that should be done to enhance the livelihood of the poor female heads of household in Wonorejo, Malang. The table is closely related to the causes of poverty presented on table 3. The causes are, in fact, multi layers because they are not only related to bad practice (illegal marriage) that gives negative impact on woman but also to the seasonal condition (drought) and land ownership. The livelihood promotion is also related to livelihood protection to deal with vulnerability and external shock. Livelihood protection emphasizes the role of government and other third parties in providing the enabling condition for the poor to achieve better livelihood. The following table presents livelihood protection for poor female heads of household in Wonorejo, Malang.

Table 13 Livelihood Protection

Livelihood Capital	Indicators		Response		Calculation
	Indicators	Weight	Scale	Weight	
Social	- Provision and establishment of PKK - Provision and establishment of unit to inform women about legal marriage and its benefit	1/12 1/12	Very good	5	(Indicators Weight * Response weight)/5

Economy	-Provision and establishment of cooperation - Provision and establishment of pro poor market	1/12 1/12	Good	4	
Physical	-Provision of cheap transportation - Provision of electricity -Provision of public communication hub - Provision and establishment of registry office -Provision of marriage certificate -Provision and establishment health center -Provision to water storage and water installation -Provision of house	1/48 1/48 1/48 1/48 1/48 1/48 1/48 1/48	Average	3	
Natural	- Provision of common property area for plantation -Provision of water supply during drought	1/12 1/12	Bad	2	
Spiritual	-Provision of consultation with female religious leader - Provision and establishment of unit that provides protection for women	1/12 1/12	Very bad	1	
Human	-Provision of health insurance - Provision of training and capacity building -Provision of scholarship for children -Provision of rice ration -Provision of healthy meal for school children - Provision of healthy meal for pregnant women	1/36 1/36 1/36 1/36 1/36 1/36			
Total		1			Total=(total social total economy + total natural + total spiritual + total human) * 100

From the measurement of livelihood protection and livelihood promotion, the results are transferred into the following matrix. The livelihood matrix consists of classification based on performance of livelihood protection and livelihood promotion.

Figure 1 Livelihood Matrix

The livelihood matrix above is used to assess the livelihood promotion and livelihood protection. The threshold used to divide the upper classification (3 stars and 4 stars) from lower classification (1 star and 2 stars) is the median. The median is obtained from the lowest score (20) and the highest score (100). The median is 60.5 and the score below it is categorized into lower classification, while the score above the median is classified into upper classification. Obviously, there are 4 implications of the matrix. First, if the assessment is given one star, it means that both the livelihood protection and livelihood promotion are not effective. Two stars mean that livelihood promotion is higher while the livelihood protection is lower. This means that even though the community is able to support their livelihood, they are likely to be vulnerable to external factors such as season and shock. Three stars mean that there is stronger

livelihood protection but the livelihood promotion is less effective. This implies that the protection from third parties such as government and international agency is effective, but the community might be reluctant to adapt the program or recommendation. Four stars are the desired outcome as both the livelihood protection and livelihood promotion are effective.

4.3.4. Livelihood Barriers

Assessing the barriers that entrap the community under poverty is essential to better develop poverty eradication programs. Involving the poor in identifying the barriers is important so that the magnitude of the barriers is understood by community and those constructing intervention programs, to better formulate solution to minimize the barriers. After the barriers are identified, the poor are involved in ranking the barriers based on the nature of the problem. The following table shows the assessment of the barriers based on the poor female heads of household in Wonorejo, Malang and the data is obtained from table 3.

Table 14 Livelihood Barriers

Barriers		Response		
Factors	Weight	Scale/weigh t	Descriptio n	Calculation
Economic Factors: -Uncertainty of land assets in the form of rice fields - Minimal venture capital - There is no means of business, - Limited work options	1/20 1/20 1/20 1/20	Emergency/ 5	0.86-1	(Factors weight* Response weight)/5
Socio-cultural factors: -Attitude "nerimo ing pandum" (satisfied with whatever the results obtained), poverty is regarded as Fate. - Married under the hand (marriage series) - Habits Women stop working when they have married and have children - The system of barter or debt in economic activity, so there is no effort to do to escape the poverty.. - Living in an environment where the average condition is poor	1/25 1/25 1/25 1/25 1/25	Extreme/4	0.66-0.85	
Structural Factors: -Do not get full access to accepted social		High/3	0.46-0.65	

assistance (the system for sharing). - Not involved in village structural activities such as PKK and Posyandu	1/10 1/10			
Natural Resources: - Living in dry farming / plantation areas, with main results of sugar cane and corn farming. - Frequent drought when the dry season	1/10 1/10	Significant/2	0.21-0.45	
Human Resources: -Low education - Age is old (unproductive age)	1/10 1/10	Moderate/1	0.11-0.20	
		Low/0	0.0 – 0.10	Total=(total social total economy + total natural + total spiritual + total human) * 100

Based on the table above, if the result of the measurement ranges between 0 and 10, the poverty barrier is low. The poverty barrier is considered moderate if the result is between 11 and 20. The poverty barrier is classified significant, if the result is between 21 and 45. The poverty barrier is classified high, if the result is between 46 and 65. The poverty barrier is categorized extreme if the result is between 66 and 85. If the result exceeds 85, the barrier is classified emergency.

4.3.5. Livelihood Strategies

The final element of SLI is livelihood strategies. It is important to assess the strategies used by the community in dealing with the poverty. Understanding the strategy should give comprehension about the resilience of the community in dealing with the poverty and might provide insight about the way to improve the strategy of the poor. The strategy used by the poor is firstly identified, weighted and then ranked. Table 15 below explains the livelihood strategies based on Chambers and the assessment.

Table 15 Livelihood Strategies (Chambers, 1991)

Strategies	Description
Stint	Reduce consumption; shift to lower quality of food; draw energy stored in the body
Hoard	Accumulate and store food and other assets
Protect	Preserve and protect the assets base for recovery and reestablishment of livelihood
Deplete	Draw upon household stores of food, pledge or sell assets

Diversify	Seek new sources of food, wild food, gleaning, wild animals, food stored by rats and other animals, diversify work activities and source of income especially in off seasons
Claim	Make claims on relatives, neighbors, patrons, the community, NGO, government, international community variously by calling in debt, appealing to reciprocity and good will, begging, political action
Move	Disperse family members, livestock, and assets or migrate

The livelihood strategies above are utilized as a frame to assess the livelihood strategies done by the poor female heads of households in Wonorejo, Malang. The following table explains the assessment of livelihood strategies.

Table 16 Livelihood Strategies based on Poor Female Heads of Household in Wonorejo, Malang

Strategy to deal with Poverty	Class	Weigh t	Scale/ Weight	Description	Calculation
1. Conduct a very simple attitude of living by trying to reduce household expenses to a minimum	Stint	1/7	Significan t Improvem ent/3	The strategy significantly improve livelihood	Weight of strategy*scale weight/3
2. Expenditure is focused only on food consumption needs, while non-food needs in the form of clothing and board fulfillment is not done or reduced intensity.	Stint	1/7	Moderate Improvem ent/2	The strategy moderately improve livelihood	
3. Consumption activity is preferred for daily staple food needs, where in the fulfillment process is obtained from the surrounding environment. (especially vegetables obtained from plants grown or planted around the house)	Diversify	1/7	Minor Improvem ent/1	The strategy improve livelihood at minor degree	
4. Involve family members to work	Claim	1/7	No Change/0	The strategy gives no effect	
5. Rowing (raising services) of livestock as a savings	Diversify	1/7	Minor decrease/ -1	The strategy decrease livelihood at minor degree	
6. Being a casual worker, especially during the growing season or harvest	Diversify	1/7	Moderate decrease/ -2	The strategy decrease the livelihood at moderate degree	
7. Make debt when forced	Claim	1/7	Significan t	The strategy significantly decrease	

			Decrease/ -3	the livelihood	
Total		1			Total=(total stint+ total diversify + total claim) * 100

According to the table above, if the result of measurement is between 0 and -100 and less than 33, the strategy used to deal with the poverty is, in fact, jeopardizing the livelihood of the poor. In contrast, if the result is between 33 and 100, the strategy gives positive change to the livelihood.

5. Conclusion

In conclusion, the poverty measurement of BPS and BKKBM are really strong in providing macro poverty outlook and detail descriptive poverty but it might be less effective in revealing the context and the multidimensional factors that influence poverty at the local community in Indonesia. Revealing the context of poverty based on the community is really important to obtain better understanding about the barriers in social, geographical and policy process that entrap the community in the poverty. The Sustainable Livelihood Index as a bottom up poverty measurement, on the other hand, is able to identify these processes and further enriches and upgrades the BPS poverty measurement. Therefore, the combination of top down (BPS poverty measurement) and bottom up approaches (SLI) is important to better eradicate the poverty and to effectively plan meaningful development programs.

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ANALYSIS OF FOOD CONSUMPTION PATTERN OF RURAL AND URBAN AREAS IN EAST JAVA PROVINCE

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ABSTRACT

The pattern of food consumption can be used as an indicator in looking at the level of community welfare and regional typology is an important determinant that helped determine the pattern of household food consumption, because the consumption patterns associated with behavior that cannot be separated from the socioeconomic cultural and environmental conditions. This study aims to (1) analyze the impact of socio-economic conditions on household food consumption patterns in urban and rural areas and (2) to estimate the elasticities of urban and rural food consumption in East Java in response to changes in prices and revenues. The micro household data from Susenas 2016 is used to answer the objective by using the demand system model of Linear Approximation Almost Ideal Demand System (LA/AIDS). The results showed that the socioeconomic condition generally influenced in determining the pattern of household food consumption, where the pattern of food consumption in urban areas tended to prioritize food consumption with better nutritional value than rural areas. While based on the value of elasticities, food commodities in East Java are still a necessity, households in rural areas are generally more responsive to both price changes and income changes than urban households.

Keywords: Consumption Pattern, Request System, LA / AIDS, Urban, Rural

INTRODUCTION

Consumption activities are undertaken by individuals, households, and firms are influenced by many factors. One of them is income factor, as explained by Mankiw (2007) that income factor has the direct influence on consumption. Meanwhile, the pattern of household consumption is defined by the Central Bureau of Statistics as the proportion of household expenditures allocated for food and non-food needs. Food expenditure will remain the most important component for households because the food is the basic nutrient of every human being (Ahmad, 2015). typically, food consumption for households is a function of household income, prices, tastes and so on.

Empirical data shows that consumption patterns urban household in East Java tend to be better than rural household. According to the Central Bureau of Statistics, more urban consumption in 2016 concentrated on non food needs (54,67 %) than food needs (45,33 %). Opposite with this fact, rural food consumption in East Java is still dominated by food needs (54,82 %). It indicates there is welfare disparities between rural and urban households in East Java. Mulyanto (2005) explained that households can be used as an economic measure, in which the allocation of household expenditure can be used as a measure of the economic welfare of the population, where the lower the percentage of food consumption expenditure on total expenditure, the better the household economy (Togatorop, Haryono, & Rosanti, 2014). Conversely, if the consumption of food expenditure is greater, the household concerned will be less prosperous. (Nicholson, 1998) also explained that food is a

basic necessity that increases the amount of consumption less quickly than income increase. Based on Engel's theory in Salvatore (2006) it is also explained that the higher the income level, the share of household consumption expenditure for food will decrease. Shifting patterns of expenditure can occur due to low food elasticities (Trisnowati & Budiwinarto, 2013).

Furthermore, the pattern of food consumption both the amount and frequency of food consumed by households is also suspected to be closely related to the area of residence. Hamid, Setiawan, & Suhartini (2013) explains that the condition of the area can be affected by the number and type that the region can produce. Rodriguez-takeuchi & Imai (2013) explain that geographical and social conditions have different responses in response to rising food prices and patterns of food burden and welfare. Rural and urban households will allocate their consumption expenditures to achieve utility and satisfaction. Generally, urban households receive higher incomes than rural households. Thus, urban households can spend more than rural households. However, Fujii (2011) also explained that the pattern of food consumption among poor households is different because it is influenced by socio-economic conditions and the characteristics of residential areas, where inflation in food commodities will make urban households more vulnerable to food security than rural poor households. Benfica (2014) in his research found that rural and urban Melawi households suffer when prices in Malawi are increasing, but urban areas are receiving even worse effects.

In addition, various empirical studies related to the pattern of food consumption in Indonesia also show that the diversity of food consumption patterns can be different according to socioeconomic characteristics (Cahyaningsih, 2008). According to Streeter (2017), socioeconomic and demographic factors, such as income, education, shelter, family size, territory, and marital status can affect both food and nutrition intake in the short and long term.

Based on the above explanation, it can be said that a good understanding of the analysis of food consumption patterns of rural and urban areas allegedly can contribute in formulating public policies related to food security. The objectives of this study are (1) to analyze the influence of socio-economic conditions on household food consumption patterns in urban and rural areas and (2) to estimate the elasticities of urban and rural food consumption in East Java in response to price and income changes.

EMPIRICAL STUDIES

Streeter (2017) examined the socioeconomic factors affecting food consumption in China during 1989-2009. The results showed that income, education, and urban households had a positive effect on the consumption of animal foods, fruits, and dairy comoditiess, but negatively related to cereal consumption. Meanwhile, highly educated, high-income people choose low-calorie foods with more animal foods, fruit, milk and less cereals. Sari (2016) in his research in East Kalimantan showed that socioeconomic characteristics in general have a significant effect on consumption pattern, where urban households are more elastic to the price changes of grains, animal protein and cigarette than rural households.

Miranti & Syaukat (2016) also shows in his research in West Java where the share of household food expenditure in urban and rural areas is still high and dominated by grains. In addition, demand for most food commodities is unresponsive to price changes, except flour commodities, beef and cigarettes. Furthermore, the value of price elasticities is greater than income elasticities which means that food demand is more influenced by price than income.

Ahmad (2015) examines the consumption patterns of food in rural and urban areas of Pakistan. The results showed that households in low-income groups spend most of their income on wheat, beans and vegetables, while high income groups on rice, meat and fish, milk and dairy comoditiess both in urban and rural areas.

METHODOLOGY

This study used SUSENAS 2016 in East Java Province and analyzed using *Linear Approximation Almost Ideal Demand System* (LA/AIDS) model developed by Deaton, A. and Muellbauer (1980). STATA 13 is used to perform data processing. The mathematical of LA/AIDS model in this study as follows:

$$w_{i,r} = \alpha_{i0} + \sum j \gamma_{ij} \ln P_j + \beta_i \ln(y/P^*) + \delta_{i1} Age + \delta_{i2} Sex + \delta_{i3} Edu + \delta_{i4} House + \delta_{i5} Work_{i2} + \delta_{i6} Work_{i3} + \delta_{i5} Poor + u_i$$

where:

$w_{i,r}$	=	Budget share of food group i in r (rural/urban)
i, j	=	1,2,3,... etc (food groups)
P_j	=	Price estimated food groups to - j
y/P^*	=	Total household expenditure deflated by stone price index
Age	=	Age of head of household
Sex	=	Sex of head of household
Edu	=	Education of head of household (0 = junior school and 1 = high school above)
$House$	=	House ownership status (0 = not own property and 1 = own property)
$Work_{i2}$	=	Work of head of household (1 = non agricultural sector and 0 = other)
$Work_{i3}$	=	Work of head of household (1 = agricultural sector and 0 = other)
$Poor$	=	Economic status of household (1 = not poor and 0 = poor)
u_i	=	Error term
$\alpha_{ij}, \beta_{ij}, \gamma_{ij}, \delta_{ij}$	=	Parameter of conjecture

The LA-AIDS model can be restricted or unrestricted. To ensure the assumption of satisfaction maximization to be satisfied, there are three restrictions that must be included in the model, namely adding up, homogeneity and symmetry. Furthermore, there are simultaneity bias and selectivity bias in LA/AIDS model (Moeis, 2003). Instrument variables through Ordinary Least Square (OLS) can be used to solve simultaneity bias and correct prices in overcoming quality effect and quantity premium on households samples (Ekananda, 2015). Whereas, selectivity bias can be overcome by aggregating food commodities into larger groups to minimize zero value of household food consumption (Moeis, 2003 and Sari, 2016). In this study, 215 food commodities in Susenas were aggregated into six food groups according to their similar nutritional components. If still found the existence of zero observation on food commodities group then do probit regression to obtain the variable of Invers Mills Ratio (IMR) instrument (Ekananda, 2015).

Then, for the elasticities of demand can be calculated by the following equation (Chalfant 1987 dalam (Alston, 1994) :

a) Own price elasticities : $Eii = (\gamma ii - \beta i\, wi) / wi - 1$
b) Cross price elasticities : $Eij = (\gamma ij - \beta i\, wj) / wi$
c) Income elasticities : $Ei\gamma = \beta i / wi + 1$

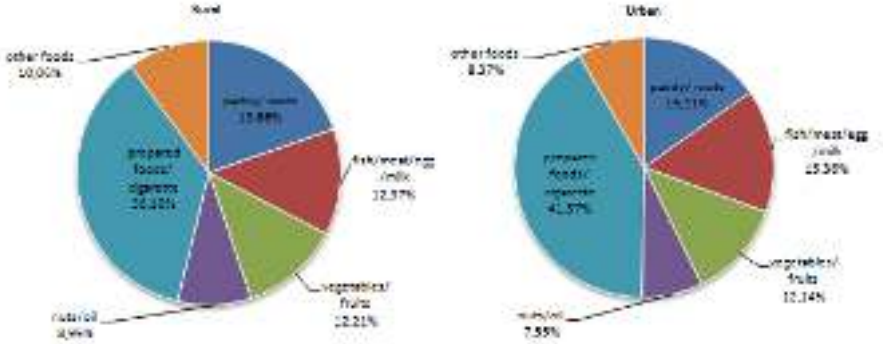
In this study, income is approximated by expenditure because it considered more accurate than income data (Deaton and Paxson (1998); Moeis (2003) and Regmi (2013)).

DISCUSSION

Budget Share of Food Commodities

The results of study show that prepared foods/cigarette dominate budget share of household in East Java, both in urban and rural areas. This fact is continuosly dominates along with the shifting lifestyle of society and the increasing number of carrier woman who demand a practical lifestyle. Futhermore, it can be seen that rural households still prioritize carbohydrate such as paddy/roots commodities (19,66 %). Whereas urban households tend to prioritize protein that obtained from fish/meat/egg/milk (15,36 %).

Figure 1.1.
Budget Share Food Commodities of Household in East Java by Typology of Area, 2016



Source: Estimated using the 2016 Susenas

Food Consumption Preference

Generally, model can be used to estimate budget share of household food commodities both in rural and urban areas. It can be seen from the simultaneous test of all variables that show significant value and partial test result are mostly significant at level of significance 1% to 10%. The socio-demografic variables included in the demand model to determine household consumption preferences in rural and urban areas of East Java also have influence in determining budget share of household food commodities. Approximately 89.3% of the 84 coefficients formed have a significant influence on the level of significance of 1% to 10%.

Table 1.1
Parameter Estimation of LA / AIDS Household Food Demand System in East Java Based on Typology of Area, 2016

Variables	Paddy/roots		Fish/meat/egg/milk		Vegetable/Fruits		Nuts/oil		Prepared foods/cigarette		Other food	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Lnpi1est	0.0524***	0.0600***	-0.0164***	-0.0249***	-0.0129***	-0.0139***	0.00289*	0.0101***	-0.00895***	-0.0215***	-0.0170***	-0.00973***
Lnpi2est	-0.0164***	-0.0249***	0.0247***	0.0750***	0.0112***	-0.00222**	0.00788***	-0.0114***	-0.0241***	-0.0205***	-0.00329***	-0.0159***
Lnpi3est	-0.0129***	-0.0139***	0.0112***	-0.00222**	0.0194***	0.0330***	-0.00141	-0.00111	-0.0130***	-0.0143***	-0.00320***	-0.00144*
Lnpi4est	0.00289*	0.0101***	0.00788***	-0.0114***	-0.00141	-0.00111	0.00356**	0.0127***	-0.00530***	-0.0106***	-0.00762***	0.00024
Lnpi5est	-0.00895***	-0.0215***	-0.0241***	-0.0205***	-0.0130***	-0.0143***	-0.00530***	-0.0106***	0.0574***	0.0747***	-0.00599***	-0.00775***
Lnpi6est	-0.0170***	-0.00973***	-0.00329***	-0.0159***	-0.00320***	-0.00144*	-0.00762***	0.00024	-0.00599***	-0.00775***	0.0371***	0.0346***
LnY_riil	-0.0265***	-0.0400***	-0.00646***	0.0225***	0.000807	-0.00691***	-0.0104***	-0.0231***	0.0616***	0.0726***	-0.0190***	-0.0251***
Lnage	-0.00274	0.0555***	-0.00223	-0.00768***	0.00662***	0.0425***	0.00742***	0.0353***	-0.00823**	-0.127***	0.000358	0.0248***
Sex	-0.00217	0.0164***	-0.0229***	-0.0158***	-0.0258***	-0.0193***	-0.0137***	0.000316	0.0494***	0.00646*	-0.00810***	0.00152
Edu	0.0196***	0.0321***	-0.00486*	-0.0141***	0.0165***	0.0122***	0.0154***	0.0173***	-0.0429***	-0.0882***	0.0113***	0.0193***
Work_i2	0.0429***	0.0560***	-0.00554**	-0.0214***	0.0280***	0.0199***	0.0267***	0.0251***	-0.0865***	-0.131***	0.0183***	0.0256***
Work_i3	-0.0190***	-0.0181***	0.0391***	0.0406***	0.0138***	0.0124***	-0.0013	-0.00641***	-0.0311***	-0.0223***	-0.00603***	-0.00598***
Poor	0.101***	0.110***	-0.0118***	-0.0412***	0.00715***	0.00148	0.0225***	0.0333***	-0.0819***	-0.108***	0.00685***	0.0177***
Own	0.0210***	0.0553***	0.0104***	0.00833***	0.00213	0.0213***	0.0112***	0.0275***	-0.0480***	-0.174***	0.00254	0.0184***
IMR	0.184***	0.0111*	-0.225***	-0.208***	0.185***	-0.0416***	0.139***	-0.00863**	-0.333***	-0.232***	0.0202	-0.0226***
(Constant)	0.301***	0.0725***	0.187***	0.0391***	0.0804***	-0.0217**	0.0779***	0.0192***	0.208***	0.833***	0.145***	0.0577***
R-squared	0.251	0.3314	0.1374	0.251	0.0921	0.1068	0.1734	0.2247	0.2157	0.2083	0.1164	0.2118
Chi2	4896.87	7906.51	2838.14	5643.81	1472.24	2060.59	2738.65	4584	5689.23	8486.17	2067.65	4189.42
Prob.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note: (*** significance at level 1%, ** significance at level 5% and * significance at level 10%)
Source: Estimated using the 2016 Susenas

The age of household head has significant influence on the budget share of all food commodities in urban areas. Most have a positive effect, a negative influence only on fish/meat/egg/milk and prepared foods/cigarette commodities. Whereas in rural

households, significant influence only found in vegetables/fruits, nuts/oil and prepared food/cigarette. The significant effects of age were also shown in Rohmanyu (2009) studies.

Generally female household head have negative influences in determining the budget share of food commodities, except for prepared foods/cigarette commodities in rural areas have positive effect. Whereas in urban areas paddy/roots and prepared foods/cigarette commodities that have positive effect. This fact is possible because of the increasing number of women who have dual role, as household head and carrier woman. So that, they do practical solutions with consumption of prepared foods. While in male household head usually have a couple to prepare food at home.

Both in rural and urban areas, a more educated household head is tend to reduces budget shares for fish/meat/egg/milk and prepared foods/cigarette, increases budget shares for others. This result is similar to Sari's (2016) study in which educated households head associated with better income levels, but will reduce fish/meat/egg/milk consumption compared to less-educated household head.

Furthermore, household head employment in rural and urban agricultural sectors has a positive and significant influence in determining the budget share of food commodities, except on fish/meat/egg/milk and prepared foods/cigarette commodities have a negative effect. This can be attributed to wages received from relatively small employment in the wage sector where the wages received are not regulated in minimum wage determinations, so the household tends to be incapable of buying fish/meat/egg/milk and prepared foods/cigarette commodities which are sold at relatively high prices.

Meanwhile, household head for rural and urban non-agricultural employment are seen to have a positive and significant influence in determining the budget share of fish/meat/egg/milk and vegetables/fruits commodities. This is possible because the household's economic capacity is relatively better than agricultural sector, so it can buy the commodities at an expensive purchase price.

Poor rural household have a positive and significant influence in determining budget share of food commodities, except fish/meat/egg/milk and prepared foods/cigarette commodities that have a negative and significant effect. While in urban areas have a positive and significant influence in determining the budget share of food commodities, except vegetables/fruits that are not significant and fish/meat/egg/milk commodities and prepared foods/cigarette commodities that have a negative and significant impact. Negative effects on fish/meat/egg/milk commodities and prepared foods/cigarette commodities can occur due to the poor purchasing power of poor households for commodities with high purchase prices, such as fish/meat/egg/milk and prepared foods/cigarette commodities generally based on the processing industry is mostly done by buying.

The presence of house ownership in the household decreases the shares of prepared foods/cigarette and mostly increases the share of other food groups. This phenomenon is found in both urban and rural areas. This indicates that household who already have their own house prefer to cook at home rather than consuming prepared foods/cigarette and it means they also pay attention to the quality of food their consumed.

Elasticities

Own Price Elasticities

Own Price elasticities is an easy way to measure the extent to which household demand responds to price changes in food commodities. table 1.2 shows own price elasticities of food commodities in East Java both in rural and urban is negative. The value reflects that if

the price increase on a food commodities occurs, the demand for food commodities will tend to decrease. This is in accordance with the theory that the demand curve has downward sloping (Miranti and Syaukat, 2016).

The price elasticities of each commodities group both in rural and urban areas is also inelastic because it is worth less than 1. That is, if there is a price change in the commodity group, the household becomes less sensitive to respond to the price change. Thus, a price change will not affect the demand for the commodities. According Sudarmadji (1979) changes tend to be stable reflects that households pay more attention to the quality of food consumed not only in terms of quantity (Ali, 2017).

Table 1.2
Own Price Elasticities of Household Food Consumption In East Java Based on Regional Typology, 2016

Groups	General	Regional Typology	
		Rural	Urban
(1)	(2)	(3)	(4)
Paddy/roots	-0.6495	-0.7070	-0.5654
Fish/meat/egg/milk	-0.6517	-0.8031	-0.5341
Vegetable/Fruits	-0.7832	-0.8419	-0.7214
Nuts/oil	-0.8949	-0.9500	-0.8088
Prepared foods/cigarette	-0.8963	-0.9026	-0.8921
Other food	-0.5955	-0.6123	-0.5613

Source: Estimated using the 2016 Susenas

When viewed based on the typology of the region, in general rural households are more elastic to changes in food group prices than in urban households. This can happen because urban household income tends to be higher, while for most rural households it has lower incomes.

Cross Price Elasticities

The response of price increases to a commodities not only affects the commodities but also affects changes in demand on other commodities. As stated in the law of the request that there are two relationships that may occur over price changes in other commodities, namely substitution and complementary relationships (Case and Fair, 2007).

Table 1.3
Cross Elasticities of Household Food Consumption in East Java Based on Regional Typology, 2016

Variables/Regional Typology	Paddy/roots	Fish/meat/egg /milk	Vegetable/ Fruits	Nuts/Oil	Prepared foods/ cigarette	Other food
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rural Area						
Paddy/roots		-0.1166	-0.1069	0.0549	-0.0583	-0.1318
Fish/meat/egg/milk	-0.0659		0.0909	0.1026	-0.0889	-0.0082
Vegetable/Fruits	-0.0492	0.0924		-0.0016	-0.0568	-0.0087
Nuts/oil	0.0268	0.0652	-0.0121		-0.0300	-0.0587
Prepared foods/cigarette	0.0031	-0.1678	-0.1088	-0.0172		0.0086
Other food	-0.0729	-0.0203	-0.0269	-0.0731	-0.0338	
Urban Area						
Paddy/roots		-0.1844	-0.1058	0.1802	-0.0786	-0.0707
Fish/meat/egg/milk	-0.1234		-0.0095	-0.1040	-0.0765	-0.1440
Vegetable/Fruits	-0.0595	-0.0323		0.0224	-0.0559	0.0192
Nuts/oil	0.0863	-0.0853	-0.0048		-0.0389	0.0255
Prepared foods/cigarette	-0.0326	-0.1941	-0.0942	-0.0138		0.0315
Other food	-0.0420	-0.1158	-0.0071	0.0288	-0.0334	
General						
Paddy/roots		-0.1660	-0.1018	0.1530	-0.0728	-0.0982
Fish/meat/egg/milk	-0.0963		0.0551	-0.0041	-0.0824	-0.0788
Vegetable/Fruits	-0.0503	0.0341		0.0060	-0.0603	0.0051
Nuts/oil	0.0700	-0.0283	-0.0131		-0.0392	0.0008
Prepared foods/cigarette	-0.0099	-0.1810	-0.1068	-0.0185		0.0180
Other food	-0.0560	-0.0806	-0.0160	0.0001	-0.0359	

Source: Estimated using the 2016 Susenas

Cross price elasticities of food commodities at household in East Java can be seen in table 1.3. In general, the paddy/roots commodities which are the primary necessity for households in East Java have a substitution relationship with nuts/oil commodities (Eij=0.07) and have a complementary relationship with the other food group commodities, fish/meat/egg/milk commodities is the largest complement relationship, which is 0,0963%. This illustrates that the staple food (paddy/roots) is still a priority of consumption compared to the source of animal protein. In urban areas it has a substitution relationship with nuts/oil commodities (Eij=0.0863) and has a complementary relationship with the other food group commodities. Meanwhile, paddy/roots in rural areas have substitution relation with nuts/oil commodities (Eij = 0,0268) and prepared foods/cigarette (Eij = 0,0031). This condition suggests that there is a shift in consumption patterns in households in East Java, where the dominant role of paddy/roots is slightly replaced with nuts/oil commodities. This can happen because nuts contain high carbohydrates similar to paddy/roots. Plus the condition of the household that can not be separated from the increasing role of female dualism in the family, as housewives and career women. As a result, domestic affairs in the case of the provision of food in the family much of which is replaced by practical solutions is to buy prepared foods. This finding is in line with Ariani & Hermanto (2012) who stated that if there are changes in economic growth, urbanization, increased food availability and increased participation of women who work can changes household consumption patterns. It indicated by changes in the proportion of food expenditure by commodities groups, provision of prepared foods. This is similar to Sari (2016), where the substitution relationship of food is so because the price of staple food is rising, the household will respon by buying prepared foods and more practical. In addition, substitution of cigarettes is suspected to occur due to differences in consumption preferences among rural households that tend to be low incomes compared to urban households, where many empirical studies show low-income or poorer communities consume more cigarettes (Kosen, 2008).

Meanwhile, the commodities of nuts/oil which is the food commodities group with the lowest budget share in urban (7.55%) and rural (8.99%) in household basket in East Java have substitution relation to the demand of vegetable / fruits, prepared foods/cigarette and other food in the countryside. In urban areas, there are substitution relationships with fish/meat/egg/milk and prepared foods/cigarette commodities. In general, it has substitution relation with fish/meat/egg/milk and prepared foods/cigarette commodities group. The substitution of nuts/oil commodities as a source of vegetable protein with fish/meat/egg/milk commodities as a source of animal protein shows that the adequacy of the need for protein by small households is quite complete.

The largest substitute reltionship is found in fish/meat/egg/milk commodities, which is 0,0924, meaning that the price increase in fish/meat/egg/milk commodities by 1 percent will respon to rural households by increasing demand for vegetables/fruits by 0,0924 percent. This can happen because the price of vegetables/fruits are cheaper than the price of fish/meat/egg/milk. For urban areas as well as in general, the largest substitution cross elasticities is found in nuts/oil commodities of 0.1802, meaning that if the price increase in 1% nuts/oil commodities will be responded by increasing demand for paddy/roots of 0.1802 percent. This can happen because the paddy/roots are the staple food.

Income Elasticities

When viewed from the income elasticities value in table 1.4, all food groups have a positive marked value. The positive sign reflects that these commodities are normal goods. The

highest income elasticities is the prepared foods/cigarette group, so if there is an increase in income in households in East Java, then the increase will be allocated more for consumption of finished prepared foods/cigarette commodities. Such conditions occur in rural and urban areas, where in general every 1 percent increase in income of poor households, the demand for finished prepared foods/cigarette commodities will increase by 1.1868 percent. This phenomenon is supported by the fact that it is easier to meet the business of providing food and beverages in every region. This result is in line with the research by Widarjono (2013) who found that the poorer the economic status of households, the income elasticities of finished food commodities and cigarettes will be more responsive.

Table 1.4
Income Elasticities of Household Food Consumption in East Java Based on Regional Typology, 2016

Groups	General	Regional Typology	
		Rural	Urban
(1)	(2)	(3)	(4)
Paddy/roots	0.7923	0.8652	0.7370
Fish/meat/egg/milk	1.0731	0.9502	1.1465
Vegetables/Fruits	0.9663	1.0066	0.9431
Nuts/oil	0.7585	0.8843	0.6942
Prepared foods/cigarette	1.1868	1.1706	1.1755
Other food	0.7493	0.8112	0.7000

Source: Estimated using the 2016 Susenas

While the lowest income elasticities, generally located in other food commodities group which only worth 0.7493 or inferior goods for households in East Java both in urban and rural areas. This is similar to Le (2008) finding that the poorer the households, the higher the income elasticities of the fish/meat/egg/milk commodities indicating the more luxurious the commodities, while the income elasticities of the grain and non-grain commodities will increasingly declining, where the poor household's purchasing power is generally very low, causing the substitution alternatives of the food possessed less diverse. This condition is in line with Bennett's law which states that households with low income levels, food consumption will prioritize more on energy-intensive foods derived from carbohydrates, but in line with the increase in income, the food consumption pattern will be more diversified and will generally increase consumption food to commodities of high nutritional value (Ariani & Hermanto, 2012).

CONCLUSION

Based on the results of these studies, it can be concluded as follows:

1. Socioeconomic characteristics consisting of price, income, age, gender, educational level, main job of household head in agriculture also non agriculture, poverty status and house ownership status have a significant influence in determining household food consumption pattern in rural and urban areas of East Java.
2. Based on six food groups, the value of price elasticities itself is negative, so all food commodities are inelastic and are normal goods. That is, the increase in food prices will be followed by a decrease in demand for the food group itself. Rural households are also more sensitive to changes in food group prices than in urban households. In addition, in urban households, the commodities of paddy/roots are substituted with nuts/oils. Meanwhile, paddy/roots in rural areas have substitution relation with nuts/oil and prepared foods/cigarette commodities indicating that there is a shift in consumption patterns in households in East Java. Based on the value of income elasticities it is seen

that the finished food and cigarette commodities are the most responsive to income changes for both rural and urban households.

IMPLICATIONS

1. Household socioeconomic characteristics proved to have a significant influence the budget share of household food consumption in rural and urban areas, so that in the effort of making policy related to food problem in household should consider social economic characteristic of that household.
2. The need for policies related to price control and income generation for households, especially rural households, to ensure the food security of the community.
3. It is necessary to encourage the diversification of food so that the fulfillment of nutrients can be more fulfilled because most households in East Java are still trying to fulfill the carbohydrate needs which is seen from the high budget share of these commodities and price elasticities value on paddy/roots commodities which are inelastic.

SUGGESTION

Some suggestions can be put forward as follows:

1. It should be promoted socialization programs to the community about the ideal food pattern and food consumption patterns.
2. It is necessary to enforce central government policy to increase the price of cigarettes through the increase of excise duty to effectively reduce cigarette consumption if supported by other non-pricing policies, such as non-smoking areas and non-smoking conditions for households receiving aid.
3. It is necessary to establish minimum wage for workers in the agricultural sector so that households working in the agricultural sector can also consume nutritious foods, such as fish/meat/egg/milk commodities.

LIMITATIONS

This study uses the value of expenditure as a proxy of income. In addition, the categorization of food commodities in this study was only carried out into 6 main groups. Thus, to analyze food problems specifically need to be aggregated more specific food commodities. Furthermore, research should also be conducted by adding variables such as health.

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Feeling poor and the role of income inequality to mental health

Evidence from longitudinal data of Indonesian Family Life Survey

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Abstract

Background: The inverse association between mental health and inequality has been a highly discussed issue, however the evidence remains scarce in developing countries. Using 'social capital' hypothesis it is known that the difference of status between individuals would reduce social cohesion through different mechanisms such as shame and distrust, thus affecting individual's health and well-being. Previous studies in Indonesia have been exploring the association between poverty and mental health and the findings have been contradictory. This study aims to fill the gap by looking at the association between mental distress to income inequality in light of other socioeconomic, behavioral, and health determinants.

Methodology: Using longitudinal survey Indonesian Family Life Survey (IFLS) data wave 2007 & 2014 of 20,000 individuals age above 15 years old, we conduct panel fixed-effect model analysis on risk factors of mental health to control for unobservable characteristics. Mental health was measured using CES-D 10 items, while income inequality was measured using an array of variables measure at the district level measured by GINI coefficient. We also include other determinants to adjust for potential confounders such as demographic characteristics, trust, disability and physical well-being.

Result: The results from this study indicate a significant positive association between different measures of district inequality to higher individual mental health score on CES-D after controlling for various potential confounders. The effect of individual's poverty is nullified when inequality measures are introduced. Meanwhile, different measures of subjective measure of poverty shows that people are more likely to be more depressed when they feel poorer in comparison to others, even if objectively they are categorized as poor. In addition to that, we found a strong associations between mental well-being and district share of unemployment. Other factors significantly associated with mental health were physical health and trust. In conclusion, weaker social ties within the community depicted by all types of inequality are associated with worse mental health. Furthermore, it is not being in poverty that matters, but rather the realization that one is poorer than people in their counterparts that affect one's mental health. This study adds to the body of literature by proving that any attempt to alleviate individual mental health problems should also consider intervention in its population structure and cohesion.

Keywords: inequality, mental health, unemployment, fixed effect model, Indonesia, social capital

JEL Codes: I14, I15

1. Introduction

Mental distress is among the least acknowledged, yet insidious health issues in Indonesia. With at least one in ten adults experiencing it sometime in their life (Riskesdas, 2013), mental health distress has one of the highest years lived disability (Institute for Health Metrics and Evaluation, 2010). However, like most Low-Middle Income Countries, Indonesia still allocates less than 1% of health expenditure towards the alleviation of this issue (Lund et al., 2010). Meanwhile, with major economic turmoil in the past decade it is highly plausible that mental distress emerge faster and thus requires more attention. Very little study has been done to investigate if the change in economic climate would worsen population level health. This paper aims at identifying the determinants of mental distress by considering the change of economic climate in the population level.

Previous studies in Indonesia have shown conflicting results between welfare indicators and mental health condition, while no one study has looked at inequality. Cross sectional studies conducted by Tampubolon and Hanandita (2014) consistently shows that albeit small effect, absolute income is associated with mental distress. Meanwhile, the contrary is found when Das (2007) performed a cross country comparison which shows objective socioeconomic measures, such as household PCE has no significant association to mental health. These further reinforces our arguments that perhaps poverty and mental health are not related to each other.

According to the 'relative income hypothesis', after a country becoming less poor, the association between absolute income, health and mortality weakens, and the distribution of income across society becomes more important as a determinant of health outcomes (Layte, 2011). This argument is especially compelling, since in the past decade Indonesia has experienced the highest increase in inequality measures (Yusuf et al., 2014). One of the mechanism explained is when individuals assess their well-being by comparing themselves to others with more income than themselves, it [economic inequality] will engender 'low control, insecurity, and loss of self-esteem' (Wilkinson, 2002). Studies have shown that worse social cohesion such as how one relates to other people (Holt-Lunstad et al., 2010), difficulties in maintaining relationship (Kiecolt-Glaser et al., 2005), and social status threat (Dickerson and Kemeny, 2004) significantly increases distress.

Several theories which has been explained to mediate the association between income inequality and mental health are status anxiety, social capital, and neo-materialist (Layte, 2011). In status anxiety, low status within the society exerts negative reactions such as shame and distrust which directly damage individual's health through stress reactions, such as through chronic cortisol release (Wilkinson and Pickett, 2006). Meanwhile in social capital theory, people are prone to mental health issues when social ties within the society is weakened through differential of welfare status through lower of social support, limited access to services and amenities, and worse affective support (Kawachi and Berkman, 2000). Lastly, neo-materialist hypothesis stems the belief that different levels of access to social and infrastructure in highly unequal society leads to worse health outcomes (Lynch et al., 1997).

Meanwhile in many studies, worse economic measures such as inequalities have been associated with worse social capital. Many studies found the association between rising inequalities to social instability such as increasing crime and violence (Fajnzylber et al., 2002; Choe, 2008; Tajoeddin et al., 2016) and increasing unemployment and deceleration of economic growth (Berg et al., 2012; Cingano, 2014; Yumna et al., 2015). Meanwhile, borrowing arguments from Wilkinson and Pickett (2009), when social ties is weakened, the society had a tendency to suffer from mental illness and other unfortunate events due to widespread shame and distrust.

In this study, we aim to see if there is a significant association between inequality and mental distress. Since most of the studies previously conducted only measure welfare status using objective instruments, while inequalities in itself has multiple dimensions, this study would also employ subjective welfare measurements as another measure of inequalities. This is reinforced by study conducted by Powdthavee (2007, 2009) which find that people assess their economic position in society based on the comparison they make with people around them. Arguably, this measure would provide a better explanation in the individual level if the association between inequalities and mental distress is found.

The rest of the paper is organized as follows. Section two discuss the data and methodologies used in this paper. Section three contains the main findings, before concluding with implications for policy in the final section.

2. Data and Methodology

Data

Mental health score was measured using CES-D 10 items self-reported scare to measure depressive symptoms obtained from Indonesian Family Life Survey (IFLS). Subjective poverty measurement was also obtained from this dataset. IFLS is a longitudinal dataset collecting social, economic and health data of initially 7,400 households which has been conducted from 1993 to 2014. Re-contact rate was high for both period; nearly achieved 91% in 2007 and 76% in 2014. The survey is nationally representative collected from 13 provinces in Indonesia. In 2007, data on mental health and subjective well-being was first collected and the same questions were repeated in 2014. Our analysis used data from these two waves. A sample of more than 40,000 people age more than 15 years old fulfilled the criteria of the individuals included in the study.

Mental health score comprised of 10 questions related to mental distress symptoms in the past week. The score range is 1 for rare experience (<1 day), 2 for some days (1-2 days), 3 for occasionally (3-4 days), and most of the time (5-7 days). The score was made in reverse for positive questions. Then the score was calculated as an index, where the score of 10 questions was added, divided by the maximum additional score and made as percentage to make it easier to interpret.

Another main interests of this paper is in the subjective measure of poverty that is indicated by the Subjective Economic Ladder where if people consider themselves as being in level 1, they categorize themselves as being the poorest and thus was put in poor categories. While those consider themselves in level 6 thinks that they are the richest compared to their neighbors. Similarly for assessment of current standard of living those who feel like they do not have adequate living standard are defined poor and those consider their current consumption adequacy as "not adequate" are also defined as poor.

For the main independent variable of interest, Gini coefficient in district level was calculated as inequality measure using expenditure data from National Socioeconomic Survey (Susenas) 2014. As controls, we also include other district level variables that depict the economic condition of the regions such as district average per capita expenditure from Susenas, district poverty headcount obtained from Statistics Indonesia and district unemployment rate from National Labor Survey (Sakernas) 2014.

We also include other indicators as controls which are included in Tampubolon and Hanandita (2014) such as religiosity, trust, community participation, disaster victim, and per capita expenditure (log). In addition to that, we also add other possible cofounders such as self-rated physical health, share of household dependent members, and total value of asset. We also make a dummy variable for poverty status which where 1 indicates individual whose expenditure is in the bottom 20% (first quintile).

Empirical strategy

To test our hypothesis we use fixed effect models by pooling data from 2007 and 2014 on individuals. We estimate the relationship between mental distress and inequality using the following model:

$$M_{it} = \alpha_{it} + X_{it} + \mu_i + \gamma_t$$

where $M_{it}$is mental distress score and X_{it}as gini coefficient, poverty, employment rate, and average per capita expenditure, all measured in the district level, $\mu_i$is individual fixed effects, and $\gamma_t$includes time varying controls. This type of data analysis have been previously used in similar paper looking at the relationship between socioeconomic measures and health (Nobles, Weintraub, and Adler, 2013). Fixed effect estimation eliminates unobserved time-invariant heterogeneity of individual characteristics and control for omitted variable bias while including time dummy using data from 2007 and 2014. Time-variant control variables included in this

study in the individual level are education, marital and health status, and urban status, while in the household level we add household size, share of elderly and child in the household, and last is household asset.

3. Result and discussions

Descriptive summary

Overall, there was a significant increase of Gini coefficient from 2007 to 2014 by 4% (from 0.37 to 0.41) nationally. Meanwhile, on average for district level, Gini coefficient increase from 0.25 in 2007 to 0.34 in 2014. The increase within this period is considered high when compared to the changes that happened from 1993 to 2013 which is from 0.36 to 0.41 (Yusuf et al., 2014). Similarly, measures for mental health score increase between the two years significantly. In 2007 the average score of mental health is 3.96, while in 2014 the average score increases to 6.16 [Appendix 2].

Meanwhile, when observing between 2007 and 2014, mental health score was found to increase substantially. The increase was found across all levels of welfare and no significant difference was found between the levels since the confidence interval are crossing each other. However, significant difference of mental distress score was found when observed using different levels of subjective measure of welfare. The results show that the prevalence of mental health score increase as people perceived themselves poorer than their surroundings. The average score of those in the lowest quintile based on these measures are at least 33% higher than those in the highest quintile (around 7% versus around 5%).

Appendix 3 shows the average mental health score based on quintile of expenditure and subjective welfare, whereas quintile of expenditure simply orders individuals starting from the poorest to the richest and categorize them into five levels. Subjective welfare indicator is assessed using three questions provided in the survey questionnaire which are Subjective Economic Ladder, Assessment of Current Standard of Living, and Assessment of Consumption Adequacy. Subjective economic ladder has six levels of answers in which number one indicates the poorest and number six indicates the richest. Assessment of Current Standard of Living and Assessment of Consumption Adequacy use the levels of welfare, which are one for poor (less than adequate), two for moderate (adequate) and three for rich (more than adequate).

Overall socioeconomic and psychosocial condition in Indonesia experience some changes within the study period. As shown in Appendix 5 that there is increasing mental health distress score in 2014. For estimation purpose, we transform the score to be percentage with maximum value 30 as 100 percent. Meanwhile if we look at Appendix 5, on average, there is increasing mental health score from 13% in 2007 to 21% in 2014. Similarly, during the study period, we also found that on average there is decreasing in poverty and unemployment rate.

Furthermore, on average the level of household welfare is increasing in study period. On average, there is increasing real value of household asset and per capita expenditure. Similar pattern is also found on the district level. Surprisingly, there is increasing proportion of individual that reported themselves as being poor. Mismatch between objective and subjective measure of poverty indicates higher dissatisfaction in terms of economic condition. This is consistently shown by other measure of subjective measure of poverty such as report of being poor measured by Subjective Economic Ladder increases from 5 to 7 percent in 2014. While according to current standard of living, people reported being poor has increased from 17 to 21 percent. Lastly, using consumption adequacy individual reported being poor increases from 13 to 14 percent individual.

Estimation result and discussions

From this study we have obtained two significant findings related to inequality and mental health. Firstly, mental distress is persistently associated with increased Gini coefficient despite change of models and inclusion of control variables. Secondly, in the individual level different types of subjective measures of poverty is consistently associated with lower mental health score depicting the importance of social status despite objectively an individual is not categorized as poor. Despite its incongruence with previous findings, this study has shown that poverty is relatively less significant predictors than inequality and feeling of poorer than others.

Based on the fixed-effect estimation, we find that district income inequality has persistent effect to mental distress when compared to poverty. In addition to that, the unemployment rate also has positive association to inequality. The effect of income inequality measured by Gini Index is slightly reduced when control variables are introduced, but still robust nevertheless. Furthermore, we also found that district level poverty has no significant impact to mental health, while objective and subjective measures of poverty in the district level have been found to consistently affect mental health, indicating the effect of inequality is stronger than that of poverty. This finding is consistent with previous findings that shows mental illness such as schizophrenia, depression, psychosis and other general mental illness are higher in more unequal societies (Burns et al., 2014; Messias et al., 2011; Pickett et al., 2006; Pickett and Wilkinson, 2010).

In this paper, we have replicated the same model used by previous studies (Tampubolon and Hanandita, 2014) and have achieved the same result. However, when inequality measures were introduced, all district level poverty measures such as poorest income quintile no longer have significant associations. Meanwhile increasing individual wealth which is indicated by log of asset is associated with lower score of mental distress, which is similar to previous studies (Hanandita and Tampubolon, 2014). Per capita expenditure, however, another measure of monetary poverty which reflects short term condition and more dynamic, was found to have positive associations to higher mental distress. This difference is perhaps affected by smoothed consumption data and different use of data categorization as employed in Tampubolon and Hanandita's paper. Regardless, though on some level poverty associates with worse mental health, inequality was found to play a bigger role. Consistent like Gini coefficient, all measures of subjective poverty were introduced these measures were found to persistently have positive impact to mental health score. This finding suggest that it is not being in poverty that made an individual feel distressed but rather, the realization that one is poorer when compared to people around them that made them feel so (Pickett and Wilkinson, 2015).

District unemployment was another major factor associated with individual's mental health. Previous studies show that the degree of unemployment rate in a district may depict weaker social ties within the community in which people will struggle to look for working opportunities (Freitag and Kirchner, 2011; Kuzubas and Szabo, 2015; Calvo-Armengol and Jackson, 2004). Meanwhile according to social capital hypothesis when a community lacks cohesion it affects mental health through the change of behaviour, access to services, and social support (Kawachi and Berkman, 2000). Therefore, high rate of unemployment may corresponds to deteriorating inequality within a district.

The findings in this study indicates that people are prone to mental health issues when they live in areas which social capital is weakened signified by highly unequal welfare and depressed labour market. Cross countries analysis shows the way these variables affect individual mental health is through social capital and status anxiety, which overlaps each other (Layte, 2011). Some of the mechanism explained is that stronger social ties builds better institutions, health related behaviours, and psychosocial support that strengthen collective support (Kawachi and Berkman, 2000). With rising inequality, trust within the community will be expected to become lower too. This also confirms that exposure to inequality, in the household or community level have similar effect to individual's mental health score than individual level determinants. [Appendix 4].

Persistent association of subjective measure of poverty to mental distress was also shown in this study, depicting the importance of one's perception of their social status and welfare standing in the society is important predictors to mental health. This finding is relevant to previous studies, which proved that subjective socioeconomic status and health relationship persists and may have bi-directional associations (Nobles et al., 2013; Smith, 2004). This finding persists even when one is objectively not categorized as poor indicating that the feeling of poorer than other people around. This support for status anxiety theory, in which one's standing in the society drives inferiority that induces stress through biological mechanisms (Wilkinson and Pickett, 2006).

In addition to that we find that individual factors such as having poor health, strong religiosity, and low trust to other people have positive impact towards individual mental distress. Since we employ fixed effect estimation, by design, we eliminated the time-invariant indicators such as age and gender. However to observe for different effects between different groups, we conduct heterogeneity test based on gender and age group. Several variables found to be significant in previous cross sectional studies were no longer found to be

significant using panel studies, e.g. PCE, disaster victim, and community participation. Appendix XX show the estimation result for heterogeneity test by gender and age group categorized into below and above 40 years old. The Gini coefficients are significant in all estimations showing consistent and persistent association between Gini and mental health across all population group. However, several other indicators are significant when heterogeneity tests were performed indicating different mechanisms between the subgroups.

One example is for subgroups above 40 years old, physical limitation plays a significant role in determining the increase of mental health score compared to other variables. Physical limitation is only available for people above 40 years old, therefore the variable is only introduced when analysis was performed for people above age 40. This is consistent with other findings and explained by increasing disability and physical limitation among people with older age. Meanwhile, for those below 40 years old unemployment, decreasing trust, and higher share of elderly are among significant predictors of increased mental health score.

Similarly when differentiating subgroups based on gender, among female subgroups share of children in the households is associated with higher mental health score. Share of children and elderly in the households are only incorporated in the model when performing heterogeneity tests. The findings indicated uneven share of child care among females than males in the households showing gender inequality in care work is associated with mental distress.

The findings in this study is subject to several limitations. Direct association between inequality measured by Gini Index and individual mental health perhaps is too far to be established. Previous studies have compared the strength of association at different levels of aggregation have supported this conjectures (Chen and Gotway Crawford, 2012) and therefore reducing the level of inequality to smaller area may give different result to this study. In this study the unit of independent variables measurement are yet to be standardized making the effect magnitude for each variable less comparable and limiting our ability to define which factor has the biggest impact in affecting mental health.

Despite these limitations we mostly have addressed many hypothesis previously suggested in other studies and the methodologies performed in this papers have addressed causal pathway which have not previously done by other studies. The findings of this study is important in regards to policy making by addressing the need for mental health alleviation to also put attention to population structure and cohesion.

4. Conclusions

This paper aims to show the link between inequality and mental distress among individual since 2007 to 2014 in longitudinal setting. Inequality was measured using Gini coefficient which show significant positive effect to mental distress score. The result was consistent after robustness check using heterogeneity tests, indicating the association is persistent among different subgroups. In addition to that, we also found that subjective measure of inequality was similarly consistent with Gini coefficient, which further confirms our findings. However, we found that measure of poverty such as consumption indicators such as per capita expenditure has inconsistent association to mental health score when inequality measures were introduced. This is confirming that poverty matters only when an individual recognize themselves as poor in relation to people around them.

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Appendix 1. *CES-D questions, in % of observations*

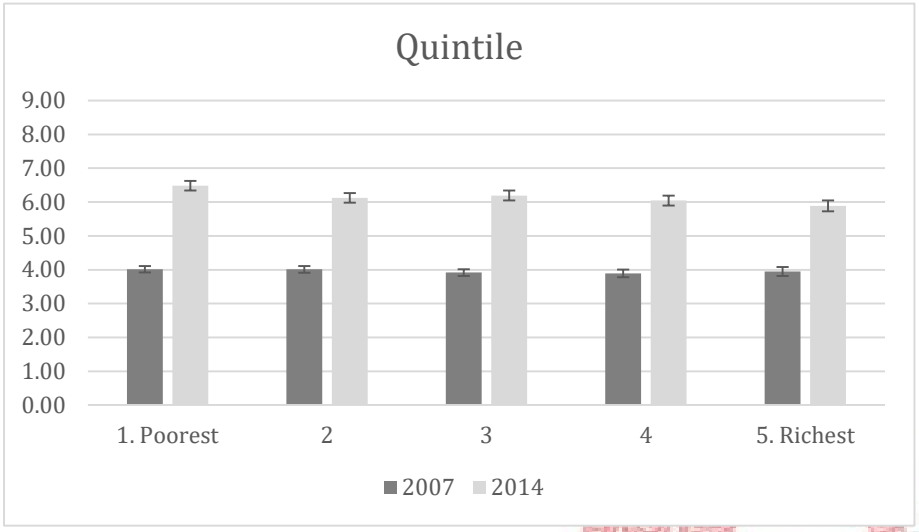
	CES-D items	Year	Rarely or none (≤1 day)	Some days (1-2 days)	Occasionally (3-4 days)	Most of the time (5-7 days)	Total
A.	I was bothered by things that usually don't bother me	2007	90.67	2.8	4.07	2.46	100
		2014	66.57	15.47	13.73	4.23	100
B.	I had trouble concentrating in what I was doing	2007	86.49	4.28	6.45	2.77	100
		2014	66.38	15.83	13.76	4.03	100
C.	I felt depressed	2007	90.39	3.21	3.95	2.45	100
		2014	75.61	11.57	9.13	3.69	100
D.	I felt everything I did was an effort	2007	69.89	6.95	12.95	10.21	100
		2014	58.08	15.07	14.6	12.26	100
E.	I felt hopeful about the future	2007	15.55	9.38	30.87	44.2	100
		2014	12.73	16.5	22.33	48.44	100
F.	I felt fearful	2007	88.96	3.15	5.04	2.86	100
		2014	70.81	13.26	11.04	4.9	100
G.	My sleep was restless	2007	78.37	5.56	8.75	7.32	100
		2014	62.42	11.84	14.69	11.05	100
H.	I was happy	2007	13.22	7.99	31.91	46.87	100
		2014	8.84	17.26	28.01	45.9	100
I.	I felt lonely	2007	95.66	1.14	2.04	1.16	100
		2014	82.14	7.27	7.32	3.27	100
J.	I could not get going	2007	94.38	1.56	2.85	1.21	100
		2014	74.84	9.98	11.11	4.06	100

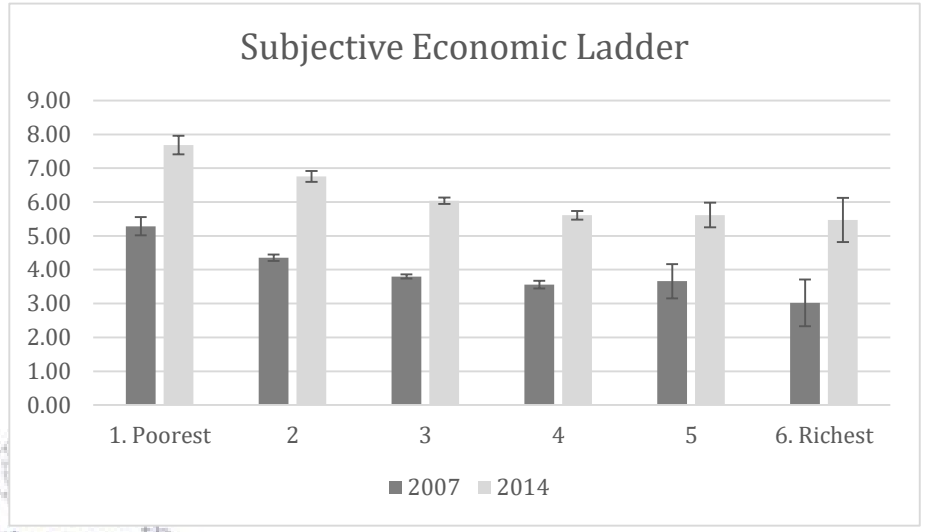
Appendix 2. *Mental distress average score by items.*

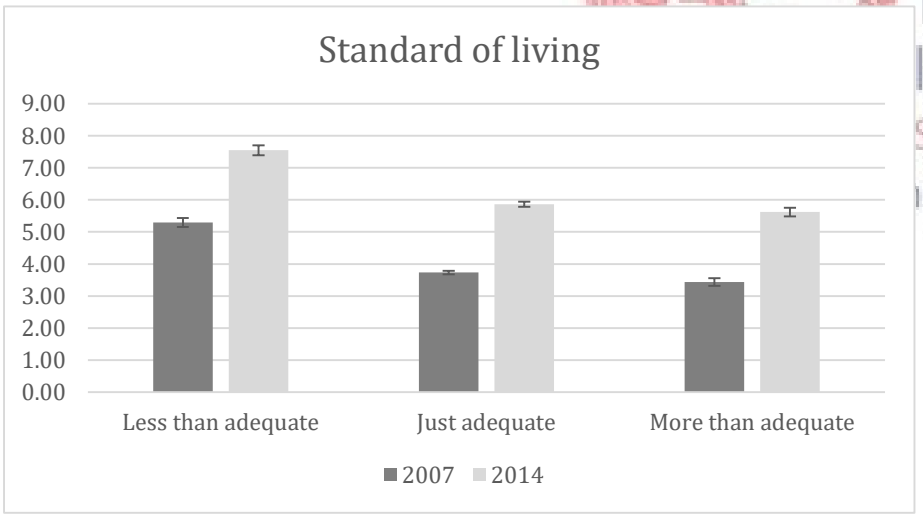
	CES-D items	2007				2014			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
A.	I was bothered by things that usually don't bother me	0.18	0.62	0	3	0.56	0.88	0	3
B.	I had trouble concentrating in what I was doing	0.26	0.70	0	3	0.55	0.87	0	3
C.	I felt depressed	0.18	0.61	0	3	0.41	0.80	0	3
D.	I felt everything I did was an effort	0.63	1.05	0	3	0.81	1.09	0	3
E.	I felt hopeful about the future	0.96	1.08	0	3	0.94	1.07	0	3
F.	I felt fearful	0.22	0.67	0	3	0.50	0.87	0	3
G.	My sleep was restless	0.45	0.93	0	3	0.74	1.07	0	3
H.	I was happy	0.88	1.03	0	3	0.89	0.99	0	3
I.	I felt lonely	0.09	0.44	0	3	0.32	0.75	0	3
J.	I could not get going	0.11	0.48	0	3	0.44	0.84	0	3
	Mental distress score	3.96	3.47	0	27	6.16	4.78	0	28

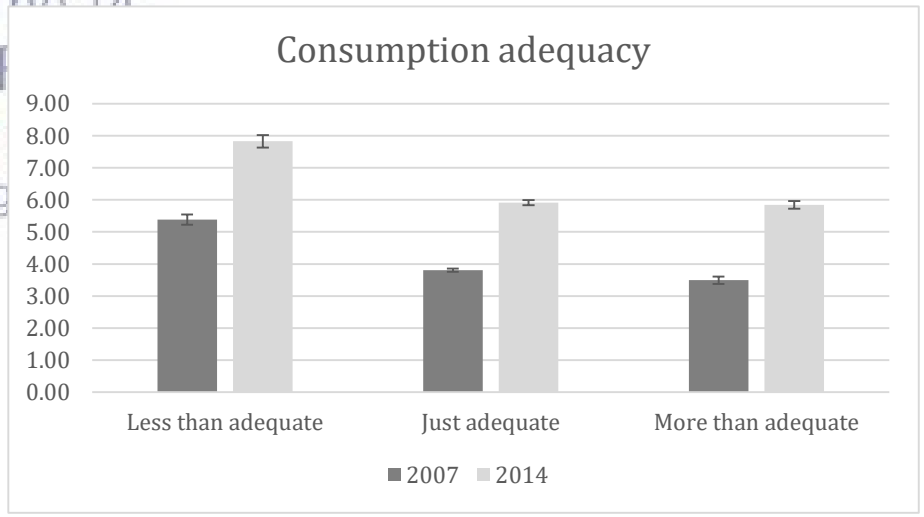
Note: the value of item E and H are reversed.

Appendix 3. *Mental distress average score by welfare categories.*









Appendix 4. Estimation result

	Mental distress score				
Gini coefficient in district	0.066**	0.064**	0.064**	0.067***	0.064**
Poverty rate in district	-0.044	-0.050	-0.044	-0.037	-0.040
Unemployment rate in district	0.162***	0.164***	0.152***	0.157***	0.154***
Household size	0.001*	0.001	0.001*	0.001*	0.002*
Married	-0.006	-0.007	-0.006	-0.006	-0.006
Separated, divorce, or widowed	0.008	0.007	0.009	0.007	0.008
Years of schooling	0.002**	0.002**	0.002**	0.002**	0.002**
Poor healthy	0.047***	0.047***	0.047***	0.046***	0.046***
Religious	0.007**	0.007**	0.006**	0.006**	0.006**
Urban residence	0.006	0.006	0.006	0.006	0.006
Total value of asset (log)	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**
Trust	-0.037***	-0.038***	-0.036***	-0.035***	-0.036***
Community participation	0.012***	0.012***	0.012***	0.012***	0.013***
Disaster victim	0.020***	0.020***	0.021***	0.020***	0.019***
Share of elderly in household	-0.006	-0.008	-0.007	-0.006	-0.006
Share of children in household	0.003	0.000	0.003	0.003	0.003
Per capita expenditure (log)	0.009***		0.009***	0.009***	0.010***
Average per capita expenditure, district level (log)	-0.026***	-0.025***	-0.026***	-0.025***	-0.025***
Year dummy	0.074***	0.076***	0.073***	0.072***	0.073***
Quintile 1 (20% poorest)		-0.004			
Subjective economic ladder (poor=1)			0.025***		
Standard of living (poor=1)				0.020***	
Consumption adequacy (poor=1)					0.025***
Constant	0.352***	0.450***	0.343***	0.318***	0.325***
Number of observations	40,134	40,134	39,998	40,120	40,124
Adjusted R2	0.171	0.171	0.173	0.174	0.174

*Note: ***p<1% , **p<5% , *p<10%*

Appendix 5. Summary Statistics

	2007					2014				
	Obs.	Mean	Std.Dev.	Min	Max	Obs.	Mean	Std.Dev.	Min	Max
Mental distress score	20961	0.13	0.12	0.00	0.90	20183	0.21	0.16	0.00	0.93
Gini coefficient in district	20961	0.25	0.05	0.16	0.38	20183	0.34	0.05	0.21	0.50
Poverty rate in district	20961	0.15	0.08	0.02	0.39	20183	0.11	0.05	0.02	0.34
Unemployment rate in district	20942	0.09	0.04	0.01	0.22	20183	0.06	0.03	0.00	0.15
Household size	20961	4.33	1.91	1.00	22.00	20183	4.15	1.81	1.00	16.00
Married	20961	0.73	0.44	0.00	1.00	20110	0.81	0.39	0.00	1.00
Separated, divorce, or widowed	20961	0.06	0.24	0.00	1.00	20110	0.10	0.30	0.00	1.00
Years of schooling	20961	8.97	3.80	0.00	18.00	20110	9.16	4.01	0.00	21.00
Poor healthy	20961	0.13	0.33	0.00	1.00	20183	0.23	0.42	0.00	1.00
Religious	20919	0.06	0.24	0.00	1.00	20148	0.18	0.38	0.00	1.00
Urban residence	20961	0.51	0.50	0.00	1.00	20183	0.59	0.49	0.00	1.00
Total value of asset (log)	20909	17.17	1.57	9.62	21.90	20178	17.64	1.70	0.00	21.53
Trust	20919	0.73	0.15	0.14	1.00	20148	0.72	0.16	0.00	1.00
Community participation	20599	0.34	0.28	0.00	1.00	19748	0.50	0.28	0.00	1.00
Disaster victim	20961	0.07	0.25	0.00	1.00	20183	0.03	0.16	0.00	1.00
Share of elderly in household	20961	0.04	0.13	0.00	1.00	20110	0.07	0.18	0.00	1.00
Share of children in household	20961	0.25	0.20	0.00	0.80	20110	0.26	0.20	0.00	0.80
Per capita expenditure (log)	20961	12.94	0.68	10.81	16.43	20183	13.29	0.67	10.73	16.59
Average per capita expenditure, district (log)	20961	12.63	0.33	12.03	13.57	20183	13.09	0.34	12.29	14.23
Quintile 1 (20% poorest)	20961	0.23	0.42	0.00	1.00	20183	0.23	0.42	0.00	1.00
Subjective Economic Ladder (poor==1)	20923	0.05	0.21	0.00	1.00	20076	0.07	0.26	0.00	1.00
Standard of living (poor=1)	20957	0.17	0.38	0.00	1.00	20172	0.21	0.41	0.00	1.00
Consumption adequacy (poor=1)	20959	0.13	0.34	0.00	1.00	20175	0.14	0.35	0.00	1.00

Evaluating the Income Differences using Individual Level Data of Risk Profiles: Empirical Evidence from North Sulawesi, Indonesia

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Many have tried to explain the causes of income differences which is the backbone of income inequality, but the approach to explaining the income differences from individual risk profiles perspectives to our knowledge has never been attempted. Risk profiles contribute to one's process of decision making in expenditure, labor supply, investment, and many aspects of lives. The aggregate decisions made by all economic actors will then shape the economy. This study takes the initial step to examine how risk profiles play role in the decision to invest and in income generation. From this point, we can assess the presence and the possible cause of income differences. We conduct a survey in 3 cities of North Sulawesi covering 421 respondents that may represent urban and rural areas. The findings help us make risk profile mapping across controlled demographic characteristics and show that different income groups and other demographic characteristics exhibit different risk profiles.

Keywords: Income Differences, Risk Profiles, Financial Terms, General Terms

A. Problem Background

Data from BPS (2018) showed improvement in Indonesian social economic indicators. As of September 2017, Indonesia had 26.58 million poor people. The number was 37.17 people in 2007. In percentage terms, the poverty rate decreased from 16.58% in 2007 to 10.12% in 2017. Human Development Index (HDI) increased from 66.3 in 2010 to 70.18 in 2016. Regardless improvements in poverty rate and HDI, income inequality in Indonesia was still a big issue. According to 2016 Credit Source Global Wealth Databooks, Indonesia ranked 4th unequal country in the world. Indonesian richest 1% owned 49.3% of total wealth of Indonesia.

Indonesian GINI Ratio had increased from year to year. The ratio was 0.341 in 2002 and increased to 0.392 in 2017. GINI ratio in urban areas was 0.406 in 2017 which was higher as compared to 0.320 in rural areas. High inequality level became a barrier to welfare, good institution quality, and people in obtaining higher education (Easterly, 2007). Inequality also became a barrier to quality economic growth. Inequality had strong negative relationship with long term economic growth and reduced the income growth of the poor but not the rich (Deininger & Squire 1998). Inequality could trigger higher crime rate like robbery (Chiu & Madden, 1998). Inequality affected the happiness level of people where people with higher inequality tend to have lower happiness (Alesina, Di Tella, & MacCulloch 2004). Additionally, Biggs, King, Basu, & Stuckler (2010) found that increase in inequality could attenuate the effect of GDRP growth on life expectancy and infant mortality (Biggs, King, Basu, & Stuckler, 2010). Inequality also had bad impact on democracy support (Andersen, 2012) and lack solidarity (Paskov & Dewilde, 2012), and was positively correlated with low wealth owned by the society (Whelan & Maitre, 2012).

Tax was seen as an effective redistribution tool used by many countries to address the inequality (De Mello & Tiongson, 2006; Karabarounis, 2010; Milanovic, 2000; Muinelo-Gallo & Roca-Sagalés, 2013). Adam, Kammas, & Lapatinas (2015) argued that an economy with high inequality highly depends on tax as redistribution means which resulted in high tax rate (Agranov & Palfrey, 2015). However, this way was not completely successful due to misappropriation (Alstadsæter, Johannesen, & Zucman, 2017), low tax income (Piketty & Qian, 2009), and inappropriate tax policy that could benefit the rich (Amir, Asafu-Adjaye, & Ducpham, 2013).

Many researchers argued that factors that led to income differences could cause the inequality. Roine, Vlachos, & Waldenström (2009) found financial growth had positive relationship with inequality. Redding & Venables (2004) added that geographic factors that could benefit some groups of people could affect the per capita income which led to inequality. Managing geographic endowment, employment or anything that could yield profit depended on the risk profiles of the individuals. Sharpe (1964) and Lintner (1965) were the first to investigate the relationship between risk and profit. Using Capital Asset Pricing Model, Sharpe (1964)explained that there was linear relationship between risk level and the profit earned. Other researchers were also in the same fashion (Fama & MacBeth, 1973; French, Schwert, & Stambaugh, 1987; Guo & Whitelaw, 2006). Cochrane (2005), Guo & Whitelaw (2006), Rockafellar & Uryasev (2002) and Sachse, Jungermann, & Belting (2012) were among others who argued that an individual who took high risk could result in high profit or loss. The expected profit and loss depended on the probability of profit and loss (Perloff, 2012). The probability itself depended on the risk profile of the individual, namely, risk-neutral, risk lover or risk adverse (Charness, Gneezy, & Imas, 2013). The probability indicated the uncertainty faced by the individuals to earn profit or loss. Usually, to mitigate this uncertainty, the individuals bought an insurance at certain premium rate (Jehle & Reny, 2011). In many cases, these individuals were wealthy enough to buy the insurance (Dague, 2014).

The possibility to buy insurance and the risk profile of an individual that determined that willingness to take the risk of earning high profit would lead to differences in profit or loss earned by the individual. These differences would lead to differences in income which created income inequality among groups of people. The role of risk in affecting the income differences was important. However, there was limited studies had attempted to investigate the relationship between risk and income differences of people.

This study aims to examine the relationship between the risk profile and the income differences of the individuals particularly those who reside in North Sulawesi Province, Indonesia, that is endowed by abundant natural resources and diversified job types. Particularly, how risk profiles affect the income differences and how different risk profiles pose are associated to different demographic profiles of the individuals.

B. Literature Review

Roine, Vlachos, & Waldenström (2009), investigates the long-run determinants of inequality. They conclude that economic growth, financial development, trade openness, government spending and tax progressivity significantly influence inequality. One interesting result emerges from this research as economic growth disproportionately increases wealth of top riches people. Financial development has similar result as financial development mostly benefits the top income earners. Trade openness however, do not give the similar impact for the top earners, if anything, this variable has negative impact to inequality. They conclude that economic growth has not been equally give positive impact for all the people.

Piketty & Saez (2003), investigates income inequality in the United States for 85 years period. Using Kuznets hypothesis, they show that income inequality in the US rises as the industrialization took place and then declines after more workers join the high-productivity sectors of the economy. In the United States, the Kuznets curve tend to have doubled back, as in the first half of the twentieth century inequality is falling but then followed by a sharp reversal since the 1970s. Sources of income mainly come from wages, business income, and capital income. They conclude that wages as the main contributor to the sharp rise of top income shares of total income in the last three decades in the United States. This experience is different with what happened in France (Piketty, 2003), as it is observed that wages inequality is stable in the long run. Based from France experience, income inequality is declining as capital income decreases because of the major shocks happening during the 1914-1945 period. The top income earner that depend mostly on capital income were not able to fully recover from the shocks. The dynamic effects of progressive taxation of capital accumulation and pretax income inequality also help in reducing income inequality.

Researchers have found that high inequality impact negatively to a country and the people. Inequality decreases happiness as investigated by Alesina, Di Tella & MacCulloch (2004). In their study, they find that people have lower tendency to report themselves happy when inequality is high. Not only the poor feel at disadvantage due to inequality, in the US, the rich is also bothered by the inequality. Andersen (2012), find that inequality have negative influence to social condition. The result indicates that people from countries with lower inequality level tend to support democracy while people from countries with high level of

inequality have less support for democracy. In accordance with Andersen (2012), Paskov & Dewilde (2012), also observe the negative impact on social condition specifically solidarity. Solidarity is defined as the 'willingness to contribute to the welfare of other people.' People from countries with higher inequality level are less willing to take action in improving the living condition of their fellow-countrymen. On the other hand, Easterly (2007), find that the tendency of a country to rely heavily on agriculture sector increases the inequality level. Inequality reduces the quality of institutions, while also have negative impact on education level and is consider as a significant barrier to prosperity.

Researchers have long investigated the impact of inequality, income inequality and its determinants. Our study will focus on income inequality. High level of income inequality can be identified as small group of people to control significantly large portion of total income earned by all the people in a region or a country. This study will try to explain the relation of risk preference towards income and income inequality. While risk has long been associated with the rate of return (Sharpe, 1964), to our knowledge none have try to explain the influence of risk preference to income which in the end affect income inequality.

Sharpe (1964), is the first to investigate and show the relationship between risk and expected return. In his study, Capital Asset Prices: a Theory of Market Equilibrium Under Conditions of Risk (Sharpe, 1964), he states that risk have positive and linier correlation with the expected return. This study also produces the Capital Asset Pricing Model (CAPM), a model that explains relation between the risk and return which is still commonly used until now. Lintner (1965), also find the similar relationship between the risk and return. In more specific way, he explains that valuation of asset risk level is explicitly and in linier way correlated with expected return, expected return less the adjustment for risk is equal to certainty-equivalent dollar return.

Virlics (2013), investigate how investment decision is made, the risk from the investment and its influence investment decision. Decision making process is based on an objective, accurate analysis of the investment and its possible outcome and return, and also investor's subjective perspective. Subjective factor includes investor's knowledge and risk perceptions while also contains emotional and psychological factors. There are three behavior individual can take in confronting risk and uncertainty as explained by Perloff (2012). An individual can be risk averse, risk neutral, and risk prefer.

Kish-Gephart (2017), shows that experience, access to resources, and social class have influence to risk behavior and preference. However, the result is still ambiguous as lower social class have mixed influence to risk preference. Individual in lower social class tend to avoid risk. In some case however, they seem to had no alternative due to their limitation and thus had to make the riskier decision. On the other hand, Brown and van der Pol (2015), find that risk preference can be descended from parents to children. Children tend to copy parents' perspective towards risk, thus making risk averse parents to have risk averse children and risk prefer parents to have risk prefer children too. They try to analyze separately the influence from father and mother, and conclude that mother's risk preference to have greater impact on children compared to father's. Anderson & Galinsky (2006), seek to explain the relationship of power, optimism and risk taking. They find that individuals with higher sense of power were more optimistic in their perception towards risk. These individuals are more likely to behave in a risk-seeking fashion and also took more risk. On the other hand, Lerner & Keltner (2001), find that emotion, specifically fear and anger are related to risk behavior in opposite way. Fearful people expressed pessimistic risk estimates and tend to become risk-averse, while angry people expressed optimistic risk estimates and risk-seeking choices.

The literatures on risk profile behavior are mostly treating risk as endogenous variable. We will treat risk profile as both exogenous and endogenous variables and investigate its relationship with income. This study will try to add new insight to the literature by relating income difference to individual's risk profile.

C. Methodologies and Analysis

In this study, we conducted a survey on how risk profiles of individuals influenced their income generation covering 421 respondents. The responses on each question we asked varied based on their personal background and willingness to respond. The distribution of respondents' occupation is as follows.

Table 1. Distribution of Occupations

Occupation	Freq	%	Occupation	Freq	%

Pharmacists	3	1.32	Drivers of Gojek/Grab (Car)	8	3.51
Civil Servants	40	17.54	Drivers of Gojek/Grab (Motorcycle)	6	2.63
Low Wage Workers	24	10.53	Fishermen	1	0.44
Medical Doctors	2	0.88	Street Vendors	19	8.33
Honorary	30	13.16	Students	10	4.39
Household wifes	2	0.88	Nurses	5	2.19
Private Employees	113	49.56	Farmers	1	0.44
Other Chefs	2	0.88	Breeders	4	1.75
National Food Chefs	2	0.88	Other Drivers	7	3.07
Snack or Bakery Makers	1	0.44	Taxibike	1	0.44
Infrastructure Contractors	7	3.07	Entrepreneurs	58	25.44
Supply Contractors	2	0.88	Others	73	32.02
			Total	228	100

Source: Authors' survey

The respondents are those who live in Manado, Bitung and North Minahasa. Manado is the capital city of North Sulawesi Province where most service businesses are located. Bitung is a city where North Sulawesi's international port and major fishery industries are located. North Minahasa is a regency located in between Bitung and Manado which has been a growing regency in recent years and still relies on agriculture sector. The choice of these three different geographic areas aims to cover the diversification of the respondents in terms of job classification, income, education and so on. To support the analysis, we use cross section and logistic regression models to examine how any types of risk variable affect the income variables and how risk profiles are differentiated across income groups. The population cross section regression model of variable r consists of variables i as the variables of interest and variables Z as the control variables.

$$r = a + b_1 i + b_2 Z \quad (1)$$

Suppose the income group takes one of two values:

$$Income\ group = \begin{cases} 0, & income\ below\ the\ mean\ with\ probability\ p \\ 1, & income\ euquals\ to\ or\ above\ the\ mean\ with\ probability\ 1-p. \end{cases} \quad (2)$$

A regression model is formed by parameterizing p when an individual does not have income equals to or above the mean to depend on an index function $x'\beta$, where x is a $K\ x\ 1$ regressor vector and β is a vector of unknown parameters. The regressors include risk and

control variables. In this logistic regression model, the population conditional probability has the form

$$p_i \equiv \Pr(y_i = 1|x) = e^{x'\beta}/(1 + e^{x'\beta}). \quad (3)$$

In this study, we classify the income groups based on the mean of income. Particularly, we take the mean of respondents' income and code 0 the income below the mean and code 1 the income equals to or above the mean. We also include some control variables. Since study is our first attempt and also the initial study that tries to explain the role of risk in income differences, we focus on the significance and the direction of the effects of the variables of interest and the control variables. Due to limitation in variables that we have in the survey, we do not expect that the correlation and determination coefficients to be strong. Further study is needed to improve the strength of these coefficients. The summary statistics of the variables used in this study are as follows.

Table 2. Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
invest_share on local business	420	6.863119	8.233504	0	46
income in million	415	6.214458	4.028855	2	40
income_01	421	0.36342	0.481557	0	1
gender	415	0.515663	0.500358	0	1
marital status	413	1.549637	0.54021	1	3
age	416	34.56971	11.51029	19	74
age_square	416	1327.233	906.1676	361	5476
education	415	5.416867	0.627244	3	6
urbanrural_01	420	0.645238	0.479012	0	1
total child	287	2.372822	1.201846	1	7
working experience_id4	412	9.910194	8.745061	1	37
investment choice by risk_d12	420	4.971429	1.945349	1	9
risk_financial_01	405	0.501235	0.500617	0	1
risk_financial_scalebb1	421	5.173397	2.05075	1	9
risk_general_scaleba1	421	5.736342	2.045747	1	9
risky decision_confidence_g1	420	5.497619	1.975384	1	9
risk_finance_business involve	420	2.62381	3.116115	0	9
risk_general_business involve	420	2.783333	3.263775	0	9

Source: Authors' calculation

We start the analyses with the examination on the effect of risk on the share of money invested in local business. We use equation (1) to model the investment share on local business with respect to risk and demographic variables. In this case, we use choice of investment types to proxy the risk individuals willing to take. The choice is whether individuals prefer the investment that bears high risk but yield high return. It is assumed that risk taking individuals tend to choose the high risk investment. Table 3 shows that individuals with higher risk, higher income, and live in urban areas tend to invest more in local business. While those who have higher degree of education tend to have lower share in local business investment.

Table 3. Cross Section Model of Investment Share on Local Business

VARIABLES	Coefficients	VARIABLES	Coefficients
income	0.50***	total child	0.91*
	(0.11)		(0.55)
age	0.04	marital status	-2.01
	(0.06)		(1.38)
education	-3.66***	**investment choice by risk**	**0.84*** **
	(0.79)		(0.26)
urbanrural_01	2.88***	Constant	17.39***
	(1.05)		(4.79)
Observations	282		
R-squared	0.24		

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors' calculation

We then asked how individuals with willingness to take the risk financially and examine its effect on the income they earn. We use equation (1) with binary risk variable of whether individuals are willing to take the risk financially (*risk_financial_01*) in specifications (1) and (4) of table 4 and scale risk variable (*risk_financial_scale*) in specifications (2) and (3) of table 4. Like

in our previous model, the risk variable turns out to have positive effects on income earned by the individuals. Control variables used also turns out to have positive effects on income: higher degree of education, more working experience, living in urban areas, and being older tend to increase the income earned. In addition to risk in financial terms, we use risk in general terms to evaluate the effect of risk on income (specifications (5) and (6)). Table 4 shows that the risk and control variables have positive effects on income.

Table 4. Cross Section Model of Income with Respect to Risk in Financial and General Terms

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Risk_Financial	Risk_Financial	Risk_Financial	Risk_Financial	Risk General	Risk General
education	0.55*	0.53*	0.51*	0.55*	0.52*	0.54*
	(0.32)	(0.31)	(0.31)	(0.31)	(0.31)	(0.31)
working experience	0.09***	0.08***				0.08***
	(0.02)	(0.02)				(0.02)
urbanrural_01	0.83*	0.71*	0.58	0.69*	0.75*	0.89**
	(0.43)	(0.42)	(0.40)	(0.42)	(0.40)	(0.41)
risk_financial_01	0.76*			0.69*		
	(0.41)			(0.40)		
risk_financial_scale		**0.31*** **	**0.30*** **			
		(0.10)	**(0.10)**			
risk_general_scale					**0.19***	**0.18***
					(0.10)	**(0.10)**
age			0.28**	0.27**	0.28**	
			(0.11)	(0.12)	(0.11)	
age square			-0.00*	-0.00*	-0.00*	
			(0.00)	(0.00)	(0.00)	
Constant	1.50	0.52	-4.46*	-3.37	-4.20	0.84
	(1.80)	(1.77)	(2.56)	(2.63)	(2.59)	(1.80)
Observations	392	407	414	399	414	407
R-squared	0.06	0.07	0.09	0.07	0.07	0.06

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors' calculation

We then interact the business involvement with the risk variable in financial terms to examine the effect of risk variable on income particularly on individuals who have run a business, as shown in specifications (1) through (2) of table 5. The risk variable shows the same

effect as in previous models. Using risk-business involvement variable in general terms, as shown in specifications (3) and (4), we observe the same fashion as in table specifications (1) and (2).

Table. 5. Cross Section Model of Income with Respect to Risk in Financial and General Terms Interacted with Business Involvement

VARIABLES	(1) RiskFinBus 1	(2) RiskFinBus 2	(3) RiskGenBus 1	(4) RiskGenBus 2
age	0.31***		0.31***	
	(0.11)		(0.11)	
age square	-0.00**		-0.00**	
	(0.00)		(0.00)	
education	0.58*	0.60*	0.56*	0.58*
	(0.30)	(0.31)	(0.30)	(0.31)
risk_finance_business involve	**0.29*** (0.06)**	**0.30*** (0.06)**		
risk_general_business involve			**0.26*** (0.06)**	**0.26*** (0.06)**
working experience		0.07***		0.07***
		(0.02)		(0.02)
Constant	-4.03	1.55	-3.98	1.70
	(2.50)	(1.69)	(2.51)	(1.70)
Observations	413	406	413	406
R-squared	0.11	0.09	0.10	0.08

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors' calculation

Having analyzed the effects of risk variables on continuous variable of income, we then try to investigate how the risk can influence the improvement in income from below mean income to at least equal to the mean income using logistic regression model as in equations (2) and (3). For this analysis, we classify the income into two groups, namely, below mean and at least equal to mean. We code 0 the below mean income group, and 1 the equal to or above mean. As shown in table 8, using three different proxies to risk, we find that being riskier is likely to contribute to higher probability to move from below mean to at least mean income. In particular,

when the individuals who have run business are riskier in general terms (specification (1)) or are more confident in making risky decisions (specification (3)), the likelihood to have at least equal to mean income increases. As to compare, we present the result in specification (2) when we use risk in financial terms although it shows that the risk variable is not significant.

Table 6. Logistic Model of Binary Income with Respect to Different Risks Variables

VARIABLES	(1) RiskGenBus	(2) Risk_Financial	(3) ConfidRisk
gender	-0.08	-0.11	-0.18
	(0.23)	(0.23)	(0.22)
education	0.94***	0.91***	0.96***
	(0.20)	(0.20)	(0.20)
marital status	-0.06	-0.02	-0.05
	(0.28)	(0.28)	(0.28)
urbanrural_01	0.55**	0.59**	0.56**
	(0.25)	(0.25)	(0.25)
working experience	0.06***	0.06***	0.06***
	(0.02)	(0.02)	(0.02)
risk_general_business involve	0.08**		
	(0.03)		
risk_financial_01		0.00	
		(0.23)	
risky decision_confidence			0.12**
			(0.06)
Constant	-6.83***	-6.51***	-7.35***
	(1.18)	(1.18)	(1.26)
Observations	402	388	403

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors' calculation

After we are confident to find out that being riskier tend to improve income of individuals, we now want to check how the risk levels owned by different income groups. In other words, what is the difference in risk level when the individuals are having below mean income and when they have at least mean income. To be specific we focus on the risk profile of those who have run businesses. Table 7 presents the results. In this case, our dependent variables are risks in financial terms (specifications (1) and (2)) and risks in general term (specifications

(3) and (4)). In addition, we also include the individuals' confidence in making risky decision as our dependent variable (specifications (5) and (6)). We find that, regardless the types of risk, individuals from higher income group tend to have higher risk levels than those from lower income group. Particularly, as shown in specifications (1) through (4), individuals from higher income groups have 0.72 to 0.80 points higher than those from lower income groups on scale 0 to 9. On the other hand, as shown in specifications (1) through (4), individuals from higher income groups have 0.34 to 0.40 points higher than those from lower income groups on scale 1 to 9.

Table 7. Cross Section Model of Risks by Different Income Groups

VARIABLES	(1) RiskFinBus 1	(2) RiskFinBus 2	(3) RiskGenBus 1	(4) RiskGenBus 2	(5) ConfidRisk 1	(6) ConfidRisk 2
gender	-0.97***	-0.92***	-0.89***	-0.90***	0.16	
	(0.30)	(0.30)	(0.31)	(0.31)	(0.19)	
education	-0.27		-0.24		-0.20	
	(0.25)		(0.26)		(0.16)	
marital status	0.62*	0.89***	0.61		0.53**	0.52***
	(0.37)	(0.30)	(0.39)		(0.24)	(0.19)
urbanrural_01	0.98***	1.04***	1.11***	1.20***	0.64***	0.68***
	(0.32)	(0.31)	(0.33)	(0.33)	(0.20)	(0.20)
working experience	0.02		0.04*	0.06***	-0.00	
	(0.02)		(0.02)	(0.02)	(0.01)	
income_01	**0.76****	**0.75****	**0.80****	**0.72****	**0.40***	**0.34***
	(0.33)	(0.31)	(0.35)	(0.33)	(0.21)	(0.20)
Constant	3.10**	1.71***	2.86**	1.64***	5.73***	4.71***
	(1.38)	(0.35)	(1.45)	(0.38)	(0.89)	(0.19)
Observations	402	411	402	406	403	413
R-squared	0.09	0.09	0.10	0.09	0.06	0.06

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors' calculation

D. Discussion and Concluding Remarks

The findings clearly show that risk profiles do alter the income generation. Individuals who are willing to take riskier decision tend to have higher income. Likewise, those whose income at least equal to the mean income are likely to have higher risk levels. In addition, individuals who

reside in urban areas are willing to take more risks than those reside in rural areas. The findings suggest that public program differentiation is necessary to optimize the involvement of the individuals. In other words, if one single public program is provided for the society, individuals who are being riskier will not optimally make use of the program when the program looks less risky. Different programs at different level of risks may optimize the involvement of these heterogonous groups of individuals by risk profiles. For example, riskier individuals are more attracted to programs that require them to work to get higher benefit from the government than to programs that offer free lunch or unconditional cash transfer. In this case, understanding the risk profiles of the individuals will help increase the employment and reduce the numbers of dependents on government public benefits. Eventually, welfare may improve and the difference in income may be eliminated.

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Spatial autocorrelation analysis of per capita GRDP in the district level in Indonesia for 2004–2013.

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ABSTRACT

Exploratory spatial data analysis (ESDA) identifies the patters of spatial clustering/dispersion and visualize spatial distributions of the income variables as wells as other socio-economic factor variables. In ESDA, global indicators of spatial association (GISA) such as Moran's I and Geary's c statistic indicates the presence of spatial association globally while local indicators of spatial association (LISA) determines the location and magnitude of spatial association.

On account of the world's largest archipelagic nations, fourth largest population, and scattered natural resources, Indonesia consists of widely different socioeconomic subnational regions and faces serious income inequality. Since Esmara's (1975) pioneering work, interregional income inequality has frequently been the subject of theoretical discussion and empirical economic research. However, to the best of our knowledge, no studies have examined the regional income distribution, incorporating spatial dependence pattern in Indonesia.

Our study address this research gap, by examining the spatial association of per capital gross regional domestic products (GRDP) in Indonesia's district-level for 2004–2013. Providing the several GISA and LISA approaches, we found several interesting observations. First, the positive GISA values such as Moran's I and Geary's c imply that rich (poor) districts are located close to rich (poor) districts, despite weak spatial dependence. However, some particular zones increased the income gap with their neighbours, using a local Geary's *c* statistic.

Keywords: Exploratory spatial data analysis, Spatial autocorrelation, Indonesia
JEL classification code: R11, R12, R58

1. Introduction

Exploratory spatial data analysis (ESDA), a collection of techniques for the statistical analysis of geographic information, identifies the patters of spatial association/autocorrelation – spatial clustering and dispersion –and to visualize spatial distributions of the income variables as wells as other socio-economic factor variables (Messner et al. 1999). Spatial autocorrelation is the degree to which one region is similar to other nearby regions or the phenomenon that the influence of a region on its neighbors will eventually affect itself. In ESDA, Moran's I and Geary's c statistics, global indicators of spatial association (GISA), only indicates the presence of overall spatial association while local Moran and Geary statistics, local indicators of spatial association (LISA), determines the location and magnitude of spatial autocorrelation, developed by Anselin (1995).

On account of the world's largest archipelagic nations, fourth largest population, and scattered natural resources, the extraordinary industrial diversities from labor-intensive agriculture to the knowledge-intensive business sectors, Indonesia is beset by a serious income distribution imbalance across sub-national regions since its independence (Hill 2000, Kataoka 2017, Vidyattama 2014). Associated with the significant policy concerns, the income distribution patterns across sub-national regions have often been a subject of theoretical discussions and empirical economic research. (e.g., Esmara 1975; Islam and Khan 1986; Akita 1988; Garcia and Soelistianingsih 1988; Azis 1990; Akita and Lukman 1995; Akita et al. 1999; Hill 2000; Tadjoeddin et al. 2001; Akita and Alisjahbana 2002; Hill 2002; Akita 2003; Milanovic 2005; Akita and Miyata 2008; Hill 2008; Akita and Miyata 2010; Kataoka 2010; Akita, et al. 2011; Hayashi et al. 2014; Akita 2017, Kataoka 2017).

These studies measured interregional income inequality and examined the factors of inequality by income sources such as gross regional domestic product (GRDP) per capita and sectoral GRDP per capita in each region as well as by the expenditure of household head subgroups such as educational attainment, gender, and age. The former studies analyze the factors affecting gross regional domestic product (GRDP) by sectoral income source and hierarchical regional structure (Akita and Lukman 1995; Tadjoeddin et al. 2001; Akita and Alisjahbana 2002; Akita 2003; Akita and Miyata 2008; Akita and Miyata 2010; Kataoka 2010; Akita et al. 2011). For example, Akita and Lukman (1995) conducted a sectoral decomposition analysis to determine the extent to which the industrial sectors of the country contributed to the overall regional inequality in 1975–1992, as measured by Williamson's weighted coefficient of variation per capita GRDP. The study revealed that the tertiary sector, despite its declining trend, played a predominant role in the overall interregional inequality. Akita and Alisjahbana (2002) examined the impact of the economic crisis on regional income inequality by using district-level GRDP and a two-stage nested Theil decomposition method to decompose the overall regional inequality into three components—interregional inequality, interprovincial inequality, and intraprovincial inequality—by assuming a country's three-level hierarchical structure: region-province-district. They found that the main factor contributing to the overall regional inequality shifted from intraprovincial inequality before the crisis to interprovincial inequality after the crisis. Akita (2003) also utilized the two-stage nested Theil decomposition method to compare the factors contributing to the overall regional inequality

between two developing countries—Indonesia and China. The study finds that intraprovincial inequality accounted for about half of the overall regional inequality in Indonesia and about two-thirds in China. These studies empirically examine the decomposition of inequality by income sources, such as per capita GRDP and sectoral per capita GRDP in each region.

Another treatment of income inequality is to analyze the factors with expenditure data by household head subgroups, such as province, location, educational attainment, gender, and age. Akita et al. (1999) decompose income inequality by household head subgroups such as province, location (urban/rural), educational attainment, age, gender, and household size, using the Theil index for 1987, 1990, and 1993 and expenditure data from the National Socioeconomic Survey (Sunsenas). They find the rural-urban divide and educational differences as the major factors of inequality. Extending these findings, Akita and Miyata (2008) consider a hierarchical framework of inequality decomposition by household head subgroups, in which all the household heads are first classified into rural and urban sectors and then into two groups with lower and higher educational attainment. Employing the two-stage nested Theil decomposition method, they find that inequality within groups with higher educational attainments in the urban sector plays a significant role in the overall inequality. This shows policy implications for improvement in the quality of tertiary education, associated with urbanization and educational expansion in Indonesia.

Different from the above, Vidyattama (2014) examine the spatial effects on provincial income, incorporating the spatial lag and error terms to the growth regression. Using the distance decay spatial weight matrix, several regression models show statistically insignificant results and negative spatial impacts on provincial economic growth. One of possible reasons of this statically insignificant relation is due to the spatial unit used, especially given the large area of provinces.

The aforementioned interregional income inequality measurement studies are explored either by income source or by expenditure of household head subgroup in Indonesia; however, to the best of our knowledge, no studies have been carried out using ESDA to analyze spatial income distribution at the district-level in Indonesia. To fulfill the existing research gap, we analyze the spatial distribution and disparities in regional per capita income at the district level in Indonesia.

2. DATA AND METHOD

2.1 Data

A nation of Indonesia is divided into four tiers of sub-national administrative regions, 34 provinces (Indonesian: provinsi), 514 districts consisting of 416 regencies (kabupaten) / 98 cities (kota), 7,071 subdistricts (kecamatan), and 81,936 urban (kelurahan) / rural villages (desa) in 2015 (BPS various years). We use GRDP at the constant 2000 price and the population of 438 contiguous Indonesian districts for 2004–2013, sourcing from Indonesia Database for Policy and Economic Research (Woldbank 2015).

Political reforms after the economic crisis in 1998 increased the number of provinces and districts from 27 to 34 and from 341 to 511 by 2013, respectively (BPS various years); however, no data adjustment has been made for these historical change, which are modifiable areal unit problems that

harm consistent spatial analysis (Fischer and Wang 2011). We aggregate data on new and existing provinces in the corresponding year for the solution.

Table 1 shows the descriptive statistics of the per capita income for 2004 –2013. The mean and median values show the increasing trends for all years. The minimum value and the first quantile per capita GRDP constantly increased while the maximum value has declined due to the decrease the outliner values. The standard deviation shows the declining trends and the lower income districts have grown faster than the higher income districts, shown by the annual growth rates of minimum, the first quartile, median, the third quartile, maximum that are 7.4%, 4.6%, 3.3%, 1.7%, and -5.2%. Those indicates the improvement in economic welfare in Indonesia with the increase in average income and interregional income convergence at the district level. However, the positive skewness values for all years indicates that distribution of per capita GRDP across districts are skewed to the left and the majority of districts have the higher income than the district mean income.

Figure 1 illustrates the spatial distribution of per capita GRDP in 2013. The many higher income districts with over 10 million Indonesian rupiah (IDR), over nearly third quantile of all districts, are located in resource-rich provinces, such as Aceh, Riau, East, South, and North Kalimantan, North Sumatera, and Papua, the business districts in Java Island and the major commercial centers of off-Java Island. On the contrary, the many lower income districts with less or equal to 0.49 million IDR, below nearly first quantile, are located in resource-poor off-Java provinces and inland areas.

2.2. Global/Local indications of spatial association (GISA/LISA)

We employ two widely-used indicators of spatial association, Moran's I and Geary's c statistics for GISA and local Moran and Geary statistics for LISA, to evaluate the existence of clusters in the spatial distribution of per capita GRDP.

Let subscripts *i* (*j*) denote region *i* (*j*) (*i*≠*j*) and a nation consist of *n* region. The variables Y_{it} and P_{it} denote the GRDP value and population in region *i* in year *t*, respectively. Moran's *I* and Geary's *c* statistics of per capita GRDP in year *t*, denoted as $y_{it} = (Y_{it}/P_{it})$ are expressed in the following (Cliff and Ord 1981).

$$I = \frac{n}{W_{0t}} \sum_i \sum_j \frac{w_{ijt}(y_{it}-\bar{y}_t)(y_{jt}-\bar{y}_t)}{(y_{it}-\bar{y}_t)^2} \quad (1)$$

$$c = \frac{(n-1)}{2W_{0t}} \sum_i \sum_j \frac{w_{ijt}(y_{it}-y_{jt})^2}{(y_{it}-\bar{y}_t)^2} \quad (2)$$

where $\bar{y}_t$ indicates the average of per capita GRDP in year *t* and W_{0t} is indicates the sum of all the elements of the spatial weight matrix w_{ijt} denoted as

$$W_{0t} = \sum_i \sum_j w_{ijt} \quad (3)$$

Moran's *I* statistic lies between −1 and 1, with 1 (−1) indicating strong positive (negative) spatial autocorrelation. In Geary's *c* statistic, values significantly lower than 1 demonstrates increasing positive spatial autocorrelation, whilst values significantly higher than 1 illustrate increasing negative spatial autocorrelation. Geary's C is more sensitive to local spatial autocorrelation than Moran's I.

We use row-standardized distance-based neighbours to specify w_{ijt}, where each element of the

spatial weight matrix is an inverse of the distance between districts, denoted as w_{Dijt}.

$$w_{ijt} = {w_{Dijt}}/{\sum_j w_{Dijt}} \quad (4)$$

where w_{Dijt} is defined as

$$w_{Dijt} = \begin{cases} {\sum_j d_{ijt}}/{d_{ijt}} \ if \ d_{ijt} < d, i \neq j \\ 0 \ otherwise \end{cases} \quad (5)$$

where d_{ijt} is the distance between district *i* and *j* and *d* is a threshold distance (largest nearest neighbour distance) , assuming *d*=300 km, which is the largest minimum distance .

The LISA statistic values are derived by Anselin (1995), with the motivation to decompose global spatial autocorrelation statistics, such as local Moran's *I* and Geary's *c* statistics, into the contribution to each individual regions. The corresponding local indicators are defined (Anselin 1995) as

$$I_i = (y_{it} - \bar{y}_t) \sum_j \frac{w_{ijt}(y_{jt} - \bar{y}_t)}{\frac{1}{n}(y_{it} - \bar{y}_t)^2} \quad (6)$$

$$c_i = \sum_j \frac{w_{ijt}(y_{it} - y_{jt})^2}{\frac{1}{n}(y_{it} - \bar{y}_t)^2} \quad (7)$$

Both local statistics are proportional to corresponding global statistics, given by Equations (1) and (3) for Moran's *I* and (2) and (3) for Geary's *c*, respectively. A positive value of local Moran I statistic indicates that region *i* is similar to its neighbour, and a negative value identifies as a spatial outlier. Local Geary's *c* measures the relationship of regions by calculating the difference of per capita income between region *i* and its neighbours. The numerator would decrease if the difference between region *i* and its neighbours is small; thus, the value of the statistic will be closer to zero for strong similarity.

GISA that examines whether the spatial pattern of the whole data set is clustered against a null hypothesis of randomness while LISA examines whether the spatial pattern of the specific region's data set is clustered against a null hypothesis of randomness.

We also examine the interregional income inequalities, using the relative measures of Theil T and L index (Theil 1967) below.

$$T_T = \left({y_i}/{\sum_i y_i}\right) \sum_i ln\left({y_i}/{\bar{y}}\right) [T_T \geq 0] \quad (8)$$

$$T_L = {1}/{n} \sum_i ln\left({\bar{y}}/{y_i}\right) \quad [T_L \geq 0] \quad (9)$$

3. EMPIRICAL RESULTS

3.1 Global indicators of spatial association for 2004−2013

Figure 2 shows the two GISA values of Moran's I and Geary's c statistics for 2004–2013. For all years, the null hypotheses of the nonexistence of spatial autocorrelation for both indicators were rejected at the 1% significant level, which suggests the existence of strong spatial autocorrelation. Moran's I statistics show the lower positive values ranging between 0.196 in 2004 and 0.247 in 2008. This indicates the positive relationship in per capital GRDP between the region and the neighbouring regions, implying that rich (poor) regions are located close to rich (poor) regions. However, this spatial dependence were very weak for the period.

Geary's *c* statistics show the lower than 1, ranging between 0.786 in 2008 and 0.909 in 2013. This shows the positive spatial autocorrelation for the period; however, approaching to the negative spatial autocorrelation. The slight difference in trends between two GISA values is due to the fact that Geary's *c* is more sensitive to local spatial autocorrelation. This possibly shows that several neighbouring regions increase the dissimilarity between districts. This finding provides some advance insight on our key research questions.

Figure 3 illustrates Theil income-weighted T and population-weighted L index. Theil T index. Both show the similar declining trends for the period: the former declined from 0.652 in 2004 to 0.530 in 2010, then increased slightly to 0.543 in 2013 while the latter declined from 0.359 in 2004 to 0.302 in 2011, then increased slightly to 0.306 in 2013. Considering the descriptive statistics in the previous section, the inter-district inequality in GRDP per capita decreased for the period.

3.2 Moran Scatterplot in 2004 and 2013

Figures 4(a) and 4(b) display the Moran scatterplots, introduced by Anselin (1995), for the initial year and the final observation years. This figure plots the standardized per capita GRDP in horizontal axis against its spatial lag (also standardized) in the vertical Y axis. A spatial lag of a regional income is the weighted average income of its neighbouring regions, by the spatial weight matrix. This scatter plot assess how similar an income value is to its neighbouring income level. With both axes standardized, the Moran scatterplot can be divided into four quadrants defined by the horizontal axis y = 0 and the vertical axis x = 0. The districts in Quadrant I (upper right) and in Quadrant III (lower left) quadrants indicate positive spatial association of values that are higher and lower than zero, respectively. Those in Quadrant II (upper left) and in Quadrant IV (lower right) exhibit negative spatial association; that is, these observed values carry dissimilarity to their neighbouring ones.

For simplicity, henceforth, we refer to quadrants 1 through 4 as the following four spatial clusters: high-high (HH), low-high (LH), low-low (LL), and high-low (HL). HH and LL indicate positive spatial autocorrelation; same income level regions are clustered, also called "hot spot" and "cold spot" for HH and LL, respectively. LH and HL indicate negative spatial autocorrelation; dissimilar income level regions are clustered.

Table 2 summarizes the dynamic change in spatial clusters how the districts move between the four clusters for 2004–2013. An initial and last observation year are shown in the row and the column, respectively. During the period, hot spot districts increased from 46 to 103 while the cold spot districts decreased from 271 to 185. This indicates the improvement in economic welfare in Indonesia.

Among 103 HH hot-spot clusters in 2013, 42 districts kept the same HH cluster, 16 districts improved their own relative incomes, 18 districts improve their own spatial lags, 27 districts improve both their own relative incomes and spatial lags. On the contrary, Among 185 cold spot districts in 2013, 167 districts kept the same LL cluster as in 2004, 15 districts deteriorate their own relative incomes and 3 districts deteriorate their spatial lags (Muara Enim, Prabumulih, Natuna). The aforementioned three districts are located in inland areas that faces the disadvantages in interregional forward and backward linkages due to the undeveloped transportation network. The 167 cold-spot districts in 2013 that remain

unchanged from 2004 are located in off-Java resource poor provinces.

Figures 5(a) and 5(b) displays the regional distribution of the clusters based on the Moran scatterplot in 2004 and 2013. In 2004, nearly 75% hot spot districts are located in reroute-rich provinces Aceh, Riau, Riau Island, East, West, South and North Kalimantan while other 25% in Jakarta and the surrounding provinces. In 2013, hot spot districts expanded to other provinces such as North and West Sumatera, Jambi, Lampung, Bangka Belitung, East Java, Bali, Central Kalimantan, West Papua, and Papua. By contrast, the cold-spot districts are concentrated in the several specific provinces such as East Nusa Tenggra, Gorontalo, Maluku, and North Maluku where all are the cold-spot districts in both years. More than 80% of all districts in Jambi, Central Java, Jogjakarta West, Central, South, and Southeast Sulawesi are the cold spot in 2004. In 2013, those in Jambi, Bengkulu, Jogjakarta, West Nusa Tenggra, West and South Sulawesi are the cold spot.

3.3 Local indicators of spatial association for 2004−2013

Different from GISA, LISA, such as local Moran's *I* and Geary's c statistics, decomposes GISA to identify regions that mostly contribute to global indicates and moreover a specific location of spatial clustering and dispersion. Figure 6 exhibits the number of the districts that increase and decrease the local Geary's *c* statistic from the previous year. As the non-negative local Geary's *c* will be closer to (further from) zero for strong similarity (dissimilarity), the number of the districts with the increase (decrease) in the local Geary's *c* statistic from the previous year indicates the expansion (reduction) in income disparity with their neighbours. The figure clearly shows that the number of districts widening the income gap with their neighbours has decreased to 2007, then gradually increased to 2013. Comparing the overall income gap measured by Theil index (Figure 3), the entire economy is moving toward reduction in the interregional income disparity; however, some particular zones increased the income gap with their neighbours.

Figures 7(a) and 7(b) displays the regional distribution of Local Moran's I in 2004 and 2013 at the 0.01 statistically significant level[1]. In 2004, 18 districts show significant positive spatial association with the neighbouring districts: 12 districts in the resource-rich provinces (Aceh, Riau, Riau Islands, and East Kalimantan) and 6 districts in Jakarta. In 2013, 17 districts has positive spatial association with the neighbouring districts: 9 districts in the rich natural resource provinces (Riau Islands and East Kalimantan) and 8 districts in Greater Jakarta region (Jakarta, West Java, and Banten). Although the role of the mining sector in Indonesia's economy declined for decades, the presence of the natural resources largely affects spatial income clusters.

By contrast, the three districts show the significant negative spatial association are Kediri in East Java, Sumbawa Barat in West Nusa Tenggara, and Mimika in Papua in 2004 and Depok in West Java, Kediri in East Java, and Mimika in Papua in 2013. The districts of Kediri and Mimika showing the relatively higher per capita GRDP than the neighbouring districts indicates the enclave phenomenon.

[1] This associates with Anselin's (1995) suggestion that the 0.05 significance level may not be the appropriate significance cut-off value for LISA cluster maps.

Only Depok shows the relatively lower per capita GRDP than the neighbouring districts.

4. CONCLUSION

We analyze the spatial distribution and disparities in regional per capita income at the municipality level in Indonesia for 2004–2013, using ESDA approach and found the several interesting observations. First, the GISA values shows the positive relationship in per capital GRDP between the region and the neighboring regions, implying that rich (poor) districts are located close to rich (poor) districts, despite weak spatial dependence. Second, classifying each districts into four clusters using the Moran scatterplot and illustrated the regions' dynamic transition between the clusters, we found the improvement in the economic welfare from the dramatic increase (decrease) in the number of the hot (cold) spot districts. The third, observing the local Geary's *c* statistic and Theil index in per capita GDP, we found that the entire economy is moving toward reduction in the interregional income disparity; however, some particular zones increased the income gap with their neighbours. The fourth, observing the statistically significant local Moran's I values, we found the spatial income cluster in the rich natural resource provinces and Greater Jakarta region. The presence of the natural resources largely affects spatial income clusters despite of the recent decline in mining sector's role of the Indonesian economy. We also found several districts with strong income dissimilarity to the neighbouring districts. The government should increase the interregional linkage through the infrastructure development in transportation network.

Further research is needed to define a better spatial weight matrix that can capture the spatial association of the districts. The regional relationship can be represented better using some distance measures other than the Euclidean distance, such as the transportation network or the social distance. In order to study the dynamic changes in income disparity, future research will investigate income disparity using space-time tools such as the spatial Markov chain developed by Rey (2001), and analyze data that are obtained over longer periods. .

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Table 1 Descriptive statistics Per capita GRDP for 1998 – 2007

year	N	min	q1	Median	q3	mean	max	sd	skewness
2004	438	0.662	3.059	4.529	6.837	7.496	223.629	14.0	9.834
2005	438	0.704	3.168	4.709	7.236	7.760	217.292	14.4	9.181
2006	438	0.710	3.364	4.990	7.307	7.827	201.679	13.4	8.845
2007	438	0.749	3.491	5.212	7.678	8.048	187.475	13.1	8.111
2008	438	0.890	3.650	5.554	7.969	8.301	183.637	12.9	8.001
2009	438	0.994	3.782	5.785	8.269	8.666	173.107	13.1	7.179
2010	438	1.059	3.975	5.928	8.324	8.739	159.780	12.5	6.868
2011	438	1.146	4.180	6.035	8.208	7.961	122.361	9.4	6.969
2012	438	1.221	4.395	6.327	8.603	8.320	130.032	9.9	7.209
2013	438	1.263	4.573	6.639	9.119	8.687	137.878	10.4	7.249

Table 2 Regional dynamic change in clusters for 2004–2013

		2013				
		HH	LH	LL	HL	Total
2004	HH	42	3	0	1	46
	LH	16	43	15	1	75
	LL	27	56	167	21	271
	HL	18	4	3	21	46
	Total	103	106	185	44	438

Figure 2 Moran's I and Geary's c statistics.

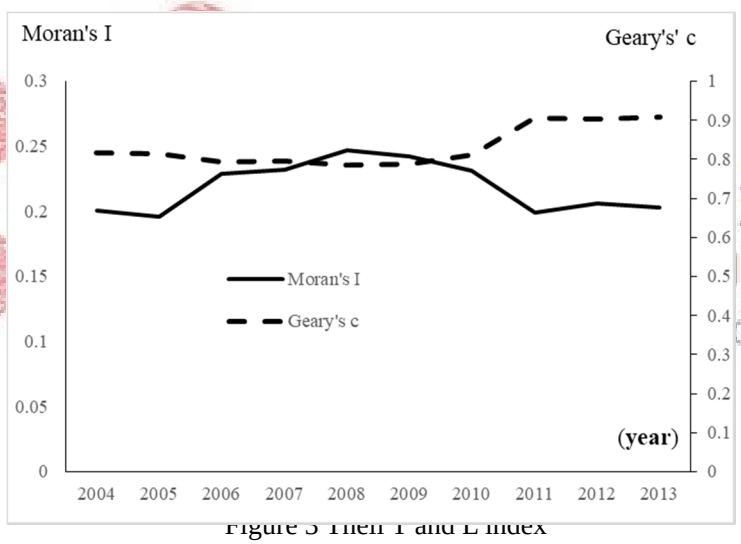
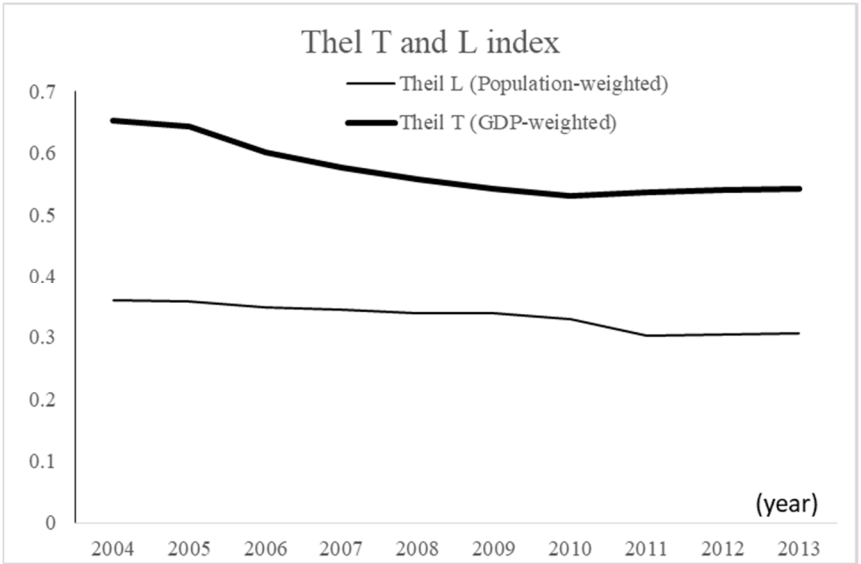


Figure 3 Theil T and L index



Figures 4(a) and 4(b) Moran scatterplots in 2004 and 2013

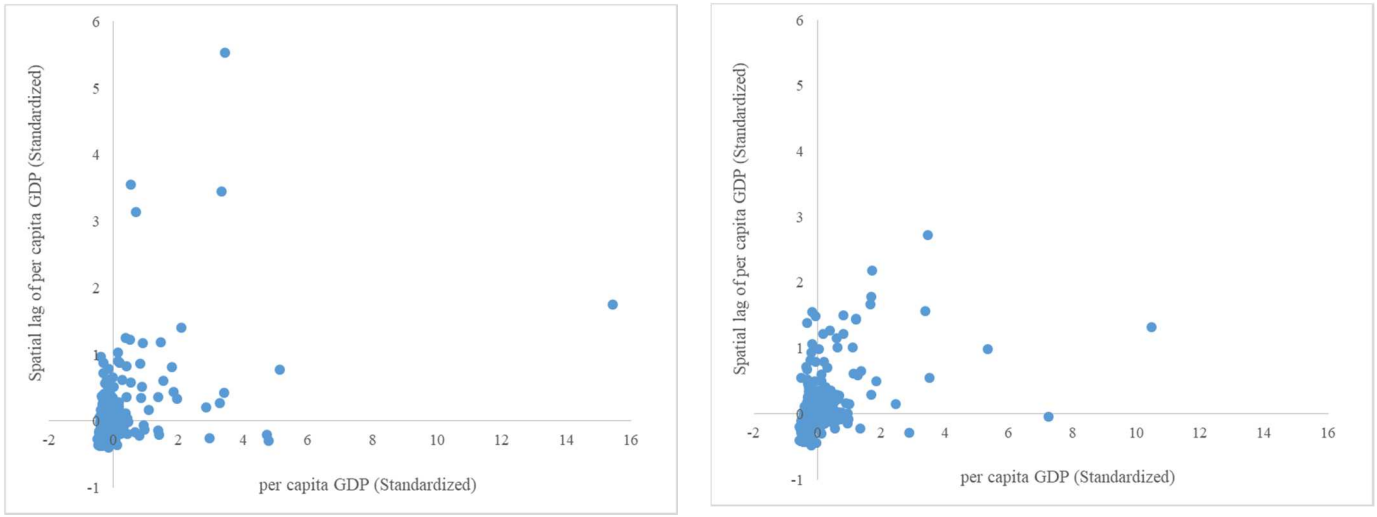


Figure 6 Trends of local Geary's c statistic

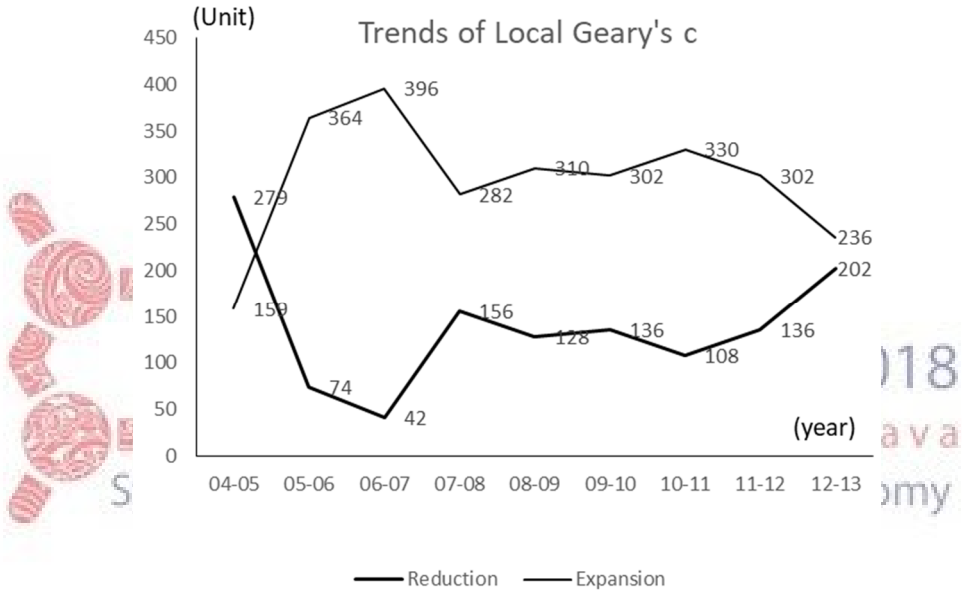
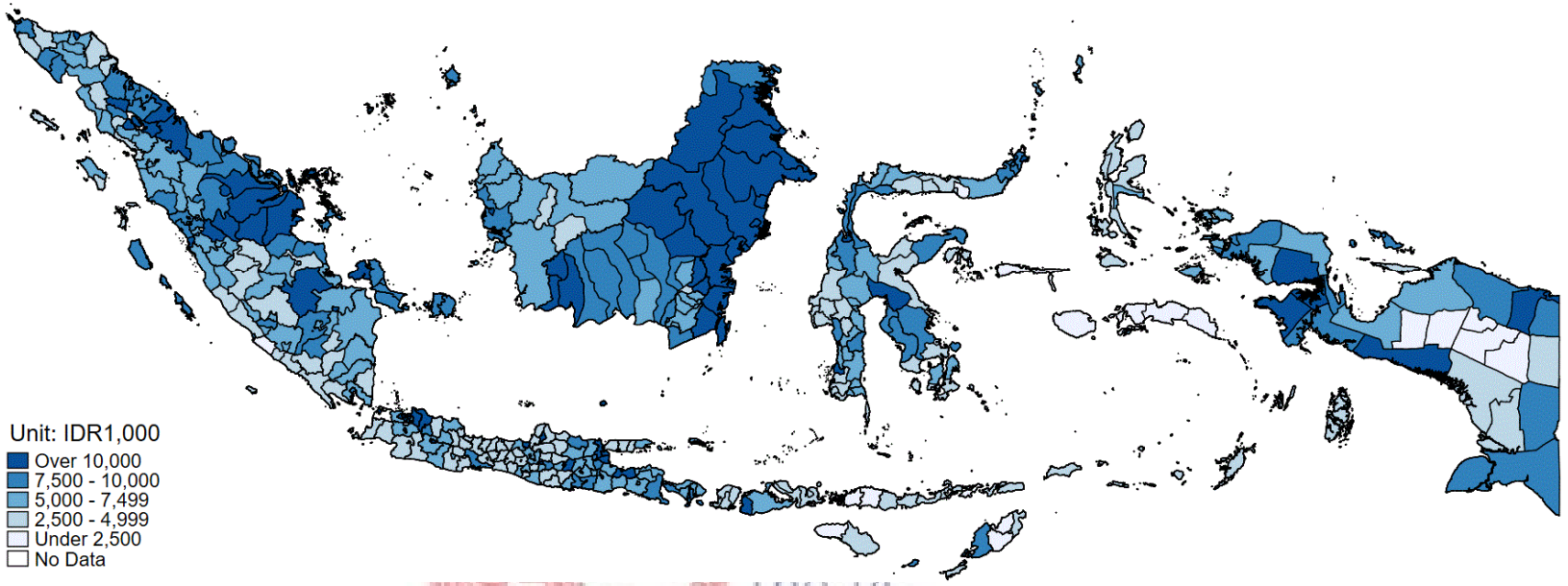
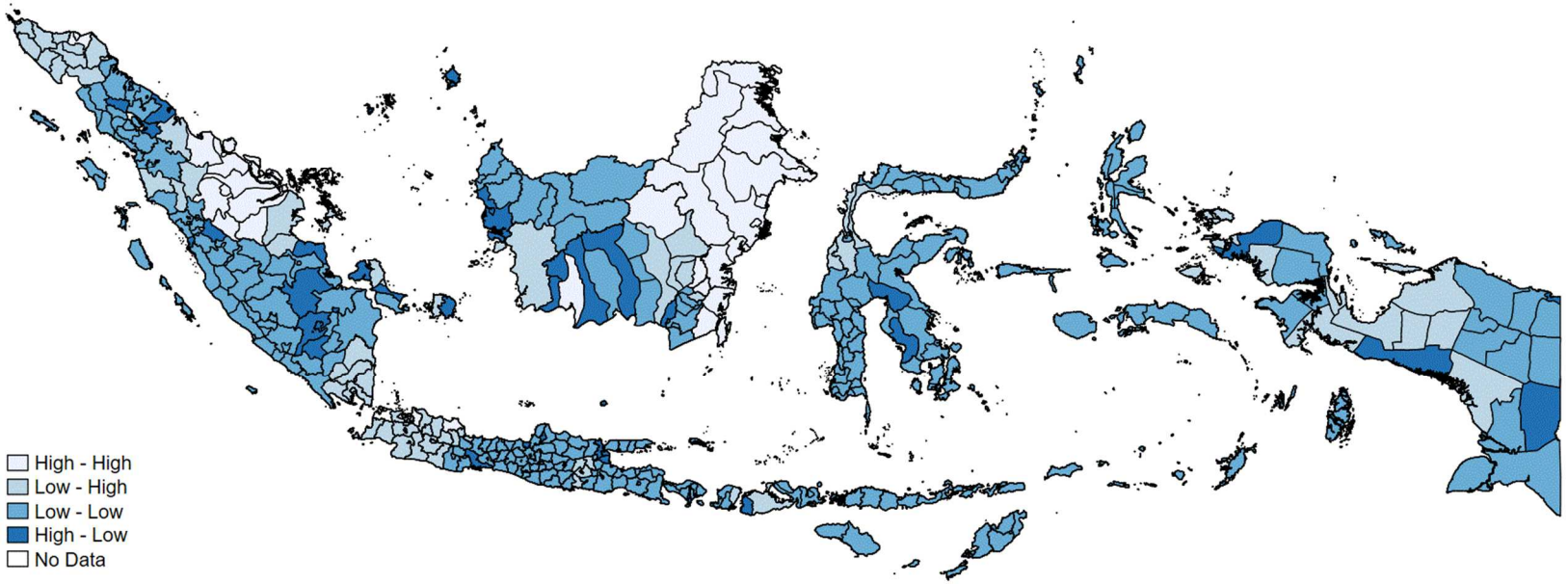


Figure 1 Distribution of GDP per capita in 2013



Figures 5(a) Distributions of the clusters in 2004



Figures 5(b) Distributions of the clusters in 2013

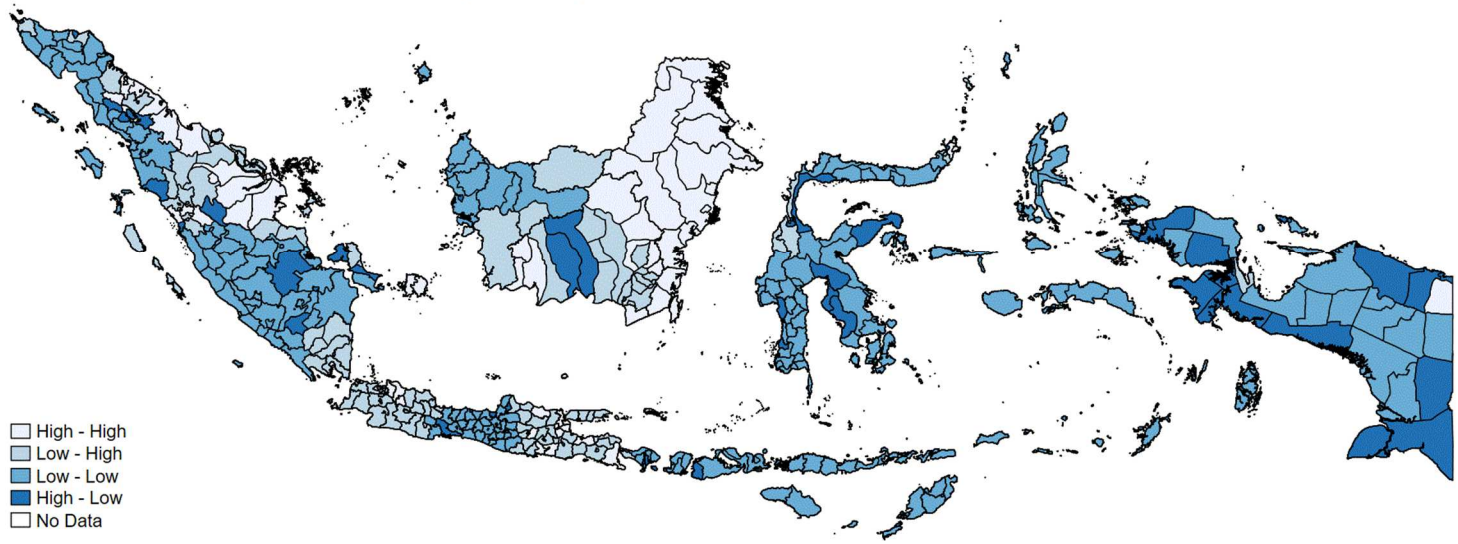


Figure 7(a) Distribution of Local Monra's I at the 0.01 statistically significance in 2004
Moran's I = 0.201

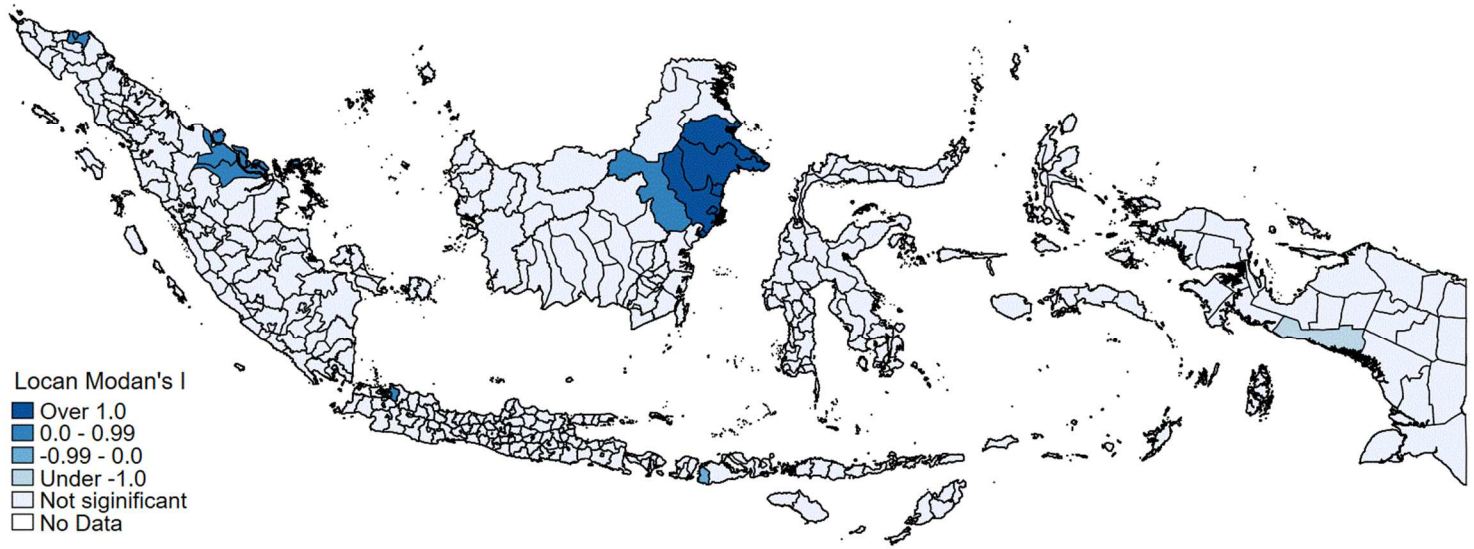
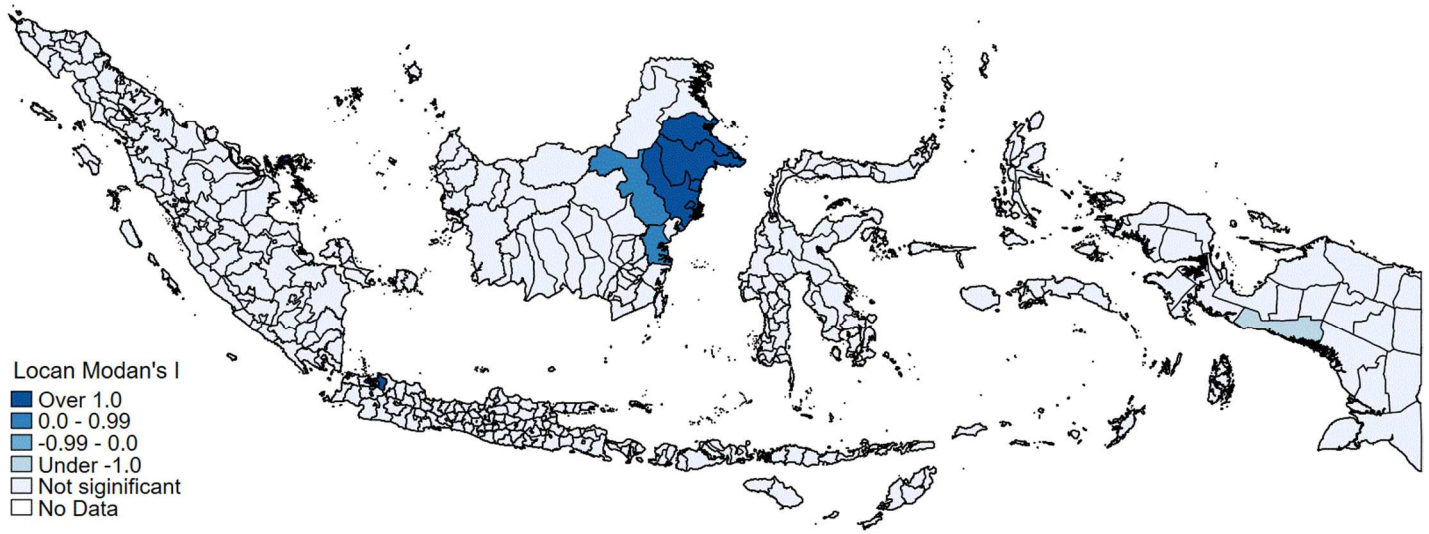


Figure 7(b) Distribution of Local Monra's I at the 0.01 statistically significance in 2013
Moran's I = 0.203



Religious Fractionalization, Inequality, and Violence: Evidence from Indonesian Districts and Cities

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ABSTRACT

Indonesia is a country endowed with diverse ethnicities, languages, and also religiouss. While often be regarded as country's advantage, these fractionalization – notably religious fractionalization – may be considered as one of the sources of conflicts or crimes involving violence among distinct group in Indonesia. On the other hand, the widening of income inequality may also have contributed to the violence incidents. Combining multiple micro-datasets available in Indonesia such as SUSENAS, PODES, INDODAPOER and National Violence Monitoring Survey/Survey Nasional Pemantauan Kekerasan (SNPK), we investigate the extent to which religious fractionalization and income inequality affected violence in Indonesia's districts and cities. We use the Negative Binomial Regression due to the over –dispersion of the dependent variable used in our econometric model. We also include other factors potentially related to the incidents of crimes involving violence in the district or city level, such as the number of police officers and local security personnels, poverty rate, etc. We find evidence that as income inequality widens, the probability of the incident of crimes involving violence increases. Moreover, the relationship between religious fractionalization and violence is found to have an inverted U-shaped, indicating that there is a variation in terms of the incident of crimes involving violence as districts or cities become more religiously-diverse.

Keywords: Violence, Conflict, Religious FractionalizationFractionalization, Economic Inequality

Background

Indonesia is among the biggest, most populous and diverse countries in the world. According to the official record from the Indonesian Statistics Office (BPS), there are around 17,000 islands spread at the area of 1.9 million sq.km., albeit that not all of the islands are inhabited. At the moment, more than 250 million people currently live in Indonesia, but approximately 55% of them live in the island of Java.

Approximately 40% of the population are of Javanese ethnicity, 15% are Sundanese, and the rest 45% are affiliated to hundreds (or thousands if we include small groups) of other ethnicity groups. Moreover, around 87% of the population are Muslims, and the rest 13% embrace five other official religiouss (BPS, 2010).

[1] The findings, interpretations, and conclusions expressed in this paper are entirely those of the author(s). They do not necessarily represent the views of the TNP2K Secretariat.

While often be regarded as country's advantage, these diversities may have been considered as one of the sources of conflicts or crimes involving violence among distinct group in Indonesia in 1990s (Sukma, 2005; Stewart, 2008). For example, at the end of 1990s/ early 2000s, there had been riots at some regions in Indonesia, namely Poso, Ambon, Sambas and Sampit. Among the most recent cases was the riot in South Lampung in 2012. While not all of the riots may be directly associated with religious issue, the majority of the conflicted parties do not share the same faith.

On the other hand, economic inequality theoretically has its own contribution to conflicts or crimes involving violence. Gurr (1968) states that inter-groups economic inequality may create collective frustration which leads into aggressive actions. Similar to Gurr (1968), Weede (1981) argues that the inequality can mobilize people to act violently in order to obtain higher distribution of income.

Meanwhile, over 15 years, the Gini Ratio of Indonesia has increased slightly from 0.341 in 2002 to 0.391 in 2017, with some raise and fall in between (BPS, 2018). The number has also increased since the period 1965-1996, which averaged around 0.34 (Van der Eng, 2009). This data shows that in the longer run, there is an indication of an increasing economic inequality in Indonesia.

This paper seeks further empirical evidence of whether religious fractionalization and economic inequality, affect the number of conflict with violence in Indonesian districts (*Kabupaten*) and cities (*Kota*). To enrich the analysis, we also incorporate other factors which potentially influence the number of violence-related conflicts, such as poverty rate, the number of police officers in the districts/cities, etc.

The following section elaborates some literatures related to the study, followed by the data used in the analysis. Afterwards, an explanation of the estimation strategy used is provided, followed by a discussion on the results. The conclusion is given in the last section.

Literature Review

There have been several research discussing the relationship between religious fractionalization and economics factors, especially income inequality, on violence or conflict. Montalvo & Reynal-querol (2005), for example, focus their research on the association of religious fractionalization and the incident of civil war. They use L'Etat des Religiouss Dans le Monde (ET) and The Stateman's Yearbook (SY) as the source of the data. Then, the Linear Probability Model is used to predict the probability of civil war in a country in a 5-year period, and found that religious fractionalization have a negative effect on the likelihood of civil war.

Barron, Kaiser, & Pradhan (2009) discusses the existence of multi-religious society and education inequality on the probability of conflict using *Podes and* Sensus Penduduk/Population Census published by Indonesian Statistics Office/Badan Pusat Statistik (BPS). Using Logit Model they find that education inequality in sub-districts, and horizontal inequality in education across ethnic or religious groups in sub-district, are associated with higher incidence of conflict.

Moreover, Tadjoeddin & Murshed (2007) argue that economic development has an effect on the incident of violence. This study used United Nations Support Facility for Indonesian Recovery (UNSFIR) dataset of violence in Indonesia as the data source. Using Poisson and Negative Binomial Regression models, they find that per capita GDP have an inverted U-shaped relationship on the number of violence incidents. In addition, they find that the growth of regional GDP contributes positively on the number of violence.

Data

We use different available micro-datasets in year 2014 to estimate the influence of religious fractionalization and income inequality on violent-related conflicts. The number of violent conflicts/crime is obtained from the National Violence Monitoring Survey (*Sistem Nasional Pemantauan Kekerasan*/SNPK) published by the World Bank. Another dataset that we use from the World Bank is the Indonesian Database for Policy and Economic Research (Indodapoer), to get the data on poverty and unemployment rates in each district/city.

We also use the datasets published by BPS, namely the National Socio-Economic Survey (Susenas) to calculate the Gini Ratio in each district/citiy, and the *Potensi Desa* (Podes) dataset as the source for several factors such as the number of local security personnel (*hansip/satpam)* and the number of village/nagari in a district/city. Moreover, the religious fractionalization index is also developed using Podes. We proxy the fractionalization using the information about the number of certain religious's worship place in a district/city. The Formula used to measure the fractionalization index is similar to that (Alesina et. al. 2003) and (Lieberson, 1969).

Then, the Indonesian Police' *LAPKUAT-POLRI* (*Laporan Kekuatan Personil POLRI*) is used as the main source for police personnel. However, the data does not include specific information on the number of police personnels at each district/city, as it is based on the report from the province level. To overcome the problem, we find out the ratio of police to population at the province level, and then we use the ratio to proxy the number of police officers in each districts and cities.

Estimation Strategy

We construct the econometric specification to estimate the effect of religious fractionalization and income inequality on violence related conflicts as follows and included some independent variables, Growth of Regional GDP, Poverty Rate and log of Population (Tadjoeddin & Murshed, 2007), and unemployment (Barron, Kaiser, & Pradhan, 2009) . Moreover, this study was also included some variables not accounted in prior studies, such as Number of Police Personnel, Number of Social Security Personnel, City or District Dummy and Number of Villages in one District or City:

$$\ln(violence_j) = \beta_0 + \beta_1 rel\_frac_j + \beta_2 rel\_frac_j^2 + \beta_3 gini_j + \sum_{i=6}^{I} \beta_i X_{ij} + u_j \qquad (1)$$

Where:
j indicates district or city (*j* = 1,2,3.., 484)
$violence$: number of violence case reported
rel_frac : Herfindahl index for religious fractionalization
$gini$: gini ratio
X_{ij} : other variables affecting violence related conflicts
u_j : Error

Following Coxe, West, & Aiken (2009) we estimate equation (1) above using the Negative Binomial Regression method, due to the over dispersion of the dependent variable as can be seen in Appendix 1. Standard error is robust to heteroskedasticity.

As can be seen, we have included the quadratic terms of religious fractionalization, due to the nature of the data. This variable have a quadratic relationship with the number of violence case as can be seen in Appendix 2.

Discussion

The estimation result is shown in Appendix 4 below. From the estimation table, it can be seen that basically, both religious fractionalization index and Gini Index have a positive effect on number of violence. However, for religious fractionalization index, the effect will be diminished beyond a certain point of fractionalization. Appendix 5 shows the predicted values of the number of violence given certain value of religious fractionalization index keeping other variables constant. Initially, the predicted number of violence increases as religious fractionalization index increases, until the index reaches 0.4.

This means that as the society becomes more fractionalized religious-wise, the number of violence incidence increases until it reaches an extreme point. Montalvo & Reynal-querol (2005) argues that ethnic or religious violence was higher in a society with small number of groups or low diversity, due to better coordination within a group to committed violence against another group than that in a highly diverse society.

Meanwhile, Appendix 6 shows that the higher the Gini Index or economic inequality, the higher the predicted number of violence, holding other factors constant. Moreover, it can be seen that the relationship between economic inequality and the predicted number of violence-related conflict follows an exponential function. This means that as the economic inequality becomes more severe, the predicted number of violence is expected to be increase rapidly.

In addition, we put another graph in appendix 7, which shows another way to interpret the relationship. From the graph, we can see that the predicted number of violence at religion fractionalization index 0.8 is lower than that of 0.4, irrespective of the value of the Gini Ratio.

Conclusion

This paper has found evidence that both religious fractionalization and economic inequality have a positive effect on violence related conflict. Specifically, we have seen that the relationship between religious fractionalization index and number of violence follows an inverted U-shape curve. This study also find that the cause of violence related conflicts does not depend solely on the difference in identity (for example, religion), but also on economic factors (such as inequality).

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Appendix

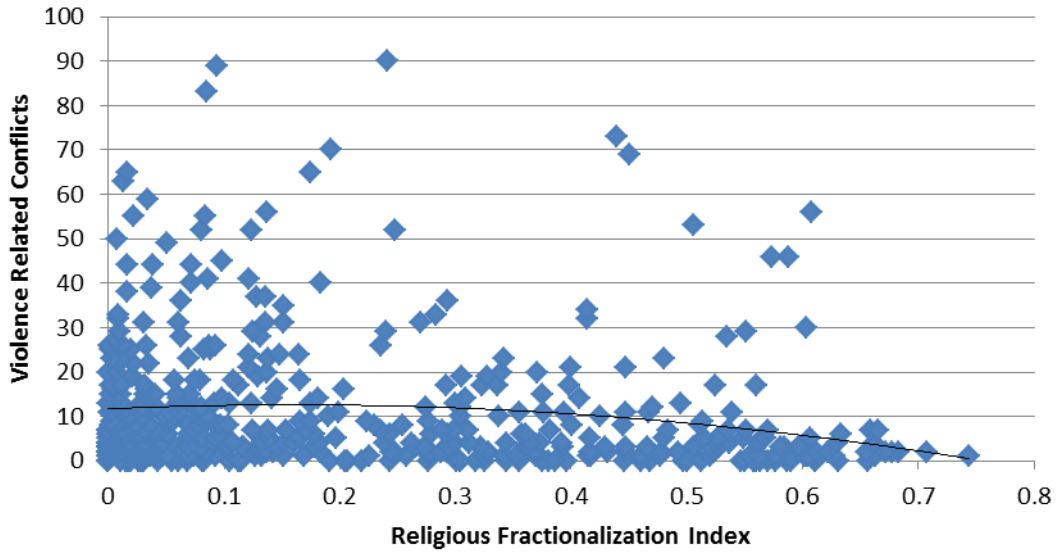
Appendix 1

Variable	*Obs*	*Mean*	*Variance*	*Min*	*Max*
Number of Violence Incidence	509	14.73	1026.68	0	412
Gini Ratio	492	0.33	0.00	0.12	0.50
Number of Police Personnel	509	797.02	954525.8	46	9637
Unemployment (proportion of Population)	489	5.29	8.70	0.16	17.62
Police Personnel	509	788.98	953088.4	46	9637
Regional Economic Growth (proportion of Regional GDP change to last period Regional GDP)	506	0.058	0.0004	-0.097	.1384568
Log of Population	509	12.55	1.09	9.51	15.49
Poverty (proportion of Population)	497	0.128	0.006	0.001	0.445
Number of Local Security Officers	509	1993.81	7548654	0	14945
Number of Villages in One District/City	509	163.442	13997.2	6	852
Religious Fractionalization Index	509	0.21	0.04	0.00	0.74
City or District Dummy	509	0.19	0.15	0	1

N=509 District/City

Appendix 2

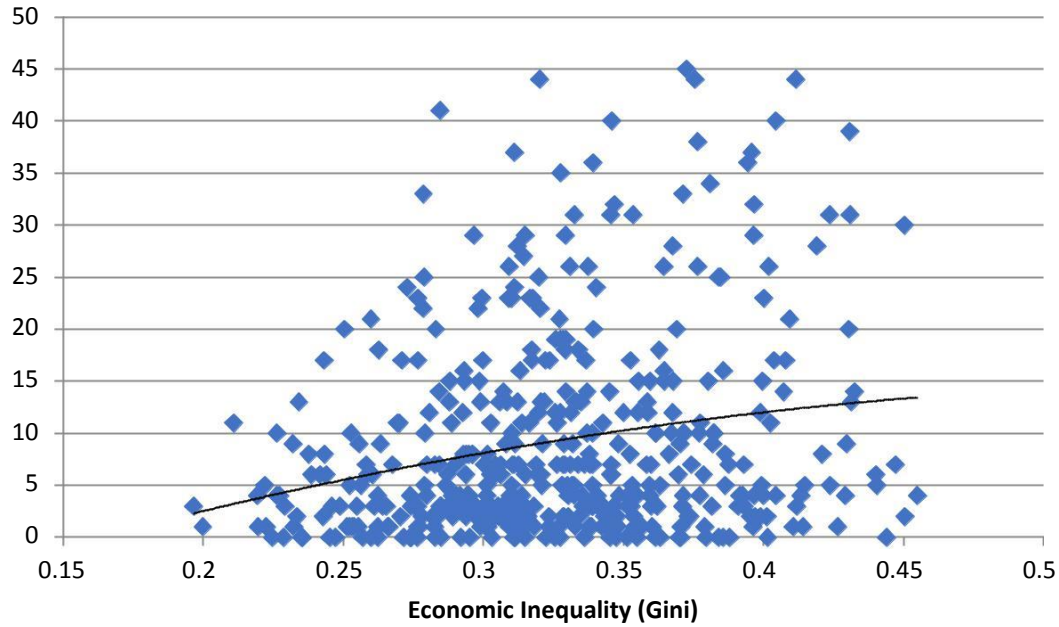
Relationship between Religious Fractionalization Index and Violence Related Conflicts in District/City in Indonesia (2014)



Source: *Potensi Desa* 2014 and *Survey Nasional Pemantauan Kekerasan* 2014, author calculation

Appendix 3

Relationship between Economic Inequality and Violence Related Conflicts in District/City in Indonesia (2014)



Source: *Survey Sosial Ekonomi Nasional* 2014 and *Survey Nasional Pemantauan Kekerasan* 2014, author calculation

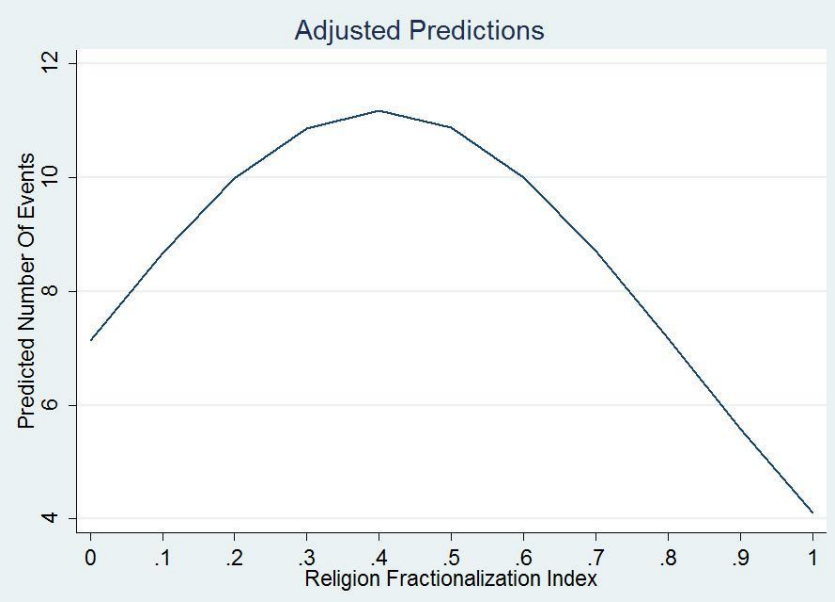
Appendix 4

Estimation Result

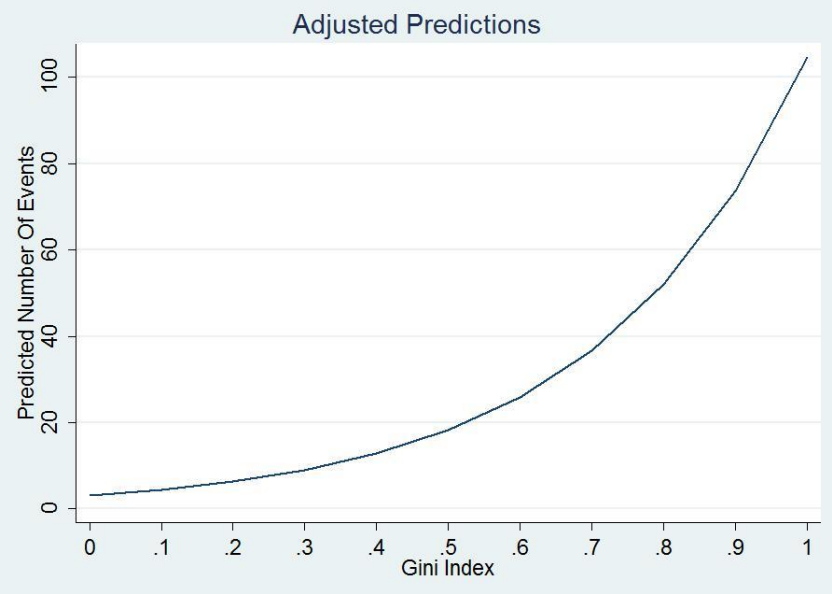
VARIABLES	Number of Violence Incidence	lnalpha
Gini Ratio	3.434***	
	(1.090)	
Number of Police Personnel	9.76e-07	
	(8.42e-05)	
Unemployment (proportion to population)	0.00311	
	(0.0167)	
Log of Population	1.007***	
	(0.0826)	
City or District Dummy	0.914***	
	(0.147)	
Poverty (proportion to population)	0.174	
	(0.716)	
Number of Social Security Personnel	-0.000115***	
	(2.02e-05)	
Religion Fractionalization Index	2.246***	
	(0.831)	
Number of Village in One City/District	0.000950**	
	(0.000473)	
Regional Economic Growth	1.476	
	(2.528)	
Quadratic Form of Religion Fractionalization Index	-2.850*	
	(1.547)	
Constant	-12.10***	-0.453***
	(1.063)	(0.0829)
Observations	484	484

Notes: 484 Observations. Robust Standard Error in Parentheses. *** p<0.01, ** p<0.05, * p<0.1

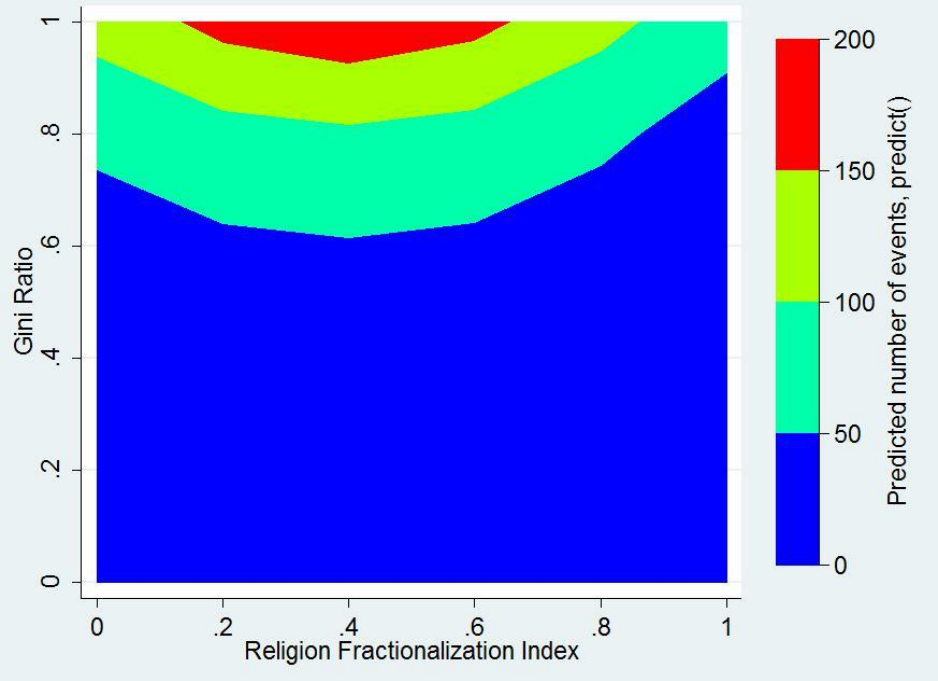
Appendix 5. Predicted number of violence holding other variables constant.



Appendix 6. Predicted number of violence holding other variables constant.



Appendix 7. Predicted number of Violence determined by Gini Ratio and Religion Fractionalization Index, holding other variables constant at means value.



Closing the Infrastructure Gap: The Impact of Infrastructure Development on Economic Growth and Inequality in Indonesia

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Abstract

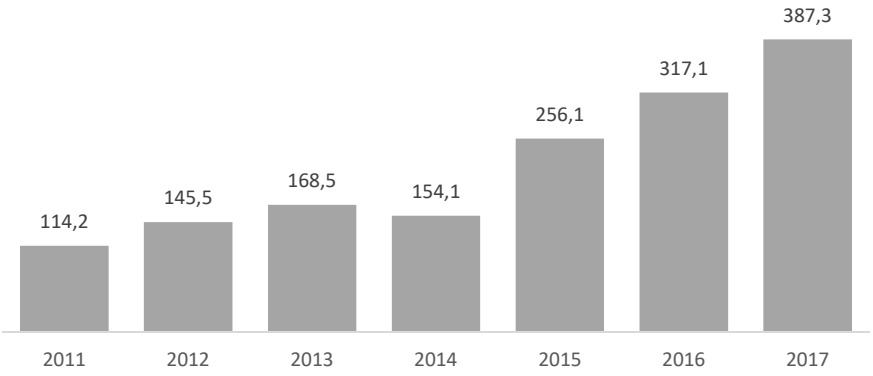
This study analyzes the impact of Indonesia's infrastructure development plan in 2015-2019 on economic growth and inequality. Using a dynamic computable general equilibrium model, INDOTERM, this study found a positive impact of the development of three types of infrastructure: dams, roads and ports on economic growth, especially in the medium term. The impact on sectoral output growth depends on the type of infrastructure. The construction of dam infrastructure will increase the output in the agricultural sector, while road and port infrastructure will boost the industrial sector's output. For inequality, this study looks at the impact of infrastructure development on regional disparity and labor's income distribution. The results show that port infrastructure development in 2015-2019 will help reducing regional imbalances, while road infrastructure exacerbates regional imbalances. Meanwhile, the construction of dams, roads and ports has a positive impact on distribution of income.

Keywords: CGE Model, Infrastructure, Economic Growth, Inequality

1. Introduction

Since 2015, government of Indonesia has prioritized infrastructure development in its national development plan. It could be noticed from the infrastructure budget allocation that rose 2.5 times in 3 years. The government focus to the infrastructure development was also seen from the target set in the National Medium-Term Development Plan 2015-2019. Among the government target in five years, the government had planned to develop 2650 km new roads, 1000 km road tolls, 24 new ports, and 49 new dams.

Figure 1.
Government Budget Allocation in Infrastructure Development
2011-2017 (Trillion Rp)



Source: Ministry of Finance

The government focus on the infrastructure development was based on the big problem of infrastructure sector in Indonesia. The study from Global McKinsey (2013) showed that infrastructural stock in Indonesia (38 percent of GDP) was much lower than the other countries in the world (70 percent of GDP in average). The infrastructure quality in Indonesia was also underdeveloped compared to the neighbor countries. In the Global Competitiveness Report 2017-2018, Indonesian infrastructure quality only ranked 52, lower than Singapore, Malaysia, and Thailand which ranked 2, 24, and 43 respectively. The survey from World Economic Forum also showed the lack of infrastructure development as three biggest problem to doing business in Indonesia.

Some studies indicated positive impact from infrastructure development to economic growth using countries panel data such as Canning (1998), Seethepalli, Bramati, Veredas (2008), IMF (2014), Straub and Terada-Hagiwara (1998), also Islamil dan Mahdyideen (2015). In Indonesian case, the study from Prasetyo and Firdaus (2006), Mayaningsih et al (2014), also World Bank (2015) provided empirical evidence of the positive impact of the infrastructure development on Indonesian economic growth. However, there were only a few studies which tried to analyze the impact of infrastructure development towards inequality. The results from some studies were also still debatable. For example, the study from Hooper, Peters, and Pintus (2007) also Calderon and Serven (2008) showed the reduced on income inequality along with infrastructure development, while Mendoza (2007) also Bajar and Rajeev (2015) found the other way round, based on the infrastructure types.

This study will contribute to policy making and analysis in Indonesia by providing quantitative evidence of Indonesia infrastructure development plan impact on economic growth and inequality. This study applies Dynamic Computable General Equilibrium INDOTERM model to conduct simulation on the impact of three types of infrastructure development: dams, roads, and ports. The simulation is done by dividing infrastructure development on the two stages: construction and operational. For the dams, the operational stage will increase the productivity the agricultural sector, while for the roads and ports, the operational stage will reduce the transportation costs.

Our result confirms the positive impact of infrastructure development on economic growth, mainly in the medium term. Related to the inequality, the impact of infrastructure development on the regional equality is depend on the infrastructure type, where the development of ports infrastructure gives the best impact to regional equity. This study also finds the positive impact of infrastructure development in 2015-2019 to the

income group distribution, although in the short term, the income group distribution tend to get worse in some regions.

This study will be divided into five parts. After introduction as the first part, the second part of this study will discuss the previous studies which analyze the impact of infrastructure development to the economy. The third part of this study will explain the simulated scenario and the simulation result will be examined on the four parts. The fifth part is the closing part which covered conclusion and policy recommendation.

2. Literature Review

The positive impact of infrastructure development has been shown by some previous studies, not only the other countries case but also Indonesia case. One of the other country's study was from Aschauer (1989). Using United States of America data, Aschauer (1989) showed one percent increase of public (government) capital stock would rise 0.39 percent private sector output. The other study from Sahoo et al (2000) showed the same positive impact in China. Working with infrastructure development data in 1975-2007, Sahoo et al (2000) calculated the elasticity of infrastructure development in China to the economic growth which was 0.20-0.41.

Some other studies that used countries panel data showed the same results. Using 16 East Asian countries data, Seethepali, Bramati, and Veredas (2008) found positive relation between infrastructure (energy, sanitation, water, transportation, and communication) and economic growth. The same result was found by Straub and Terada-Hagiwara (2010) for East Asia Pacific and South Asia countries, while Ismail and Mahyideen (2015) for East and South East Asia countries case. IMF study pointed out that the increase of public infrastructure investment could increase economic growth in the short and long run. One percent increase of public infrastructure investment in developed countries would boost 0.4 percent of output in the same year and 1.5 percent in the next four years. For developing countries, there would be 0.1 percent increase in short run and 0.25 percent in long run.

There were some other studies using CGE as the analytical tool. Applying Dynamic CGE model and micro simulation to see the impact of infrastructure development to poverty reduction, Corong et al (2012) found positive impact of infrastructure development to economic growth and poverty reduction in Philippines. The same method applied by Ahmed, Abbas, and Ahmed (2013), in Pakistan case. The same result also came up: infrastructure development had the positive impact to economic growth and poverty reduction, mainly in the long run. The other study conducted by Haddada, et al (2011) analyzed the impact of transportation infrastructure development in Brazil. The result from this study appointed the importance of inter-regional CGE analyzes to evaluate transportation infrastructure projects. Moreover, Estache, Perrault, and Savard (2007) study with CGE model for Mali showed that infrastructure development might lead to a dutch disease problem, but the positive impact to the economic growth was bigger than its negative impact.

In Indonesia, one of the previous study was done by Prasetyo and Firdaus (2006) which analyze the impact of electricity, road, and clean water infrastructure to 26 provinces in Indonesia in 1995-2006. This study found the positive relation between infrastructure development and economic growth. Meanwhile, with larger number of provinces (33) and different types of infrastructure (electricity, road, and shipping port), Maryaningsih et al (2014) also found the positive impact between infrastructure development and economic growth in Indonesia in 2000-2010. World Bank (2015) calculated if infrastructure stock grew five percent yearly (the actual number is 1.8 percent) in 2001-2012, the average of Indonesian economic growth would be higher by 0.6 percentage point and the poverty rate would be lower by 0.2 percentage point. Moreover, Yamauchi (2014) conducted a

research at the micro level with using household data and showed the improvement of resources allocation and household outcome was in line with the improvement of transportation infrastructure.

The impact of infrastructure development on economic growth was consistently found positive. However the impact of infrastructure development on inequality was still debatable. Hoopers, Peters, and Pintus (2017) research on the infrastructure spending and income inequality per capita relation in the US found that infrastructure spending for highway effectively could reduce income inequality. The other study from Calderon and Serven (2008) used panel data for more than 100 countries (1960-2000) and found the decrease on income inequality in line with the increase of infrastructure quality and quantity. However, the other study from Mendoza (2017) showed the impact of infrastructure development to the inequality depended on the infrastructure types. The infrastructure types like water and waste management could reduce the inequality. However, mass transit infrastructure would affect the increase of inequality. The same result was found in Bajar and Rajeev (2015) for India states case. This study showed that infrastructure effect to the regional inequality relied on the infrastructure types and the states income level. The infrastructure types like roads and electricity tends to increase the inequality.

3. Simulation Scenario

Simulation scenarios are set according to the development plan of three types of infrastructure, which are dams, roads, and ports in 2015-2019. Infrastructure development simulation is divided into two stages: construction and operational. On the construction stage, simulation is done by increasing government expenditure on the construction sector corresponds with the planned number of investment. On the other hand, simulation on the operational stage depends on the types of infrastructure. The simulation for three types of infrastructure is conducted for 2017-2019 and only covers the development started after 2015. Infrastructure projects started before 2015 considered as the old projects which has been captured in the model's baseline scenario.

The spread of investment for dams, roads, and ports development can be seen on Figure 2 and Table 1. Among the three types of infrastructure, the number of investment for dams are the smallest. Based on the spread of the regions, the dams' infrastructure development is built on the regions which have relatively large agricultural sector. On the roads' infrastructure development, the biggest investment value is still occurred in the western Indonesia, which are Java and Sumatra islands. On the other hand, the spread of ports infrastructure investment relatively common in whole Indonesia regions.

On the dams' infrastructure, the operational stage simulation is done by increasing productivity rate on the agricultural sector in the provinces where the dams are built. Moreover, the operational stage of roads infrastructure is assumed will reduce the intra and inter provinces road transportation cost where the roads are built. The decrease on the transportation cost is assumed to depend on the investment values of roads development. For ports infrastructure, the operational stage is assumed to reduce water transportation cost from the provinces where the ports are built to the other provinces and vice versa: from the other provinces to the provinces where the ports are built. The decrease on the transportation cost depends on the investment values of the ports development.

Figure 2.
Dams, Roads, and Ports Infrastructure Investment
2015-2019 (Percent)

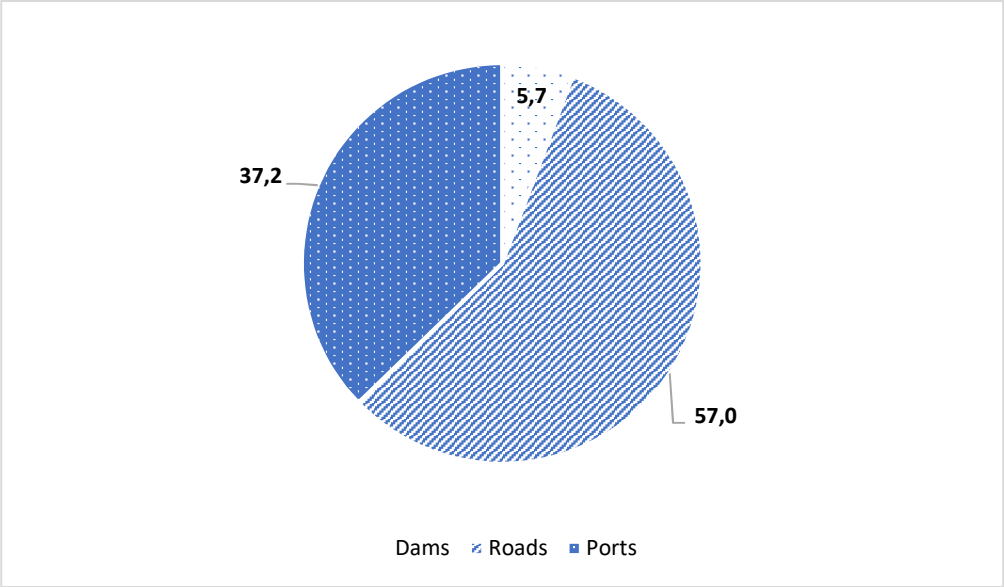


Table 1.
The Spread of Dams, Roads, and Ports Infrastructure Investment Based on Regions
2015-2019 (Percent)

	Dams	Roads	Ports
1 WestSumatra	15.5	10.7	13.8
2 EastSumatra	3.3	28.8	11.7
3 NthWestJava	23.8	19.6	9.9
4 EastJava	10.6	13.5	7.4
5 WKalimantan	0.0	1.8	3.6
6 EKalimantan	3.3	11.2	8.1
7 NthSulawesi	10.1	3.0	5.4
8 SthSulawesi	9.2	3.7	12.5
9 Bali	1.8	0.6	1.0
10 NusaTeng	20.3	2.3	6.0
11 Maluku	1.1	2.3	9.8
12 Papua	1.1	2.6	10.9

4. Results

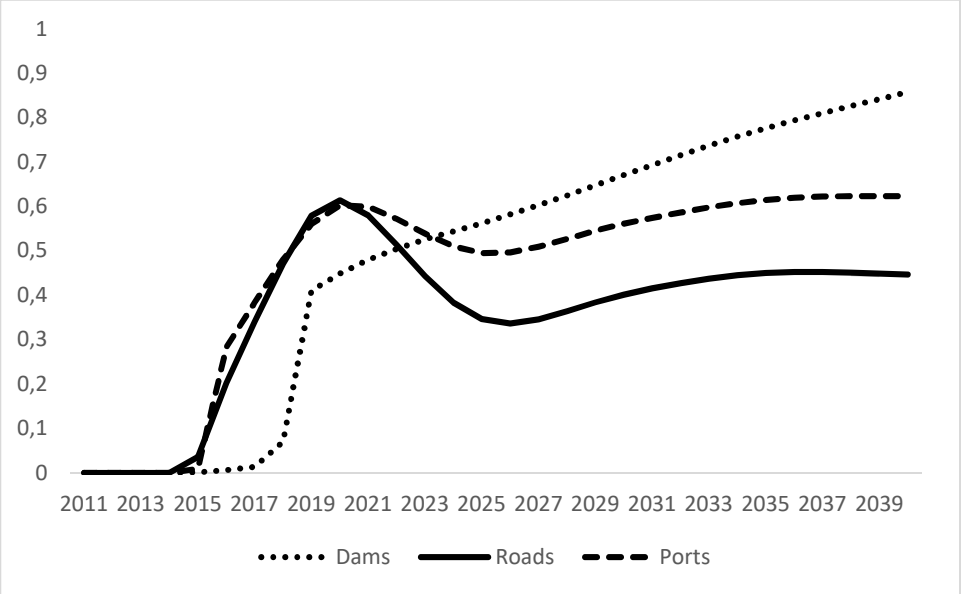
The result of the impact of infrastructure development that has been planned for 2015-2019 will focus on its impact to economic growth and inequality. Besides looking for its impact to the national economic growth, the

sectoral impact of infrastructure development will also be examined. The impact to inequality can be analyzed from two aspects: based on regions and income groups. The analysis of regional equity will examine how fast eastern part of Indonesia grows relatively to the western part of Indonesia. Furthermore, for the income groups, the impact will be examined from the received outcome of capital and labor production factor. Income distribution will be better or equal when wages or salaries that have been received by the labor grow higher than the received income of the capital owner.

The Impact on Economic Growth and Sectoral Output

Figure 3.

The Impact of Infrastructure Development on Economic Growth



The simulation result shows infrastructure development that has been planned by the government has positive impact on economic growth in all three types of infrastructure. The biggest impact of infrastructure development on economic growth happens on the medium term. While in the short term, the impact is relatively limited. The bigger impact in the medium term happens when the infrastructure starts operating. It is mainly seen clearly at the dams' type, where operational stage in this simulation starts after 2018. From the simulation, the impact of the infrastructure development construction stage on economic growth relatively lower than the operational stage.

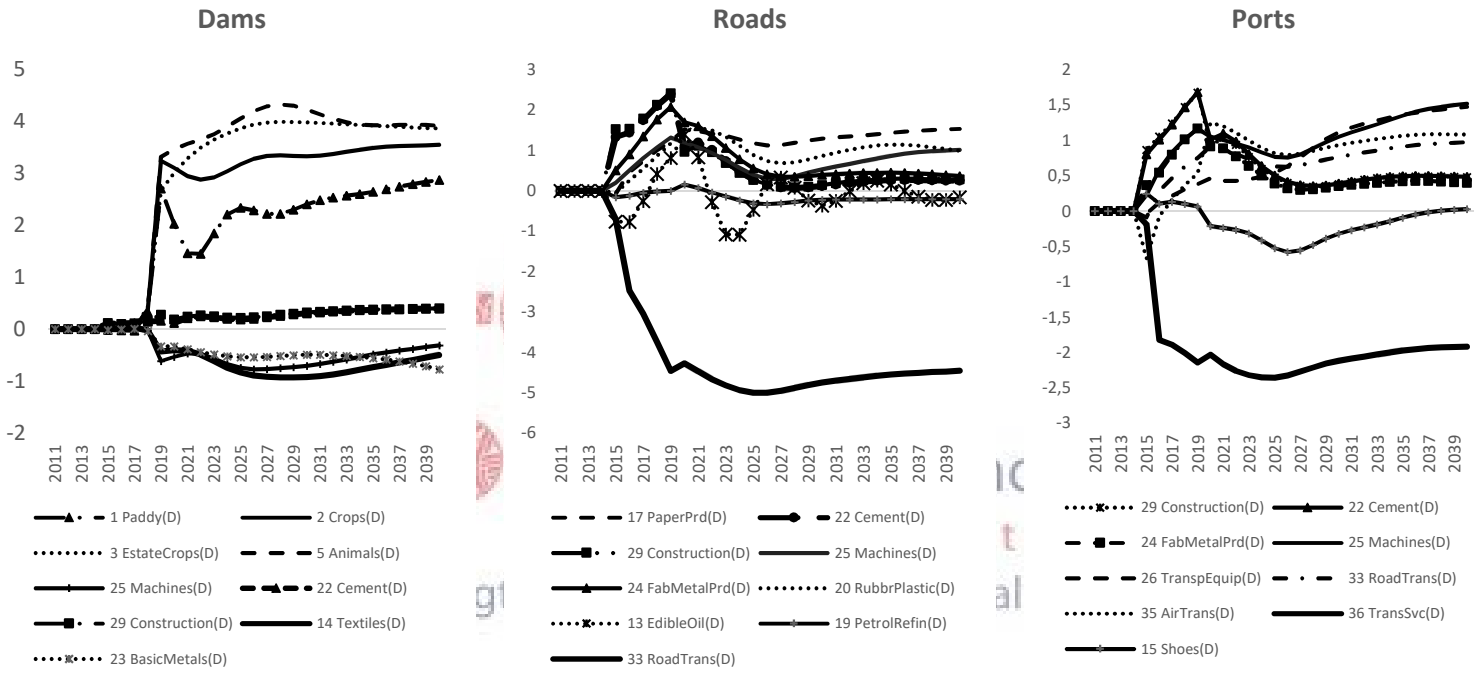
From the sectoral output, in the short term, construction stage of the three types of infrastructure will boost the output on the construction sector and the other related sectors, mainly cement industry and metal fabrication. However, the increase of output in this sector will continuously go down after the construction stage is done. In the short term, the biggest absorption of labors occurs in the construction sector and the other related sectors.

On the other hand, the impact of infrastructure development on the medium term depends on the types of infrastructure. Dams' infrastructure development gives positive impact to the agricultural sector and the sectors that use agricultural products, but negatively affects non-agricultural sectors such as textiles and basic metals.

The road infrastructure operational stage tends to give benefit to industrial sectors such as machines, papers, and plastics/rubbers. Meanwhile, the development of ports' infrastructure will boost not only machinery industry but also the increase on the other sectors related to transportation, except water transportation. The increase of industrial sector on both simulation of roads and ports development is driven by the decrease on the transportation or logistic cost which have to be paid by the industrial sector. The improvement of connectivity also tends to boost the increase of market access to the area which is inaccessible by the industrial sector before.

Figure 4.

The Impact of Infrastructure Development on Sectoral Output Growth



In general, the simulation results show that the biggest benefit of all three types of infrastructure development (dams, roads, and ports) coming from the indirect impact. It can be seen in the form of the improvement on the other sectors triggered by the increase on productivity or the decrease on the input costs in those sectors. On the construction stage, the direct impact of infrastructure development is relatively lower and only happens in the short term.

The Impact on Regional Equity

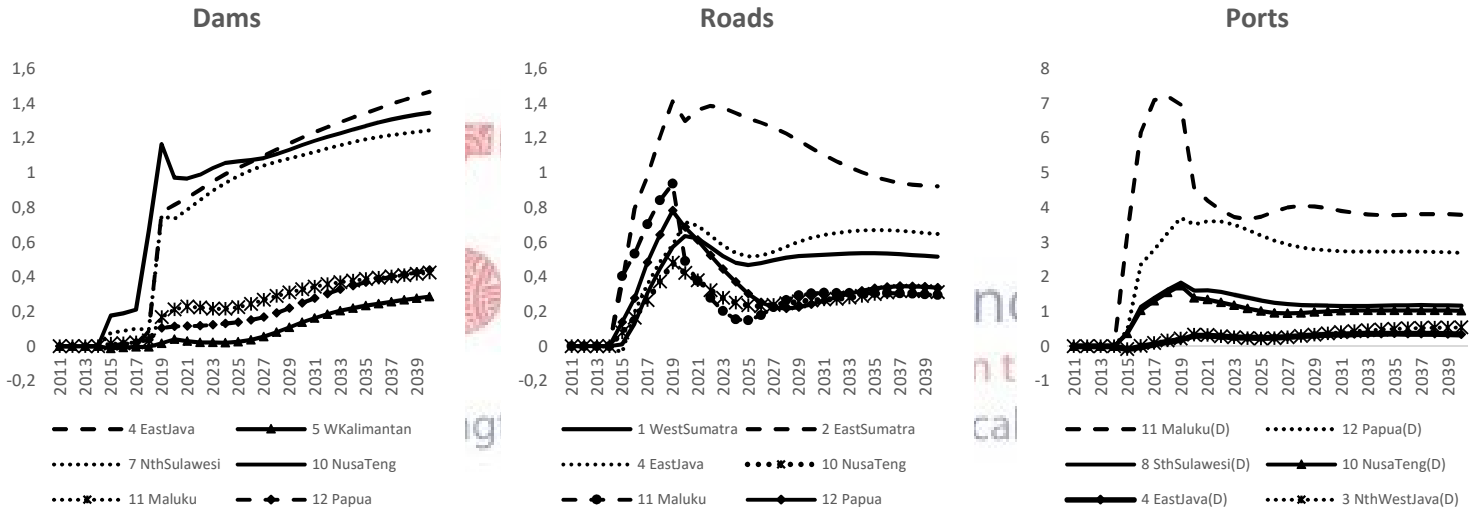
The 2015-2019 infrastructure development has positive impact on the economic growth in every region. However, its impact on regional equity is different, depends on the infrastructure types. The simulation result shows the best result of infrastructure development comes from the ports. In the ports infrastructure development simulation, Papua and Maluku becomes region that experiences the highest increase of economic growth compared to baseline, while the increase of economic growth in eastern and western part of Java is the lowest.

Dams infrastructure development has bigger impact to the regional equity compared to the roads development. The most benefited regions from dams infrastructure development are eastern Java, Nusa Tenggara, and northern Sulawesi, while Maluku, Papua, and western Kalimantan have the lowest increase of economic growth. This finding is in line with the spread of dams' infrastructure investment locations which is concentrated to the region with big share of agricultural sector.

Furthermore, the roads infrastructure development tends to worsen regional equity. The region with the highest increase of economic growth is the western part of Indonesia: eastern and western Sumatra, as well as eastern Java. The region with the lowest increase of economic growth is the eastern part of Indonesia: Papua, Maluku, and Nusa Tenggara. These findings are not only caused by the fact that most of roads investment still occurs in the western Indonesia, but also the road development itself will boost the industrial sector which mainly based on Java and Sumatra.

Figure 5.

The Impact of Infrastructure Development on Regional Economic Growth



The Impact on Income Distribution

In general, the development of three types of infrastructure planned by the government a positive impact to the improvement of income distribution. Almost in every region, the increase of labors' wage/salary is higher than the increase of capital owners' return on investment. However, the impact to the income distribution relies on the types of infrastructure, development stage, and regions.

For ports infrastructure, the development at first will worsen income distribution, where the improvement of income distribution will happen in the medium term. In Sulawesi, Nusa Tenggara, Maluku and Papua, the capital owners will gain bigger impact of ports development than the labors in the short term. The improvement of connectivity will lead to more accessible region that mainly gain the capital owners in the short term. However in the medium term, in line with the increase of economic activities in the regions, the increase of labors' wage/salary will exceed the return on capital.

The dams and roads infrastructure development has slightly different pattern with the ports. At first, in the construction stage, the dams and roads development will increase labors' wage/salary relatively higher than

capital owners' return. However, after the construction stage is done and the operational stage is started, the higher increase of capital owner's return tends to happen compared to labors' wage/salary. This pattern is mainly recognized in western and eastern Sumatra, eastern Java, and western Kalimantan for dams, and western Kalimantan, Bali, and Nusa Tenggara for roads. However, in the long term, wage/salary will increase higher.

Figure 6.

The Impact of Ports Infrastructure Development on Income Distribution

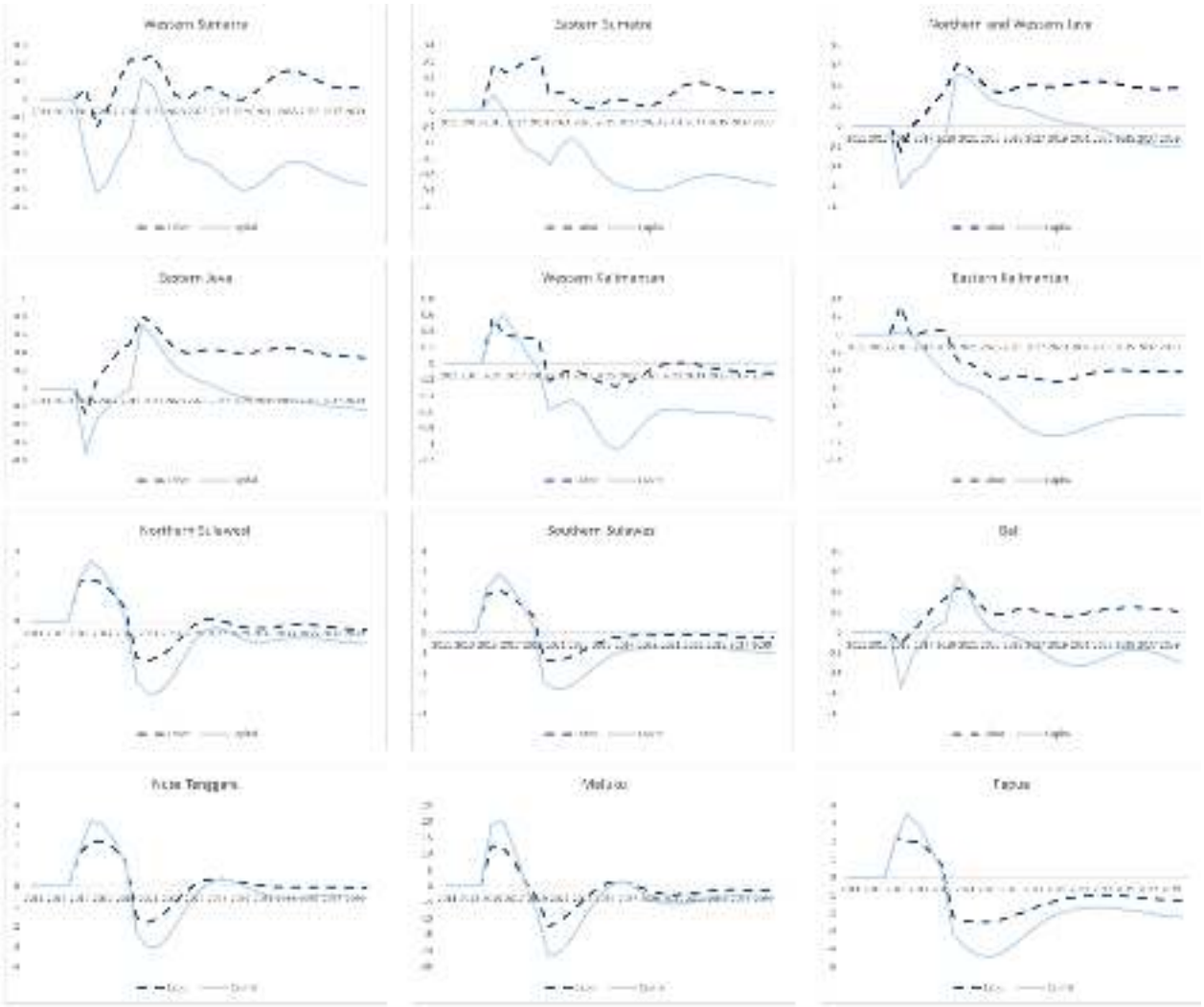


Figure 7.

The Impact of Dams Infrastructure Development on Income Distribution

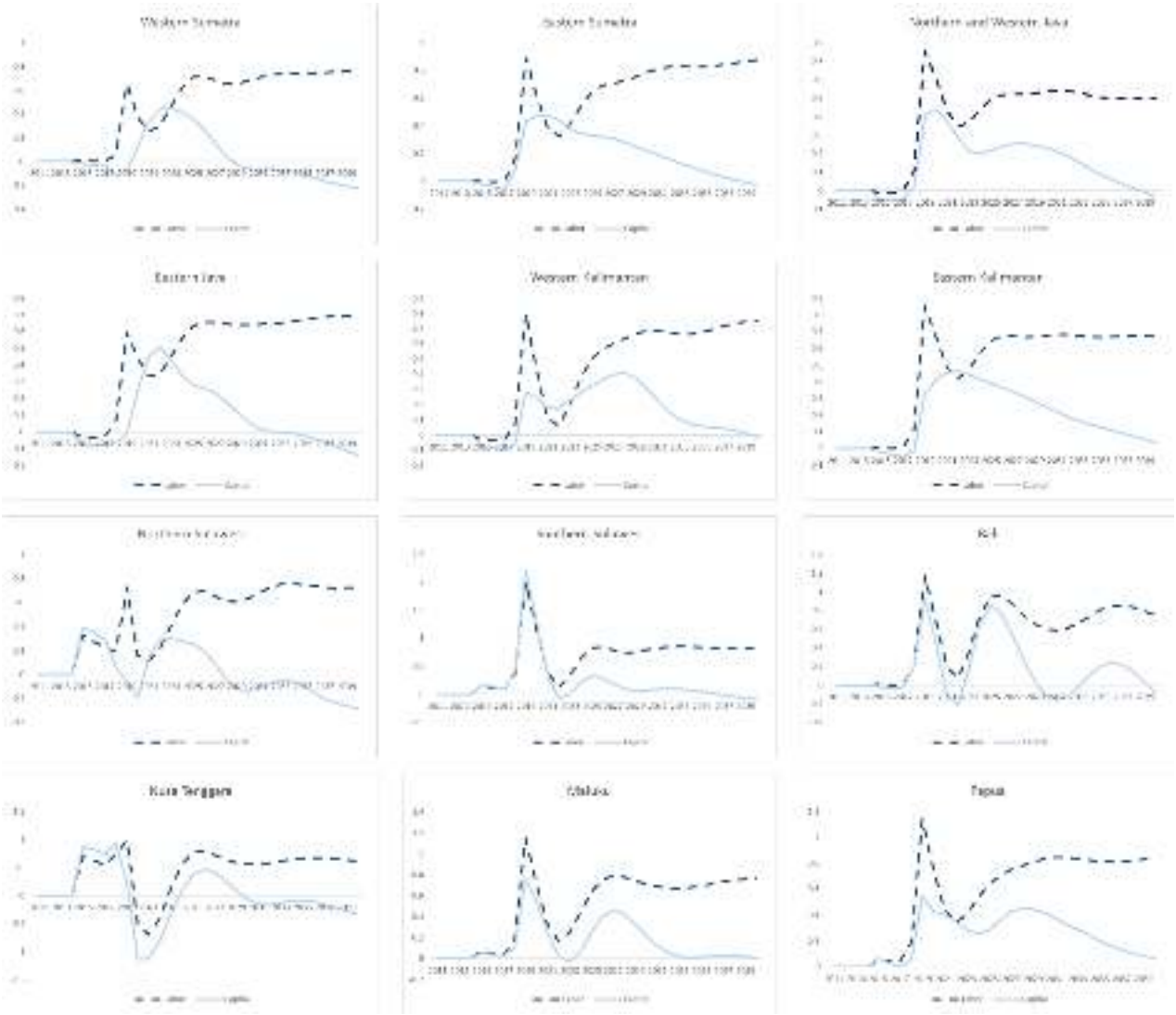
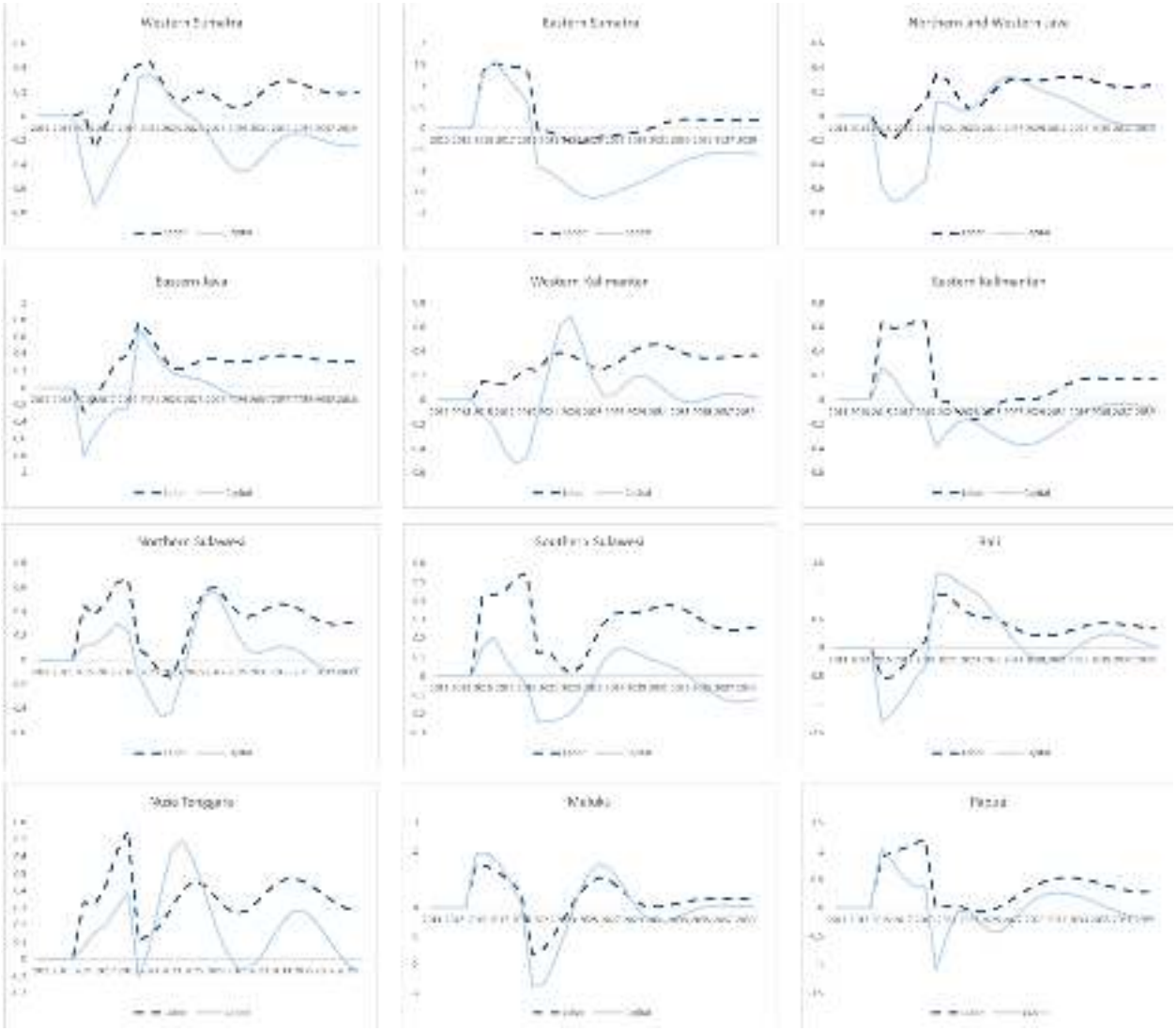


Figure 8.

The Impact of Roads Infrastructure Development on Income Distribution



5. Conclusion

The result from this study shows government infrastructure development in 2015-2019 can give positive impact to the economic growth and equity. However, the impact depends on time, stage, and the types of infrastructure. Infrastructure development will give biggest impact in the medium term which is closely related to operational stage of the infrastructure. Infrastructure development tends to worsen inequality in some regions in the short term, although it will give positive impact in the medium and long term. Moreover, every type of infrastructure will generate various impact to the progress of other sectors as well as regional economic growth. The dams infrastructure will give positive impact to agricultural sector and regions with big share of agricultural sector. Industrial sector becomes the most impacted sector as the roads and ports infrastructure is

developed. The ports infrastructure development will improve regional disparities by encouraging faster economic growth in eastern part of Indonesia compared to the western part, while roads development will be the contrary, it tends to worsen regional disparities.

From the findings, the government can set better policy plan, such as: (1) to maintain the economic growth, infrastructure development policy must be balanced with the other policies that can boost short term economic growth, (2) to create regional equity, the ports infrastructure development policy can be the government priorities. If roads infrastructure development is addressed to regional equity, the bigger allocation should be given to eastern part of Indonesia, (3) the government can anticipate the increase of income inequality in the start of infrastructure development in some regions by establishing temporary pro job creation policy, (4) anticipative policy can also be done to support other sectors that relatively loss from every type of infrastructure development.

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Inequality of Income Distribution in Indonesia

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Abstract

Along since the enactment of regional autonomy in the last decade this certainly gives flexibility to the provincial goverment in regulating and managing its own territory. Of course, each province has a different level of capacity both in terms of quality of human resources (HR) that exist in determining any policy in encouraging the creation of welfare of society and differences in the potential wealth of resources owned by every province in Indonesia. It encourages writers to see the condition of inequality income distribution that occurred between provinces in Indonesia. This research it aims to reviewing the factors affect the inequality of income distribution in 34 provinces in Indonesia. This research uses secondary data with data collection method using the library (library search) sourced from the Central Statistics Agency and other relevant agencies, then the data is classified into groups according to their data processing needs. As for the variables exogen used in measuring income income inequality in this research consists of Gross Regional Domestic Product (GDP), Population, Investment amount and the amount of budget owned by each province. Meanwhile, the inequality level of income distribution is calculated using the Williamson Index. As for this type of research data using a panel of data consisting of time series data and cross section for 34 provinces across Indonesia with research method used is error corection model (ECM) that is panel data model which use small amount of T (time) , but the amount of N used is many to see the short-term and long-term impacts of these variables on income distribution disparities in 34 provinces in Indonesia.

Keywords: inequality, income distribution, 34 provinces

INTRODUCTION

Indonesia is described by the term gemah rimpah loh jinawih or an expression of the condition of abundance of natural wealth. The area of Indonesia that stretches from Sabang to Merauke has the potential of diverse riches ranging from wealth on the surface of the earth such as fertile land that is able to produce a variety of potential agricultural crops to marine potency that is able to produce potential fisheries and marine products. Indonesia also has the potential in the abdomen of the earth that is also abundant like oil, gas, gold, coal and some other mining products. The potential of natural resources contained in the country of Indonesia is a big capital in supporting the economy. The available resources are optimally utilized for the sake of community welfare. One welfare indicator is the more equitable distribution of people's incomes.

Indonesia is the largest archipelagic country in the World with an area of Indonesia is 1.905 million KM2 which consists of thousands of large and small archipelagic clusters. Indonesia's geographical condition has its own challenges in terms of development especially

in the effort to create equity. In addition to geographical conditions Indonesia is also faced with the condition of human resources where diverse between regions.

Implementation of the diversity of the condition of the region and also its development is regional development gap. One of the reality of development is the creation of development gap that is the happening of difference of growth rate between regions and between regions that cause the happening of prosperity gap and progress between regions (Mudrajat Kuncoro, 2003 dalam (Nanda, 2013). In a developing country like Indonesia the problem that often arises is the inequality of income distribution and poverty. The development process is faced with a trade-off between pursuing high economic growth or equity. In other words, the rapid growth of GNP per capita does not automatically improve people's lives. Because the so-called "trickle down effect" of the benefits of economic growth for the poor does not happen as expected (Arsyad, 1988 dalam (Permana, 2016). Professor Kuznet has analyzed the condition of inequality with a hypothesis known as "U-Reversed". Professor Kuznet has argued that in the early stages of economic growth, the distribution of income tends to deteriorate, in other words high inequality. However, in later stages it will improve. (Todaro, 2000 dalam (Yuliani, 2015).

The Government of Indonesia has sought sustainably to carry out the development process. The development of regional economic development is measured by using measures of increasing the production of goods and services measured using the calculation of Regional Gross Domestic Regional Bruto (PDRB). The growing inequality of distribution is feared to exacerbate development performance where only a small part of the community perceives the results of development.

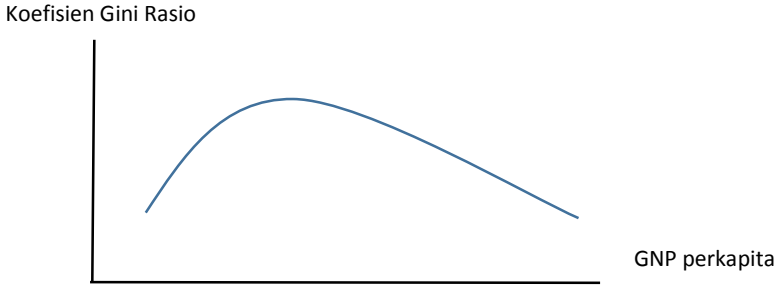
Therefore, the researchers are very interested to see the development of inequality level of income distribution in Indonesia.

LITERATURE REVIEW

Definition of Income Gap

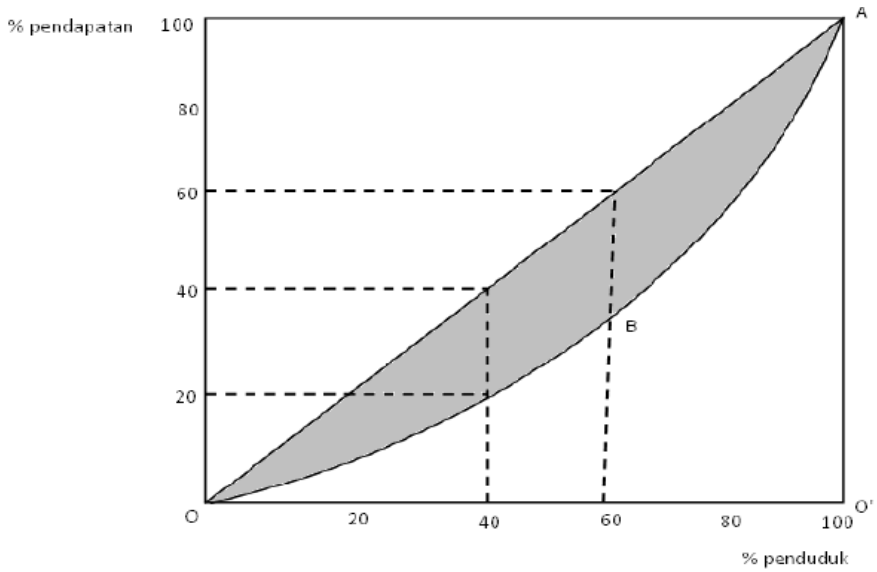
Definition of Revenue Gap Bigsten (2000) dalam (Rubiarko, 2013)argues that the distribution of income in an economy is the end result of all economic processes, which means that the distribution of income in principle must take into account all the factors that influence it. Adam Smith and Marx argue that the main issue of the distribution of income is how the product proceeds are divided among wages, rent and profits.

Adelman and Moris argue that the income gap in the region is determined by the type of economic development indicated by the size of the country, natural resources, and the policy adopted. In other words, policy and structural dimensions factor are worth noting in addition to the rate of economic growth (Kuncoro, 1997 dalam (Mailindra, 2017). Professor Kuznets, who has been instrumental in pioneering the analysis of historical growth patterns in developed countries, has argued that in the early stages of growth, the distribution of income tends to worsen, but in later stages it will improve. This observation is known as Kuznets's "U-Reversed" hypothesis, in accordance with a series of changes in the trend of income distribution with the GNP per capita GNP growth coefficient size as illustrated in the following curves: Figure 1: U-Reversed Hypothesis Kuznets :



Sources : Arsyad

The Lorenz curve in general is often used to describe the form of inequality that occurs with the distribution of people's incomes. The Lorenz curve shows the actual quantitative relationship between the percentage of income earners with total income percentage that actually they received during a certain period, for example a year.



Factors That Cause Inequality Income Distribution

The main factors causing economic inequality among provinces in Indonesia are as follows:

a Different Concentrations of Regional Economic Activity

The high different concentration of economic activity among regions is likely to encourage increased regional development gap because regional development process will be faster in regions with higher concentrations of economic activity. otherwise it occurs in areas with lower concentrations of economic activity..

Economic growth will tend to be faster in areas where there is a considerable concentration of economic activity. These conditions will further encourage regional development processes through increased jobs and income community. Similarly, if the concentration of economic activity in a region is relatively low which in turn also encourages unemployment and low levels of income of local communities.

The concentration of economic activity can be caused by several things. First, there are more natural resources in certain areas, such as petroleum, gas, coal and other mineral materials. The presence of fertile land also affects, especially concerning the growth of agricultural activities. Secondly, the prevalence of transportation facilities, both land, sea, and air also affect the concentration of economic activities between regions. Third, demographic conditions (population) also influence because economic activity will tend to be concentrated where human resources are available with better quality.

b Investment Allocation

Lack of investment in a region makes economic growth and levelsper capita income per capita in the region is low.

c Factor production mobility is low between regions

Less smooth production factor mobility such as labor and capital among provinces is also a contributing factor to regional economic inequality.

d Differences in natural resource content

The enormous differences in the content of natural resources in each region will encourage inequality between regions. The content of natural resources such as oil, natural gas, or soil fertility certainly affect the development process in each region. There are areas that have oil and natural gas, but other areas do not have it. There are areas that have large coal deposits, but no areas. Similarly, the soil fertility rate is also very varied, thus affecting efforts to encourage agricultural development in each region.

Differences in the content of these natural resources will obviously affect the production activities in the area concerned. Areas with high natural resource content will be able to produce certain goods at relatively low cost compared to other regions with lower natural resource content. This condition will encourage the economic growth of the area concerned to be faster than other regions.

e Differences in Demographic Conditions

Another major factor that can also encourage inequality between regions is if there are differences in demographic conditions large enough between regions. Demographic conditions include growth rates and population structure, education and health levels, labor conditions and the behavior of the local people.

Differences in demographic conditions will be able to influence inequality among regions because this will affect the productivity of community work in the area concerned. Areas with good demographic conditions will tend to have higher work productivity so that this will encourage increased investment which will further enhance the employment and economic growth of the region concerned. Conversely, if in a certain area demographic conditions are not good then this will cause the relatively low productivity of local people's work that leads to conditions that are less attractive for investment so that the economic growth of the relevant areas will be lower.

The Williamson Index

Williamson has observed levels of inequality in different countries with different levels of development. Williamson assessed the gap rate by introducing the Williamson Index. The Williamson Index is an index based on the per capita inequality of population per capita and national per capita income. This Williamson Index is a modification of the standard deviation. The higher the Williamson Index means greater regional gaps, and vice versa. Williamson then analyzed the relationship between regional disparities and the level of economic development.

Williamson uses this index to measure the level of inequalities of different countries with relatively the same year. In doing the calculations, Williamson uses GDP per capita data as well as the population of various countries. The results of these calculations are then combined with the level of economic development (based on the level of GDP) of these countries from Kuznets.

Given the merging of these two calculations, Williamson states that there is a systematic relationship between the level of national development and regional inequality. The degree of regional inequality is very high in the middle income segment based on Kuznets, but is consistently lower if we move to higher levels of development. It can be said that at a time when the level of economic development of a country is still low, the gap rate is lower (the value of the Williamson Index). This value continues to increase for countries with higher

levels of economic development. Until one day a turning point is reached, where the level of economic development of the country is getting higher, the index value is lower.

Inequality that occurs not only to the distribution of people's incomes, but also happens to development between regions within the territory of a country. Jeffrey G. Williamson (1965) examines the relationship between regional disparities and the level of economic development, using developed and emerging country economic data. It was found that during the early stages of development, regional disparities became larger and development concentrated in certain areas. At a more "mature" stage, judging by economic growth, there appears to be a significant balance between the regions and disparities. Williamson uses the Williamson Index (Index of Williamson) to measure the inequality of regional development. The Williamson Index uses gross domestic regional bruto per capita as the baseline. The reason is clear that the comparison is the level of development between regions not the level of welfare between groups. The Williamson Index formulation is statistically as follows:

$$IW = \frac{\sqrt{\sum(Yi-Y)^2 \frac{F1}{n}}}{Y} \quad 0 < IW < 1$$

Information :
IW = Williamson Index
Yi = Local per capita income i
Y = Average per capita income across regions
fi = Number of local population i
n = Population of the whole region

The Williamson Index coefficient number is 0 <IW <1. If the Williamson Index is smaller or closer to zero indicates a smaller or more uneven inequality and the larger number indicates widening inequality. Although this index has a weakness that is sensitive to the definition of area used in the calculation means that if the size of the area used is different it will affect the results of the calculation, but quite commonly used in measuring inequality of development between regions.

Economic Development
According to Meier (1995) economic development is a process whereby a country's per capita income increases over a long period of time with the record that the number of people living below the absolute poverty line does not increase and the income distribution is not unequal. According to Lincolin Arsyad (2010) dalam (Lamere, Tatuh, & Kapantow, 2016) economic development is a process that causes an increase in real incomes per capita population of a State in the long term accompanied by improvements to the institutional system.

RESEARCH METHODS

In this research using panel data consisting of time series and cross section data, where time series data is limited by period analysis between 2012 until 2016 and cross section data consist of 34 provinces in Indonesia. Sources of data used are secondary data covering index of wiliamson (to measure inequality) calculated by the researcher using data sourced from BPS, Gross Domestic regional Product value, population, investment value and amount of budget taken from total realized expenditure of provincial APBD. The data - data obtained from the BPS Indonesia and other relevant institutions at various periods.

The method of analysis used in this research is Error Corection Model (ECM) method. The method in this study examines panel data using small amount of time t, but the number of N used is much to see the short-term and long-term impact of the variable - variable to the income

distribution gap in 34 provinces in Indonesia. In the ECM model include the ECT *(error corection term)* variable. ECT variable regression coefficient is a coefficient of adjustment which is also a speed of adjustment between the actual value and the desired value which will be eliminated in one period. A valid ECM characteristic when it meets the stipulation that the coefficient value of ECT (ω) lies in the range 0 <ω <1 and must be statistically significant (Yuliadi, 2007).

The long-term relationship can be expressed in the following equation:

IW = β0 + β1 PDRB + β2Population + β3Investment + β4Number of Budget + μ

Meanwhile, short-term relationships can be expressed in the following equation:

IW = β0 + β1 PDRB + β2Population + β3Investment + β4Number of Budget + β4ECT + Σμ

Information :

IW : The Wiliamson Index
B0 : Constants
GRDP : Gross regional domestic product 34 provinces in Indonesia
Population : The population of 34 provinces in Indonesia
Investment : The total investment of 34 provinces in Indonesia
Budget amount: Total budget of 34 provinces in Indonesia
ECT : Error Corection Term
μ / Σμ : Residual

RESULT

Estimation Method Error Correction Model (ECM)

ECM dynamic estimation method for analyzing change of index of wiliamson influenced by variable of pdrb, population, investment value and amount of budget dynamically both in short and long term, while significance level used in this research is 5%. Table 1 discloses the results of the study by ECM method.

Variable	Long Term		Short Term	
	coeffisient	Probability	coeffisient	Probability
PDRB	4.79E-07	0.0000	4.14E-07	0.0000
Population	-9.40E-09	0.0000	-9.05E-09	0.0000
Invesment	-5.54E-06	0.0000	-3.40E-06	0.0000
Bugdet amount	2.00E-09	0.2084	2.54E-09	0.0033
ECT	-	-	0.924403	0.0000
R - Squared	0.796971	-	0.951927	-
Prob (F – statistik)	-	0.000000	-	0.000000

Table 1. Estimation Analysis of Wiliamson Index of ECM Methods

Source: secondary data (processed researcher)

Based on the results of ECM method estimation in the long term indicates that of 4 variables that allegedly affect the value of inequality there are 3 variables that have a significant effect that is the PDRB variable. Population and investment, where the probability is 0.0000, while in the long term the variable of budget amount has no significant effect to the value of inequality. These empirical findings each imply that the higher the PDRB value of each province will actually increase the inequality, while the higher the population will actually reduce the level of inequality, on the other hand the higher the value of investment in the province will reduce the value of inequality. Meanwhile, if analyzed together with all four variables above gives a significant influence to the value of inequality as evidenced by the

value of Prob (F - statistics) that is 0.000000, where the magnitude of the influence can be seen from the value of R - Squared that is equal to 0.796971 or equal to 80%. Equally important is the extent to which the government's commitment and consistency in implementing its economic policies can reduce the value of inequality in each province in Indonesia.

Meanwhile, the results of ECM method estimation in the short term indicate that of 4 variables that are suspected to affect the value of inequality, all the variables have a significant effect on the value of inequality, it can be seen from the probability value of each variable less than 5 percent, that's the probability of a significant and positive value of ECT. These empirical findings each imply that the higher the PDRB value of each province will actually increase inequality, while the higher the population will actually reduce the level of inequality, on the other hand the higher the value of investment in the province will reduce the value of inequality. Meanwhile, the greater the value of expenditure issued by each province would increase the value of inequality. Meanwhile, if we analyzed together the four variables above gives a significant influence on the value of inequality as evidenced by the value of Prob (F - statistics) that is 0.000000, where the magnitude of the influence can be seen from the value of R - Squared that is equal to 0.951927 or as big as 95%. Equally important is the extent to which the commitment and consistency of government in implementing its economic policies that can reduce the value of inequality in each province in Indonesia.

CLOSING

1. Conclusion

Based on the long-term ECM estimation, the variables affecting the value of inequality as measured by the index of wiliamson are the pdrb value, the total population and the investment value either partially or collectively, while in the short run the four variables (pdrb value, population and investment value and the amount of budget) either partially or jointly gives significant influence to the value of inequality in 34 provinces in Indonesia.

2. Suggestions

Based on the results of the research is expected to be a consideration for the government daeah, especially in the province to be careful in determining the policy to be done. This is done so that the economic policies implemented can run effectively and efficiently in reducing the value of inequality in each province in Indonesia.

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EFFECT OF GENDER, URBAN AND EDUCATION TOWARD REGIONAL INCOME DISPARITIES IN INDONESIA

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ABSTRACT

During 1995-2015, the annual wage gap between the urban and rural area in Indonesia has become wider. This high wage disparity potentially contributes to higher inequality, especially across the region. Using household data from Indonesia Family Life Survey (IFLS) wave 5, this paper aims to determine wage disparity across Indonesian region which was divided by island: Java, Bali, Sumatera, Kalimantan, and Sulawesi-Papua. This region also represents its size and variation of economic activity. There are two research questions we are trying to answer in this paper: factors affected regional wage disparity between urban and rural area; as well as regional wage disparity between male and female, both are across the region. Using Ordinary Least Square (OLS) method; controlling for age, working experiences, types of job (private, casual, unpaid), job sector (manufacturing and services); we found that, on average, Kalimantan and Sumatera have higher annual wage level than Java; while Bali and Sulawesi have lower annual wage level compared to Java. Finding from the interaction between dummy region and urban, people live in an urban area in Bali and Sulawesi will earn more wage than the ones living in the rural area; unlike people in Sumatera and Kalimantan. From interaction between dummy region and male, we found that male in Sulawesi-Papua, Kalimantan, and Sumatera earn higher annual wage compared to women; and this gender-region interaction is significant in those three regions. Lastly, we found that individual education level across region does not significantly affect annual wage level across the region. Aside from existing study on urban-rural wage gap in Indonesia, this paper contributes to providing regional wage gap analysis and within region wage gap analysis, considering labour characteristics and genders. From the policy perspective, we learn that we still have high urban-rural wage gap especially in the east part of Indonesia, as well as male-female wage gap across the region. Therefore, rural development and gender equality in labour market should be one of development planning priority in the future.

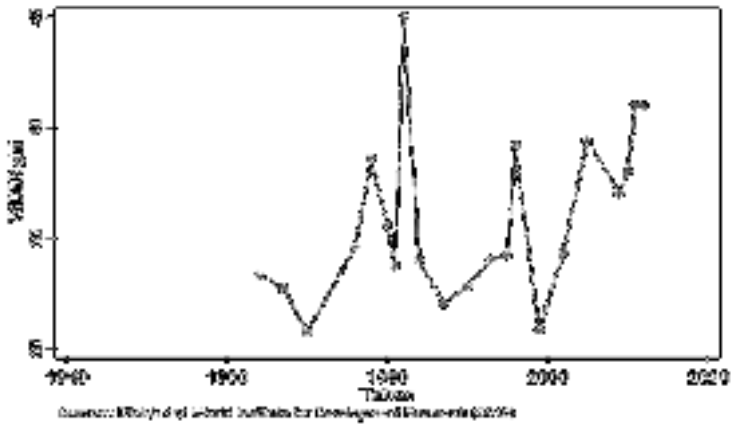
Keywords: wage gap, regional income disparity

BACKGROUND

Data from World Institute for Development Research (WIDER) shows that inequality in Indonesia has become wider during 1965-2012. Graph 1 shows that on average, the wage was

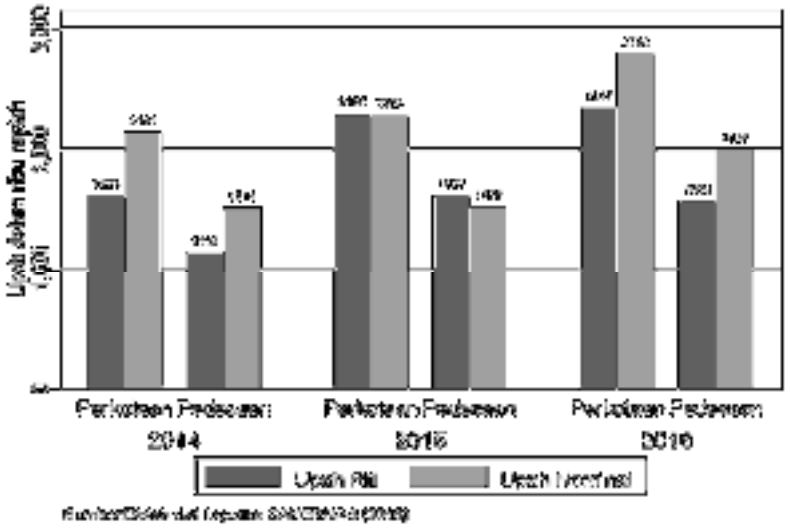
increased in both nominal and real value. This situation occurred in both urban and rural areas.

Figure 1. Inequality in Indonesia 1965-2012



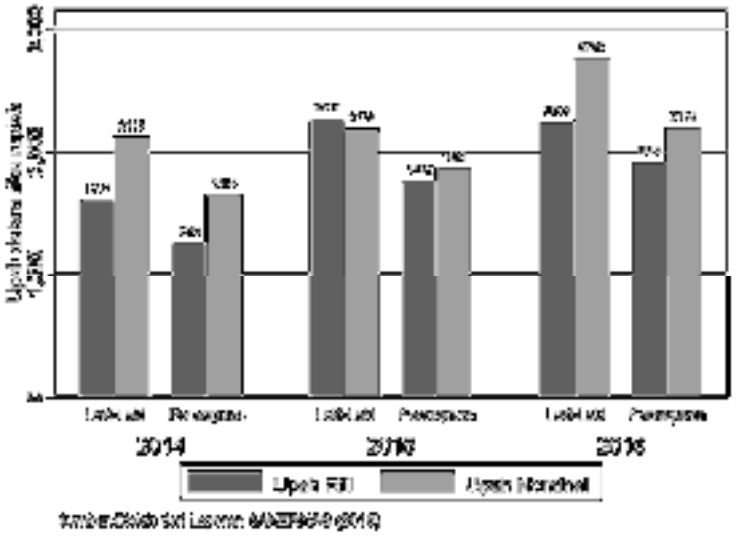
Graph 1 below shows the income inequality between urban and rural areas from 2014 and 2016, as we can see that urban workers receive higher earnings (both in nominal and real term) compared to rural workers. Urban workers receive 40 to 49% higher income than rural workers.

Graph 1. Urban and Rural Wage 2014-2016



On the other hand, Graph 2 shows the income inequality between male and female workers in Indonesia. During 2014-2016, average income earned by male workers is 16 to 28% higher compared to women workers' earning.

Graph 2. Male and Female Wage 2014-2016



Furthermore, this wide wage gap potentially contributes to the broader gap across regions. Sicular et al. (2007) explained that in 2002, the urban-rural gap contributes about one-quarter of overall inequality in China. Another study conducted in China found that household and individual characteristics such as education, age, and household demographics contribute to the urban-rural income gap. The decomposition reveals further that education is the most critical non location characteristic underlying the urban-rural income gap. In 2002, differences in education levels between urban and rural areas contributed one-quarter of the income gap, even though in the long term education levels are endogenous, and current investments in human capital are affected by other household characteristics, such as family size and composition (Sicular et al., 2007). However, Wan (2001) resulted that increases or changes in

regional inequality are caused by wage and non-wage income sources, even though there is no substantial evidence to suggest that wage is dominating the effect.

Autor, Katz, and Kearney (2005) found that wage gap or wage inequality in the US during the 1990s occurred due to labour force shifting while Firpo, Fortin, and Lemieux (2007) found that changes in wage distribution between 1988 and 2005 in the US were affected by labour unions and education level.

Puga (1999) explained that higher wage elasticity of labour migration in the US has answered why economic activity is less geographically concentrated in the European Union (EU) than in the US, but income disparities across EU members are more extensive than across US states. Rice and Venables (2003) concluded that small exogenous differences between such as the geographical advantage could lead to significant differences in per capita income, whereas skill differences cannot solely affect income differences.

In Indonesian context where regional disparity becomes an important economic issue, this paper aims to understand the factors affected regional wage disparity between urban-rural area and regional wage disparity between male-female, across regions. As a country with more than 17 thousands islands, Indonesian region can be classified as five central regions: Java, Bali, Sumatera, Kalimantan, and Sulawesi-Papua. Those groups represent not the only area in terms of size, but also economic activities.

Moreover, this study is expected to contribute to reducing regional disparity in Indonesia through policies focusing on labour characteristics analysis in each region.

DATA AND METHODOLOGY

This paper used data from Indonesia Family Life Survey (IFLS) year 2014. IFLS is a longitudinal survey in Indonesia. The sample represents approximately 83 per cent of the Indonesian

population and contains more than 30,000 individuals who live in 13 provinces. The first wave of the IFLS (IFLS 1) was conducted in 1993-1994 by RAND in collaboration with Lembaga Demografi, University of Indonesia. IFLS 2 and IFLS 2+ were conducted in 1997 and 1998, respectively, by RAND in collaboration with UCLA and Lembaga Demografi, University of Indonesia. IFLS 2+ covered 25% sub-sample of the IFLS households. IFLS 3 (was conducted in 2000) covered the full sample, by RAND in collaboration with the Population Research Centre, University of Gadjah Mada. The fourth wave of the IFLS (IFLS 4), fielded in 2007-2008 covering the full sample, was conducted by RAND, the Centre for Population and Policy Studies (CPPS) of the University of Gadjah Mada and Survey METER. While the fifth wave of the IFLS (IFLS 5) was fielded 2014-2015.

Some of the advantages of IFLS data are. F*irst*, it is the only longitudinal data which is freely available in Indonesia, and because those data came from the same individuals during a different period, IFLS gives an outlook on the dynamics of Indonesian people. *Second*, IFLS data covers various aspects of lifestyle, so that using IFLS data can give a detailed picture of human behaviour. *Third*, IFLS includes communities and public facilities and private respondents.

In order to analyze regional income disparities in Indonesia, this study uses Ordinary Least Square (OLS). This method is used in cross-section regression model with N observation and observations had dependent variable and independent variable. This research used 3 models to analyze regional disparity in Indonesia. Model (1) is used to capture regional influences and regional dummy interactions with urban characteristics

$$y_i = \alpha_0 + \beta X_i + \delta J_i + \gamma R_i + \theta urban_i + \lambda R_i * urban_i + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

$$y_i = \alpha_0 + \beta X_i + \delta J_i + \gamma R_i + \theta urban_i + \lambda R_i * urban_i + \partial R_i * male_i + \varepsilon_i \dots \dots (2)$$

$$y_i = \alpha_0 + \beta X_i + \delta J_i + \gamma R_i + \theta urban_i + \lambda R_i * urban_i + \partial Ri * male_i + \rho R_i * educi + \varepsilon_i \dots \dots (3)$$

Whereas y_i is log annual wage for individual i, while X_i is individual characteristics such as dummy male, years of education, age, and experience. This study also controls job characteristics J_i such as manufacture dummy, and service dummy. In addition, this research include dummy for private, casual, and unpaid individual. For regional influence R_i include regional dummy (Sumatera, Kalimantan, Sulawesi and Papua), as well as regional dummy interaction with dummy urban areas *urban*$_i$. In order to describe gender and education influences, this study incorporates $R_i * M_i$ as regional dummy interaction with male dummy in model (2). To check the consistency between each model $male_i$ incorporated in the model, while $educ_i$ is included as regional dummy interaction with years of education on model (3).

Table 1 is the individual characteristic in this study. Based on the data, most observations are women who lived in the Urban area. On average, mostly individual had reached senior high school level where it is equivalent to 12 years education. Most workers are in the service sector with employment status in private companies. From the regional side, most individuals are located on Java island; this fact contribute to wage disparities to some extent.

Table 1. Individual Characteristics

Variable	Proportion (in percent)
Male	46,8
Urban	59,8
Highest Education	
Primary school	20,6
Secondary school	16,5
Senior high school	39,3
University	23,5
Sectoral	

Agriculture	20
Manufacture	27,3
Service	52,6
Job Status	
Self-employed	27,2
Public	8,6
Private	39,4
Casual	12,3
Unpaid	12,2
Regional	
Sumatera	21,4
Java	52,3
Bali and Nusa Tenggara	12,6
Kalimantan	4,6
Sulawesi and Papua	8,9

Source: IFLS 5, processed

Table 2 is a tabulation of the annual wage in a regional context. Some areas such as Sumatra, Kalimantan, and Sulawesi-Papua have higher average salary than nationwide in particular Urban areas. In contrast to the region, Java and Bali-Nusa Tenggara regions have a lower average annual wage. The analysis in the model is necessary to identify the magnitude of regional influence toward annual wage gap.

Table 2. Annual Wage in Regional Context (in '000 rupiah)

Regional	Urban	Rural
Sumatera	31635	28500
Java	30781	27137
Bali and Nusa Tenggara	27808	28956
Kalimantan	36567	28682
Sulawesi and Papua	36467	28617
Indonesia	31203	22359

Source: IFLS 5, processed

ANALYSIS AND CONCLUSION

Table 3 below shows regression result from 3 models using OLS regression. From the regression table, we can see that individual characteristic such as gender, urban status, age, and experience affect the annual wage difference, in which those characteristics are

consistent across 3 model. In addition, job characteristics such as sectoral worker, and job status significantly affect annual wage disparities.

On the regression result, a worker on Kalimantan and Sumatera earned 12 to 65 percent higher annual wage level compared to Java region. Whereas worker on Bali and Sulawesi earned 36 to 49 percent lower annual wage level compared to Java region. Moreover, a household in the eastern part of Indonesia earned significantly less than western part of Indonesia. On the further analysis, this condition caused by emerging urban areas in each regional. Some urban areas in Bali and Kalimantan earned more than urban areas in Java.

Table 3 Regression Result

Dependent Variable: log (wage_y)	Model (1)	Model (2)	Model (3)
dummy_bali	-0.492***	-0.447***	-0.197
	(0.0546)	(0.0655)	(0.149)
dummy_sulawesi_papua	-0.366***	-0.494***	-0.369*
	(0.0829)	(0.0909)	(0.224)
dummy_kalimantan	0.654***	0.387***	0.639***
	(0.0829)	(0.108)	(0.241)
dummy_sumatera	0.124***	0.0287	0.0600
	(0.0457)	(0.0562)	(0.112)
Urban	0.329***	0.329***	0.325***
	(0.0309)	(0.0309)	(0.0310)
int_bali_urban	0.287***	0.286***	0.280***
	(0.0653)	(0.0652)	(0.0654)
int_sum_urban	-0.120**	-0.117**	-0.113**
	(0.0550)	(0.0550)	(0.0554)
int_kal_urban	-0.507***	-0.464***	-0.456***
	(0.106)	(0.106)	(0.106)
int_sul_urban	0.295***	0.245**	0.251**
	(0.0989)	(0.100)	(0.101)
Male	0.384***	0.340***	0.342***
	(0.0196)	(0.0248)	(0.0248)
int_male_bali		-0.0814	-0.0933
		(0.0606)	(0.0609)
int_male_sulawesipap		0.297***	0.288***
		(0.0928)	(0.0947)
int_male_kalimantan		0.400***	0.383***
		(0.105)	(0.106)
int_male_sumatera		0.151***	0.150***
		(0.0519)	(0.0526)
years_educ	0.0796***	0.0798***	0.0833***
	(0.00332)	(0.00332)	(0.00396)

int_bali_educ			-0.0181*
			(0.00961)
int_sum_educ			-0.00287
			(0.00782)
int_kalimantan_educ			-0.0195
			(0.0163)
int_sulawesipap_educ			-0.00957
			(0.0148)
Age	0.0873***	0.0874***	0.0873***
	(0.00595)	(0.00594)	(0.00594)
age_squared	-0.00114***	-0.00114***	-0.00113***
	(8.00e-05)	(8.00e-05)	(8.00e-05)
Experience	0.0847***	0.0846***	0.0845***
	(0.00408)	(0.00407)	(0.00407)
experience_squared	-0.00170***	-0.00170***	-0.00170***
	(0.000139)	(0.000139)	(0.000139)
Private	-0.129***	-0.139***	-0.143***
	(0.0298)	(0.0299)	(0.0300)
Casual	-0.800***	-0.810***	-0.813***
	(0.0438)	(0.0439)	(0.0440)
Unpaid	-0.403***	-0.417***	-0.418***
	(0.0911)	(0.0910)	(0.0910)
dummy_manufacture	0.246***	0.245***	0.244***
	(0.0258)	(0.0257)	(0.0258)
dummy_service	0.251***	0.249***	0.248***
	(0.0234)	(0.0234)	(0.0234)
Constant	13.26***	13.30***	13.26***
	(0.116)	(0.117)	(0.119)
Observations	13,262	13,262	13,262
R-squared	0.256	0.258	0.258

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

From interaction parameter between dummy region and male, we found that men in Sulawesi-Papua, Kalimantan, and Sumatra earn higher annual wage compared to women; On average, men get 34 percent to 38 percent annual wage higher than women, and this gender-region interaction is significant in those 3 regions. In the regional context, in some regions such as eastern Indonesia such as Sulawesi and Papua, men earned 40 percent annual wage higher than women. This confirmed the earlier table that men earns more than women do in a regional context. However, we found this is not the case in Bali, as men get 8 percent lower annual income than women.

On the other hand, from the interaction parameters between the dummy regions and urban areas, we investigated worker in urban areas earned 30 percent more annual wage than workers in rural areas. Urban areas in Bali and Nusa Tenggara earned more income 20 percent higher than in rural areas, in which they are supported by the service sector. While interaction parameter between education and dummy region insignificant, we found that only Bali region had a significant effect. Since this paper only used OLS regression method, we should be aware of endogeneity problem and omitted variable bias. Due to the limitation of IFLS data, we are not able to identify control variables and any other variables which could contribute to annual wage level, such as workers' ability. Further robustness check should be conducted for future work.

Based on our result and conclusion, there are several policy lessons on inequality across the region in Indonesia. First, urban-rural wage gap, especially in east part of Indonesia, is still high, and one of the factors is wage inequality. For similar job sector in urban and rural, there should be similar wage level. Second, the government should assure there is gender equality in the labor market in order to reduce wage inequality between male and female workers. Third, in a broader perspective, rural development should be one of development planning priority in the future.

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LOWER REGIONAL INEQUALITY AND HIGHER JOB CREATION THROUGH FOREIGN DIRECT INVESTMENT

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ABSTRACT

Economic disparities among individuals and regions is a major problem in many developing countries including Indonesia. Although in national level, the economy grows quite high, but the benefits are not equallly distributed. This can be seen from the Gross Regional Domestic Product (GRDP) in Java-Bali and Sumatera regions which reached around 80 percent of the national Gross Domestic Product (GDP) in 2016. It means that other regions only received small portions of GDP. It is hypothesized that one of the causes of regional inequality in Indonesia is unequal distribution of Foreign Direct Investment (FDI) across regions. This assumption is supported by some literature which suggest that FDI in developing countries may lead to a higher regional inequality. Based on the data, from 2015 – 2017, the realization of investment in Indonesia has been concentrated in Java island in which it contribution reached more than 50 percent while other regions have small proportion.

This study is using two main scenarios. The first main scenario uses limited sectors, while the second one uses more open sectors which is including labor intensive sectors. In addition, this study divides each main scenario into three sub-scenarios which are: (a) the additional FDI will be allocated to all region in Indonesia with proportion based on the historical data, (b) the additional FDI will be allocated mainly in Java island, and (c) when the additional FDI will be allocated equally to all region both Java and non-Java island. Also, this study assumes that there was an additional 4.5 percent of FDI comes to Indonesia in 2005, and this additional FDI would be used to each main scenario and its subscenarios. The overall scenarios use historical data of foreign and domestic investment provided by Investment Coordinating Board which are then simulated by using static Computable General Equilibrium (CGE) model.

Based on the simulation, this paper shows that if the additional FDI goes to the labor-intensive sectors with a balanced proportion between Java and outside Java, it will increase economic growth quite high accompanied by sharpest decrease in inequality among regions compared to other scenarios. In conclusion, the Government of Indonesia needs a combination of policies which is able to encourage FDI allocation outside Java and in more labor-intensive sectors. The government needs to address the issues of FDI enter to Indonesia more seriously especially the strategy of allocating FDI in each sectors and provinces. Also, according to the simulation, this study found that FDI allocated to more capital-intensive sectors tended to increase regional inequality.

Keywords: Regional disparities, foreign direct investment, domestic capital investment, Williamson Index

I. INTRODUCTION

The economic gap in income distribution between both community groups and between regions is a major problem in many developing countries including Indonesia. In case of Indonesia, although the rate of economic growth is well-maintained, but this development has so far led to a regional development imbalances. Based on the data, the gap between regions in Indonesia remains high where the national economy is still concentrated in Java-Bali and Sumatra. In 2016, more than 80 percent of Gross Regional Domestic Product (GRDP) was concentrated in these areas (see Figure 1.1).

Figure 1.1 The Distribution of GRDP by Island in 2016 (in %)

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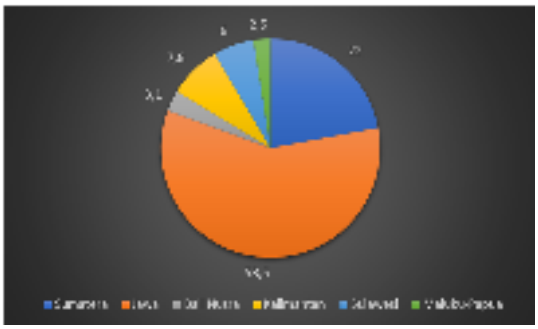

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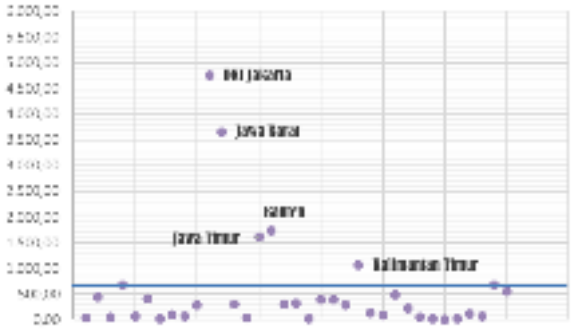
Source : *Statistics of Indonesia*

Research focusing on the regional income inequality in Indonesia is quite ample. Based on the results, investment allocation gap is one of the main determinants. During 2006 to 2015, Java island remained a dominant area for both domestic and foreign investment (see figure 1.2). Cumulatively, the realization of domestic investment in Java island reached Rp459.3 trillion or about 60 percent of the realization of domestic investment. Other areas which were relatively rich in natural resources, such as Sumatera and Kalimantan, only reached 19 percent and 14 percent. Along with the domestic investment, in terms of FDI, the realization value of FDI reached USD 188.7 billion, where 61 percent were located in Java. This also explained why the development process outside Java was relatively slower than in Java.

Figure 1.2 Average FDI Realization by Province 2006 – 2015 (USD Million)



: average national FDI realization

Based on the explanation above, it can be assumed that the benefits of FDI will be enjoyed mostly by the people living in Java. Therefore, the imbalances of investment distribution among provinces can be considered as one of the main factors causing a high level of spatial inequality in Indonesia.

Overall, this part shows a background of regional income inequality in Indonesia. Next chapter will elaborate more on literature review.

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II. LITERATURE REVIEW

In theory, investment can increase job opportunities. This is because an increased in investment will boost production process of goods and services which in turn it will absorb workforce. In addition, investment is also closely related to the economic growth of a region. An increased in number of investments entering in a region, will increase output and economic growth. This statement is based on Harrod-Domar theory of economic growth which explains a positive correlation between the level of investment and economic growth. High investment level in one region made economic growth and income levels in the area higher (Tambunan, 2001).

However, the concentration of high economic activity in a particular region will lead to inequality of inter-regional development (Tambunan, 2001). This is because the economy of regions with high economic concentrations will grow more rapid compared to regions with low levels of economic concentration.

Several studies were found to produce inconclusive conclusions. For example, research from Kanbur and Zhang (2005) examined the impact of FDI on intra-regional inequality in China. They conclude that the benefits of FDI can not be enjoyed evenly by the whole region. In another study using data from 1978 - 2006, Tian et al. (2008) proved that FDI actually reduced the level of regional gaps in China.

FDI has an effect on regional inequality in developing countries, but in developed countries there is no such pattern. Developed countries have better infrastructure readiness, transportation, a better prepared workforce. In addition, effective government and greater fiscal capacity have an important role in reallocating inter-regional resources (Lessmann, 2012).

While Mohtadi (1987) and Figini and Gorg (2006) concluded that capital-intensive investments tend to increase inequality along with greater need for skilled workers than labor-intensive. As a result, the wage gap between skilled and unskilled workers is likely to increase in more capital-intensive industries.

III. METHODOLOGY

This study will use two main scenarios where each of these main scenarios has three sub-scenarios.The first main scenario assumes that there was an additional 4.5 per cent of the FDI in 2005 entered Indonesia. FDI was assumed to be allocated in the sectors favored by foreign countries. For the second main scenario, with the same amount of FDI added, it was assumed that FDI entered labor-intensive sectors.

Three sub-scenarios in each of the major scenarios are : FDI entered all regions with the proportion of each provinces based on historical data; FDI entered dominantly to Java; FDI entered equally between Java and Non-Java. The combination of main scenarios with each of its sub-scenarios will be simulated and will then calculate the imbalance between regions generated from each scenario. A summary of six scenarios is illustrated in Table 3.1 below.

Table 3.1 Scenarios for Simulation

Main Scenario	Explanation	Sub-Scenario	Explanation
A	Status Quo	A1	Java receives 56% and Non-Java receives 44%
		A2	Java receives 56% and Non-Java receives 35%
		A3	Java and Non-Java equally receive 50%
B	FDI enters into labor- intensive sectors	B1	Jawa receives 56% and Non-Java receives 44%
		B2	Java receives 65% and Non-Java receives 35%
		B3	Java and Non-Java equally receives 50%

IV. RESULTS AND DISCUSSION

In this section, all the results will be presented.

SCENARIO A1 : SCENARIO: FDI IS SPREADED THROUGHOUT INDONESIA WITH THE EXISTING PROPORTION BETWEEN REGIONS (JAVA : 56% AND NON-JAVA : 44%)

Based on the simulation, there is an additional national economic growth by 1.65 per cent compared to baseline. This additional economic growth is mainly driven by increased GDP in resource-rich regions such as Papua and East Kalimantan provinces which reached 5.02 per cent and 3.96 per cent respectively from the baseline. These results indirectly indicate that FDI in Indonesia is still concentrated in only a few provinces, namely areas with rich natural resources.

Furthermore, with the increase in national economic performance, labor absorption increases by 0.60 per cent from the baseline. Increase in labor absorption contributes to the increased in wages, in which nominal wages of workers nationally increases by 1.66 percent. In addition, an increase in labor absorption also leads to a decreased in return on capital by 2.44 per cent from the baseline. With these figures, the inequality between income groups will decline.

In line with the decrease in inequality between income groups, this A1 scenario also causes a decrease in regional gap shown by a decrease in the Williamson Index by 0.05 percent from the baseline. This indicates that the addition of FDI in sectors that are currently in demand with the spread of the region that runs as usual will lead to a decrease in inequality between regions.

SCENARIO A2: FDI IS INVESTED MORE IN JAVA WITH THE PROPORTION OF 65%

The simulation results show that the additional economic growth from baseline of A2 scenario is equal to A1 scenario that reaches 1.65 percent. In detail, the increasing share of FDI in Java lead to a substantial increase in economic growth in all provinces in the region but result in lower economic growth in all provinces outside Java.

In addition, the addition of the FDI portion in Java to 65 percent could increase the national employment absorption by 0.59 percent from baseline or slightly lower than the A1 scenario (by 0.60 percent from baseline). This indicates that the additional FDI in Java is more capital-intensive so that although the proportion of FDI in Java is increased, the national employment increment is actually lower than the A1 scenario. This increase in the lower national employment absorption lead to an increase in the average national wage (by 1.62 percent from baseline) lower than the A1 scenario (by 1.66 percent from baseline). As in A1 scenario, the increase in FDI in Java has resulted in a 2.29 percent reduction from baseline in return on capital compared to the baseline so that this scenario also has an impact on the decrease in inequality between income groups.

Overall, this scenario will cause a decrease in the inequality between regions in Indonesia (by 0.03 percent from baseline) but with a lower decrease compared to the A1 scenario (by 0.05 percent from baseline).

SCENARIO A3: FDI IS INVESTED WITH THE SAME PROPORTION BETWEEN JAVA AND NON JAVA

In terms of economic growth, the third scenario has the same effect on economic growth with A1 and A2 scenarios (increase by 1.65 percent from baseline). Nevertheless, inequality between regions decrease greatly compared to the two previous scenarios where the

Williamson Index decreased by 0.06 percent from baseline. This indicates that by not concentrating additional investment in a certain area will reduce the inequality between regions greater.

One possible cause of concentration of FDI in certain areas is that FDI is more capital intensive and not labor intensive. Capital-intensive investments is appropriate in areas that have relatively more adequate infrastructure and a more skilled workforce. With adequate infrastructure and skilled manpower availability, the FDI will be able to boost economic growth in the region. The absence of a combination of these two factors in most parts of Indonesia especially in the eastern part of Indonesia is allegedly the cause of FDI inability to encourage higher economic growth. Therefore, another scenario is needed to achieve higher national economic growth and reduce the level of inequality between regions. The alternative scenario in this paper is the revision of the rules related to FDI in Indonesia.

SCENARIO B1 : SCENARIO: FDI IS SPREADED THROUGHOUT INDONESIA WITH THE EXISTING PROPORTION BETWEEN REGIONS (JAVA : 56% AND NON-JAVA : 44%)

In this scenario we assumed that the regulation of FDI has been revised which foreign investors could have higher opportunities to invest in labor-intensive sectors. The simulation results show that there is an additional national economic growth of 1.81 percent, compared to baseline, higher than in scenario A. Since Indonesia is a developing country and more concentrated in labor intensive industry, it is expected higher economic growth by widely open in labor-intensive sectors for FDI.

Moreover, since the economic performance is improving, employment rate is increasing by 0.63 percent, compared to baseline, higher than all in scenario A. It implies that widely open in labor-intensive industry significantly improve the job creation. Government expected in FDI inflow to labor-intensive sector in Indonesia will be able to increase job creation.

However, despite the increasing in labor absorption the increasing of nominal wage rate in all region in Indonesia is lower than in scenario A. As Indonesia is a developing country with a labor abundant issue, so the additional labor demand could be directly fulfilled with there is not significant additional income. The inequality among income groups is decreasing but in a lower level than scenario A.

Overall, this scenario will cause a decrease in regional disparities in Indonesia. It is showed by a lower rate of Williamson Index of 0.04 per cent compared to baseline.

SCENARIO A2: FDI IS INVESTED MORE IN JAVA WITH THE PROPORTION OF 65%

In terms of additional FDI invested more in Java with proportion of 65 percents and maintain the labor-intensive sectors open, the additional economic growth increase by 1.82 percent, compare to baseline, or higher than all scenarios. It is showing that Java has a bigger share of national economic growth.

The increasing of economic growth in scenario B2 will cause higher of additional in employment absorption of 0.63 percent compared to baseline. However, this additional of employment absoption is same as what is in scenario B1. This shows that by increasing proportion FDI in Java and opening labor-intensive sectors does not give a significant impact for employment absorption. This is again indicate that FDI to Indonesia is more capital-intensive and only employs an educated workforce. So even though the government has revised the FDI regulation to allow more FDI into labor-intensive sectors, the additional employment created is still marginal.

The low increase in labor absorption leads to a lower average nominal wage in each province of only 1.06 percent of the baseline. Overall of FDI concentrated in Java and the lower rate of national labor wages will lead to a lower decline in inequalities between income groups and worsening regional disparities.

SCENARIO B3: FDI IS INVESTED WITH THE SAME PROPORTION BETWEEN JAVA AND NON JAVA

The last scenario is focusing on the same proportion of FDI invested in all region in Indonesia. In additional of economic growth, this scenario gives an additional economic growth of 1.81 percent.

The additional economic growth will cause an increasing of national employment absoprtion of 0.62 percent compared to baseline. This increasing is driven by the higher level of employment absorption in outside Java. Overall, this scenario would decrease the disparities among region of 0.06 percent compared to baseline. Table 4.1 is the summary of all simulation result exercised.

In conclusion, if the government intends to increase economic growth then the scenario B is the best scenario because it could increase higher economic growth. Under this scenario B, if the government wants to combine high economic growth with the largest intergroup gap and interregional, then the B3 scenario is the best policy choice.

Table 4.1 Simulation Result of Each Scenario

	A1	A2	A3	B1	B2	B3
Additional of national real GDP growth	1.65	1.65	1.65	1.81	1.82	1.81
Additional of national employment rate growth	0.60	0.59	0.61	0.63	0.63	0.62
Additional of national average wage rate	1.66	1.62	1.67	1.08	1.06	1.10
Additional of regional disparities (Williamson index)	-0.05	-0.03	-0.06	-0.04	0.03	-0.06
Additional of average factor poduction return (Capital)	-2.44	-2.29	-2.54	-1.27	-1.21	-1.31

V. CONCLUSION AND POLICY RECOMMENDATION

Based on the analysis above, FDI to Indonesia will have an impact on economic growth, unemployment rate, and gap between regions. This is reflected in the changes in the development variables when there is an increase in the value of FDI.

It appears that the impact of higher FDI has a positive impact on economic growth and job creation. All simulation scenarios show an increase (from the baseline) in economic growth in the range of 1.65 to 1.82 percent with an additional job creation between 0.59 to 0.63 percent.

The interesting thing is that the positive benefits from the influx of FDI to Indonesia have not been distributed evenly in all provinces. This is reflected in the limited decline in the value of the Williamson Index in all scenarios. One of the reasons is that FDI entering Indonesia is still concentrated in several provinces and some sectors only. Government efforts to increase the portion of FDI outside Java also can not significantly reduce the level of regional disparities. The limited number of skilled workers and poor infrastructure is a factor in the reluctance of foreign investors to invest in a region. Looking at the portion of FDI coming into Indonesia, we can

assume that the number of skilled workers is generally found in Java and Sumatra. As a result, FDI entering these areas will boost economic performance faster than other regions.

What about the government's efforts to open a more labor-intensive sector? The results show that the impact of this policy alternative is indeed able to reduce the imbalance between regions but the value is not too large. In fact, in one scenario it is shown that the additional economic growth generated actually contributes to the gap between regions. The question now is what combination of investment policies should the government take to promote quality economic growth that is reducing inequality between regions and creating jobs?

Based on the results of the research, the combination of equity investment policy out of Java and to the more labor-intensive sectors has been able to increase economic growth, create employment opportunities, and reduce inequality among income groups and between regions. Therefore, the government need to make a commitment to look back on investment policies such as the Negative List Investment/DNI, particularly for labor-intensive sectors.

In conclusion, the government should address the phenomenon of FDI entry into Indonesia more cautiously especially in the strategy of applying additional inflows of FDI in each provinces. It is found that inflows of FDI is mostly located in some areas which are already well equipped in terms of human resource and physical infrastructure. This will lead to an imbalance among regions. Also, there is a tendency that inflows of FDI in Indonesia is more capital-intensive rather than labor intensive. Thus, the government needs to make an investment to be allocated to sectors that have not been “touched” by foreign investors.

Overall, it is hoped that the government will have policies that can support FDI such as education and training policy so that the benefits of FDI can be more equally received by all regions and society.

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BORN TO BE BROKE: INTERGENERATIONAL ECONOMIC MOBILITY IN INDONESIA

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ABSTRACT

There are thousands of rags-to-riches Indonesian soap operas, but the story is probably more prevalent in television rather than in reality. Current body of research has shown moderate intergenerational poverty persistence, but it gets worsen as it goes down the economic ladder. This means, the more chronic your parents' poverty is, the lower your chance is to move up the economic ladder, a phenomenon known as "stickiness at the ends". To some extent, it reflects the society's failure to create equal opportunity for one and all. If the immobility continues to persist, it may add more upward force to the existing increment of income and wealth inequality in Indonesia.
With the Government of Indonesia (GoI) put more interest in tackling rising inequality, study that examines economic mobility is needed. To author's best knowledge, this is the first study to address this issue. Utilizing longitudinal data from the Indonesian Family Life Survey (IFLS) 1 and 5, the first aim of this study is to observe interquartile economic mobility transition across generations in Indonesia using transition matrix and parent-child income elasticity. The second purpose is to find enabling environment for higher economic mobility and ultimately put an end to the rising divide in Indonesia. In addition to common earning function variable, this study also puts interest on innate factors such as gender, which require government intervention to shatter the "glass ceiling" in economic ladder. From the analysis, it is found that Indonesia has a relatively high intergenerational economic mobility, with elasticity of 0.20. On enabling environment, it is found that higher educational attainment, being male, being married, possession of savings, living in urban, and higher ease of doing business is significantly increase intergenerational economic mobility. Children's employment sector is also a significant factor for intergenerational economic mobility. Understanding the enabling environment will provide insight for GoI in formulating appropriate policies to promote higher intergenerational economic mobility.

Keywords: Intergenerational Mobility, Inequality, Indonesia, Regional Disparities, Policy

INTRODUCTION

Story on how a child from a poor family end up being successful is a very common soap opera storyline, including in Indonesia. There are thousands of rags-to-riches Indonesia soap operas, but whether the story in reality is as prevalent as in television is a question which has grabbed the attention of many economists. To this day, economists are still trying to measure to what extent a child can exceed their parents' socioeconomic condition in relative to their peers, or more commonly called as intergenerational economic mobility.

The interest in understanding intergenerational economic mobility is increasing at the moment. Existing literatures indicated that there is connection between intergenerational economic mobility with income inequality. Higher intergenerational economic mobility is often associated with lower income inequality (Bloome & Western 2011; Blanden 2009; Aaronson & Mazumder 2008). As income

inequality is heavily scrutinized, more deliberation on intergenerational economic mobility is nothing but natural and inevitable.

Up to this day, most literatures on intergenerational economic mobility focus on how to measure the mobility and see the trend, whether across time and/or countries. As economists are now reaching mutual agreement on how to measure the mobility, the discussion on intergenerational mobility is now entering a new phase – discussing on factors that affect intergenerational economic mobility. So far, most literatures focus on educational attainment of the children as the driving force (Sirniö, Martikainen, & Kauppinen 2013; Lucas & Kerr 2013; Blanden, Gregg, & Macmillan 2007; Restuccia & Urrutia 2004), as it is easy to explain the economic intuition underlying the relationship between the two of them. However, most people are likely to agree that there are far more determinants of intergenerational economic mobility. Further research in this topic is crucial to better understand how to enable more upward intergenerational economic mobility, and at the end, tackle the issue of inequality.

This paper aims to fill the existing research gap of intergenerational economic mobility determinant, especially in Indonesia. As the Government of Indonesia (GoI) put more interest in tackling rising inequality, study that examines determinant of intergenerational economic mobility in Indonesia is needed. The rest of the paper is structured as followed: Section II will review existing literature on intergenerational economic mobility, Section III will discuss the methods employed in this paper for analysis, Section IV will discuss the data used in this paper, Section V will elaborate the findings from the analysis, and lastly Section VI will provide the conclusion from this paper.

LITERATURE REVIEW

Economic mobility across generation or intergenerational mobility (IGM) refers to mobility of individuals to attain better (or worse) socioeconomic condition, e.g. income, wealth, education attainment, in comparison to their previous generation. In other words, to what extent do individuals "inherit" their socioeconomic status (Corak & Heisz 1995). Like many others development-related phenomenon, economic IGM can be interpreted in two ways: absolute and relative.

Absolute IGM refers to the extent current individuals' socioeconomic condition has changed in respect to their respective predecessor. On the other hand, relative IGM refers to the extent current individuals' socioeconomic condition in relative to their peers has changed in respected to their respective predecessors' socioeconomic condition in relative to their peers. This paper will put more focus on the later kind of IGM as it provides more insight for further discussions on income inequality.

Current body of literatures utilized two complementary ways to measure the extent of IGM, which are by constructing transition matrix relating the child's position in the income distribution (as an adult) to the parent's position (at the time the child was being raised), and by estimating the correlation between child and parent income.

Table 1. Transition matrix of intergenerational economic mobility in Canada

Quartile		Sons			
		Bottom	Second	Third	Top
Fathers	Bottom	0.325	0.296	0.221	0.158
	Second	0.258	0.274	0.259	0.209
	Third	0.220	0.237	0.268	0.275
	Top	0.197	0.193	0.252	0.358

Source: Corak and Heisz (1999)

Table 1. serves as an example of the first approach, transition matrix constructed by Corak and Heisz (1995). The diagonal element of the matrix indicates the probability of sons maintain their father's position in the income distribution. When there is equal opportunity for mobility, the elements of the matrix should be close to 0.25. As exemplify by the table, the elements of the matrix tend to be highest on the both end of the diagonal, a phenomenon known as "stickiness at the ends" (Urahn et. al. 2012).

The second approach was based on model constructed by Becker and Tomes (1979). In this approach, children's income is expressed as a function of their parent's (father's) income (generally measured in logarithms). The standard model is as follow:

$$Y_{i(t)} = \beta_0 + \beta_1 Y_{i(t-1)} + \varepsilon_i$$

where $Y_{i(t)}$ is the child's income, $Y_{i(t-1)}$ is the parent's income, and β_1 denotes the intergenerational income elasticity. Higher value of the elasticity means parent's income is much more detrimental for child's income. Thus, higher value the elasticity can also be seen as lower IGM. Numerous literatures have tried to estimate the elasticity and found it varies between countries and timeframe. Becker & Tomes (1979) founds that in USA, the elasticity is 0.2. On the other hand, Bratber, Nilse, & Vaage (2005) found the elasticity is only around 0.11 – 0.15 in Norway, while Lefranc, Ojima, & Yoshida (2014) found it is 0.35 in Japan. Based on international evidence gathered by Solon (2002), the elasticity varies between 0.11 until as high as 0.57, while Blanden, Gregg, and Machin (2005) found it varies between 0.14 and 0.29 for Europe and North America.

After decades of trying to estimate the extent of intergenerational economic mobility (through the elasticity), the current trend is to find the factors behind the intergenerational economic mobility. Several variables have been nominated as the driver for intergenerational economic mobility. Amongst other, the most prominent and commonly used one is education attainment of the children. It is safe to say that there is a consensus that better education attainment of the children results in higher intergenerational economic mobility (Sirniö, Martikainen, & Kauppinen 2013; Lucas & Kerr 2013; Blanden, Gregg, & Macmillan 2007; Restuccia & Urrutia 2004). The reason is very intuitive – higher education attainment will allow the children to have better opportunities and thus perform better than their parents.

Other literatures have tried to explore other variables which may affect intergenerational economic mobility. Western (1994) and Titma, Roots, & Soidla (2010) have found sex of the children affect the intergenerational economic mobility – both of the literatures found that women in most cases are less mobile than men. Other than sex, which industry the children worked also affect the mobility (Lefranc, Ojima, & Yoshida, 2014). Furthermore, possession of saving by the children is also associated with higher mobility (Urahn et. al. 2012; Keister & Deeb-Sossa 2001).

Not only the child's characteristics, the characteristics of the household the child grew up also affect the mobility. The characteristics include the number of children in the family (Peters 1992; Kesiter 2007) and whether the family is migrant or not (Borjas 1993). More number of children has been associated with lower mobility (Peters 1992; Keister 2007; Keister 2003). On the other hand, migration's impact depends on the similarities between the skillset needed in the origin and in destination as origin's economy is detrimental to the migrant's children (Borjas 1993).

The environment of the children's household is also found as the drivers of intergenerational economic mobility. Fox & Miller (1965) found that there is a gap in mobility between urban and rural, with urban is found as a more suitable environment to prevent children from moving down. In addition to urban-rural, the economy where the children reside also affect the intergenerational economic mobility. Better economic development, as almost all people guess, is more preferable for higher intergenerational economic mobility (Olivetti & Paserman 2015).

Although there has been myriad of literatures on intergenerational economic mobility, there has been yet that focused on Indonesia. To author's best knowledge, the closest one is done by Pakpahan, Suryadarma, & Suryahadi (2009) on intergenerational poverty persistence. The study shows moderate intergenerational poverty persistence, but it gets worsen as it goes down the economic ladder – consistent with the common "stickiness at the ends" phenomenon. However, the study only focus on intergenerational poverty persistence, not intergenerational economic mobility. The absence creates a gap that worth to fill, especially noting the fact intergenerational economic mobility is related to inequality, topic which Government of Indonesia has put more interest on. Furthermore, there is still rather limited amount of research on determinants of intergenerational economic mobility, especially on factors which is more in control by government, such as quality of infrastructure and ease of doing business. Research on such topic will provide insight to government on what intervention needed to shatter the "glass ceiling" in intergenerational economic mobility, and at the end, tackle the issue of inequality.

METHODOLOGY

As described in the previous section, we employ at least three different methodologies to examine intergenerational economic mobility in Indonesia. For both transition matrix and parent-child income regression, the proxy used is the sum of two variables: net salary including all benefits and net profit during the past year. Solon (1998) has raised the problem of possible bias due to the use of single-year measure of income, which is a short run proxy. It is encouraged that the analysis of intergenerational mobility is done with the use of permanent income. Consequently, subsequent studies use the average of multiple-year income, which is currently unavailable in the IFLS. For the transition matrix, we determine parent and child's position in their respective income distribution by applying income cut-off points from Sakernas (Labor Survey) data in 1993 and 2014. This is a way to make sure that the obtained economic position follows the population distribution.

Next, the standard model constructed by Becker and Tomes (1979) is employed to obtain the elasticity of child's income over his parent's income. The equation is:

$$Y_{i(t)} = \beta_0 + \beta_1 Y_{i(t-1)} + \varepsilon_i \qquad (1)$$

where $Y_{i(t)}$ is the child's annual income, $Y_{i(t-1)}$ is the parent's annual income, and β_1 denotes the elasticity. The third and final stage aims to find the determinant of economic mobility with the equation as follows:

$$y_i = \beta_0 + \beta_1 CC_i + \beta_2 HHC_i + \beta_3 HHE_i + \varepsilon_i \qquad (2)$$

where

- y_i = intergenerational economic mobility status: 0 = stay or move down to lower quartile, 1 = move up one quartile, 2 = move up 2 quartiles or more;
- CC_i = a set of child characteristics in 2014, including age, sex, marital status, education level, employment sector, migration status, and liquid assets;
- HHC_i = a set of child's household characteristics in 2014, including the number of children below 6-year-old, number of children between 6 and 15-year-old, number of adult above 55-year-old, and household size;
- HHE_i = a set of household environment variables, including location (urban/rural), unemployment rate on province level, electricity rate, infrastructure index, and Ease of Doing Business (EoDB).

Some of the above explanatory variables are following the work of Alisjahbana & Yusuf (2003). Employment sector is a categorical variable with 1=Extractive, 2=Manufacturing and utilities, 3=Construction and transportation, and 4=Trade and services. Likewise, education level is the last education completed with 1=Less than Primary School, 2=Primary School, 3=Junior High School, and 4=Senior High School or higher. Liquid assets are the sum of child's liquid assets adjusted for household size in natural logarithm. Household environment variables such as electricity rate, infrastructure index, and EoDB are generated from the IFLS' community survey. Infrastructure Index and Ease of Doing Business (EoDB) are generated from several variables which ask respondents' perception on whether there is an improvement in particular public services and infrastructures compared to 2007. To check the model's robustness, we also use logit estimation with dependent variable being 1 if the child moves up the ladder and 0 if otherwise.

DATA

The analyses in this study mainly use data from the Indonesian Family Life Survey (IFLS) wave 1 and 5. It is the only large-scale longitudinal survey currently available in Indonesia with a sample of more than 30,000 individuals living in 13 provinces. The survey was designed to be representative of about 83% of Indonesian population and first conducted in 1993. Households participating in the first survey were then recontacted to take part in the other upcoming rounds of interviews (1997, 2000, 2007, 2014). In IFLS 5 (2014), the recontact rate for both dynasty and targeted individual households are 92.0% and 90.5% respectively. The latter has also included individuals who participated in the past interviews but later split off from their original households. This quality makes IFLS the most fitting data available to observe intergenerational economic mobility in Indonesia. Furthermore, we also use unemployment rate data on province level in 2014 from Statistics Indonesia.

The sample in this study is limited to households in 1993 that had child (or children) under 18-year-old as a family member. The real pair of biological parent and child accounted for 88.8% of total sample. The rest 11.2% are pairs of parents and their related children, such as grandchildren and step-children. Our final sample consists of 4,136 observations. In order to decrease possible bias in the sample, the child's weight in 2014 is applied in the estimation.

FINDINGS

Table 2 shows transition matrix for Indonesian case. The number in the left diagonal is the likelihood that a child will inhabit his/her parent's position in the income distribution. The number above the

diagonal represents the probability of moving up the ladder, while the number below represents the opposite. A perfect economic mobility is reached if each number in the matrix equals to 0.25. Nevertheless, this is clearly not the case for Indonesia. The numbers in the two extremes are notably larger, pointing to less mobility at the top and bottom of the distribution. A child born to a parent at the bottom of the distribution is likely to stay in the same rank as her parent when he/she reaches adulthood. The case is similar with a child born to a parent at the top of distribution, only with a higher probability. Both confirm the existence of "stickiness at the ends".

Table 2. Transition matrix of intergenerational economic mobility in Indonesia

Quartile		Sons			
		Bottom	Second	Third	Top
Fathers	Bottom	0.40	0.19	0.18	0.22
	Second	0.35	0.17	0.18	0.29
	Third	0.30	0.16	0.15	0.39
	Top	0.23	0.13	0.16	0.47

Source: IFLS 1 and 5, calculated by author

In comparison to other countries, Indonesia is doing a slightly better job than United Kingdom. According to Atkinson (1980), 44% of children born to parents at the bottom were unable to move to a higher quartile. Meanwhile, half of those born to parents at the top stayed at the top. For the United States, stickiness at the ends is less showing at the top with a probability of 40% (Peters, 1992). The phenomenon is relatively imperceptible in Canada, with only around one third probability in the two extremes (Corak, 1999).

Estimation of equation (1) found that Indonesia parent-child elasticity is only 0.20. Looking at international evidence, Indonesia has a rather moderate intergenerational mobility, as our elasticity is slightly lower than Malaysia, Canada, and Japan – 0.26, 0.23, and 0.35 respectively, while quite higher than German, Finland, and Swedia – 0.11, .13, and 0.14 respectively (Lefranc, Ojima, & Yoshida 2014; Bladen, Gregg, & Machin 2005; Solon 2002).

The estimation result for equation (2) is provided in the Table 3. On the child characteristic as an adult, type of gender matters in determining whether the person is able to climb the ladder. Females would expect around 0.92-0.97 decrease in the log odds of being in a higher level of economic mobility compared to males, given all other variables are held constant. Furthermore, a married person is more likely to move to a higher quartile. Around 50% of the married people in the sample is reported to have a spouse who is also working. Having said that, it is expected that the positive correlation is due to the presence of dual-earner in the household.

On education level, those graduated from Primary School, Junior High School, and Senior High School or higher have greater odds of moving up compared to those dropping out of Primary School or no schoolings. Nevertheless, the effect is stronger for PS and JHS since people completing SHS or higher could already be at the top quartile, and so were their parents. Those graduated from PS and JHS probably had parents at the bottom or middle quartiles, thus providing them space to move up. Likewise, people employed in sectors other than extractive have a greater possibility to climb the ladder. Manufacturing and utilities sector, however, displays the strongest effect compared to the other sectors. For liquid assets, a one unit increase in the variable will generate around 0.30 increase in the log odds of being in a higher level of mobility. This positive relationship hints the importance of savings since it makes up the largest portion in liquid assets.

On household characteristic, only the presence of adult with age above 55-year-old shows negative, significant relationship with the dependent variable. The presence of both children and elder is widely taken as a 'burden' in economic context, thus making the negative relationship reasonable. It is interesting to see positive relationship in most estimations for the presence of children between 6 and 15-year-old. Despite being insignificant, it is worth a second look at the issue of child labor as it might serve a part in the explanation.

On household environment variables, people living in urban area are at advantage only when electricity rate, Infrastructure Index, and EoDB are included as control variables. Out of the three, only EoDB seems to be positively and significantly correlated with a higher level of economic mobility. This variable gives scores to the improvement in acquiring building and business license in community level, that is lower than district level. Infrastructure Index, however, shows an unexpected sign. This direction in coefficient persists even when we change the index to be based on adequacy level. Even though it is not significant, possible explanation includes the construction of infrastructure that more benefitted people at higher income quartiles.

Table 3. Regression Table

Dependent variable: Mobility (Ordered logit: 1=stay/move down, 2=move up one quartile, 3=move up two quartiles/more); Logit: 1=move up, 0=otherwise)

	Ordered Logit		Logit	
	Without Policy	With Policy	Without Policy	With Policy
Child's characteristic				
Age	-0.016	-0.009	-0.017	-0.011
	(-1.79)	(-0.79)	(-1.79)	(-0.87)
Sex (0=male, 1=female)	-0.961***	-0.966***	-0.928***	-0.920***
	(-10.28)	(-7.29)	(-10.17)	(-7.13)
Marital status (1=married, 0=unmarried)	0.509***	0.446**	0.454***	0.385*
	(4.27)	(2.98)	(3.56)	(2.45)
Education level				
Primary School	0.399*	0.762**	0.369*	0.717**
	(2.28)	(2.90)	(2.00)	(2.63)
Junior High School	0.526**	0.687**	0.484**	0.673*
	(3.08)	(2.65)	(2.67)	(2.50)
Senior High School or higher	0.335*	0.624*	0.311	0.654*
	(2.04)	(2.49)	(1.78)	(2.51)
Employment sector				
Manufacturing and utilities	1.464***	1.661***	1.531***	1.765***
	(11.07)	(9.38)	(10.74)	(9.18)
Construction and transportation	0.470**	0.636**	0.436**	0.637**
	(3.05)	(3.09)	(2.82)	(3.11)
Trade and services	0.577***	0.661***	0.609***	0.697***
	(4.99)	(4.22)	(5.15)	(4.39)
Migration status (1=migrated, 0=didn't migrate)	0.159	-0.270	0.083	-0.257
	(1.29)	(-1.32)	(0.66)	(-1.15)
Liquid assets	0.028***	0.035***	0.023***	0.026*
	(4.82)	(4.26)	(3.72)	(3.04)
Household characteristic				
Number of children below 6-year-old	-0.126	-0.128	-0.118	-0.123

Table 3. Regression Table

Dependent variable: Mobility (Ordered logit: 1=stay/move down, 2=move up one quartile, 3=move up two quartiles/more); Logit: 1=move up, 0=otherwise)

	Ordered Logit		Logit	
	Without Policy	With Policy	Without Policy	With Policy
	(-1.92)	(-1.35)	(-1.73)	(-1.25)
Number of children 6 to 15-year-old	-0.000	0.033	0.015	0.079
	(-0.00)	(0.43)	(0.25)	(1.00)
Number of adult above 55-year-old	-0.109*	-0.097	-0.099	-0.074
	(-1.96)	(-1.39)	(-1.76)	(-1.06)
Household size	-0.020	-0.000	-0.023	-0.015
	(-0.90)	(-0.01)	(-1.03)	(-0.54)
Household environment				
Location (1=urban, 0=rural)	0.114	0.316**	0.088	0.306*
	(1.34)	(2.74)	(0.99)	(2.52)
Unemployment rate on province level	-0.006	-0.016	-0.023	-0.037
	(-0.37)	(-0.67)	(-1.39)	(-1.52)
Electricity rate		0.003		0.004
		(0.56)		(0.70)
Infrastructure index		-0.026		-0.016
		(-0.20)		(-0.12)
EoDB		0.272**		0.223*
		(2.82)		(2.24)
Constant			-0.205	-2.323*
			(-0.50)	(-2.56)
Observations	3,704	2,006	3,704	2,006
Pseudo R-squared	0.060	0.067	0.077	0.087

t statistics in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Note: Stay/move down is the comparison group

DISCUSSION AND CONCLUSION

Using IFLS 1 and 5 data, we find less economic mobility at the top and bottom distribution of income in Indonesian case—usually referred as "stickiness at the ends". We are doing slightly better than the United Kingdom in 1980s, comparable with the United States but worse than Canada in 1990s. Similarly, doing estimation on autoregressive model of child's income with respect to parent's income generates an elasticity of 0.20 which is quite moderate number, noting that the international evidence varies between 0.14 until 0.29 (Blanden, Gregg, & Machin 2005). Both findings indicate violation to the notion that there is an equal opportunity for everyone to achieve prosperity. In fact, how well (economically) a person is doing in life is affected significantly by the parents' (economic) circumstances. This finding has definite implications to poverty, whereas a child born to poor parents is likely to stay poor when he/she reaches adulthood.

We find gender issue in the intergenerational mobility context, in which females are less likely to climb the ladder compared to males. The presence of dual-earner and liquid asset also plays a significant role in increasing the probability of moving up to higher quartiles. Education level remains a significant factor for moving up, but the strongest effect comes from being employed in manufacturing and utilities sector. It implies the importance of reviving Indonesia's manufacturing sector in the midst of

the country's early deindustrialization claim. On the external factors, an improvement in the ease of obtaining building license and business permit in the community matters more for economic mobility compared to infrastructure.

Since this study is the first attempt to estimate intergenerational economic mobility in Indonesian context, a room for improvement is definitely existent. It is mentioned in the previous section that a bias might be present from using single-year measure of income as a proxy for permanent income. While the IFLS 1 took records of annual income in the preceding 5 years, the question is omitted on the IFLS 5. It is worthy to carry out the study nonetheless. In addition, the analysis has not included the insight on the relationship between economic mobility and inequality in subnational level. Regions with higher gini ratio usually suffer from less economic mobility as depicted in "the Great Gatsby Curve". With the IFLS covering 13 Indonesian provinces, the analyses should be doable.

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DEVELOPMENT OF INDONESIA'S TOURISM SECTOR FOR A QUALITY GROWTH : A SOLUTION?

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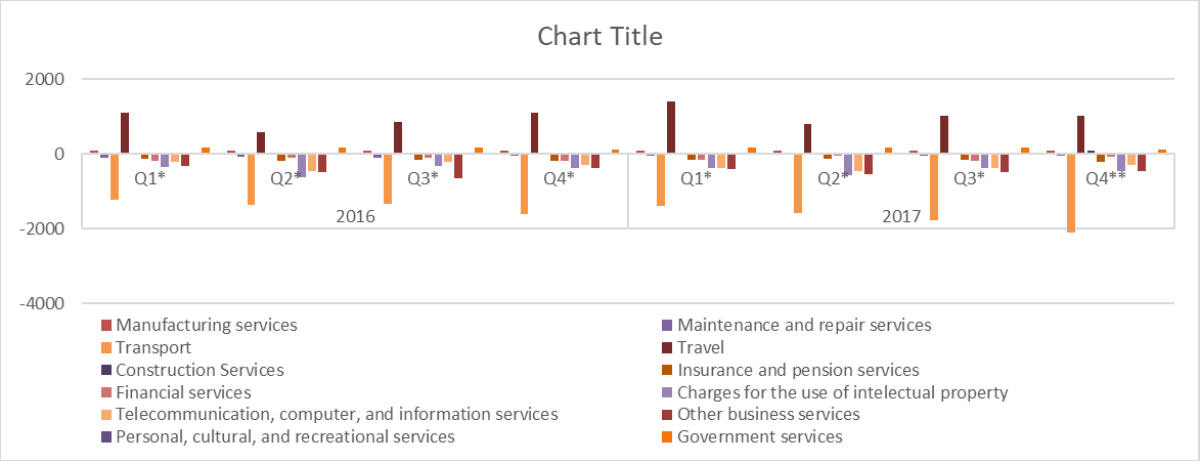
In the period 2010-2016, the number of foreign tourists coming to Indonesia increased rapidly from 7 million people in 2010 to 10.9 million in 2016 or increased by 55 percent within 7 years. The increasing in number of foreign tourists was also accompanied by an increase in foreign exchange from the travel services sector by 48 percent during the period. In developing this promising sector, the government, through the Ministry of Tourism, conducts promotional efforts, in particular 10 priority marketing destinations and development destinations for 10 new Tourism Destinations priority to achieve the target of 20 million foreign tourists set in the RPJMN 2014-2019. This study uses the Indoterm CGE model to see the impact of the development of tourism sector in Indonesia on the Indonesian economy, such as GDP, investment, and export, as well as the impact on factor price production in priority destination areas, both marketing and development priorities. The scenario of Indonesia's tourism development by the government is carried out in three ways, firstly the efforts of tourism development is only done through the promotion of tourism destinations in Indonesia, secondly developing the tourism sector is only done with the development of tourism infrastructure in the new destinations, and thirdly developing tourism infrastructure and promoting of Indonesian tourism destination is done simultaneously. The results of this study indicate the development of tourism sector can not only be done through one side. Promoting destinations and developing tourism infrastructure in tourism destinations should be carried out simultaneously in developing Indonesia's tourism sector. In addition, this study suggests that the development of the tourism sector is a trade-off of other sectors in Indonesia, especially the manufacturing sector.

Keywords: Tourism, CGE, inequality, growth, priority destinations

Introduction

Indonesia's service account performance is still experiencing a deficit contributed by the large deficit of transportation services. However, the opportunity to narrow the deficit can be achieved by developing the tourism sector. Among the three sectors that contribute positively to Indonesia's services account, travel services are the largest contributors, followed by communications and construction services, while the other seven services sectors are in deficit.

Figure 1. Trade Balance of Services (Million USD)



Source: Bank Indonesia

The developing of tourism sector affects many other economic sectors such as accommodation, restaurants, tour guides, artists, trade, transportation, travel agencies and other services. Pendit (1994) states that the tourism sector is also spurring to contribute to the implementation of projects in various sectors in developed and developing countries. Some projects related to the development of tourism include the construction of roads, airports, ports, sanitation and health programs which aim to provide comfort for tourists. In addition, the tourism sector also contributes the most to foreign exchange exports, creating jobs, and business opportunities for countries or regions that are

able to attract tourists. Therefore, tourism activities can generate significant economic value in the economy.

Table 1. The Role of Tourism Sector to Indonesia's GDP 2015

Component	Unit	C	G	I.	X	M	Total
Tourism	Trillion Rp	231.9	8.7	146.6	175.7	97.7	**465.2**
National GDP	Trillion Rp	6.477.6	1.124.8	3,782.1	2,439.1	2,389.6	**11.434.0**
Tourism Contributions	Percent	3.58	0.78	3.88	7.20	4.09	**4.1**

Source: National Tourism Satelite Account (Nesparnas) of 2016

The number of foreign tourist arrivals in Indonesia are in increasing trend, from 7.0 million in 2010 to 10.9 million in 2016 or grow by 55.7 percent. The development of this number of visits directly affects the tourism revenue. In 2010 tourism revenues reached USD 7.6 billion, in 2016 the number is increased by about 48.7 percent to 11.3 USD billion. Looking at these opportunities, the Government of Indonesia is committed to boosting the tourism sector. In the RPJMN 2015 - 2019, priority programs to develop the tourism sector are through the development of tourist destinations and tourism promotion. The development of destinations includes the development of tourist attraction, infrastructure asset build-up, provision of public tourism facilities, and community empowerment.

Table 2. Target of Foreign Tourists, Priority Destinations of Tourism Development, and Priority Destinations of Tourism Marketing 2015 - 2019

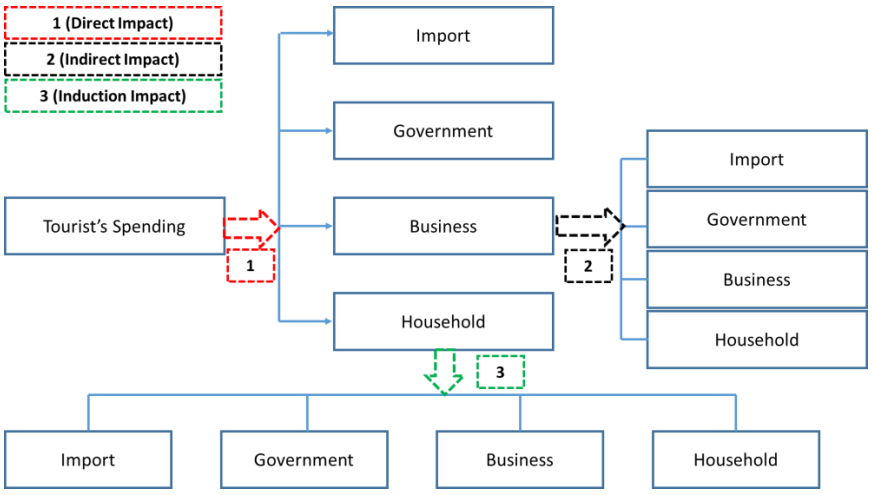
	2015	2016	2017	2018	2019
Target of Foreign Tourists (Million People)	10.2	11.5	15.0	17.0	20.0
Priority Destination Development	Danau Toba; Tanjung Kelayang; Tanjung Lesung; Kepulauan Seribu; Greater Borobudur area; Bromo-Tengger-Semeru; Mandalika-Lombok;Labuan Bajo-Flores; Wakatobi; Morotai				
Priority Tourism Marketing	Bandung; Greater Bali area; Greater Jakarta area; Greater Riau Island; Joglosemar (Jogja, Solo, and Semarang); Wakatobi; Bunaken; Raja Ampat; Medan; Makassar, Lombok, dan Banyuwangi.				

Owing to the fact that the tourism is a strategic sector to the national economy, it is necessary to prepare an analysis of the potential impact of tourism development to encourage a quality growth. The main objective of this study is to create a comprehensive analysis so that it can provide input for tourism development planning in the future.

Literature Study

In figuring the impact of the tourism sector, usually researcher using tourist expenditure in a tourist attraction as a proxy. The increase in expenditure will have an impact on sales, profit, taxes, and people's income in an area that is used as tourism object. Meanwhile, the sectors that have the greatest impact are those directly related to tourism, such as hotels, restaurants, transportation, entertainment and trade (Ardahaey, 2011). In general, the impact of tourism is divided into three, namely *direct effect* , *indirect effect* , and *induced effect* . Ennew (2003) describes the impact in the diagram as below:

Figure 4 . Tourism Impact



Source: Ennew (2003)

Direct Impact : the expenditure of tourists will have a direct impact on income for business entities that provide goods and services which directly enjoyed by tourists (eg Hotels and Restaurants), income for households working in the tourism sector, revenue for the government through entertainment and recreation tax as well as taxes related to other tourism sectors. One thing to be aware of, tourists can also consume goods and services obtained through imports (such as imported food and beverages, hotel expat staff salaries) and result in the outflow of the domestic economic system through imports (Ennew, 2003).

Indirect Impact : After earning revenue, the government, households, and especially business entities, will spend their revenues to provide inputs of goods and services required by travelers. The existence of these expenditures will have an impact on continued revenues for governments, households and other business entities, as well as the possibility of imports.

Impact of Induction: The existence of income from the tourism sector, not all of them are spent back to buy goods and services related to the input of tourism sector. Some income will be spent on other consumption. The existence of these expenses will provide additional for other sectors in the economy.

The total of direct impacts, indirect impacts, and induced impacts is referred to as the Total Economic Impact of the tourism sector. The Total Economic Impact is illustrated in an increase or decrease in gross expenditure or income, income, labor, and added value (Ardahaey, 2011). Some studies illustrate the impact of an increase in tourist spending, especially foreign tourists , will have an impact on the growth of a country's economy and the imbalance between countries and or territories within a country (Kweka, 2004; Blake & Arbache, 2006; McCatty & Serju, 2006; Proenca & Soukiazis, 2008; Wattanakuljarus & Coxhead, 2008; Cerovic, *et al* , 2015).

However, the positive impact on the development of tourism destinations hinges on many factors and it is also worth mentioning that there are debates whether tourism development will *crowd out* development progress of other sectors that have export competitiveness and require the same imported goods as the tourism sector (Dwyer, *et al* , 2010).

"*Unless there is significant excess capacity in tourism-related industries, the primary effect of an economy-wide expansion in inbound tourismis to alter the industrial structure of the economy rather than to generate a large increase in aggregate economic activity. Its effect will thus showup as a change in the composition of the economy rather than as a net addition to activity* (Adams & Parmenter, 1991 in Dwyer, *et al*, 2010)".

Methodology

This study uses the Computable General Equilibrium (CGE) model to calculate the impact of the development of tourism sector on the Indonesian economy, especially the gap between regions. In this model, tourism policy is defined into three separate interventions: (i) increase of foreign tourist expenditures as a result of tourism promotion activities (demand- side improvements), (ii) increased tourism investment through development tourism infrastructure in sectors related to tourism activities (supply side) and lastly; (iii) a combination of both (through promotion and investment, simultaneously).

Sectoral shocks are defined based on foreign tourist expenditure classification. The largest chunk foreign tourists expenses are hotels and restaurants costs (67.1 percent), the trade sector (13.72 percent), land transportation costs (5.71 percent), railway transportation costs (3.21 percent), and air transportation (2.27 percent). As such, the sectors that are included in the shocks are: (i) restaurants and hotels, (ii) trade, (iii) land transportation, (iv) rail transportation, (v) air transport, and (vi) others.

Table 3. Foreign Tourist Spending Structure (2016)

No.	Sector	Proportion of Tourist Total Expenditures (%)	Notes
1.	Restaurant and Hotel	67.1	Accommodation, food and beverage, and entertainment
2.	Trading	13.72	Souvenirs and shopping
3.	Land transportation	5.71	The assumption uses a proportion of 0.64
4.	Railway Transportation	3.21	The assumption uses a proportion of 0.36
5.	Air transport	2.27	
6.	Others	7.98	Local tour packages, cruises, health

Source: National Tourism Satelite Account (Nesparnas) of 2016

In this model, there are 10 provincial groups which consists of government tourism priority areas: (i) Western Sumatera, (ii) Eastern Sumatera, (iii) North-West Java, (iv) Eastern Java, (v) Northern Sulawesi, (vi) Southern Sulawesi, (vii) Bali, (viii) Nusa Tenggara, (ix) Maluku, and (x) Papua.

Interventions on the above mentioned sectors and the provincial group are based on the assumptions that the increase of foreign tourist arrivals to Indonesia will increase foreign tourists spending and investment. The magnitude of the increase in expenditure and investment in both the sector and provincial groups are proportional to the percentage increase in the number of foreign tourists arrivals to Indonesia.

Three scenarios are conducted to see the impact of tourism promotion and the development of these destinations:

- *Scenario 1:* The government conducted only promotion activities in the 10 provincial groups where priority destinations are located. This will increase the number of foreign tourist visits and expenditures and will be illustrated through increased exports of the Hotel and Restaurant sector, Trade, Land Transportation, Rail Transportation and Air Transportation
- *Scenario 2:* The government conducted only tourism destinations development in the 10 provincial groups. In this scenario, there will be no increase in foreign tourist expenditure but there are exists increase of investment in Hotel and Restaurant sector.
- *Scenario 3:* A combination between scenario 1 and 2, whereby the government makes efforts both to promote tourism destinations and to develop tourism destinations in the 10 provincial groups.

Results and Discussion

The analysis of the impacts of tourism development is divided into two major sections; (i) the impacts on Indonesian macroeconomics, and (ii) the disparity between regions in Indonesia. The analysis of the macroeconomic Indonesia conducted to see the impact of tourism development to Indonesia's macroeconomic indicators, such as GDP, sectoral investment, and sectoral output.

Analysis of the Impact on Indonesian Macroeconomics

Table 4. CGE Simulation Results Macroeconomic Variables In 2030

Variables	Scenario 1	Scenario 2	Scenario 3
Macro Economics			
GDP	0.10	0.30	0.34
Household	0.06	-0.08	-0.02
Government	0.17	-0.10	0.08
Export	-0.01	0.34	0.28
Investation	0.51	1.66	1.91
Labor	0.00	0.00	0.00
Sectoral Output			
Tourism Sector			
Hotels and Restaurants	4.50	4.18	8.21
Trading	-0.20	0.37	0.09
Land Transpo	0.02	0.10	0.08
Transport Rail	0.17	-0.03	0.14
Air Transportation	2.80	0.18	2.95
Non-Tourism Sector			
Agriculture	0.14	0.40	0.46
Farms	0.24	0.18	0.39
Fishery	0.07	0.04	0.11
Food industry	0.15	0.40	0.48
Textile industry	-0.83	0.06	-0.82
Chemical Industry	-0.39	0.05	-0.38
Machinery Industry	-0.79	0.77	-0.20
Manufacture of Transportation Equipment	0.00	0.09	0.07
Construction	0.44	1.17	1.44
Communication	-0.12	0.03	-0.10
Financial Services	-0.22	0.32	0.03

Source: Simulation results

In aggregate, the impact of an increase in tourism demand due to the increase in foreign tourist spending coming to Indonesia (Scenario 1) will give an increase to Indonesia's GDP by 0.10 percent from the *baseline* in 2030. Meanwhile, the development of tourism destinations which reflected by the increase in investment in tourism sector (Scenario 2), will increase Indonesia's GDP by 0.30 percent. Only when the government of Indonesia is able to develop destinations *and* also conducted promotional activities then the impact on GDP will be of 0.34 percent above the baseline (Scenario 3).

Additionally, the increase in sectoral added value is gained by sectors that have direct links to the tourism sector, such as hotels and restaurants, air transport, trade, and several sectors that are indirectly related to the sector, such as food crops, petroleum and food industries. Whereas, sectors that do not have a close linkage to the tourism sector, such as the manufacturing sector, some experience negative impact from the increase in tourism demand, instead. This further reiterate on what (Dwyer, *et al* , 2010) have mentioned earlier that the impact on tourisms sectors will be on the change on the composition of one economy. However, it is worth noting that only when a combine efforts to promote tourims and to develop destinations are made, then the impact on the aggregate level will be optimised and will moderate some negative impacts on several non-tourism related sectors.

Table 5. CGE Simulation Results of Investment, Export, and Sectoral Employment Variables In 2030

Variables	Scenario 1	Scenario 2	Scenario 3
Sectoral Investment			
Tourism Sector			
Hotels and Restaurants	9.18	61.62	61.56
Trading	1.76	-2.31	-0.06
Land transportation	-0.48	1.72	0.86
Transport Rail	1.07	-1.14	0.14
Air Transportation	5.72	-0.26	5.52
Non-Tourism Sector			
Agriculture	0.30	1.92	1.93
Farms	1.63	1.75	3.29
Fishery	0.89	0.80	1.67
Food industry	0.35	1.39	1.52
Textile industry	-1,73	0.71	-1.28
Chemical Industry	-0.83	0.43	-0.57
Machinery Industry	-1.68	2.08	-0.08
Manufacture of Transportation Equipment	-0.14	0.55	0.30
Construction	0.53	2.93	3.07
Communication	0.12	-0.08	0.04
Financial Services	0.23	-0.20	0.06
Sectoral Exports			
Tourism Sector			
Hotels and Restaurants	49.02	14.67	65.27
Trading	51.00	2.39	53.62
Land transportation	37.93	-0.17	37.62
Transport Rail	27.40	0.23	27.50
Air Transportation	22.46	1.07	23.37
Non-Tourism Sector			
Agriculture	-5.49	-0.84	-6,46
Farms	-7,73	-4.65	-11.70
Fishery	-3,86	-2.08	-5,74
Food industry	-2.74	0.05	-2.90

Variables	Scenario 1	Scenario 2	Scenario 3
Textile industry	-1.38	0.14	-1.34
Chemical Industry	-1.06	0.03	-1.10
Machinery Industry	-1.93	0.86	-1.34
Manufacture of Transportation Equipment	-1.28	0.24	-1.15
Construction	0.00	0.00	0.00
Communication	-1.41	0.13	-1.39
Financial Services	-1.72	0.83	-1.16
Sectoral Labor			
Tourism Sector			
Hotels and Restaurants	4.59	-7.20	-0.98
Trading	-0.39	0.59	0.06
Land transportation	0.07	0.01	0.06
Transport Rail	0.01	0.20	0.16
Air Transportation	2.80	0.52	3.20
Non-Tourism Sector			
Agriculture	0.15	0.45	0.52
Farms	0.84	0.63	1.41
Fishery	0.31	0.13	0.44
Food industry	0.09	0.41	0.43
Textile industry	-0.88	-0.08	-1.00
Chemical Industry	-0.43	0.00	-0.46
Machinery Industry	-0.88	0.89	-0.19
Manufacture of Transportation Equipment	0.06	0.05	0.10
Construction	0.58	1.19	1.62
Communication	-0.50	0.34	-0.25
Financial Services	-0.81	1.15	0.08

Source: Simulation results

In addition to the impact on sectoral GDP, there are also exists impact on sectoral investment as well. In Scenario 1, the majority of tourism related sectors experience an increase in investment by 2030. Moreover, the majority of non-tourism related sectors experience a decrease of investment as compared with the baseline. While in Scenario 2, investment on the trade sector, rail transportation, air transport, and financial services will decrease from the baseline in 2030. Meanwhile, in Scenario 3, the sectors that will experience declining in investment from baseline are trade, textile, chemical , and machinery industry. However, although still having a decreasing in investment, the magnitude is smaller in Scenario 3.

In terms of export, it is evident that the majority of tourism-related sectors exports will increase significantly in all three scenarios. Mostly evident on Scenario 1 and Scenario 3 where tourism-related sectors export will increase on double digit numbers, contrasting the result on non-tourism related sectors where exports yield negative impact, instead.

Interesting results are evident on the sectoral analysis of the changes in the labor market. In Scenario 1, the largest labor increase occurs in the Hotel and Restaurant sector, whereas in Scenario 2 occurs in the construction sector, and in Scenario 3 occurs in the air transportation sector. As two-

thirds of foreign tourist expenses are spent on accommodation, it is reasonable that the largest labor increase occurs in the hotel and restaurant sector, in Scenario 1. Also, as the majority of shocks in Scenario 2 are on infrastructure development pprojects, it is expected that that construction sectors will be one of a major beneficiary—including in terms of employment increase. In Scenario 3, where the government is doing both simultaneously, the hotel and restaurant sector becomes the sector that experience a decrease on the number of workers—an evident of sectoral labor composition changes. Interestingly, the air transportation sector became the largest labor-growing sector, followed by the construction sector. This gave a clear indication that the role of air transportation services sector in Indonesia will be an important feature of Indonesian tourism development.

Analysis of the Impact on Return of Production Factors among Regions

Table 6 . CGE Simulation Results of Variable *Return to Capital* and *Return to Labor* Region in Indonesia In 2030

Territory	Return to Capital			Return to Labor		
	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
Western Sumatra	0.59	-0.49	0.28	1.23	-0.39	0.98
Eastern Sumatra	0.25	-0.34	-0.01	0.66	-0.38	0.37
Northern and Western Java	0.09	-0.44	-0.30	0.41	-0.37	0.11
Eastern Java	0.44	-0.53	0.11	1.12	-0.35	0.92
Western Kalimantan	0.03	0.11	0.10	0.10	-0.14	-0.02
Eastern Kalimantan	0.02	0.11	0.11	0.07	-0.06	0.02
Northern Sulawesi	0.95	-0.52	0.68	1.79	-0.47	1.51
Southern Sulawesi	1.19	-0.51	0.96	2.33	-0.46	2.08
Bali	1.14	-1.69	-0.34	2.00	-1.38	0.81
Nusa Tenggara	0.38	-0.05	0.33	0.87	-0.25	0.66
Maluku	0.70	-0.08	0.65	1.20	-0.23	1.03
Papua	0.21	0.11	0.29	0.53	-0.18	0.35

Source: Simulation Results

Tourism development affects the labor and capital growth in all provincial groups and are reflected in changes in relative prices of production factors (wages and capital rents). In Scenario 1, it can be seen that the wage gap between provincial groups seems to decrease, as many provincial groups in the Eastern part has experienced higher increase in real wage than Western part of Indonesia—with notable example is South Sulawesi as the highest one. The two smallest increase are of East Kalimantan and West Kalimantan province as this two groups are not included in the shock interventions.

However, different results are in Scenario 2 whereby all provincial groups experienced a decrease in wages--Bali Province experienced the highest decrease and East Kalimantan province experienced the lowest decrease. While in the third scenario has seen that all provincial groups experienced an increase in real wages, except in Western Kalimantan.

Similar to wages, capital rent in Scenario 1 has increased in all provincial groups with the highest increase being in South Sulawesi province and the lowest increase is in East Kalimantan province. It appears that the gap between skilled labor and unskilled labor is decreasing, as the increase in the real wage is larger than the increase in the price of capital rent in all provincial groups . While in Scenario 2, some provincial groups experienced a fluctuative trend in the price of capital rent. Several provincial groups such as Eastern Sumatra, Nusa Tenggara, Western

Kalimantan, Eastern Kalimantan, Papua and Maluku experiencing the price of capital rent increase much higher than wages.

In Scenario 3, the rental price of capital has increased in all provinces, except three areas: North-West Java, Bali, and East Kalimantan. Wages increase higher than rental price increase in all except two provinces: West Kalimantan and East Kalimantan where both provinces did not receive policy interventions.

Comparing between all three scenarios, it appears that there are only two scenarios that are worth noting but with inconclusive result—between Scenario 1 and 3 there is no distinctive results which tourism policy options yield better outcome in terms of differentials in factor price production.

Conclusion

This research is conducted to see the impact of tourism sector development on Indonesian economy. In addition, this research is also looking at the impact of tourism development on factors of production disparity across regions in Indonesia. Tourism development intervention is assumed to be carried in three different options, firstly through demand side, where the Indonesian government to promote tourism destination which will increase the expense of foreign tourists who come to Indonesia. Secondly, through the supply side, where the Indonesian government develop tourist destinations in Indonesia through the development of tourism infrastructure. Third, the government of Indonesia to do both things, namely promotion to increase foreign tourist expenditure and tourism infrastructure development simultaneously.

Based on the results of simulations that have been done, the development of tourism in Indonesia can not be done in one way, whether it is promoting alone or doing infrastructure development alone. This can be seen in the impact of Indonesia's GDP increase, where the largest growth addition occurs in scenarios where the government promotes and develops tourism infrastructure.

In addition, in terms of differential between *return to labor* and *return to capital* in the provincial regions and how it responds with different sets of tourism policy interventions, the result is inconclusive between promotion-led policy only and a policy mix of promotion-and-destination development policy.

However, how much the proportion of budgets to be spent on each intervention options is beyond the scope of this study, so further research is needed to find out in detail the proportion of government budgets for each intervention.

In addition, the results of this study also reinforce the results of previous research, which says the development of tourism in a country's economy is not a panacea to improve the economic growth of a country. As the economy runs at a given amunt of economic resources, the development of tourism sector —as it is with any other sectors—is a trade off with other sectors that utilizes the same pool of factor of production.

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Analysis of Changes in Inequality of Income and Economic Growth Inter Province in Java Island 2011-2016

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ABSTRACT

Inequality of income is still a problem that needs to be considered in economic development in every region or country, both in developed and developing countries. In Indonesia, Java is the center of the economy and the government has a higher economic growth than the other islands. However, income inequality in Java is still often occurs and has not been able to overcome. This shows that the benefits of economic growth during this time is not fully felt by all the people of Java. Based on these, this study aims to analyze the level of income inequality among provinces in Java and analyze the pattern or classification of areas based on economic growth in 2011-2016. The calculation method used is the Williamson Index (IW) and Klassen Tipology, where in the Williamson Index is used to see the level of inequality based on per capita income and the population and the Klassen typology method is used to illustrate the different patterns of economic growth in each province of Java. The research data used are secondary data, namely population and Gross Regional Domestic Product (PDRB) per capita in each province in Java Island. The result of research with calculation analysis of the Williamson Index (IW) shows that the level of income inequality in Java tends no significant change that is average of 0.8770 during the observation period. On the other hand, this value also indicates high income inequality among provinces in Java. Meanwhile, the result of Klassen typology shows that the provinces of West Java, Central Java, DI Yogyakarta and Banten are in relatively lagging region categories. DKI is in the category of developing and fast growing areas. While East Java is in the category of fastest growing areas. Based on these findings, focusing on the development of connectivity infrastructure is an appropriate step to overcome income inequality. Through adequate infrastructure that is characterized by smooth connectivity, it can overcome income inequality in Java. In addition, development can also be done in relatively lagging provinces through innovation and technology for the creation of community welfare.

***Keywords**: Income Inequality, Economic Growth, Java Island, Williamson Index, Klassen Typology*

1. INTRODUCTION

The success of the economic development of the regions is identical to an increase in economic growth. However, good economic growth do not necessarily describe the equity and welfare in the community. Often the impact of the results of economic growth is not

felt evenly so that the cause of the existence of inequality, income inequality is good as well as inequality between regions. An economic growth in addition can be seen from the amount of the total output is high can also be reflected in the gross Regional domestic product (GDP) per capita of each region.

The occurrence of inequality is a problem that occurs in many regions and developing countries. Within the regional economy explaining the causes of regional inequality is illustrated by an imbalance of relationships between areas close to the development center and the periphery. The area close to the center of development has the opportunity to grow larger when compared with the area that is on the periphery. Meanwhile, according to Sjafrizal (2012), inequality between regions occurs because of differences in natural resources and demographics. This causes the regional capability in improving the development process is also different so that it will have implications on the level of welfare of people between regions. Research conducted by Sutherland and Yao (2011), Efriza (2014) and Lestari (2016) show that regional inequality is also influenced by economic growth. Therefore, a region must have the capability in managing the financial or fiscal capacity of the region, such as natural resources, regional potential, natural condition and human resource capability of each region (Sultan and Sodik, 2010).

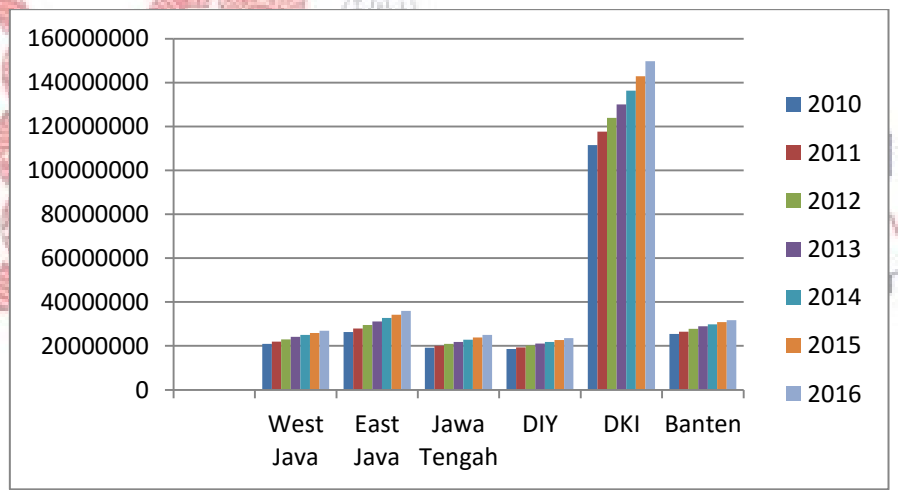
Economic disparity between regions is a common aspect of an area. The height of a disparity not only creates social tension but can also hamper economic growth and development. Economic development should be viewed as a multidimensional process that encompasses fundamental changes to social structure, public attitudes, and national institutions, while still pursuing accelerated economic growth, addressing development disparities, and poverty alleviation (Todaro, 2012).

Table 1.1 GRDP Per Capita (Thousand Rupiah) Constant Price 2010 In Java Island

Years	West Java	East Java	Central Java	**DIY**	**DKI**	**Banten**
2010	20.974.940	26.371.100	19.209.310	18.652.970	111.528.860	25.397.650
2011	21.976.530	27.864.206	20.053.800	19.387.450	117.672.920	26.548.940
2012	23.036.000	29.508.400	20.950.620	20.183.880	123.962.380	27.716.470
2013	24.118.310	31.092.040	21.844.870	21.037.700	130.060.310	28.910.660
2014	24.966.860	32.703.390	22.819.160	21.867.900	136.312.340	29.846.640
2015	25.842.320	34.272.290	23.887.370	22.688.350	142.892.190	30.799.590
2016	26.921.970	35.962.400	24.967.850	23.566.250	149.779.370	31.761.920

Source: BPS Indonesia

Java Island as one of the major islands in Indonesia that can not be separated from the problem of economic inequality. Java Island consisting of six provinces that mean has many important issues to be solved, such as the problem of economic growth and income inequality. Table 1.1 below shows that the greatest contribution to the economy of Java Island is based on DKI Province reaching hundreds of billions of rupiah since 2010-2016, which amounted to Rp111,528 billion in 2010 and Rp149,779, - billion in 2016. Meanwhile, West Java Province, East Java Province, Central Java Province and Banten Province have per capita income which is far behind compared to DKI Province which is under forty billion rupiah. Nevertheless, East Java Province is superior to Banten Province since 2010-2016 where in 2016 East Java Provincial Per Capita GDP reached Rp35,962, - billion and Banten Province was only Rp31,761 billion. While in West Java, Central Java and DIY have low GRDP compared to the others that is Rp 24.966, - billion, Rp22.819, - billion and Rp21.867, - billion in 2016.



Source: processed from BPS Indonesia

Figure 1.1 The Value of GRDP Per Capita (Thousand Rupiah) Constant Price 2010 Province in Java Island

In this study, the inequality and uneven distribution of income of Java is shown from the PDRB per capita value in each Province, which can be seen in Table 1.1 and Figure 1.1. High GDP per capita shows a high level of welfare in the community, and low GDP per capita shows low levels of welfare. Figure 1.1 below is very visible inequality among provinces in Java, especially DKI Province with other provinces in Java. This is because DKI Jakarta is the capital of Indonesia so that the economy is very advanced. Meanwhile, in East Java Province has the second largest per capita income after DKI Province due to the existence of several

big cities that became the development of processing industry. In addition, the lowest per capita income in the Province of Java is achieved by DIY Province.

The success of regional economic development is characterized by increasing economic growth and income distribution. The occurrence of income inequality in the Province of Java is a matter to note, given the uneven distribution of income and development becomes an important issue that needs to be addressed. Therefore, this study aims to analyze the level of income inequality among provinces in Java and analyze how the pattern or classification of regions is based on economic growth in 2011-2016. Analytical techniques used to analyze the distribution of income inequality using the calculation method of Williamson Index (IW) based on per capita income and population. Meanwhile, Klassen typology is used to look at the pattern of mapping and structure of economic growth in each Province in Java Island.

2. LITERATURE REVIEW

Disparity economic is the difference of economic development between one region with other region either vertically or horizontally causing inequality of development. In addition, economic disparities can be defined as differences in the economic structure of a region when compared with other areas. One of the goals of regional economic development is to reduce inequality. Increased income per capita does show the level of economic progress of a region. However, rising per capita income does not forever indicate that the income distribution becomes more evenly distributed.

Kuncoro (2006) argues that economic imbalances can be seen from three dimensions: *First*, based on the level of modernity is the gap between the modern sector and traditional sector. The modern sector is generally located in urban areas while the traditional sector is generally located in rural areas. *Second*, the regional gap is a gap that occurs between an area with high economic potential and a region with low economic potential. *Third*, the gap by ethnic is the gap that arises because of ethnic differences for example between indigenous and non indigenous communities. Meanwhile, according to Todaro (2012) income distribution inequality is a disproportionate distribution of total national income with the number of households in a country.

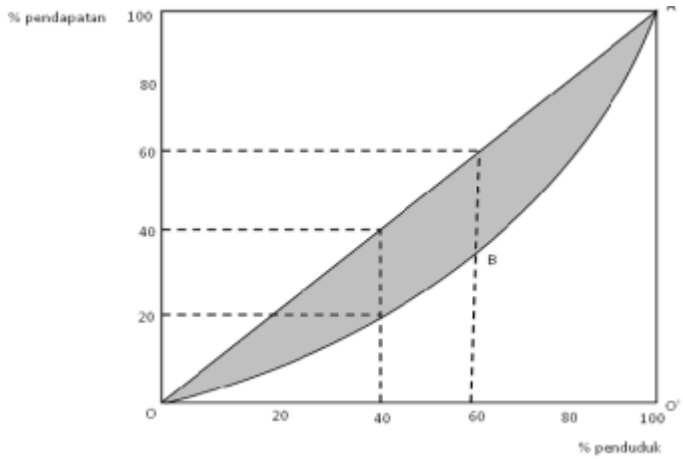


Figure 2.1 Lorenz Curve

The Lorenz curve in general is often used to describe the form of inequality that occurs in the distribution of people's incomes. The Lorenz curve shows the actual quantitative relationship between the percentage of revenue received and the percentage of total revenue actually received over a given period. The Lorenz curve is depicted on a square / square plane with the help of a diagonal line. The horizontal line represents the percentage of income recipient population, while the vertical line is the percentage of revenue. The closer this curve to the diagonal, the lower the inequality and the wider the curve further away from the diagonal means the higher inequality (see Figure 2.1).

Inequality that occurs not only to the distribution of people's incomes, but also happens to the development between regions within the territory of a country. Williamson (1965) examines the relationship between regional disparities and the level of economic development, using developed and emerging country economic data. It was found that during the early stages of development, regional disparities became larger and development concentrated in certain areas. Williamson uses the Williamson Index (IW) to measure the inequality of regional development. The Williamson Index uses GRDP per capita as the baseline. The Williamson Index coefficient number is 0 <IW <1. If the Williamson Index gets smaller or closer to zero it means that the inequality is low, and the greater the number of the Williamson Index shows the widening inequality.

Chamber (2010), Wahiba & El Weriemmi (2014) and Rubin & Segal (2015) in his research say that there is a positive relationship between economic growth and income inequality. That is, the higher the economic growth of a region, the higher the income imbalance. Conversely, the decline in economic growth has an impact on the decrease in income inequality. Unlike the case of Panizza (2002), there is a negative relationship

between income inequality and economic growth, where economic growth can reduce income inequality. While Binatli (2012), found that economic growth is negatively related to income inequality. The existence of a positive and negative relationship between economic growth and income inequality indicates that economic growth does not always have a good effect on the distribution of income in the community.

Research Huang et al. (2015) concluded that the relationship between economic growth and income inequality can be positive and negative. In low-income countries there is a negative relationship between income inequality and economic growth. In contrast, in countries with high incomes a positive relationship between inequality and economic growth. Hassan, Zaman & Gul (2015) in his research in Pakistan provided empirical evidence that in the short run there is a positive relationship between economic growth and income inequality. While in the long run, there is a negative relationship between the two variables.

3. DATA AND METHODOLOGY

The data used in this study are secondary data obtained from the Central Bureau of Statistics (BPS) with the observation year 2011-2016. The data are data on the population of each province in Java Island, population of Java Island, Gross Regional Domestic Product per capita of each province in Java Island and Gross Regional Domestic Product per capita of Java Island.

To analyze income inequality among provinces in Java, this research uses Williamson Index (IW) while to analyze patterns or classification of provinces based on economic growth used Klassen Typology.

Williamson Index (IW)

The Williamson Index (IW) was introduced by Jeffrey G. Williamson (Sjafrizal, 2008). In its calculations, the Williamson Index uses population data and GRDP per capita. Statistically, the Williamson Index can be formulated as follows (Arsyad, 2010):

$$IW = \frac{\sqrt{\sum_{i=1}^{n} (Yi - Y)^2 - (\frac{fi}{n})}}{Y}$$

Where :

IW : Williamson Index
Y : Gross Regional Domestic Product per capita in Java Island
Yi : Gross Regional Domestic Product per capita of each province in Java Island
Fi : Population of each province in Java Island

n : Population in Java Island

The value of the Williamson Index is in the range of 0 to 1. Bappenas (2013) classifies the imbalance of a province based on the value of the index into several categories. A province is said to have a low level of inequality if its index value is 0.3, the level of moderate inequality if its index value is between 0.3 and 0.7, and the high rate of inequality if its index value> 0.7.

Klassen Typology

Klassen Typology was introduced by Leo Klassen (Sjafrizal, 2008). Klassen typology divides the province into two main indicators, namely the Gross Regional Domestic Product (GRDP) and the economic growth rate of each province.

According to Sjafrizal (2008), there are four classifications in the Klassen Tipology analysis: First, high income and high growth is an area that has economic growth and income per capita higher than Java Island. Second, high income, but low growth is an area with higher per capita income, but the growth rate is lower compared to Java Island. Third, high growth, but low income is an area with high growth rate, but low per capita income level compared to Java Island. Fourth, low growth and low income is an area with an economic growth rate and per capita income is lower than Java Island.

Table 3.1 Classification of Klassen Typology

GRDP per Capita (Y) Growth Rate (r)	*Yi > Y*	*Yi < Y*
ri>r	High Income and High Growth (The area is advanced and fast growing)	High Growth but Low Income (The area is growing fast)
ri<r	High Income but Low Growth (The area is advanced but depressed)	Low Growth and Low Income (Relatively lagged areas)

Source : Syafrizal (2008)

Where :

Y : Gross Regional Domestic Product per capita in Java Island
Yi : Gross Regional Domestic Product per capita of each province in Java Island
r : Growth rate in Java Island
ri : Growth rate of each province in Java Island

4. RESULT

Table 4.1 shows the calculation of Williamson Index (IW) of Java Island in 2011 to 2016. Based on the table can be seen that the value of Williamson Index did not change significantly in the span of 6 years. Overall, the average index of the Williamson Island of Java is 0.8770, this indicates that income inequality in Java is very high.

Table 4.1 Williamson index in Java Island 2011-2016

Year	Williamson Index
2011	0.8761
2012	0.8773
2013	0.8770
2014	0.8773
2015	0.8773
2016	0.8774

Then, based on GDP per capita data and economic growth, the classification of provincial pattern and economic structure in Java Island, according to Klassen typology can be seen in Table 4.2. Provinces with higher economic growth and higher per capita income from Java (high income and high growth) are DKI Jakarta. Provinces with higher growth rates, but per capita income is lower than Java (high growth, but low income) is East Java. Furthermore, provinces with economic growth and per capita income are lower than Java (low growth and low income) are West Java, Central Java, DI Yogyakarta and Banten.

Table 4.2 Klassen Typolgy in Java Island

GrDP per Capita (Y) Growth Rate (r)	*Yi > Y*	*Yi < Y*
ri>r	High Income and High Growth • DKI Jakarta	High Growth but Low Income • Jawa Timur
ri<r	High Income but Low Growth	Low Growth and Low Income • Jawa Barat • Jawa Tengah • DI Yogyakarta • Banten

The main cause of income inequality in Java is the distribution problem. Northern areas tend to be more prosperous than the south because northern regions are supported

by adequate connectivity such as ports and trains. Therefore, there is a high unemployment rate in the south and will eventually increase the income inequality in Java.

One effort to overcome income inequality in Java is to improve connectivity infrastructure. The construction of connectivity infrastructure is expected to increase productivity so that it will lead to north-south collaboration. This collaboration will increase the chances of new ideas, new creations that will eventually create new sources of economic growth in Java. Thus, through adequate infrastructure that is characterized by smooth connectivity, it can overcome income inequality in Java. In addition, focusing development on relatively lagging provinces is also an appropriate step to overcome income inequality through innovation and technology for the creation of community welfare.

5. CONCLUSION

Although Java Island has a higher economic growth compared to other islands in Indonesia, income inequality in Java is still frequent and has not been able to overcome. This study aims to analyze the level of income inequality among provinces in Java and analyze the pattern or classification of areas based on economic growth in 2011-2016. The calculation of the Williamson Index (IW) indicates that the level of income inequality in Java tended to not change significantly, that is average of 0,8770 during the observation period. This value indicates high income inequality among provinces in Java. Meanwhile, the results of Klassen typology show that the provinces of West Java, Central Java, DI Yogyakarta and Banten are in relatively disadvantaged areas. DKI Jakarta is in the category of developing and fast growing areas. While East Java is in the category of fastest growing region. Based on these findings, focusing on the development of connectivity infrastructure is an appropriate step to overcome income inequality. Through adequate infrastructure that is characterized by smooth connectivity, it can overcome income inequality in Java. In addition, development can also be done in relatively lagging provinces through innovation and technology for the creation of community welfare.

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Economic Disparities in West Java Based on Village Development Index

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ABSTRACT

Economic disparity is one of indicator in measuring the development of a region. Generally, disparities occur because each region has different resources, so the level of development and optimization by local government are also different. If a region has high disparities, local governments can do local economic development to reduce gaps with other areas. Long-term impact of the gap between region, can cause regional leakage. The areas which has high disparities, requiring improved and measurable policies from local governments. Generally, the regional disparity is seen from the PDRB of the region, but this research will see the disparity of villages in West Java Province based on economic facilities (village development index). West Java Province is the province with the largest population in Indonesia with 48 million people, or 18.34% of the total population of Indonesia (BPS, 2017). West Java is a region which has an interesting development and disparity of the region for research. The general objective of this research is to see the disparity of villages in west java based on regency, status and location on the border with other provinces. This research will be use village potency and spatial data from BPS. The analysis used are a scalogram analysis, theil entropy analysis, and spatial analysis (GIS). The results showed disparities in the study area. Economic disparity in this study area based on disparity within area, either between districts/cities, border/non-border and coastal/non-coastal areas. This fact shows that the current economic disparity is caused by the disparities of economic facility development in each *desa*/*kelurahan*, not due to differences in the status of the village area and its location. The policy of each local goverment (*desa*) in optimizing village funds needs to be improved in order to provide more adequate economic facilities in the village.

Keyword: disparities, economic fasilities, village development index

Introduction

Population growth and economic activity are rapid in urban areas, including in some areas of West Java Province. The substantial economic added value in urban areas resulting from the agglomeration of social and economic activities of society provides and opportunity for efforts to improve the economy and the welfare of the people. However, rapid growth (urban), sometimes has a bad impact, for some less developed areas. Less developed areas, becoming more left behind, this condition causes disparity. The development disparity between regions is one form of poor distribution and allocation in the utilization of resources - creating inefficiency and less optimal economic system (Rustiadi et al, 2010).

Currently, West Java Province has 3 (three) Metropolitan Areas, including **Metropolitan Bogor - Depok – Bekasi – Karawang - Purwakarta (Bodebek Karpur)**, covering Bogor City, Bogor Regency, Depok City, Bekasi City, Bekasi Regency, Karawang Regency and Purwakarta Regency, **Metropolitan Bandung Raya** covering Bandung City, Cimahi City, Bandung Regency, West Bandung Regency, and Sumedang Regency, and **Metropolitan Cirebon Raya** covering Cirebon City, Cirebon Regency, Kuningan Regency, Majalengka Regency and Indramayu Regency. In addition, there are 3 (three) growth centers, including: Pangandaran, Palabuhan Ratu, and Rancabuaya. The growth center is expected to reduce disparity between regions and it can be a growth center for other less developed areas.

In 2014, West Java Province is the province with the largest number of villages in Indonesia that is 5,918 villages (BPS, 2010), with a population of approximately 46 million people and population growth rate of 1.78% (BPS, 2017). In general, the disparity of the region is seen from the income or expenditure of a region. However, in this study, the disparity of the region will be measured based on the **Village Development Index (VDI)** based on economic facilities. The number and type of economic facilities of a region can indicate the level of development of a region, and also can see the disparity of a regions. The area referred to in this study is the "desa/kelurahan". VDI values with wide ranges (there are very large values and some are very small) indicate a disparity of areas. The current differencies are due to different development rates, to not evenly distribution of technical and social infrastructure within countries, along its under development stage, to demographic imbalances, and to natural factors and different resources to be found from one region to another (Boldea et al, 2012).

The purpose of this study is (1). Determine the value of VDI, and (2). Analysis of disparity region based on VDI. With the knowledge of VDI and the level of regional disparity, the local government can determine the most appropriate strategy for the sustainable development and development of the region.

Study Area

Study location is all villages in West Java Province. The total area of West Java Province is 35,377.76 km^2 (BPS, 2014). West Java Province consists of 18 districts and 9 cities. According to Law No. 21/2012, Pangandaran Regency is a new regency, an expansion of Kabupaten Ciamis since 2012. Therefore, some data still does not exist (merged with the origin district). The study location maps are presented in **Figure 1**.

Methods

In this research, there are 2 (two) analysis phase, that is: (1). Determine the VDI using a scalogram, and (2). Determine the disparity of the region under various conditions. Disparity analysis is seen by district, coastal, and border area. The data used are from the Central Bureau of Statistics (BPS) - Potential Villages (PODES) at 3 (three) year (2008, 2011 and 2014). Description of the analysis used is:

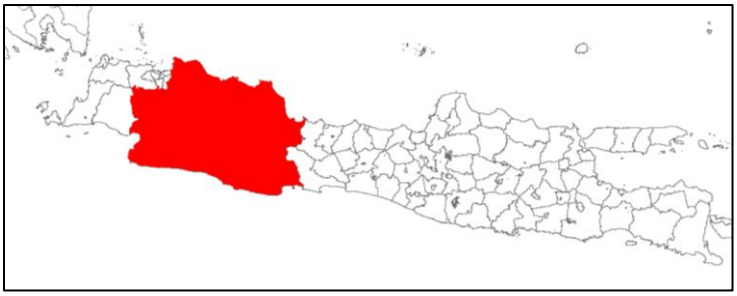


Figure 1. Study Area (red area)

1. Scalogram Analysis

A scalogram analysis is used to determine the VDI. VDI is calculated based on the number and type of economic facilities in each village area (unit). Thus, variables are used more for economic support facilities in micro coverage (generally at the "desa/kelurahan" level). The variables used consist of 22 (twenty two) variables, among others: farm kiosks, KUD ("Koperasi Unit Desa" or Village Unit Cooperative) and non-KUD, the number of units of each industry (leather, wood, metal/non-metal, webbing, pottery/ceramic, cloth/weaving, food, and others), restaurants, stalls, markets, banks, minimarkets, hotels, inns, cooperatives, and others. Data on the number of units of each economic facility obtained from the data of "Potensi Desa" (podes) BPS, each year.

The step of the scalogram analysis is:

a. Prepare data podes into a tabular form, consist of data on various economic facilities in each village

b. Calculates a facility index per 1.000 population (equation 1).

Note: Aij = index of j-facility in i-village; Fij = the number of j-facility in the i-village; Pi = the number of populations in the i-village

$$A_{ij} = 1000 * \frac{F_{ij}}{P_i} \quad \text{..... (1)}$$

c. Calculates weight of the identifier index (equation 2).

Note: Iij = weighted value of the j-facility identifier index in i-village; Fij = number of j-facility in i-village; B. j = weight of j-facility

$$I_{ij} = Fij * B.j \quad \text{..... (2)}$$

d. Indexing (equation 3)

Note: Kij = standard value of i-village hierarchy index and j-facility; Iij = weighted value of the j-facility identifier index in i-village; min (I) j = the minimum value of j-facility index; Sj = standard deviation

$$K_{ij} = \frac{I_{ij} - \min(I)_j}{s_j} \quad \text{..... (3)}$$

e. Determination of VDI (equation 4) and Hierarchy of Region (Hij) (equation 5)

Note: VDI = Village Development Index; Kij = standard value of i-village hierarchy index and j-facility

$$VDI = \sum Kij \quad \text{..... (4)}$$

Hirarchy equation (Hij). Hierarchy 1 = ΣKij> average (Kij) + Stdev (Kij); Hirarchy 2 = average (Kij) <ΣKij <average (Kij) + Stdev (Kij); Hirarchy 3 = ΣKij <average (Kij) ……. *(5)*

2. Analysis of Theil Entropy Index.

The next analysis is the theil entropy index. This analysis is used to decompose region disparity based on area division. In this study used to see the economic disparity based on VDI between districts/cities in West Java and disparity within the district/city. In addition, in this study also see the disparity of coastal areas with non-coastal areas. Smaller theil entropy index values, indicating smaller regional disparities and higher theil entropy index values indicate higher disparity rates (Pravitasari, 2009). Theil Entropy Index Equation (equation 6) is as follows (Theil, 1967):

$$I - Theil = \sum (yi / Y).\log\left[(yi / Y) / (xi / X)\right] \quad \text{……. (6)}$$

Note: I-Theil = total disparity in West Java (Theil Entropy Index); yi = VDI in the village / kelurahan j; Y = VDI in West Java; xj = total population in each village; X = total population of West Java.

3. Analysis of Geography Information System (GIS).

GIS analysis in this study is used to display the results of analysis into spatial (map). For example: VDI maps, hierarchical maps and other maps. The tools used include join table and map layout.

Results and Discussion

Population in West Java.

The population in West Java has trends up from 1980-2015. For example, the population in Bogor Regency in 1980 amounted to approximately 2.5 million to 5.4 million by 2015, as well as the other districts. The complete data as presented in **Figure 2**. Meanwhile, based on the proportion of area, population and GDP, can be known to have a mixed combination, and this will also affect the imbalance of a region. The urban areas in West Java have small areas, but larger GDP, when compared to districts. Based on the proportion of each of the largest, Bogor Regency has a larger population (11.09%) than other districts/cities, while the largest percent of GDP (9.41%) is Bandung City, and the largest area is Sukabumi (11.72%). The third largest proportion, not accompanied by the largest percentage of other variables. The complete data as presented in **Figure 3**.

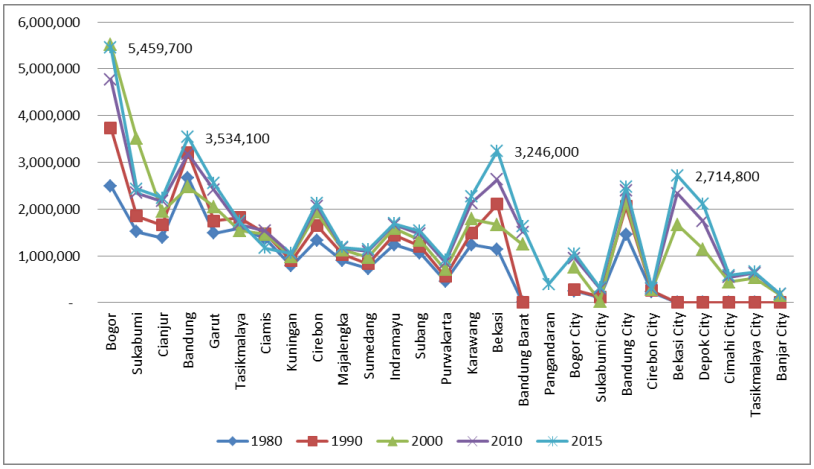
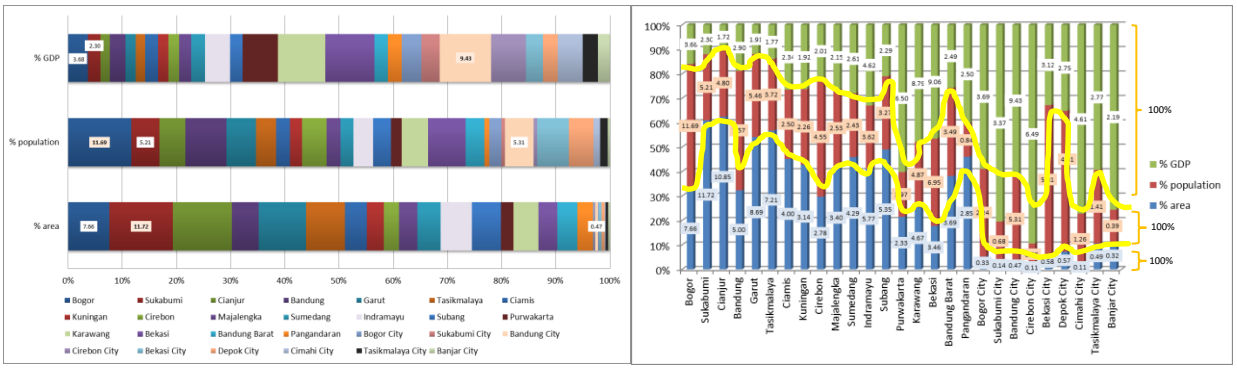


Figure 2. Population in West Java by Regency / City 1980-2015



Source: 1). BPS (2017); *Dirjen PUM Kemendagri (Permendagri No. 56-2015); 2).* BPS (2016)

Figure 3. Proportion of Sum of Area[1)], Population[2)], and GDP contribution[2)] District/City In West Java

Villages Development Index (VDI)

VDI in this study is referred to the index of the existence of economic facilities on the village unit. As well as presented in the method, facility data is obtained from Podes BPS data at 3 (three) year points. VDI is an index obtained from the results of a scalogram analysis. The greater the value of a region's VDI, indicating the rate of development of a larger region, and opposite (divided by 7 classes). After the VDI value is obtained, the hierarchy of each region can be determined (into 3 hierarchies). Spatial distribution of VDI (or IPD) values in each village, as presented in **Figure 4**.

The bigger VDI, characterizing the more developed a village, because it has more facilities than other villages (number and type facilities). In relation to the value of VDI is relative, it can't be compared between years. However, we can review as follows. In 2008, at the smallest VDI of 1,583 villages, and the largest of only 4 villages, in 2011, there were 1,986 villages in the smallest VDI value, and 2 villages at the largest VDI value. Meanwhile, in 2014, there were 3,310 villages in the smallest VDI value and 11 villages in the largest VDI score. The complete data as presented in **Table 1**.

Table 1. Number of Village based on VDI (not-comparison)

No	VDI Class (Value)	Year (sum of village)		
		2008	2011	2014
1	0,00-2,40	1.583	1.986	3.310
2	2,41-6,20	2.615	2.372	1.474
3	6,21-11,90	1.194	1.048	640
4	11,91-20,30	354	368	292
5	20,31-36,30	95	105	141
6	36,31-66,30	22	23	50
7	>66,31	4	2	11
8	No Data	51	14	0
	Total	5918	5918	5918

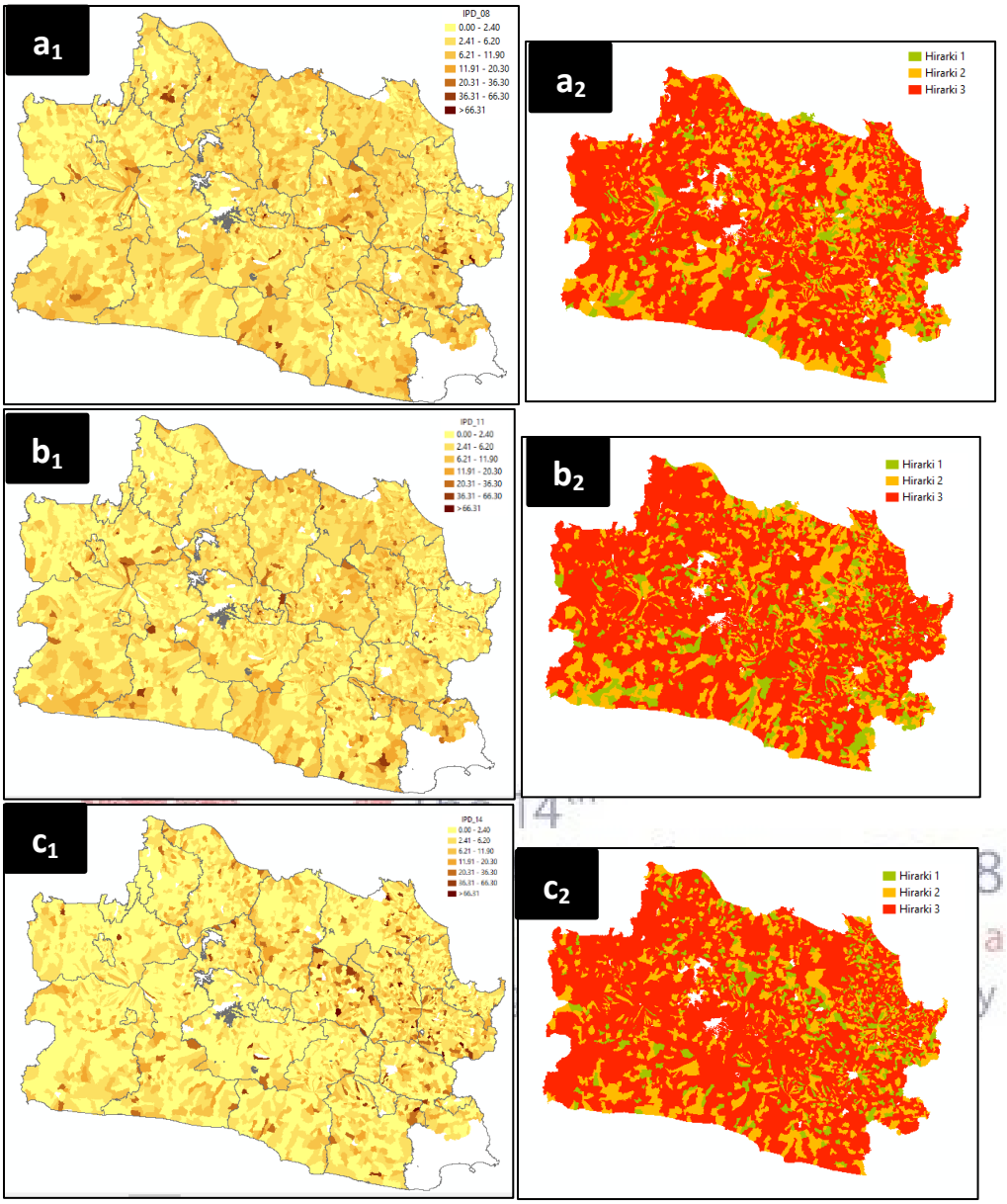


Figure 4. VDI of each Village; a_1-a_2) VDI and hirarchy year 2008; b_1-b_2) VDI and hirarchy year 2011; c_1-c_2) VDI and hirarchy year 2014

Economic Disparity Based on VDI

The level of regional economic disparity in this study uses economic facility indicator. Based on the results of analysis it is known that economic disparity based on facilities in West Java is more due to the disparity of facilities in the villages within the district/city. The percentage of disparity within districts/cities is 72% in 2008, 63% in 2011 and 81% in 2014. At three points the year showed a fluctuating percentage, declining from 2008 to 2011, then rising again from 2011 to 2014 (**Table 2** and **Figure 5**). This result is consistent with Aprianoor et al (2005) study which shows the level of inequality of West Java Province during 2007-2013 ranges from 0.61 and is included in the region with high inequality. Meanwhile, disparity between districts/cities shows a percentage of 27% in 2008, to 36% in 2011, and 18% in 2014. Thus, disparity in West Java is dominated by disparity of economic facilities in villages within districts/cities .

High disparity in West Java can't be separated from the influence of the largest population in Indonesia (approximately 43 million in 2015), but also the largest number of villages compared to other provinces. This condition can be seen from the results of Theil Entropy analysis which shows a high disparity in some districts/cities (3 point of the year), including: Kuningan, Majalengka, Sumedang, Indramayu and others. The complete results are presented in **Figure 6**.

Efforts to reduce disparity include the planning and construction of facilities on a regional basis (West Java), prioritizing un-developed areas. In addition, infrastructure development (including economic facilities) is a manifestation of policy makers decision towards development in less developed areas (Firdaus, 2013).

Based on the results of this study, the disparity that occurs is more due to government policies that are generally based district/city, not based on the village area. This may cause the government to initiate a village fund program (1 village 1 billion). The program aims to improve the development and development of the territory in the village. In addition, in 2018 West Java Provincial Government has also established, eleven regional development priorities, one of which is the provision of basic housing services infrastructure, and strategic infrastructure in urban and rural areas, and one of the regional spending policy for 2018 one of them is financial assistance district/city, village assistance and others (Pikiran Rakyat, 2017). The effort to prioritize the development of villages in West Java, also encourage the central government to develop other villages throughout Indonesia (West Java Provincial Government, 2016).

Table 2. Disparity of Distric/City in West Java

Disparity/ District/City	Indeks Theil Entropy					
	2008	%	2011	%	2014	%
Total Disparity	**0.291**	100.00	**0.338**	100.00	**0.505**	100.00
Between Districts	**0.080**	27.58	**0.123**	36.53	**0.092**	18.29
Villages within districts / cities	**0.211**	72.42	**0.214**	63.47	**0.412**	81.71
Bogor	0.012		0.019		0.007	
Sukabumi	0.011		0.012		0.018	
Cianjur	0.009		0.013		0.023	
Bandung	0.009		0.010		0.016	
Garut	0.010		0.011		0.023	
Tasikmalaya	0.010		0.017		0.012	
Ciamis	0.016		0.014		0.019	
Kuningan	0.025		0.015		0.056	
Cirebon	0.027		0.011		0.017	
Majalengka	0.009		0.012		0.046	
Sumedang	0.011		0.011		0.045	
Indramayu	0.007		0.011		0.035	
Subang	0.006		0.008		0.018	
Purwakarta	0.006		0.008		0.021	
Karawang	0.010		0.009		0.020	
Bekasi	0.009		0.005		0.013	
Bandung Barat	0.004		-0.001		0.005	
Kota Bogor	0.002		0.007		0.002	
Kota Sukabumi	0.002		0.002		0.001	
Kota Bandung	0.010		0.010		0.005	
Kota Cirebon	0.001		0.002		0.000	
Kota Bekasi	0.001		0.001		0.001	
Kota Depok	0.002		0.002		0.001	
Kota Cimahi	0.000		0.001		0.000	
Kota Tasikmalaya	0.002		0.003		0.002	
Kota Banjar	0.001		0.002		0.003	
Pangandaran					0.005	

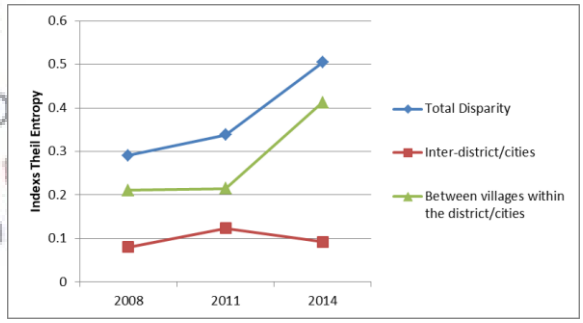


Figure 5. Total Disparity in West Java

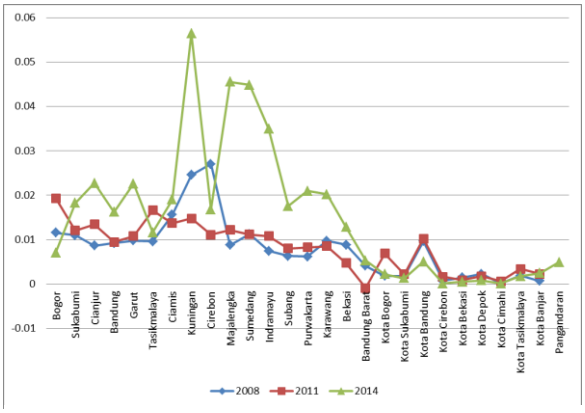


Figure 6. Disparity of District/City in West Java

Economic Disparity in Border and Coastal Area

In addition to disparities of each district/city, also conducted analysis of disparity between border areas and coastal areas. Illustration of study area in coastal areas and adjacent boundaries is presented in **Figure 7**. Both regions have similar results, example: disparity within regions, respectively 98% (border area) and 99% (coastal area). The figures indicate a very high (facility-based) disparity in villages in West Java, so the influence of spatial location, both on the border and on the coast does not become a major influence in the development of the region. The complete results presented in **Table 3**.

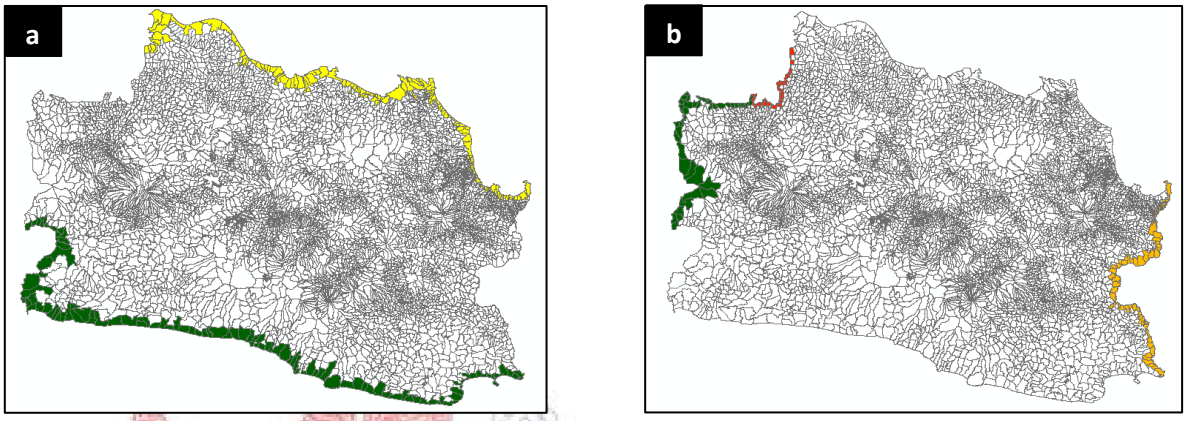


Figure 7. Economic Disparity based on (a). Coastal Area and (b). Border Area

Table 3. Disparity based on Border and Coastal Area

Disparity/Region	Index Theil Entropy	Percent
Border and Non Border Area		
- disparity between border area	0.006	1.972
- disparity within border area	0.301	98.028
- total disparity	0.307	100.000
Coastal and Non Coastal Area		
- disparity between coastal and non-coastal area	0.002	0.553
- disparity within coastal area	0.295	99.447
- total disparity	0.297	100.000

Conclusion

The number of villages with the greatest and smallest VDI value from 2008-2014, both shows an increasing number, indicating the construction of economic facilities is still not evenly. Economic disparity based on disparity within area facilities, either between districts/cities, border/non-border and coastal/non-coastal areas. Disparity within the area indicates the need for more strategic efforts by the government to reduce the disparity by way of the development of economic facilities in some areas that still have the number and types of facilities are still small. The challenge of local governments (districts and provinces) in reducing disparity is the number of population and the number of villages that are relatively many when compared to other provinces in Indonesia. This fact shows that the current economic disparity is caused by the disparities of economic facility development in each

desa/*kelurahan*, not due to differences in the status of the village area and its location. The policy of each local goverment (*desa*) in optimizing village funds needs to be improved in order to provide more adequate economic facilities in the village.

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Analysis Factors Affecting Inequality of Income in 4 Districts / 1 City of DI Yogyakarta 2010 -2015

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ABSTRACT

Development aims to improve people's welfare. To improve the welfare of the community, high and stable growth and equitable income distribution are required. Rapid economic growth is not balanced with equity, will cause inequality. Inequality of income is caused by several factors, not only because of differences in development between regions, the quality of human resources, the potential of natural resources, geographical location, ethnicity can also determine inequality in terms of income distribution. Some of these factors can be a source of inequality. Related to this, it is necessary to note the factors that affect the income inequality, so that the implementation of development can be planned and oriented .

The purpose of this study is to Determine the magnitude of factors affecting income in e quality in Yogyakarta. This study uses panel data method, and data used is time series and cross section data in 4 districts and 1 city of Yogyakarta in 201 0 - 2015. This research use variable: Human Development Index (HDI), GRDP Per capita, Open Unemployment Rate. The analysis method use is panel data with fixed effect model regression . The contribution of this research is expected to be one of the considerations in formulating the planning, strategy and policy related to income inequality . Research is expected to be contribute ideas and information for all the parties will conduct further research.

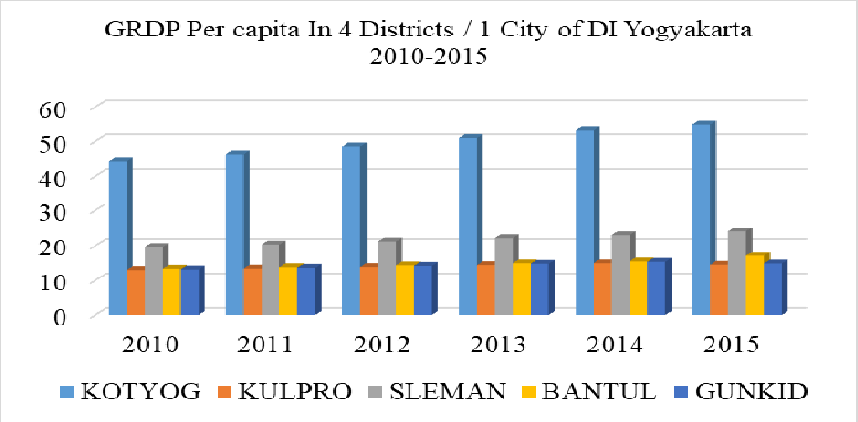
The results show that the variable of HDI has a negative and insignificant affect to income inequality, GRDP Per capita has a positive relationship and significant to income inequality, and open unemployment rate has positive and insignificant affect to income inequality.

Keywords: Human Development Index (HDI), GRDP Per capita, Open Unemployment Rate, Income Inequality, Panel data method

Introduction

Development aims to improve people's welfare. To improve the welfare of the community requires a fairly high and stable growth and income distribution evenly. Rapid economic growth that is not balanced with equity, will cause inequality. Inequality of income is caused by several factors, not only because of differences in development between regions, the quality of human resources, the potential of natural resources, geographical location, ethnicity can also determine inequality in terms of income distribution. Some of these factors can be an advantage but can also potentially be a source of inequality. Gini index or income distribution inequality measure recorded income inequality in Indonesia especially Java island in 2011, 2012 and 2014 which has the highest value of inequality is DI Yogyakarta : 0.418, 0.451, 0.444. During the observation period from 2010 - 2015 which has the highest gini value in DI Yogyakarta is Sleman District: 0.37, 0.41, 0.44, 0.38, 0.37, 0.44. Economic development in general can be defined as a process that causes an increase in real incomes per capita population of a State in the long term accompanied by improvements to the institutional system (Arsyad, 2010 : 11)

With increased per capita income, expected to solve the problem of unemployment, inequality of income distribution through *trickle down effect* (*drip down effect*). In the component of economic growth, Todaro (2006: 118) one of the important components of economic growth that is technological advances or new ways of customizing work. Improvements in the field of health, education can be seen from the value of human development index (HDI). The achievement of HDI in DI Yogyakarta continues to increase from year to year. The welfare of society is expected to be realized if the ever-increasing economic growth will create employment so that it can absorb more labor at reasonable wage levels. Not only economic growth is still not evenly distributed, the value of GRDP also looks very unbalanced between islands. Java Island as the center of economy and government has the value of GRDP that far exceeds the value of other island GRDP. Java GDP contribution to the national GDP of 2013 is the largest of 61.52%. The large contribution of the Gross Regional Domestic Product (GRDP) of Java to the national GDP still leaves the economic problem in its own region, namely the unequal distribution of income shown by GRDP Per capita. The magnitude of the per capita income gap across the province is followed by a high Gini Index in some provinces . Two provinces in the island of Jawa, Jakarta and Yogyakarta, which is the province with the GRDP Per capita both highs and lows, is the province recorded the Gini index exceeds the national average. Here is the graph of GRDP Per capita in 4 Districts / 1 City in DI Yogyakarta



Source: BPS, data is processed

Rapid economic growth will increase the inequality of income distribution, this is because it does not pay attention to whether growth is greater / smaller than the rate of population growth and changes in economic structure. The more the number of unemployed people, the more people who do not receive income / wages, so the gap between the rich and the poor will worsen. More and more working people are expected to reduce income inequality. Condition of open unemployment rate in districts / city in DI Yogyakarta the highest is the city of Yogyakarta (with the lowest population), followed by Sleman district (with the highest population). Overall from 2010 -2015 tends to fluctuate up and down the open unemployment rate in this DI Yogyakarta Districts / city. With the reduced unemployment rate is expected to reduce the income inequality that occurred in DI Yogyakarta . The Gini index is quite high in two provinces in Java and some uneven achievements indicate that the problem contributes to the inequality of income distribution in Java . Based on the above description , researchers interested to examine how the influence of HDI, GRDP per capita, and open unemployment rate to income inequality in 4 districts / 1 City in DI Yogyakarta Year 2010 -2015

Research Methodology

This research uses panel data. The period of time from 2010-2015. The unit of analysis of this study are 4 districts / 1 cities in Yogyakarta: Yogyakarta, Kulon Progo, Sleman, Bantul, Gunung Kidul. Collection of references from several articles, journals, books and internet. Definition operational variables:

1. Human Development Index (HDI) : The data is proxyed with Human Development Index (HDI) according to 4 districts / 1 city in DI Yogyakarta. Data obtained from the Central Bureau of Statistics (on a scale of 0-100)
2. GRDP Per capita (PDRBPK) : Per capita income is derived from dividing regional income (GDP or GRDP) by population. Data obtained from BPS (in thousand rupiah)

3. Open Unemployment Rate (TPT) : The Open Unemployment Rate is derived from the number of unemployed divided by the labor force multiplied by 100 percent. Data obtained from BPS (in percentage units)
4. Inequality Income (IG) : The data is proxyed by Gini Index (IG) according to 4 districts / 1 city of DI Yogyakarta. Data obtained from the Central Bureau of Statistics (in percentage units)

Analysis Tools

This research uses Fixed Effect Method. Equation model of regression analysis is as follows:

$$IG_{it} = \beta_0 + \beta_1 IPM_{it} + \beta_2 PDRBPK_{it} + \beta_3 TPT_{it} + U_{it}$$

Information :

IG	= Gini index
IPM	= Human development index
PDRBPK	= GRDP Per capita
TPT	= Open unemployment rate
β_0	= Constanta
$\beta_1, \beta_2, \beta_3$	= Coefficient
U	= *Disturbance error*
i	= *Cross Section*
t	= *Time Series*

Research Results

Regression Result Analysis

The results of Regression Method *Fixed Effect Model (FEM)* is as follows:

Table 4.1 Regression Results Fixed Effect Model

Dependent Variable: GINI?
Method: Pooled Least Squares
Date: 06/21/18 Time: 21:56
Sample: 2010 2015
Included observations: 6
Cross-sections included: 5
Total pool (balanced) observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.194588	0.850857	0.228696	0.8212
HDI?	-0.004185	0.012047	-0.347346	0.7316
TPT?	0.006618	0.009664	0.684839	0.5006
PDRBPK?	0.018539	0.005200	3.564854	0.0017
Fixed Effects (Cross)				
KULPRO - C	0.172092			
BANTUL - C	0.080181			
GUNKID - C	0.097142			
SLEMAN - C	0.106984			
KOTYOG - C	-0.456400			

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.751774	Mean dependent var	0.330667
Adjusted R-squared	0.672792	SD dependent var	0.070805
SE of regression	0.040502	Akaike info criterion	-3.351759
Sum squared resid	0.036089	Schwarz criterion	-2.978107
Log likelihood	58.27639	Hannan-Quinn criter.	-3.232225
F-statistic	9.518392	Durbin-Watson stat	2.035904
Prob (F-statistic)	0.000020		

Based on the results of data processing value of R^2 of 0.751774. this indicates that the independent variables together can explain the diversity of the dependent variable by 75 percent. The remaining 25% is explained by variables outside the model

Based on the analysis results, it is known that F stat of 9.518392 with probability F of 0.000020. when compared with 5% significance level then the probability of F is smaller than the level of significance. This explains that overall independent variables together provide a significant influence on the dependent variable

To determine whether the independent variables in the regression equation are partially / individually significant in predicting the value of the dependent variable by doing the t test. Testing is done by comparing the probability value to the 0.05 level of significance. From the output in Table 4.1, it can be seen that the probability value of HDI is 0.7316 and the probability of open unemployment rate (TPT) of 0,5006 is greater than

the 0.05 significance level. This shows that the variable of HDI and TPT individually not significant or no effect on income inequality variables. As for the variable GRDP Per capita (PDRBPK) probability value of 0.0017 is smaller than the level of significance of 0.05, this indicates that the variable PDRBPK individually significant or affect the income inequality variables.

Discussion

From the result of panel data regression with *Fixed Effect Model we* get the regression equation as follows:

$$IG_{it} = 0.194588 - 0.004185IPM_{it} + 0.018539PDRBPK_{it} + 0.006618\,TPT_{it} + U_{it}$$

Further discussion of the factors affecting income inequality is described below:

1. Effect of HDI on Inequality of Income

The results show that when the index of human development (HDI) increased by 1 percent it will not decrease the revenue of 0.004185 percent. This is according to research conducted by Holifah (2017) that IPM no significant effect on income inequality between districts / cities in West Java Year 2012-2015. However, the results of this study differ from the research that has been done by Putri, Amar, Aimon (2012) which states that the HDI has a significant effect on income inequality that occurs between provinces in Indonesia. Uneven HDI between different regions will lead to a relatively more developed region due to its better human quality and relatively unfavorable areas due to its low human quality

2. The Influence of GRDP Per capita on the Inequality of Income

The results show that the silmutan and partial per capita GRDP affect the income inequality between regions. The coefficient of GRDP per capita is 0.018539 with a probability of 0.0017 explaining that 1% increase of GRDP per capita will be followed by increase of income inequality equal to 0.018539 percent. This is in accordance with research conducted by Nurlaili (2016) that Per capita GRDP has a positive and significant influence on income income inequality in Java Island in 2007-2013. Kuznet (in Lincolin, 2010: 292) in his analysis found a relation between income disparity and inverted per capita income levels, that is, at the beginning of the growth stage, the distribution of income or welfare tends to worsen. However, in later stages, the distribution of income will improve with increasing per capita income.

3. Variable of Open Unemployment Rate (TPT) to income inequality

The results show that the value of TPT has no significant effect on the income inequality. TPT variable coefficient of 0.006618 with a probability of 0.5006 explains that each 1% increase in the open unemployment rate it will not increase income inequality of 0.006618 percent. Open

unemployment rates that have positive and insignificant signs are due to the relatively low unemployment rate in DI Yogyakarta that does not affect income inequality. This is different from the results of research conducted by Nurlaili (2016), where TPT has a positive and significant impact on income inequality in Java Island Year 2007-2013 .

Conclusion

Based on the analysis of factors affecting income inequality in 4 Districts / 1 City of DI Yogyakarta during the year 2010 - 2015 obtained the following conclusions:

1. The result of regression analysis shows that HDI has negative and insignificant effect on income income in districts / cities of DI Yogyakarta. This is because the probability value obtained more than the significance value of 0.05 is 0.7316 with coefficient -0.004185
2. GRDP Per capita has positive and significant effect to income inequality in districts / cities of DI Yogyakarta shown with probability value 0.0017 which means less than value of significance 0.05 with coefficient value of 0.018539. This means that the high low GDP per capita affect the high low inequality
3. The open unemployment rate has a positive and insignificant effect on income inequality in the districts / cities in DI Yogyakarta which is shown by probability value 0.5006 with coefficient 0.006618. In other words the high low open unemployment rate does not affect the increase in income inequality

Policy Implications

1. Human development index and open unemployment rate which have insignificant influence to income inequality, in this case should increase of HDI which keep increasing from year to year and TPT in districts / city of DI Yogyakarta need to pay attention to other supporting factors like job opportunity, infrastructure and economic growth

2. GRDP Per capita as a factor that has a significant effect on inequality in the district / cities of DI Yogyakarta. Differences of GRDP Per capita between regions leads to income inequality. Where is known that the city of Yogyakarta has the highest GRDP Per capita and for the last 3 years 2013-2015 has a value gini above sleman district . While the GRDP Per capita Sleman is highest second after the city of Yogyakarta. Conditions like this where different GRDP Per capita must be one of the considerations in development planning that needs to be followed by the equity of the economic sector in all regions

Suggestion

1. Inequality distribution income in DI Yogyakarta including medium category need to be followed up with the implementation of economic policies and non-economic support each other so that income distribution inequality can be improved so that the income distribution can be more evenly

2. Provincial Government besides paying attention to 3 elements of HDI (level of health, education level and standard of living) also need to pay attention to other supporting factors such as infrastructure, economic growth of employment opportunities so that open unemployment rate will decrease and can significantly influence inequality income

3. Conditions which different GRDP Per capita between regions should be one of the considerations in development planning. Enhancement welfare economy as measured through enhancement GRDP Per capita need followed with equitable distribution of economic sectors in all regions. Enhancement participation power work in all area too need to be considered for equity population for prevent the height current urbanization

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FLYPAPER EFFECT AND FISCAL ILLUSION: A RELATIONSHIP BETWEEN THE TWO

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ABSTRACT

With fiscal decentralization it is expected that the regions, both districts and municipalities, can be independent in financing their expenditures. This independence shows the existence of regional autonomy in managing and developing the regional potential for the prosperity of its people. APBD or regional spending and revenue budget is a reflection of regional fiscal policy used in the management of this potential. On the other hand, the independence of regional expenditure financing is expected to generate local revenue can be greater than the income earned from other sources. In the flypaper effect analysis, which uses district and municipal APBD data from 2010 to 2016, it is known that the coefficient of transfer funds is more dominant than the local government revenues on regional expenditures. This shows that regional dependence on transfer funds is still strong. The amount of transfer funds should be able to create great value added to the regional economy so that in the end it is expected to increase the local revenue. To find out whether there is a significant role of regional revenue on regional expenditure in response to the hypothesis that there is a positive relationship between regional expenditure and local revenue, the approach of revenue enhancement are used. The data used are APBD and Gross Regional Domestic Product. By using the regression model, it is found that in the revenue enhancement approach, fiscal illusion occurs because the ratio of income to expenditure is negatively correlated with government expenditure. From the flypaper effect and fiscal illusion analysis it can be explained that the concept of fiscal illusion can explain the existence of flypaper effect where the region is highly dependent on transfer funds compared to its own revenue. It can also be said that the region has not been able to significantly create value added to its revenue from regional expenditure obtained from the transfer fund. Two things can be suggested, namely the central government should re-formulate the calculation of transfer funds, and the local government needs to prioritize activities and programs that can increase local revenue.

Keywords : Flypaper effect, fiscal illusion, local government budget

PRELIMINARY

The new round of government management from the centralized system to a decentralized system is marked by the enactment of regional autonomy in accordance with Law Number 22 Year 1999 on Regional Government and Law Number 25 Year 1999 on Financial Balance between the Central Government and Local Government. The autonomy policy has consequences on the readiness of the regions to make it happen. For regions that are not ready due to low of fiscal capacity owned the regions. To address these conditions, the central government provides transfer funds or balancing funds for regions, such as the General Allocation Fund (DAU) and the Special Allocation Fund (DAK).

Intergovernmental transfers are a common phenomenon occurring in all countries regardless of their governmental system (Kuncoro 2007). This transfer fund is intended to address the fiscal gap between the central government and local governments, and the fiscal gap among local governments. The regions are expected to be able to optimize the management of these resources so that there is an increase in fiscal capacity, as well as to reduce dependence on central government to become more independent (Sidik et al., 2002).

In many countries, transfers between central and local governments have been widely implemented. Such intergovernmental transfers are a common phenomenon in many countries, irrespective of prevailing governance systems and even the most prominent feature of financial relations between central and local governments (Kuncoro, 2004). The main purpose of the transfer is to overcome the problem of externalities, correcting vertical imbalances, fiscal equalization among regions, and to achieve certain development goals (Oates, 1999). Many developing countries are implementing fiscal decentralization as an attempt to get out of the pitfalls of government inefficiency, macroeconomic instability, and the inadequacy of economic growth that causes them to fall (Bird et al., 1998).

Before a new era of fiscal decentralization was introduced in 2001, each of the first and second tier regions had two types of revenues to finance their expenditures, namely local revenues and funds transferred by the central government (Alfirman, 2003). In 1999 issued the Law Number 22 on Regional Government and the Law Number 25 on Fiscal Balance between Central and Regional Governments. Both law products aimed to create inter-regional autonomy and encourage a more democratic system of government. In the new fiscal decentralization system, provinces and districts take over all of the roles of the central government, except for defense and security issues, foreign policy, judiciary, macroeconomic policy and national planning (Fane, 2003). The new fiscal decentralization also allows the creation of new local governments.

Since the enactment of Law Number 25 Year 1999 on Fiscal Balance between Central and Regional Governments, Indonesia entered a new era in fiscal decentralization. If the previous regional financial management has been conducted centrally, now it is decentralized. The goal of this change is to create and build a public system that provides local public goods and services to be more effective and efficient, while maintaining macroeconomic stability. This is manifested in the form of government-level authority for expenditure, tax collection, and assistance in the form of transfers from the central government to the regions.

The Law Number 25 Year 1999 on Financial Equilibrium between the Central Government and Local Government was revised into the Law Number 33 Year 2004. The law states that local government funding sources comprise regional revenue, equity funds, and other legal revenues. Regional Original Revenue (PAD) consists of elements of local taxes, regional charges, separate proceeds of wealth processing, and other indigenous revenues. While balance funds are regional funds derived from APBN, consisting of Revenue Sharing Fund (DBH), DAU, and DAK. Meanwhile, the Revenue Sharing Fund comes from taxes and natural resources that are channeled to regions based on certain percentages.

The relatively more dominant the role of transfer funds (DBH, DAU, DAK, and DPOK) compared to PAD in financing local government spending is actually not a good signal for the government. The results of empirical studies internationally show that high dependence on transfer funds is negatively associated with the outcomes of governance (Mello et al., 2001). This indicates that local governments should be more careful in using and managing the funds obtained from the community than the transfer funds

obtained from the central government. This condition shows that the fiscal behavior of local governments in responding to transfers from the central government is an important factor in supporting the effectiveness of the transfer policy itself.

The fiscal behavior of local governments in responding to transfers from the central government is crucial in supporting the effectiveness of transfer funds. Empirical results regarding the local governments' response to transfers and incomes have been widely discussed, as has been done by Bae et al. (2004) and Kusumadewi et al. (2007). The results of their analysis are not much different, that is when the regional income comes from the transfer funds, the stimulus expenditure is different from the stimulus that emerged from the regional income. When the regional expenditure response is greater than the transfer compared to regional income, then what happens is called the flypaper effect.

Local governments tend to be dependent on the central government and budgeted for increased spending with the aim of improving the capacity of local governments to increase PAD. This is stated as a fiscal illusion (Dollery and Worthington, 1999). Any government revenue must have an impact on the amount of spending, where the greater the government's expenditure should the government benefit increase revenue in the future, such as increased public taxes. There is a symmetrical relationship between government revenue and expenditure. If the opposite happens (there is an asymmetric relationship), then it can be said there is a fiscal illusion. This is because the central government or the community is not aware that they are contributing (either transfer funds, or taxes / levies) greater than what is actually required by the local government.

On the other hand, to find out whether there is a fiscal illusion or not, it can be done in various ways, one of which is revenue enhancement (Bergstrom and Goodman 1973; Dollery and Worthington 1999). Regional spending is a function of local revenue. Expenditure is a dependent variable that is highly dependent on local financing sources, either from self-generated income or from transfer funds. Increased acceptability components should have a positive relationship with spending. However, if the opposite happens, then fiscal illusion is indicated.

METHOD OF ANALYSIS

This study uses an explanation method explaining the relationship between one variable with other variables, where there is one dependent variable, that is regional expenditure and five independent variables, that is PAD, DBH, DAU, DAK, and DPOK. This study uses panel data where the population is all districts in every province in Indonesia, from 2010 to 2016. The data used are from Directorate General of Fiscal Balance, Ministry of Finance, and Central Bureau of Statistics (BPS). Meanwhile, to detect the existence of fiscal illusion using revenue enhancement approach also uses relationship among variables. In revenue enhancement approach there is one dependent variable, that is regional expenditure and the independent variables are Gross Regional Domestic Product, regional revenue, local taxes, and local levies.

The model used is based on the model developed by Maimunah (2006) and Khairani (2008), with the reformulated to be:

$$\ln\_BD_{ij} = b_o + b_1 \ln\_PAD_{ij} + b_2 \ln\_DBH_{ij} + b_3 \ln\_DAU_{ij} + b_4 \ln\_DAK_{ij} + b_5 \ln\_DPOK_{ij} + \mu_{ij}$$

where BD is regional expenditure, PAD is Local Original Revenue, DAU is General Allocation Fund, DAK is Special Allocation Fund, and DPOK is Adjustment Fund and Special Autonomy, μ is error term, b0 is constant, b1, b2, b3, b4, and b5 is the regression coefficients. To determine whether or not flypaper

effect occurs, the coefficients of transfer funds are greater than the PAD coefficient, and both are significant, or PAD is not significant (Khairani, 2008 and Maimunah, 2006).

Meanwhile, for revenue enhancement model using model developed by Borcherding and Deacon (1972) in Gemmel et al. (1998) with the re-formulation as follows:

$$\ln\_BD_{ij} = b_o + b_1 \ln\_PDRB_{ij} + b_2 \ln\_PB_{ij} + b_3 \ln\_DB_{ij} + b_4 \ln\_TAX_{ij} + b_5 \ln\_RET_{ij} + \mu_{ij}$$

where BD is regional expenditure, PDRB is Gross Regional Domestic Product (GRDP), PB is ratio of GRDP to regional expenditure, DB is ratio of regional revenue to regional expenditure, TAX is local taxes, and RET is local levies, μ is error term, b0 is constant, b1, b2, b3, b4, and b5 are regression coefficients. To find out whether there is a fiscal illusion, that is, if there is a variable of revenue that is deficit. Therefore there must be a positive relationship between the variable of revenue and the expenditure variable (Gemmel et al., 1998). Hypothesis will be accepted if there is a negative relationship between independent variable and dependent variable.

RESULT AND DISCUSSION

This study uses fixed effect model with least square dummy variables method. The selection of this model aims to find out the regression model of panel data by using dummy variables that can be used to explain different intercept between individuals, in this case is the district / municipality in each province. Results from data processing done with STATA software are as follows.

Table 1. Variables Affecting Regional Expenditure

Province	Variables Affecting Regional Spending	Province	Variables Affecting Regional Spending
Aceh	PAD, DAU, DAK, DPOK (.217) (.359) (.116) (.062)	Kalbar	DAU, DPOK (1.014) (.064)
Sumut	PAD, DBH, DAU, DAK DPOK (.069) (.075) (.749) (.177) (.041)	Kalteng	PAD, DAU, DAK, DPOK (.098) (.898) (.063) (.043)
Sumbar	PAD, DBH, DAU (.148) (-.095) (.692)	Kalsel	PAD, DAU, DAK, DPOK (.279) (.445) (.058) (.094)
Riau	PAD (.638)	Kaltim	PAD, DBH (.324) (.329)
Jambi	PAD, DAU (.249) (.598)	Sulut	PAD, DAU, DAK, DPOK (.141) (.433) (.183) (.024)
Sumsel	PAD, DAU (.235) (.580)	Sulteng	DAU, DAK, DPOK (.751) (.197) (.049)
Bengkulu	DAU, DAK, DPOK (.791) (.156) (.082)	Sulsel	PAD, DAU, DAK, DPOK (.079) (.625) (.142) (.083)
Lampung	PAD, DAU, DAK, DPOK (.067) (.727) (.091) (.116)	Sultenggara	PAD, DAU, DAK, DPOK (.085) (.621) (.164) (.076)
Jabar	PAD, DAU (.299) (.474)	NTB	PAD, DAU, DAK, DPOK (.158) (.512) (.102) (.079)
Jateng	PAD, DBH, DAU, DAK, DPOK (.250) (-.094) (.524) (.068) (.032)	NTT	DBH, DAU (-.243) (.848)
Yogya	DBH, DAU,DPOK (-.237) (.729) (.081)	Maluku	DAU, DAK, DPOK (.624) (.161) (.113)
Jatim	PAD, DBH, DAU, DPOK (.243) (.114) (.399) (.141)	Papua	PAD, DAU, DAK, DPOK (.083) (.612) (.144) (.192)
Bali	PAD, DBH, DAU, DPOK (.198) (-.099) (.454) (.150)	Malut	PAD, DAU, DAK, DPOK (.086) (.624) (.125) (.067)
Kepri	PAD, DBH (.513) (.169)	Gorontalo	DBH, DAU, DPOK (-.561) (.466) (.052)
Banten	DAU (1.358)	Pabar	DAK (.513)
Babel	DAU, DAK (.745) (.165)	Sulbar	DAK (.511)
Source: Author calculation			
In parentheses is coefficient of variables			

The effect of transfer funds on regional expenditure is indicated by the large impact of transfer funds on regional expenditures. In most provinces, the biggest impact is provided by DAU, where the effect of

DAU on regional spending is the greatest compared to other transfer funds. This is indicated by the larger DAU variable coefficients compared with other variable coefficients. This confirms the important role of DAU in local expenditure in almost all provinces in Indonesia.

On the other hand, the positive impact of DAU and DBH as well as the positive influence of PAD on regional spending is supported by Ashworth et al. (2005) and Deller et al. (2005). However, in some provinces, such as West Sumatra, Central Java, Yogya, and Bali, DBH has a negative impact on local spending. This is allegedly caused by the decrease of expenditure realization due to absorption that is not in accordance with the planned expenditure.

Regression results in general explain the existance of flypaper effect, which means that local governments through their regional expenditures more respond to transfer funds than their own income. Therefore, local governments should maximize their regional potentials as a form of implementation of regional autonomy.

As for the model of revenue enhancement obtained the results in the summary as follows.

Table 2. Variables Indicating Fiscal Illusion

ln_BD	Coefficient	Conclusion
ln_PDRB	0.565	no fiscal illusion
ln_PB	0.574	no fiscal illusion
ln_DB	-0.403	fiscal illusion
ln_TAX	0.223	no fiscal illusion
ln_RET	0.216	no fiscal illusion

Source: Author calculation

The table above shows that GRDP, the ratio of GRDP to regional expenditure, local taxes, and local levies have positive relationships to local government expenditure. Meanwhile, the ratio of regional revenue to regional expenditure has a negative relationship. The calculation results also indicate that there has been fiscal illusion after the existence of regional autonomy. This is because there is a variable that has negative correlation to local government expenditure, namely the ratio of regional revenue to regional expenditure. This is in accordance with the results of research conducted by Gemmel et al. (1998) that if there are variables that have negative relationships to regional government spending, then there is an indication of the existence of fiscal illusion. Similar results were also performed by Diamond (1989) and Ashworth (1995) in Gemmel et al. (1998) which concluded that there is a fiscal illusion because of a negative relationship between regional government expenditure and the ratio of regional revenue to regional expenditure. This study focuses only on fiscal illusion testing using revenue enhancement approach. For that purpose, the use of other fiscal illusion approaches is needed to obtain a picture of fiscal illusion widerly.

CONCLUSION

The analysis of the existence of flypaper effect and fiscal illusion discussing regional government expenditure and some variables that influence it can be drawn some conclusions as follows:

1. Transfer funds affect regional expenditure as indicated by the magnitude of the impact of transfer funds on regional expenditure. In most provinces the biggest impact is provided by the DAU, thus underscoring the importance of DAU in regional expenditure in almost all provinces.

2. In general there are flypaper effects, where local governments respond more to transfer funds than their own income. Therefore, local governments should maximize their regional potentials as a form of regional autonomy.

3. The ratio of regional revenue to regional expenditure has a negative relationship, thus indicating a fiscal illusion after regional autonomy. This is indicated by a negative correlation to the ratio of regional revenue to regional expenditure.

RECOMMENDATION

1. The central government needs to redefine the transfer fund policy in order to become an incentive to increase the fiscal capacity of the regions. In addition, local governments should continue to maximize the potential of their regions in order to have a significant impact on regional revenue growth.

2. Local government spending should be planned in detail until the implementation stage and the response will be made to various risks that can occur in order to absorption of spending can be maximized and in accordance with the planning.

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THE IMPACT OF FISCAL DECENTRALIZATION, GENERAL ALLOCATION FUND, SPECIAL ALLOCATION FUND AND REVENUE SHARING FUND ON ECONOMIC GROWTH IN REGENCIES/CITIES OF CENTRAL JAVA PROVINCE 2011 TO 2015.

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ABSTRACT

This paper aims to the impacts fiscal decentralization, General Allocation Fund, Special Allocation Fund, Revenue Sharing Fund for economic growth in Central Java Province. Economic growth is one of the most important indicator to look at economic development sector in each country. It can be seen with GDP. The Regency/Cities with high economic growth, can be realized with decentralization fiscal policy. It assignment of authority from central to local government. That policies have been set in Law No.23 of 2014 and started in 2001. Fiscal decentralization enough to speed up development regional, poverty reduction, and boost economic development regional. In addition, fiscal decentralization policies has been implemented in Indonesia expected to grow regional independence to organize and make programs that support population necessary in each region.

This paper use secondary data from statistics Indonesia and Departement Finance in Central Java from 2011 to 2015. Analysis use panel Fixed Effect Model approach with Stata program 13. The results shows that probability value from Fiscal Decentralization is 0.012<α (0.05), it means this variable effect positively positively and significance to economic growth. Then, probability value from General Allocation Fund variable is 0,008<α (0.05), it means this variable effect positively and significance to economic growth. Then, probability value from Special Allocation Fund variable is 0.042<α (0.05) it means Special Allocation Fund variable effect positively and significance to economic growth. While Revenue Sharing Fund variable probability values is 0,52>α (0.05), it means that have no effect positively and significance to economic growth. The conclusion from this results is between Decentralization Fiscal, General Allocation Fund, Special Allocation Fund have the largest contribution is General Allocation Fund variable.

The conclusion from this paper is decentralization fiscal policy authority is giving freedom to local government. It means local government can improve their potential of natural or human resources. The Region Own Source Revenue in Central Java province also needs to

be improved in order to achieve a higher GDP. There are several ways that can be done by increasing the local tax revenue and other areas of the original.

Keyword : Fixed Effect Model, Economic Growth, Central Java Province.

1. INTRODUCTION

Economic growth is one of economic development indicators in a country that measured by Gross Regional Domestic Bruto (GRDP). In Indonesia, economic development is formed by regional autonomy policy that officially implemented since 1 January 2001. Regional autonomy policy or fiscal decentralization regulated in law no 13 of 2014 on Regional Government. The goal of regional autonomy is to boost prosperity and welfare.

Fiscal decentralization can be an opportunity to a region to increase its regional potential to boost economy. The aim of regional decentralization policy is to provide better public services, to stimulate regional independence to manage their finances, as well as develop programs that support the needs of people in the region. The result concluded that fiscal decentralization policy provides authority to government to increase regional economy as well as the potential of natural resources as well as human resources.

Some studies conducted by Oates (1993); Bird (1993), Bird, Ebel, and Wallich (1995); Martnez dan McNab (2001); World Bank (1997a); Bahl and Linh (1992); and Gramich (1993) suggest that decentralization or authority delegation to regional government can also boost public services efficiency as well as economic growth (Saputra, 2013).

World Bank (2997a); Matinez dan McNab (2001) emphasized that fiscal decentralization can be negatively affect economic growth. It is because decentralization boost macroeconomic instability. In the end, it can inhibit

economic growth. Previous studies conducted by Philips and Woller (1997), and Davodi and Zao (1997) in developing countries (in Saputra, 2013) proved that fiscal decentralization negatively affect economic growth.

In Indonesia, according previous studies according to Situngkir et al (2014), fiscal decentralization negatively affect economic growth. From revenue indicator, fiscal decentralization negatively affect economic growth. Meanwhile, from expenditure indicator, when there is no calculation on revenue generated from balance funds, fiscal decentralization did not significantly affect economic growth in North Sumatera Province.

Figure 1.1 below explains the effect of fiscal decentralization to economic growth in Central Java Province that can be seen from the average value of GRDP percapita.

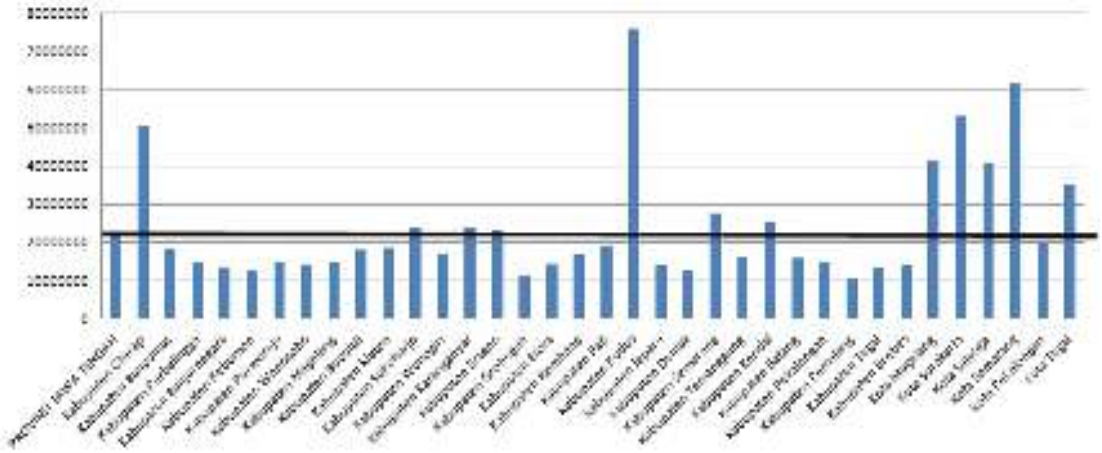

Figure 1.1 Average Percapita Income Regencies/Cities in Central Java Province from 2011 to 2015 (in million Rupiah)

Source: Statistic Indonesia 2011-2015

Figure 1.1 reveals the GRDP percapita average value of regencies/cities of Central Java Province from 2011-2011. The highest GRDP percapita average value

are in Kudus Regency, Semarang City, and Surakarta City. In addition, there are several regencies/cities that have higher GRDP percapita average value than Central Java Province, that are Cilacap Regency, Magelang City, Salatiga City, Tegal City, Semarang Regency, Kendal Regency, Sukoharjo Regency, Karanganyar Regency, and Sragen Regency. Thus, this study asseses the impact of fiscal decentralization, general allocation fund, special allocation fund and revenue sharing fund to economic growth in regencies/cities in Central Java Province from 2011-2015.

2. THEORETICAL FRAMEWORK

a. Theoretical Framework

1) Economic Growth Theory

a) Modern Theory of Economic Growth

According to Kuznet, a country's economic growth defined as a long-term rise in capacity to supply increasingly diverse economic goods to its population. That growing capacity based on advancing technology and the institutional and ideological adjustments that it. Kuznet stated that there are 6 characteristics of economic growth process, that are (Todaro, 2000) :

- the high rates of growth of per capita product and of population
- the rise of rate in productivity
- the rate of structural transformation of the economy is high
- the closely related and extremely important structures of society and its ideology have also changed rapidly.
- the economically developed countries have the propensity to reach out to the rest of the world

- Limited spread of economic growth that reaches about one third of the world's population.

b) Classical Economic Growth

According to Adam Smith, there are two main aspects in economic growth that are (Arsyad, 1992) :

- Total Output Growth

There are three production factors in production system in a country :

- Natural resources
- Population
- Capital

- Population Growth

According to Adam Smith, wage rate that is higher than subsisten rate will boost population. At the prevailing rate, wage is determined by the attractiveness between the forces of demand and supply of labor, while labor demand is determined by the stock of capital and the level of output of population. Adam Smith added that demand will determined by capital and output growth rate.

c) Neoclassical Economic Growth

According to Arsyad (1992), neoclasical economic growth theory was developed in the late 1950s. In this theory, economic growth determined by production factors that are population, labor, and capital accumulation as well as technological progress.

2) Fiscal Decentralization

Fiscal decentralization is a budget distribution process from higher levels of government to the lower levels of government to support

government functions and duties as well as public services according to the number of delegated authorities (Saragih, 2003). According to Mulyanto (2007) revenue fund sources that used to implement fiscal decentralization are :

a) Local Own Source Revenue

Local Own Source Revenue is revenue generated from Regional Tax Income, Regional Retribution Income, the separated regional resource management, etc. Local-own source aims to provide discretion to the region.

b) Balance Fund

Balance Fund according to Mulyanto (2007 : 25) is regional fund sourced from state budget consist of Revenue Sharing Fund, General Allocation Fund, and Special Allocation Fund.

b. Conceptual Framework

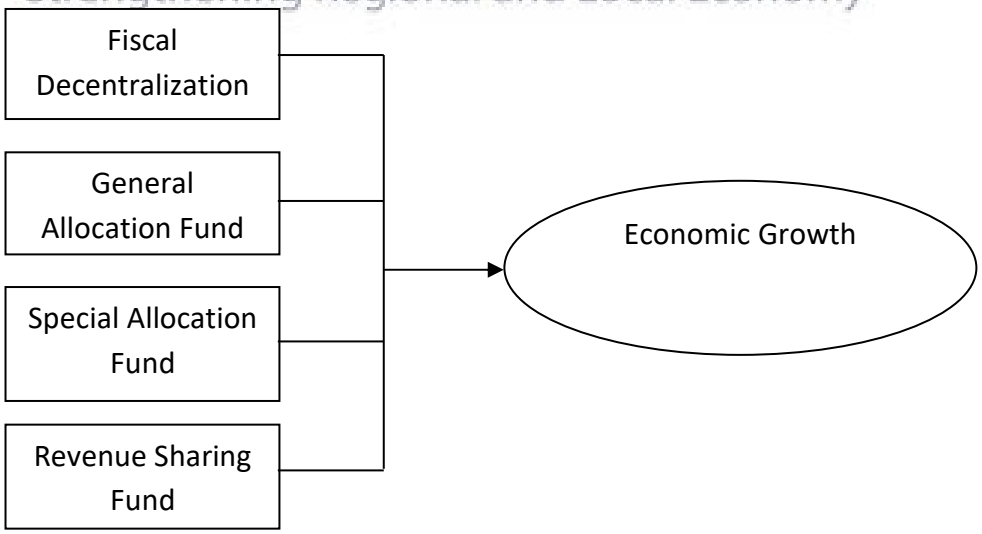

Figure 1.2 Theoretical Framework

Economic growth basically is a description of economic condition in one region in certain period. One of successful development indicators is the increasing of economic growth. However, economic growth is macroeconomic issue in long-run. A nation can be named as developed country when its percapita income is increasing. The instrument used to measure economic growth is Gross Regional Domestic Product (GRDP). GRDP explains the condition of economy in certain region.

General Allocation Fund, Special Allocation Fund, and Revenue Sharing Fund is revenue source or region fund to implement fiscal decentralization in Indonesia. The allocation of General Allocation Fund, Special Allocation Fund, and Revenue Sharing Fund aim to regional finance distribution as well as to finance regional needs in order to implement fiscal decentralization. Fiscal decentralization is expected to increase economic growth in every region in Indonesia. Thus, regional government should have allocation fund source to implement fiscal decentralization to boost prosperity.

c. Hypothesis

1) The first hypothesis argues that fiscal decentralization positively affect economic growth in regencies/cities of Central Java Province.
2) The second hypothesis argues that General Allocation Fund positively affect economic growth in egencies/cities of Central Java Province.
3) The third hypothesis argues that Special Allocation Fund positively affect economic development in regencies/cities of Central Java Province.
4) The fourth hypothesis argues that Revenue Sharing Fund negatively affect economic growth in regencies/cities of Central Java Province.

3. RESEARCH METHOD

a. Research Scope

This study observes 35 regencies/cities of Central Java Province between 2011 and 2015. This present study relied on the data of GRDP, ocally Generated Revenue, Total Regional Revenue, General Allocation Fund, Special Allocation Fund, and Revenue Sharing Fund. This study aims to examine the effect of fiscal decentralization General Allocation Fund, Special Allocation Fund, and Revenue Sharing Fund to economic growth.

b. Data

This study employs secondary data and utilizes panel data regression. The estimation is runned by Stata 13. The data generated from Statistic Indonesia and Ministry of Finance budget information.

c. Method

1) Panel Data Regression Analysis

To examine the effect of fiscal decentralization, General Allocation Fund, Special Allocation Fund, and Revenue Sharing Fund to economic growth in Central Java Province from 2011-2015, this paper utilizes panel data regression to run the analysis with the equation as follows :

$$Y = \beta 0 + \beta 1\ X1it + \beta 2\ X2it + \beta 3\ X3it + \beta 4\ X4it + e \ldots\ldots.(3.1)$$

Spesification :

Y = Economic Growth

X1 = Fiscal Decentralization (FD)

X2 = General Allocation Fund (GAF)

X3 = Special Allocation Fund (SAF)

X4 = Revenue Sharing Fund (RSF)

i = number of provinces

t = year

e = error term

2) Selection of Panel Data Regression Model

This study relied on the panel data. Panel data combines features of both time series and cross-section data. According to Widarjono (2007), there are several advantages from panel data. First, panel data is a combination of time series and cross-section data. Panel data is able to provide more data that can generate bigger degree of freedom. Second, the combination of time series and cross-section data information is able toovercome the problem of *omitted-variable*. According to Widarjono (2007), there are three methods commonly used to estimate panel data, that are :

a) *Common Effect Model* (OLS)

Common effect model (OLS) combines cross section data and time series data using OLS to estimate the data panel (Widarjono, 2009).

b) *Fixed Effect Model* (FEM)

According to Gujarati (2012) *fixed effect model* (FEM) is a model with different *intercept* for each subject (cross section). However, each subject slope so not change over time. The *Intercept* in this model differently assumed with each subject. Meanwhile, this model assumes there is difference iver subject but the slope is still same over subject. According Kuncoro (2011), dummy variable is employed to to differ one

subject to other subject. The model is known as *Least Square Dummy Variables* (LSDV).

c) *Random Effect Model* (REM)

Widarjono (2007) stated that *random effect* model is performed to overcome *fixed effect model* weakness which uses dummy variable. Random effect model assumes error randimly. There is assumption in *random effect* that is the number of *cross section* should be larger than the variables of the research.

3) Model Determination

The best model determination between *common effect model, fixed effect model* and *random effect model* is estimated by two models that are *Chow test* and *Hausman test*. *Chow test* is performed to choose between *common effect* or *fixed effect model*. Meanwhile, *Hausman test* is performed to choose the best model to estimate oanel data regression that are between *fixed effect* atau *random effect model*.

a) *Chow test*

Chow test is performed to compare *common effect model and* dengan *fixed effect model* (Widarjono, 2007). Chow test hypotheses are as follows :

H_0 : *Common Effect Model*

H_a : *Fixed Effet Model*

H_0 is rejected when the value of Prob. F < α value. Meanwhile, H_0 is accepted when the value Prob. F > α value. The α critical value is 10%.

b) *Hausman test*

Hausman test is employed to compare *fixed effect* model and *random effect* model to determine the proper regression panel data model. (Gujarati, 2012). There are two hypotheses used :

H_0 : *Random Effect Model*

H_a : *Fixed Effect Model*

The test rejects H_0 when Prob. F value > α value. The test accepts H_0 when Prob. F value < α value.The critical value of α is 10%.

4) Statistic Test

a) T-Test (Partial Test)

T-test is performed to show each independent variables that affect dependent variable (Kuncoro, 2011). This test employed hypotheses as follows (Utomo, 2015) :

- Hypothesis Formula :

  H_0 : Independent variable-i does not affect significantly

  H_a : Independent variable-i does affect significantly

- Level of significance (α)
- Testing criteria

  H_0 is rejected if t < α

  H_0 is accepted if t > α
- Conclusion :

  H_0 is rejected if t < α

  H_0 is accepted if t > α

b) F test (Simultaneous Test)

F-test is performed to reveal how well the impact of independent variables on dependent variable simultaneously. The test is performed by comparing $F_{calculate}$ and $F_{table.}$ The decision to reject H_0 or accept H_0 is as follows :

a) H_0 is rejected when the significance statistic is $F < \alpha$

b) H_0 is accepted when the significance statistic is $F > \alpha$

c) Coefficient Determination (R^2 test)

According to Ghozali (2009) Coefficient Determination (R^2) test is employed to measure how well a model explains the variation of dependent variable. The range value of R^2 is from 0 to 1. Widarjono (2007) stated that a good model is when the R^2 value is close to 1. On the contrary, when the R^2 value is close to 0, the model is not good.

4. DISCUSSION

a. Panel Regression Result

This study employed panel data that analyzed by three method that are *Common Effect Model (OLS), Fixed Effect Model (FEM)* and *Random Effect Model (REM).*

1) Common Effect Model (OLS)

Table 4.1 *Common Effect Model* (OLS) test result

	Constanta	FD (X1)	GAF (X2)	SAF (X3)	RSF (X4)
Coefficient	5.9062	-0.0170357	0.0000000306	-0.00000976	-0.00000507
Std Error	0.2357486	0.0171146	0.000000289	0.00000378	0.00000185
Prob $p > \|t\|$	0.000	0.321	0.29	0.011	0.007
Prob > F					0.0003
R-Squared					0.1148

Source : estimation result run by Stata 13

2) *Fixed Effect Model* (FEM)

Table 4.2 *Fixed Effect Model* (FEM) test result

	Constanta	FD (X1)	GAF (X2)	SAF (X3)	RSF (X4)
Coefficient	7.379004	-0.0778406	-0.00000132	-0.00000919	0.00000303
Std Error	0.7423732	0.0304876	0.00000493	0.00000447	0.00000477
Prob $p > \|t\|$	0.000	0.012	0.008	0.042	0.526
Prob > F					0.0101
R-Squared overall					0.0369

Source : estimation result run by Stata 13

3) *Random Effect Model* (REM)

Table 4.3 *Random Effect Model* (REM) test result

	Constanta	FD (X1)	GAF (X2)	SAF (X3)	RSF (X4)
Coefficient	6.061418	-0.000000187	-0.00000710	-0.00000302	-0.00000302
Std Error	0.3201336	0.0194247	0.000000302	0.00000281	0.00000238
Prob $p > \|t\|$	0.000	0.286	0.536	0.063	0.205
Prob > F					0.0184
R-Squared					0.0953

Source : estimation result run by Stata 13

4) *Hausman Test*

Table 4.4 *Hausman Test*

Test Summary	Chi 2 (2)	Prob.
Cross-section random	7.43	0.0594

Source : estimation result run by Stata 13

Hausman test result in table 4.4 reveals that the probability value is 0,0594 or less than α (0,10). It means, if the probability value of Hausman Test is less than 0,10, *Fixed Effect Model* will be utilized. *Fixed effect model* estimation results are as follow :

Table 4.5 *Fixed Effect Model (*FEM) test

	Konstanta	FD (X1)	GAF(X2)	SAF (X3)	RSF (X4)
Coefficient	7.379004	-0.0778406	-0.00000132	-0.00000919	0.00000303
Std Error	0.7423732	0.0304876	0.00000493	0.00000447	0.00000477
Prob $p > \|t\|$	0.000	0.012	0.008	0.042	0.526
Prob > F					0.0101
R-Squared overall					0.0369

Source : estimation result run by Stata 13

Table 4.5 revelas the *fixed effect model* test result based on the probability value of P > | t |. On fiscal decentralization, the probability value is 0,012 < α (0,10). It means that fiscal decentralization positively and significantly affect economic growth. The probability value of General Allocation Fund is 0,008 < α (0,10). It means that General Allocation Fund positively and significantly affect economic growth. The probability value of Special Allocation Fund is 0,042 < α (0,10). It means that Special Allocation Fund positively and significantly affect economic growth. Meanwhile, the probability value of Revenue Sharing Fund is 0,52 > α (0,10), it means that Revenue Sharing Fund does not positively and significantly affect economic growth.

b. Statistic Test

1) T-test (Partial Test)

T-test is performed to examine independent variables (decentralization, general allocation fund, special allocation fund and revenue sharing fund) affect dependent variable (economic growth). The results of T-test are as follow :

Table 4.6 T-Test Result

Variables	P>|t|
FD	0.012
GAF	0.008
SAF	0.042
RSF	0.526

Source : Estimation result run by Stata 13

T-test result shows that the value of P>|t| of fiscal decentralization is 0,012 or less than α value (0,05). It means that Fiscal Decentralization positively and significantly affect economic growth. The value of P>|t| of General Allocation Fund is 0,008 or less than α value (0,05). It means that General Allocation Fund positively and significantly affect economic growth. The value of P>|t| of Special Allocation Fund less than α value (0,05). It means that Special Allocation Fund positively and significantly affect economic growth. Meanwhile, the value of P>|t| of Revenue Sharing Fund is 0,526 or greater than α value (0,05). It means that Revenue Sharing Fund does not positively and significantly affect economic growth.

2) F-Test (Simultaneous Test)

Simultaneous test or F-test is a test to examine independent variables (fiscal decentralization, General Allocation Fund, Special Allocation Fund, Revenue Sharing Fund) simultaneously affect dependent variable (economic growth). The F-test result is as follows :

Table 4.7 F-Test Result

Prob > F	0,0000

Source : Estimation result run by Stata 13

F-test estimation shows Prob > F is 0,0000 or less than α value (0,05). It means that fiscal decentralization, general allocation funds, special allocation fund and revenue sharing fund simultaneously affect economic growth.

3) Coefficient of Determination Test (R^2)

Coefficient of Determination Test (R^2) is was run to measures the proportion or percentage of the total variation in dependent variable explained by inependent variable. The estimation result of Coefficient of Determination Test is as follows :

Tabel 4.8 Coefficient of Determination (R^2) Test Result

R-Sq : Within	0,0922

Source : Estimation result run by Stata 13

Coefficient of Determination (R^2) test result shows value of 0,0922. It means that 9,22% of fiscal decentralization, general allocation fund, special allocation fund, and revenue sharing fund are able to affect economic growth in regencies/cities of Central Java Province from 2011 to 2015. Meanwhile, the rest of 90,78% are affected by other variables.

5. CONCLUSION AND SUGGESTION

a. Conclusion

1) Based on panel data test, this study employs three method that are *Common Effect Model, Fixed Effect Model, and Random Effect Model*. Next, Hausman test is conducted to choose which one is the best model between *Fixed Effect Model* and *Random Effect Model*. Hausman Test result shows

Probability value of 0,0594 or less than α value (0,10). It means that Fixed Effect Model does fit in.

2) The result from *Fixed Effect Model* reveals that fiscal decentralization, general allocation fund, and special allocation fund positively and significantly affect economic growth, whereas revenue sharing fund does not affect economic growth positively.

b. Suggestion

1) Fiscal decentralization policy provides authority to government to increase the potential of natural resources as well as human resources. The authority is an opportunity to increase prosperity and welfare of the people.
2) For next research, the addition of new variables is necessary in order to generate more relevan result.

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Widarjono, Agus. 2009. Ekonometrika Teori dan Aplikasi untuk Ekonomi dan Bisnis. Yogyakarta : Ekonisia

Trade Liberalization and Export Competitiveness : A Case Study on Indonesian Seaweed In the Global Market

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ABSTRACT

This research aims to analyse the characteristics of Indonesian seaweed commodities, analyse Indonesian seaweed export competitiveness model in global market, analyse the Government of Indonesia's efforts to improve the export competitiveness of Indonesian seaweed commodities, and analyse the role of actors in increasing the Indonesian seaweed in global market. This research used mix method analysis quantitative and qualitative, the collected data through primary data derived from Indonesian Seaweed Association and secondary data from United Nations Commodity and Trade, Indonesian Central Bureau of Statistic, Bank of Indonesia, Ministry of Trade. This research found that the characteristics of Indonesian seaweed according to several variables such as export competitiveness, productivity, raw material price, trade liberalization rate, inflation rate, exchange rate, research and investment development, and product differentiation have fluctuated value in the period of 2006-2016. The result of regression data shows that interest rate, exchange rate, economic growth, raw material price, farmer wage rate, product differentiation, and liberalization policy has positive effect on RCA seaweed. Inflation, productivity, nominal protection coefficient, and research development investment have negative influence on RCA. The prediction on the competitiveness of Indonesian seaweed is that the competitiveness will still increase, but it depends on the economic condition of Indonesia in the future. It is necessary to have synergy between government, private, and universities to increase seaweed competitiveness in global market.

Keywords: Trade Liberalization, Export Competitiveness, Indonesian Seaweed

INTRODUCTION

Maritime and Fisheries is one of the most important sectors in the world due to the high demand for maritime and fishery products as a source of food, nutrition, and livelihoods of hundreds of millions of people as evidenced by the consumption of maritime and fisheries products per world capita reached 20 kg in 2013 (Bappenas, 2014). Indonesia as a maritime country has huge potential of maritime and fishery resources with a potential amount of 3,000 Trillion Rupiah per year, but which has been utilized only about 225 Trillion Rupiah or about 7.5 percent consisting of superior commodities such as tuna, skipjack, and seaweed (Ministry of Maritime Affairs and Fisheries, 2013).

Central Bureau of Statistics of Indonesia (2013) stated that the ten largest exporters of seaweed in the world are China, Indonesia, Japan, Chile, United States, Republic of Korea, France, Philippines, Ireland and Peru. Among those countries, China, Indonesia, Philippines, Republic of Korea, and Japan are the largest seaweed producers in the world. Data from UN Comtrade (2016) showed that Indonesian seaweed products are considered weak conditions and have lower per-ton export values. The export value per-ton of Indonesian seaweed is in the eighth place of the world which is around US$ 10.000. The export value per ton of seaweed Japan, the United States, China and Chile in 2011 amounted to US$ 174.000, US$ 120.030, US$ 52.000, and US $12.000, the export value per ton of seaweed from these countries respectively is above Indonesia.

Data from the Ministry of Maritime Affairs and Fisheries (2013) stated that the lower realization of Indonesia's seaweed export value in the global market is caused by the type of seaweed export products of Indonesia that just dominated by 80 percent seaweed raw material. The high increase of seaweed cultivation production in Indonesia each year is not in line with the increase of absorption capacity of seaweed processing industry in Indonesia which is only 18 units. This situation caused the lower absorption capacity of raw material seaweed products in the domestic market. The lower export price per-ton of Indonesian seaweed in global market is also caused by low quality raw material competitiveness, thus giving effect to the low export price per ton of seaweed.

The Government of Indonesia has initiative to make efforts to increase seaweed competitiveness as a step to increase profits in the global seaweed trade and increase the welfare of the community, especially coastal communities (Ministry of Maritime Affairs and Fisheries, 2013). Increasing the competitiveness of seaweed products should be done by considering several key factors in improving competitiveness such as the development of innovation to produce products that have high competitiveness. The development of these innovations is done by considering the market opportunity such as the level of demand adjusted for the amount of resources owned and then allocated to the appropriate policy mechanism and support the process of developing a focused product.

There are two distinct interests between government and seaweed business actors in seaweed commodities. This is a challenge in an effort to increase the competitiveness of seaweed products in the global market so that the need for synergy between the two parties both government and seaweed business actors, so if the cooperation synergies between the two actors, then the efforts to increase the competitiveness of Indonesian seaweed in the global market can be optimized.

Problem Identification

Based on the description of the problems and background of this research the formulation of the issues that raised are: 1) What is the characteristics of Indonesian seaweed commodities; 2) How Influence, Interest Rate, Exchange Rate, Economic Growth, Productivity, Raw Material Price, Nominal Protection Coefficient, Farmer Wage Rate, Investment Research and Development, Product Differentiation, Liberalization Policy Revealed Comparative Advantage (RCA) Seaweed Indonesia; 3) How is the Government of Indonesia's efforts to improve the competitiveness of Indonesia's seaweed commodities; 4) How does the role of actors play in enhancing the competitiveness of Indonesian seaweed commodities?

The Characteristic of Indonesian Seaweed

The magnitude of Indonesia's production in the field of marine and fisheries, especially for seaweed commodities is a huge potential for the government to be able to develop the seaweed commodity industry. There are several obstacles in the process of seaweed commodity management although seaweed production in Indonesia is very large. These constraints such as seaweed production in the form of raw materials still have a low quality, when compared with some other seaweed producing countries.

The RCA of Indonesian Seaweed Index tends to increase since Year 2008 and has the highest increase in Year 2014 which is 30,82. In 2006 Indonesia RCA seaweed index in global market is 12,80 and in year 2016 is 19,31. In the period after Year 2006 the level of Indonesian Seaweed RCA increased until the year 2008. Then in the period of 2012 until the period of 2015 the development of Indonesian Seaweed RCA has increased significantly. In the year 2011 the number of Indonesian seaweed RCA index of 17.25 and in the Year 2016 is 19.31. The average value of Indonesian seaweed RCA index during the period 2006-2016 is 20.75.

Discussion: Multiple Regressions

The Model in this research is linear form. Regression analysis was done by OLS method. The estimated equation is:

$$\ln Y = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 + \beta_6 \ln X_6$$

$$+ \beta_7 \ln X_7 + \beta_8 \ln X_8 + \beta_9 \ln X_9 + \beta_{10} \ln X_{10} + \beta_{11} D + e$$

This method is already available in Eviews 7.0. From the regression results found that:

$$Y = -13{,}333 - 0{,}089X_1 + 0{,}296X_2 + 1{,}835X_3 + 1{,}418X_4 - 0{,}778X_5$$

$$(-3{,}1081)^{***}(2{,}5702)^{**}(3{,}7226)^{***}(3{,}7888)^{***}(15{,}5774)^{***}(6{,}3236)^{***}$$

$$+ 0.0191X_6 - 0.248X_7 + 0{,}521X_8 - 0.001X_9 + 0.012X_{10} + 1.013D$$

$$(0{,}6607) \quad (-4{,}6379)^{***}(1{,}4180) \quad (-0{,}0142) \quad (0{,}8474) \quad (13{,}3269)^{***}$$

Based on the results of regression analysis found that there are some explanatory variable coefficients are statistically significant and some other variables are not significant. Here are the results of the regression done and obtained then described in the following table:

Table 1. Multiple Regression Result

Dependent Variable: RCA Seaweed

Variable	*Coefficient*	Probabilities	t-*statistic*	Note
Constant	-13,334	0,0043	-3,1081	-
Inflation (X_1)	-0,089	0,0158	-2,5702	Significant
Interest Rate (X_2)	0,296	0,0009	3,7226	Significant
Exchange Rate (X_3)	1,834	0,0007	3,7888	Significant
Economic Growth (X_4)	1,417	0,0000	15,5774	Significant
Productivity (X_5)	-0,778	0,0000	-6,3236	Significant
Price of Raw Material (X_6)	0,019	0,5142	0,6607	Not Significant
Nominal Protection Coefficient (X_7)	-0,248	0,0001	-4,6379	Significant
Farmers Wage Rate (X_8)	0,521	0,1672	1,4180	Not Significant
Research Investment Development (X_9)	-0,000	0,9887	-0,0142	Not Significant
Product Differentiation (X_{10})	0,012	0,4040	0,8473	Not Significant
Liberalization Policy (*Dummy*) (X11)	1,012	0,0000	13,3269	Significant

Source: Result of the processed data by using *Eviews7*

The result of t test which is test of dependent variable partially shows that of all independent variables used in the model there are 6 (six) significant variables at alpha 1 per cent affect RCA (Y), such as: 1) Interest Rate (X_2); 2) Exchange Rate (X_3); 3) Economic Growth (X_4); 4) Productivity (X_5); 5) Nominal Protection Coefficient (X_7); 6) Liberalization Policy (X_{11}), while Inflation (X_1) significant at alpha 5 percent. For more details can be seen in the following explanation:1) Interest rate (X_2), based on the partial test data analysis, found t test value for the variable interest rate of 3.722 and the probability of 0.0009 <alpha 0.01, thus accept H_0 and reject H_a. It shows the variable interest rate statistically at the 1 per cent alpha level significantly affect RCA (Y); 2) Exchange rate (X_3), based on analysis of partial test data, found t test value for exchange rate variable equal to 3.788 and its probability equal to 0.0007 <alpha 0.01, Thus accept H_0 and reject H_a. It shows statistically, the exchange rate variable at the 1 per cent alpha level significantly affects RCA (Y); 3) Economic growth (X_4), based on analysis of partial test data, found t test value for economic growth variable equal to 15.5774 and the probability equal to 0.0000 <alpha 0.01, Thus accept H_0 and reject H_a. This shows the statistically significant variable of economic growth at a significant 5 per cent alpha level affecting RCA (Y); 4) Productivity (X_5), based on partial test data analysis, t test value for economic growth variable is -6.323 and its probability is 0.0000 <alpha 0.01, Thus accept H_0 and reject H_a. It shows statistically productivity variables at the 1 per cent alpha level significantly affect RCA (Y); 5) Nominal Protection Coefficient (X_7), based on partial test data analysis, t test value for Nominal Protection Coefficient variable is -4.637 and its probability is 0.0001 <alpha 0.01, Thus accept H_0 and reject H_a. It shows the nominal variable protection coefficient statistically at the 1 per cent alpha level significantly affect RCA (Y); 6) Liberalization policy (D), based on partial test data analysis, t test value for liberalization policy variable is 1.332 and its probability is 0.000 <alpha 0.01. Thus accept H_0 and reject H_a. It shows statistically liberalization policy variables at a 1 per cent alpha level significantly affect RCA (Y); while, 7) Inflation (X_1); based on partial test data analysis, t test value for inflation variable from -2.570 and probability is 0.0158 <alpha 0.05, Thus receiving H_0 and

rejecting H_a, it shows the statistically variable inflation at a 5 per cent alpha level significantly affects RCA (Y).

Factor Analysis that Affecting RCA of Indonesian Seaweed

The expected sign test (hope of coefficient mark) is meant to model according to logic, so that the validity of the model can be determined and the following 7 (seven) variables have significance affecting RCA (Y), namely: 1) Inflation (X_1); 2) Interest Rate (X_2); 3) Exchange Rate (X_3); 4) Economic Growth (X_4); 5) Productivity (X_5); 6) Nominal Protection Coefficient (X_7); 7) Liberalization Policy (X_{11}).

Inflation (X_1) has a negative coefficient sign (-), higher inflation causes RCA Seaweed to be lower. This is caused by the price of seaweed commodity traded in the global market is becoming higher, so it can cause seaweed exporters to be difficult because with higher prices will cause RCA seaweed to be lower. Higher export prices lead to, the market share of Indonesian seaweed commodities becomes increasingly difficult to compete with other countries seaweed products traded in global markets at relatively lower prices or easier to reach. Suseno and Aisyah (2009) stated that inflation has an impact on the rise in prices of goods and services, the value of a currency will decrease and the purchasing power of the currency becomes weaker. The decline in purchasing power will then affect the individual, business world, and government revenue and expenditure budget. In other words, high inflation rate will negatively affect an economy as a whole.

The Interest Rate Variable (X_2) has a sign of positive coefficient (+). High interest rates will have a positive effect on RCA. This is because an increase in interest rates will have an effect on the deflation, which will have a positive impact on the decline in the price of seaweed commodities traded in the global market due to deflation can cause seaweed exporters not to be hampered by higher prices will cause the level of export competition is getting lower. Yoda et al (2008) stated that the government issued an interest rate increase to deflation by reducing the amount of money in the community to reduce inflation.

The exchange rate variable (X_3) has a positive coefficient sign (+), the stronger exchange rate index (appreciation) causes the Indonesian seaweed RCA to become higher. This is due to the higher exchange rate index causing Indonesia's seaweed export prices to become more stable and can be adjusted to the prevailing prices in the international market, thus increasing the competitiveness of Indonesian seaweed exports in the global market is increasing. Yoda et al (2008) states that strong exchange rate conditions will have an effect on the stability of local commodity prices traded in global markets.

The Economic Growth Variable (X_4) has a sign of a positive coefficient (+). Increased economic growth will have a positive impact on Indonesia's seaweed RCA. This is due to the increase in economic growth will have an impact on infrastructure development, so with the increase of infrastructure development it will provide a reduction to the cost of seaweed production. Novi et al (2014) stated that economic growth has an impact on improving infrastructure that will provide efficiency and effectiveness in the production of a commodity to be traded or exported in a global market.

The Productivity Variable (X_5) has a negative coefficient sign (-), the productivity that is too high may cause the Indonesian seaweed RCA to decline. This is due to the low absorption of raw materials of seaweed to be processed first before marketed or traded in the global market. At present, the total absorption of raw material of Indonesian domestic seaweed is only about 20 percent of the total production of Indonesian seaweed, causing the majority of seaweed products exported by Indonesia in the global market is in the form of raw material which has very little added value and also has the quality and the low quality that causes the selling price of Indonesian seaweed in the global market is very low. Indonesian Seaweed Association (2014) stated that the low absorption of raw seaweed material in Indonesia in the domestic market causes the competitiveness of Indonesian seaweed to be weak, resulting from the increase in seaweed productivity in every year. This will have an impact that the high seaweed productivity in Indonesia has a negative effect on the Indonesian seaweed RCA.

The Nominal Protection Coefficient (X_7) variable has a negative coefficient sign (-). The negative sign indicates that a Nominal Protection Coefficient increase of 0.248 will lower the Indonesian Seaweed RCA by 0.248, Cateris Paribus. High Nominal Protection Coefficient will cause RCA Indonesian seaweed will decrease. This is due to the low competitiveness of Indonesian seaweed products, compared to other seaweed exporters in the world. In addition, also due to the low selling value plus quality of quality by Indonesian seaweed products that are less good will affect the weak competition or competition seaweed trade in the global market. Hidayat (2006) stated that the high Nominal Protection Coefficient will cause the stimulation of efforts to improve the quality of a commodity product produced will be low, so that will affect the inability of Indonesian export commodities to compete in the global market.

The Liberalization Policy Variable (Dummy) (X_{11}) has a sign of positive coefficient (+). A positive sign indicates that a 1.012 increase in the Trade Liberalization Policy will increase RCA Seaweed Indonesia by 1.012, Cateris Paribus. Trade liberalization policy will have a positive impact on Indonesia's seaweed RCA in the global market. This is due to the existence of trade liberalization policies ratified by the Government of Indonesia, will provide direct stimulation to Indonesian seaweed producers to improve the quality of seaweed produced so as to compete in the global market with producers from other countries. Hidayat (2006) states that liberalization policy will provide stimulus to increase the competitiveness of a commodity. The Government of Indonesia ratified the liberalization policy to impact the strengthening of the competitiveness of exported commodities in order to compete with export commodities from other countries by making efforts such as by curbing domestic production by using certain standards as well as Indonesian National Standard (SNI).

Government Efforts in Increasing the Indonesian Seaweed Competitiveness

The development of the seaweed commodity sector in the context of enhancing the competitiveness of national seaweed is charged to all interested actors in the seaweed commodity. Each ministry and agency under the Government of Indonesia should have each policy prepared on the basis of their respective functions and duties. But in reality in the

structure of policy in the Government of Indonesia is not the occurrence of synergy so it is considered causing the overlapping policy. Each of the ministries issued a colliding policy.

The Government of Indonesia in an effort to improve seaweed competitiveness in global markets through the relevant ministries should establish a policy scheme for each ministry. Based on the functions and tasks of each ministry will provide a clear picture and plot in the process of policy implementation later and not contradict each other. Subarsono (2005) states that the policy issued by the government is a policy applied by each ministry agency based on their respective functions and duties to provide a clear picture of a policy to be implemented by the government.

Based on the functions and duties of each ministry responsible for implementing the improvement of seaweed competitiveness each ministry is required to be in their respective positions based on the assigned authority. On the one hand, other ministries and agencies are supporters in terms of creating competitive Indonesian seaweed products, on the other hand the actors of seaweed business (private actors) have a duty to help increase the competitiveness of national seaweed from the business side in providing input and information to create a vision, mission, and objective in enhancing national seaweed competitiveness in global markets.

The Role of the Government, Private, and Society Actors

Developmental State is a concept of increasing economic development of countries applied in countries located in East Asia. Integrity blend elements of government (Government Sector) and private sector (Private Sector) is generally done to create economic development of the country. Government intervention to restricted market sectors can create a balanced mix in improving national product competitiveness. The role of government and seaweed business actors synergized to each other can yield positive efforts in order to increase the competitiveness of seaweed products in the global market.

In some characteristics of the Developmental State concept of the role of state and private sector states that in the state market problems to intervene the market only through instruction and direction based on the national strategy, so it needs a good cooperative relationship between the government and business actors to achieve one goal the same avoidance of the contradictory impression in formulating policies to realize the same goals in implementing the policy. On the one hand, the government is given the opportunity to take several initiative steps on various policies that are considered beneficial, while still providing the opportunity and full support to seaweed business actors.

The continuous effort of the government and seaweed business actors in order to increase the competitiveness of Indonesian seaweed in the global market is to work together in support of each other. The Indonesian government is keen to disseminate policies and rules of development to improve seaweed competitiveness. The seaweed business actors always provide information to the government related to the issues faced by Indonesian seaweed commodities.

The most fundamental thing in the implementation of the policy by the Government of Indonesia so that business actors can optimize the implementation of the policy is to cooperate. The form of cooperation that can be done by both parties is implemented by: 1) exchanging information about the problems faced; 2) involving seaweed business actors in formulating policies by the government; 3) jointly active in controlling and maintaining economic stability, especially enhancing the competitiveness of seaweed products in the global market so that based on the type of strategy established by the Government of Indonesia included in the concept of The Role of Support Policies. Some things that the Government of Indonesia should consider in creating a good bureaucracy are to minimize a bad bureaucratic system so that policies will be fully supportive of the national strategy being built. Basically seaweed business actors have conflicting interests with the government due to the opportunity of greater profits in seaweed business. However, it cannot be denied that the actual efforts of the government in making efforts to improve competitiveness are positive movements in the improvement of national economic development. Seaweed business actors need full support if the government wants to issue a policy, so that optimization of policy implementation by seaweed business actors can be maximized. Seaweed businessmen need great support either in the form of policies that are deemed to be helpful to the full implementation of the policy.

In Developmental State Theory states that business actors need a positive role of government to generate positive advantages. Socialization is one way or government strategy to seaweed business actors in order to increase awareness and knowledge to be able to create agreement in a policy implementation. With a understanding by seaweed business actors government efforts in improving seaweed competitiveness in global markets can be optimized in order to achieve maximum results. Establishing joint forums and establishing collective agreements between the two sides by the government has been a good strategy but the problem can be minimized or dealt with in cooperation in the form of synergies between both parties of government and seaweed business actors, so that the optimization of the policy will be aligned and the achievement of the results will apply maximally in improving the competitiveness of Indonesian seaweed products in the global market.

The Synergy's in Upstream Revitalization Efforts

Development of upstream sector is considered important in order to improve the development of downstream sectors as there is continuity if the upstream sector can be optimized and improved, the downstream sector will provide the yield increase itself as a reference to high quality industrial raw materials.The government provides several descriptions related to the implementation of the policy to be directly socialized to all seaweed business actors which is then followed by the exchange of various forms of information related to the constraints in efforts to increase the revitalization by seaweed business actors to the government. The government is also making efforts to formulate policies related to zoning plan of potential seaweed development area along with seaweed business actors to avoid threats related to degradation of seaweed cultivation area (Diposaptono, 2014).

The policy undertaken by the Government of Indonesia in order to revitalize seaweed is to provide the application of national cultivation technology standards and national seaweed quality standards. The Government of Indonesia socializes as a synergy to seaweed business actors, especially those who play a role in the upstream sector (cultivation) and by providing direct guidance to seaweed business actors and build conscious responsibility in the form of quality recognition to the cultivators and other business actors in order to awaken the awareness on the importance of quality standards and food safety (Indrayani, 2014).

The Synergy's in the Industrialization of the Downstream Sector

Efforts made by the Government of Indonesia in synergy with Indonesian seaweed businessmen towards the industrialization program of seaweed downstream sector is to synergize between the two actors both government and seaweed business actors is by the establishment of Indonesian Seaweed Industry Association (ASTRULI) on dated February 28th , 2014, the purpose of the establishment of ASTRULI is to accommodate all activities related to the national seaweed industry as the first step of the Government of Indonesia in synergizing with seaweed business actors. In addition, one of several efforts made in the synergies of cooperation between the two parties is to socialize by the government (government sector) to the seaweed business actors.

The Synergy's in National Seaweed Standardization Efforts

The Government of Indonesia's efforts to synergize cooperation for national standardization of seaweed products aims to maintain the value of seaweed product quality so that it has high competitiveness in global market. The first strategy undertaken by the Government of Indonesia is to conduct a full socialization to seaweed business actors, secondly by applying standardization to the seaweed cultivation sector, it will directly give a positive impact on the development of seaweed industry production as it is supported by raw materials (raw material) seaweed that has a high quality (Indrayani, 2014).

Conclusion

Based on the result of the research, the conclusion in this research is as follows: 1) The characteristic of Indonesian seaweed commodity is the production of seaweed in the form of raw material still has low quality, compared to some other seaweed producing countries which resulted in the selling price of Indonesian seaweed which is smaller compared to some other seaweed exporting countries; 2) Regression results are as follows: $Y = - 13{,}333 - 0{,}089X_1 + 0{,}296X_2 + 1{,}835X_3 + 1{,}418X_4 - 0{,}778X_5 + 0.0191X_6 - 0.248X_7 + 0{,}521X_8 - 0.001X_9 + 0.012X_{10} + 1.013D + 4{,}28$. Based on the results of regression analysis found that there are some explanatory variable coefficients are statistically significant and some other variables are not significant; 3) The Efforts made by the Government of Indonesia to improve Indonesia's seaweed competitiveness in global markets is to synergize the roles of actors namely Government, Seaweed Business Actors and Research Institutes; 4) The role of actors acting as an effort to improve seaweed's competitiveness is by the policy applied by the Government of Indonesia in an effort to increase the competitiveness of seaweed products in the global market belonging to The Role of Support Policies due to the form of policy strategy

implemented by The Government of Indonesia is a domestic policy by emphasizing the upstream and downstream sectors through policy directly in providing assistance or support to business actors in optimizing the implementation of policies and referring to research conducted by several research institutions. The policy strategy implemented by the Government of Indonesia in an effort to increase the competitiveness of seaweed products in the global market is to synergize into three policy sectors such as revitalization, industrialization, and standardization.

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FISCAL INCENTIVES FOR YACHTS: BETWEEN REGIONAL ECONOMIC GROWTH AND TAX JUSTICE

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ABSTRACT

As an archipelagic country that has natural beauty of the sea, land, and various cultures, Indonesia is known as an attractive tourist destination in the world. Tourism industry contributes significantly to some regional GDP. Currently, marine tourism become the government's priority to be developed. Many marine tourism objects have not been explored optimally, including the yacht tourism. There are some constraints faced by yacht tourism, including the lack of number of yachts and marinas. Investors are reluctant to buy yachts because they are subject to Luxury Sales Tax (LST) which is considered too high, 75% of the purchase price. Investors are also reluctant to build a marina, because the number of yachts served is not economically sufficient. It is important to develop yacht tourism since it has an opportunity to increase foreign tourists, and regional GDP for some provinces and districts. On the other hand, there will be a threat if not developed: the potential of Indonesian marine tourism will be exploited by foreign yachts. Therefore, a breakthroughs is needed for improving yacht tourism in Indonesia. One of the proposed breakthroughs is LST exemption for the purchase of yachts.

This study analyzes the feasibility of central government to provide LST exemption for yacht procurement, using the cost and benefit analysis supported by SWOT analysis. Data in this study is gathered by conducting interview and focused group discussion involving yacht association and some related stackeholders. The study concludes that LST exemption for yachts will increase yacht ownership in Indonesia. Increasing the number of yachts will attract investor to build marina in a certain region, especially if the local government provides incentives for marina development. Increased investment for yacht procurement and marina development will encourage the growth of the tourism and other related industry, employment, and regional GDP in some regions. The exemption of LST for yacht, however, contradicts the LST philosophy and raises tax injustice, since the price of yacht is higher than that of cars. Currently, cars are subject to LST, so it is unfair to exempt LST for yacht which is more expensive and luxurious than cars. In addition, the exemption of the LST yacht will reduce tax revenues, and make tax revenue targets more difficult to achieve. In order to develop the yacht tourism industry, this study recommends to the central government to provide LST exemption for yachts and to local goverments to provide incentives for Marinas development for a limited period of time, eg five years. At the end of period, these policy will be evaluated whether it needs to be forwarded or stopped.

Keywords: yacht, luxury sales tax, fiscal incentives, marine tourism, marina

1. BACKGROUND

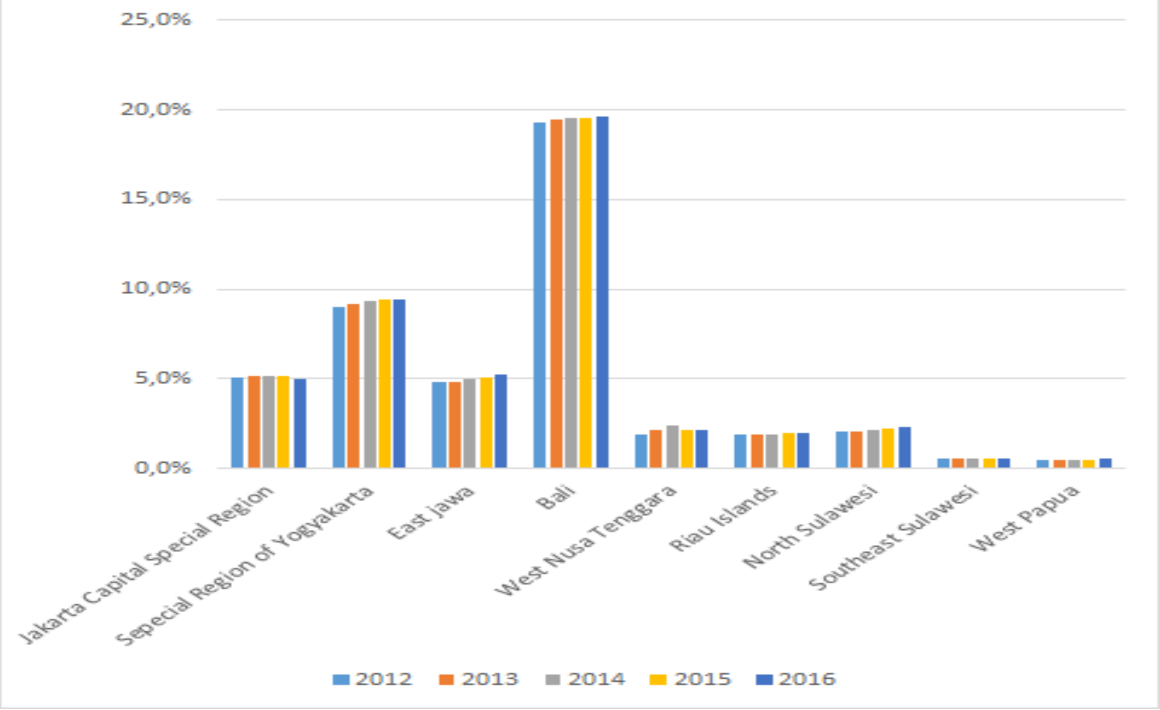
Indonesia is known for having natural beauty of the sea, land, and various cultures. Many regions have good natural tourism objects. Some regions have empowered it well, meanwhile the other areas yet. This can be seen from the contribution of tourism industry to PDRB in some regions.

Figure-1 shows the contribution of the tourism sector, particularly the sub-sector of accommodation and food and beverage, to the Regional GDP of several tourist destination provinces. The tourism sector in several regions, such as Jakarta, Yogyakarta, East Java, and Bali, contributed significantly, between 5-20%, to Regional GDP. Metrotvnews (2016) reported that East Java's tourism industry contributed Rp.92.68 trillion in 2015, or 5.48 percent of East Java's total GDP.

In some regions such as West Nusa Tenggara, Riau Islands, and Nort Sulawesi, the tourism sector contributes about 1-5% of GDP. In the meantime, there are some regions that have good tourism objects but have not been developed properly and contributed less than 1% to the regional GDP, for example West Papua and Southeast Sulawesi provinces.

Figure-1

Contribution of tourism sector to Regional GDP



Source: BPS (2017), processed

Currently, marine tourism become the government's priority to be developed, including the yacht tourism. Some regions has good marine tourism objects, such as Wakatobi in Southeast Sulawesi and Raja Ampat ini West Papua, but it have not been developed properly.

There are some constraints faced by yacht tourism, including the lack of number of yachts and marinas. Investors are reluctant to buy yachts because they are subject to Luxury Sales Tax (LST) which is considered too high, 75% of the purchase price.

The number of yachts in Indonesia affects the number of marinas in Indonesia. Investors are reluctant to build a marina, because the number of yachts served is not economically sufficient.

It is important to develop yacht based tourism in Indonesia since it has an opportunity to increase foreign tourists arrival, and to increase regional GDP for some provinces and districts. On the other hand, there will be a threat if yacht based tourism is not developed: the potential of Indonesian marine tourism will be exploited by foreign yachts. Therefore, a breakthroughs is needed for improving yacht tourism in Indonesia. One of the proposed breakthroughs required by Indonesian yacht association is LST exemption for the purchase of yachts. the question is, whether it is beneficial for the country to provide LST exemption?

2. LITERATUR REVIEW

2.1. Yacht Business in Indonesia

Yacht is a Small or Medium Cruise Ship built to reflect luxury for the owner or its users. One example of a super luxury yacht is "Tropical Island Paradise Themed Mega-Yacht". This 91-meter long yacht has a luxurious bedroom, equipped with pool facilities, helipad, artificial bay, bar and other entertainment facilities (Plus.Kapanlagi.Com, 2015)

Yachts are designed according to their usage, including daily sailing, weekender, cruising, racing, sportfishing, and luxuries yachts.Day sailing yachts are small types of yachts designed for daily or hourly use. Its length is not more than 6 meters. The available facilities are very limited, there is no permanent cabin. Weekender yachts are a bit bigger than day sailing yachts, equipped with 1-2 simple cabins. These yachts are generally used for short trips, about 2-3 days. Cruising yachts are generally used for personal or family purposes. Its model is very diverse, because it is designed to meet the needs of its customers. It has up to three cabin, equipped with kitchen and bathroom. This yacht can be used for shipping in a relatively longer period of time. Racing Yacht is generally used for yacht racing competitions. This yacht is designed to be able to move quickly, with little convenience factor for its users. The size of the yacht racing varies greatly, for one man's crew, fifteen people, thirty people and so on. Mileage of the race also varies, ranging from several kilometers, between cities in one country, to between countries that cross certain oceans. Sport fishing yachts are designed for a few days fishing at sea. Generally this yacht is equipped with facilities for adequate living, plus equipment for fishing. Luxury yachts are designed with luxurious and sophisticated facilities, such as bedroom, kitchen, television, internet, radar, echo-sounding GPS, and autopilot.

As an archipelagic country, Indonesia has interesting locations for famous yacht attractions, such as Raja Ampat, Komodo Island, Bunaken, and Derawan Island. Raja Ampat is a group of islands in Raja Ampat Regency, West Papua. Currently Raja Ampat is becoming a tourist destination for divers because of its beautiful underwater scenery. Various sources mention that Raja Ampat is one of the ten best waters area of the world to dive. Komodo National Park, located in East Nusa Tenggara, is built to protect the Komodo dragon and its habitat. There are 32 species of mammals, 128 species of birds, and 37 species of reptiles lives in this areaa. There are also 253 species of coral reefs and about 1,000 species of fish exist in this region . The beauty of this reef attracts foreign tourists to visit Komodo National Park. Manado and the Bunaken National Marine Park is located in Manado Bay, North Sulawesi. Bunaken is known for its marine park which has many diving spots. Bunaken is also known to have the highest marine biodiversity in the world. Derawan is an archipelago located in Berau District, East Kalimantan. There are a number of captivating

marine tourism objects in this archipelago that attract foreign tourists, especially the world-class divers.

Marina is a special port for cruise ships. It provides facilities for storage or houseboats inside or outside water, yacht maintenance and repair facilities, fuel and clean water sales, telecommunication facilities, etc.

As part of a resort, the marina can be equipped with shops, hotels and restaurants. This area can also be used as a recreation and marine sports center such as water skiing, wind surfing, diving, fishing and others.

Marina can be built upon the initiative of central government, local government, private companies, or yacht clubs. The marinas can be managed independently, a part of a resort, or managed by a public entity. Marina earns its income from yacht parking, yacht maintenance and maintenance services, car and motorcycle parking services, use of picnic area, hotel income, club house, shops, fuel supply, clean water, telecommunication facilities, etc.

There are not so many marinas operated in Indonesia, such as Marina Ancol in Jakarta, Nongsa Point Marina & Resort and Marina Fast Batam in Batam, Marina Baruna Benoa Sakti, in Benoa Bali, Medana Bay Marina in North Lombok. Sabang Marina, in Lhok Weng Sabang, Marina Tanjung Lesung, in Banten, and Marina Raja Ampat, in West Papua.Several marinas are currently being built, including Marina Labuan Bajo, in East Nusa Tenggara, Banyuwangi, Island Cruise, Bali and Indonusa, Bali.

2.2. Yacht Business Profile in Indonesia

Indonesia has been known as a tourist destination for yachts tourism. Unfortunately, however, there are still many obstacles faced by Indonesia in attracting foreign tourists, including lack of yachts and marinas facilities. The Indonesian Yacht Association claimed that the lack of yachts in Indonesia is the high LST for the purchase of yachts, which reach 75% of the purchase price. Investors are reluctant to buy and save yachts in Indonesia. They prefer to buy and keep the yach in other countries, such as Singapore. Although in the realization, the yacht is often used in tourist destinations in Indonesia.

Investors are also reluctant to build marinas in Indonesia because the number of yachts served has not yet met economies of scale. Currently, Indonesia has only eight marinas already operating, a small number compared to the number of marine tourism locations in Indonesian waters.

2.3. Yacht LST in Indonesia

LST for yacht is levied based on PMK No. 35 / PMK.010 / 2017 on the types of taxable goods categorized as Luxury, In addition to Motor Vehicles. In the PMK mentioned, that yacht is subject to LST with a rate of 75%. Except when yacht is purchased for state or public transportation, the purchase is not subject to PPnBM.

However, LST collected from yacht of 2012-2015 shows that the contribution of LST yacht is very small, only 0.01% of total VAT revenue. High rates of yachts LST are suspected to be the cause of investors reluctance to buy yachts and pay for LST, or investors reluctance to report their yacht purchase transactions.

Table-1

Yachts LST Revenue in 2012-2015.

Jenis PPN	2.012	2.013	2.014	2.015	2.016
Pendapatan Pajak Pertambahan Nilai (Rp miliar)	**337.584,6**	**384.713,5**	**409.181,6**	**423.710,8**	**412.213,5**
a. Pendapatan PPN	**318.709,2**	**365.882,4**	**393.601,4**	**410.335,0**	**396.042,2**
- Pendapatan PPN Dalam Negeri	191.936,8	226.761,8	241.145,8	280.009,4	273.004,9
- Pendapatan PPN Impor	126.610,1	138.989,2	152.303,9	130.124,7	122.774,7
- Pendapatan PPN Lainnya	162,2	131,5	151,6	200,8	262,6
b. Pendapatan PPnBM	**18.875,4**	**18.831,1**	**15.580,3**	**13.375,8**	**16.171,2**
- Pendapatan PPnBM dalam Negeri	10.428,7	11.548,0	10.241,4	9.293,1	11.810,1
- Pendapatan PPnBM Impor	8.422,8	7.281,3	5.335,6	4.008,3	4.295,4
- Pendapatan PPnBM Lainnya	23,9	1,8	3,3	74,4	65,7

	2012	2013	2014	2015	2016
PPnBM yacht (Rp miliar)	0,20	4,24	2,65	1,37	3,70

Source: Ministry of Finance, processed

The data in table-1 shows that LST for yachts only contributes about 0.01% of total LST as a whole.

2.4. Car LST in Indonesia

The imposition of LST for motor vehicles is regulated by PMK No. 64 / PMK.011 / 2014 on Motor Vehicle Subjects to Sales Tax on Luxury Goods and Procedure of Exemption for the Imposition of Sales Tax on Luxury Goods.

LST for Motor Vehicle is subject to Import of CBU Vehicle, Delivery of assembly / production vehicle within customs area, or modification of chassis or freight vehicle, in the form Vehicle for People up to 15 (fifteen) persons including driver, double cabin vehicle (double cabin), special vehicles, trailers and semi-trailers of the type of caravan type for housing or camping and 2 wheeled motor vehicles with a cylinder capacity of more than 250 cc. LST tariffs are charged at 10%, 20%, 30%, 40%, 50%, 60%, 125%, depending on vehicle type.

LST is exempted from import or delivery of motor vehicles in the form of ambulances, hearses, fire engines, detention vehicles, public transport vehicles, State Protocol Vehicles, Motor vehicles for the transportation of 10 (ten) persons up to 15 (fifteen) persons, including drivers , used for official vehicles of the Defense Force of Indonesia or the Indonesian National Police; and the Indonesian National Armed Forces Patrol Vehicle or the State Police of the Republic of Indonesia.

2.5. Preliminary Study

Putri et al (2016) compares Indonesia's and Malaysia's tourism industries over the period 2010-2015. Indonesia with the slogan Wonderful Indonesia has managed to increase the number of foreign tours entering through the Sekupang port, more than 10 million visitors by the end of 2015. Meanwhile Malaysia with the slogan Truly Asia managed to attract more

than 27 million foreign tourists in 2014, whereas Indonesia has a destination tourism, human resources, and SDA better than Malaysia.

Fallon (2015) wrote that in the past 10 years China has grown into a huge market for tourism in Indonesia. But without proper preparation and maintenance, the potential will be lost in vain. There needs to be good collaboration between various stakeholders in both countries so that the potential can be utilized optimally in the long run, including service providers, local government, and local communities.

3. METHODOLOGY

In order to analyze the feasibility of central government to provide LST exemption for yacht, this study start gathering information on yacht, its taxation, and related issues from journal and other literatures, in the form of hard and soft copy. In addition, this study also gathers information by conducting interview and focused group discussion, involving Indonesian yacht association, Directorate General of Tax, and some related stackeholders.

This study analyzes the feasibility of central government to provide LST exemption for yacht procurement, using pros and cons analysis supported by SWOT analysis. Mindtools website (2018) describes pros and cons analysis as a tool used for simple go / no-go decision making, by listing the factors that support pros and cons, then proceed with making a weight for each factor, and summing the weights for the factors that pros and cons. Decisions are made by choosing a greater weight. SWOT is a strategic planning method used to evaluate strengths, weaknesses, opportunities, and threats in a project or a business speculation. (Wikipedia Indonesia, 2018). Meanwhile Dictio website (2018) explains that the SWOT Analysis is a systematic identification of various factors to formulate the company's strategy. This analysis is based on logic that maximizes strength and opportunity, but can simultaneously minimize weaknesses and threats.

4. ANALYSIS

4.1. Existing Condition of Yacht LST

Except for state and public transportation, yachts are subject to LST at a rate of 75%. For taxpayers, the LST tariff of 75% is very burdensome. LST increases the purchase price of the yacht, so the yacht cost becomes more expensive. Consequently, taxpayers will provide services with a more expensive tariff, making it difficult to compete with foreign yachts.

In the last 5 years, the revenue of LST from yachts is relatively small, which is an average of 0.01% of total LST and average of 0.001% of total VAT. Respondents from the yacht employers association said the low acceptance of LST from yachts was due to the reluctance of taxpayers to buy yachts, because taxes are too expensive. Even if they buy yachts, they choose to buy and keep their yachts abroad, which cost less.

3.2 Impact analysis if PPnBM Yacht is exempted

LST removal for yachts positively impacts the marine tourism industry. With the reduced cost of yachts, it is expected to boost the purchase of new yachts. The marine tourism industry will grow inline with the grow of yachts population and the reduced cost of yacht services.

The growth of marine tourism industry will have a positive impact on the related economic sectors. Hotels, restaurants and freight services will increase. Employment of sectors directly linked to yachts and other related sectors also increased.

LST exemption of yachts will have negative impact the State's revenue, due to loss of potential LST on yacht, but on the other hand, the exemption may increase the income tax and VAT from the growth of marine tourism industry and related economic sectors.

The increasing number of yachts will provide opportunities for certain province or district to build marinas and the marine tourism industry. Local governments can work together with investors to build marinas and nautical tourism industries, by providing incentives that is needed by investors.

3.3 Pro and Cons Analysis if Yacht LST is Excempted

The following table shows the Pro and Cons Analysis if the government excempt the LST for yacht.

Table-2
Pros and Cons Analysis If LST for Yacht is Excempted

Fiscal Policy to Excempt the LST for Yacht			
Pros	Weight	Cons	Weight
Opportunities to attract investors to buy yachts, the number of yachts will increases	+5	Tax injustice issue arises: between the yacht and the car	-4
Opportunities to attract investors to build marinas, the number of marinas will increases	+4	The government revenue from LST of yacht is missing	-3
There is an increase in economic activity in the tourism industry sector	+3	There is a possibility that taxpayers in the car industry and other LST taxpayers to ask for waivers facilitiy for LST	-4
There is an increase in economic activity in the upstream and downstream sectors of the Tourism industry	+2		
Increased Employment Absorption.	+3		
There is an Increase in GDP	+2		
There is an Increase of state revenue from Income Tax and Value Added Tax	+3		
unities for local governments to build in their areas	+2		
The existing tourism resources is utilized by the domestic yacht	+2		
Total	+26	Total	-11

Table-2 shows that the number of pros exceeds the number of cons, therefore fiscal incentives in the form of LST exemption for Yachts are eligible.

3.4 **SWOT Analysis If LST of Yacht is Excempted**

Fiscal Incentives in the form of LST exemption for yachts will change the map of strengths, weaknesses, opportunities and threats to the yacht industry. Table-3 shows an approximate the new map of strengths, weaknesses, opportunities and threats to the yacht industry when the LST for yacht is excempted.

Table-3
SWOT Analysis If LST of Yacht is Excempted

Internal		External	
Strengths	The number of yachts increases	Opportunities	Opportunities to attract investors to buy yachts
	The number of marinas increases		Opportunities to attract investors to build marinas
	There is an increase in economic activity in the tourism industry sector		Opportunities for local governments to build marinas in their areas
	There is an increase in economic activity in the upstream and downstream sectors of the Tourism industry		
	Increased Employment Absorption.		
	There is an Increase in GDP		
	There is an Increase of state revenue from Income Tax and Value Added Tax		
Weaknesses	Tax injustice issue arises: between the yacht and the car	Threat	There is a possibility that taxpayers in the car industry and other LST taxpayers to ask for waivers facility for LST
	The government revenue from LST of yacht is missing		

3.5 The SWOT Strategy

The first strategy is to utilize strength and to anticipate threat, by providing fiscal incentives in the form of LST exemption.

The second strategy, to anticipate weaknesses as well as to eliminate the threat, the exemption of LST is given in a limited time, ie 5 years only. Within 5 years is expected enough time to meet the needs of domestic yachts and build marine tourism industry in Indonesia. For the sake of tax justice, the imposition of LST must be re-applied after 5 years.

The third strategy, taking advantage of opportunities to turn threats into opportunities, by encouraging local governments to provide incentives for investors to build marinas in their areas

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The followings are conclusion of the study:

1. Yacht tourism industry in Indonesia has not developed properly, although the resources for marine tourism is abundance.
2. LST for Yacht at 75% of acquisition cost is considered to be very burdensome for taxpayers interested in buying yachts
3. LST receipts for yachts contribute very little to VAT revenue in Indonesia. This fact reflects the small purchase transaction of yachts in Indonesia. There are also indications that to avoid LST, some taxpayers buy yachts and keep them abroad.
4. Providing fiscal incentives in the form of LST exemption for yachts will lead to tax injustice, given that the cars which has cheaper price are subject to LST.
5. Pro and Cons analysis for yacht LST exemption shows that the total weight of pros exceeds the total weight of cons. It indicates that fiscal incentives in the form LST exemption for yacht is eligible
6. SWOT analysis for yacht LST exemption indicates that providing LST exemption for yacht will produce more strength than weaknesses in the internal factor, and more opportunities than threat in the external factors.

4.2 Recommendation

Based on the conclusions, this study recommends:

1. Central government to provide fiscal incentives in the form of LST exemption for yachts. To reduce the issue of tax injustice, it is proposed that fiscal incentives be granted within a limited period of 5 years
2. At the same time, it is expected that the local government will provide the facilities needed by investors to build marinas in their area
3. It is expected that within five years the needs of domestic yachts are met, and certain regions have built marinas. For the sake of tax justice, after the LST exemption period ended, the LST exemption policy must be revoked.

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BEEFING UP THE STOCK, IMPROVING FOOD SECURITY: UTILIZING INTERNATIONAL TRADE TO LOWER BEEF PRICES IN INDONESIA

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ABSTRACT

Beef is nearly twice as expensive in Indonesia as in the international market. This creates a massive challenge for around 28 million poor people in the country and contributes to Indonesia's low beef consumption compared to its neighbors, including the Philippines, Malaysia, and Vietnam.

The government suspects that long and complex distribution chain is the main cause of high beef prices in Indonesia. In response, it urges the National Logistics Agency (Bulog) to take over the whole distribution process. In addition, the government implements price ceiling policy (HET) on both frozen and fresh beef sold in the retail markets. Furthermore, as the government prioritize self-sufficiency agenda, it imposes trade restrictions against imported beef via various import licenses, preferential treatment for state-owned importers, and limited market access.

This study analyzes the effectiveness of HET, the potential risks of allowing Bulog to single-handedly deal with beef distribution process across the country, as well as the potential of international trade as an alternative in lowering beef prices in Indonesia. We use Error Correction Models (ECM) and conducted literature review as well as semi-structured interviews. We use authoritative data sources such as official reports and statistics from Statistics Indonesia (BPS), the World Bank, UN-FAO, and our interviews with relevant government officials and the representative from one of the beef companies.

Keywords: Beef trade, distribution system, domestic-international price correlation, price ceiling, free trade agreements

INTRODUCTION

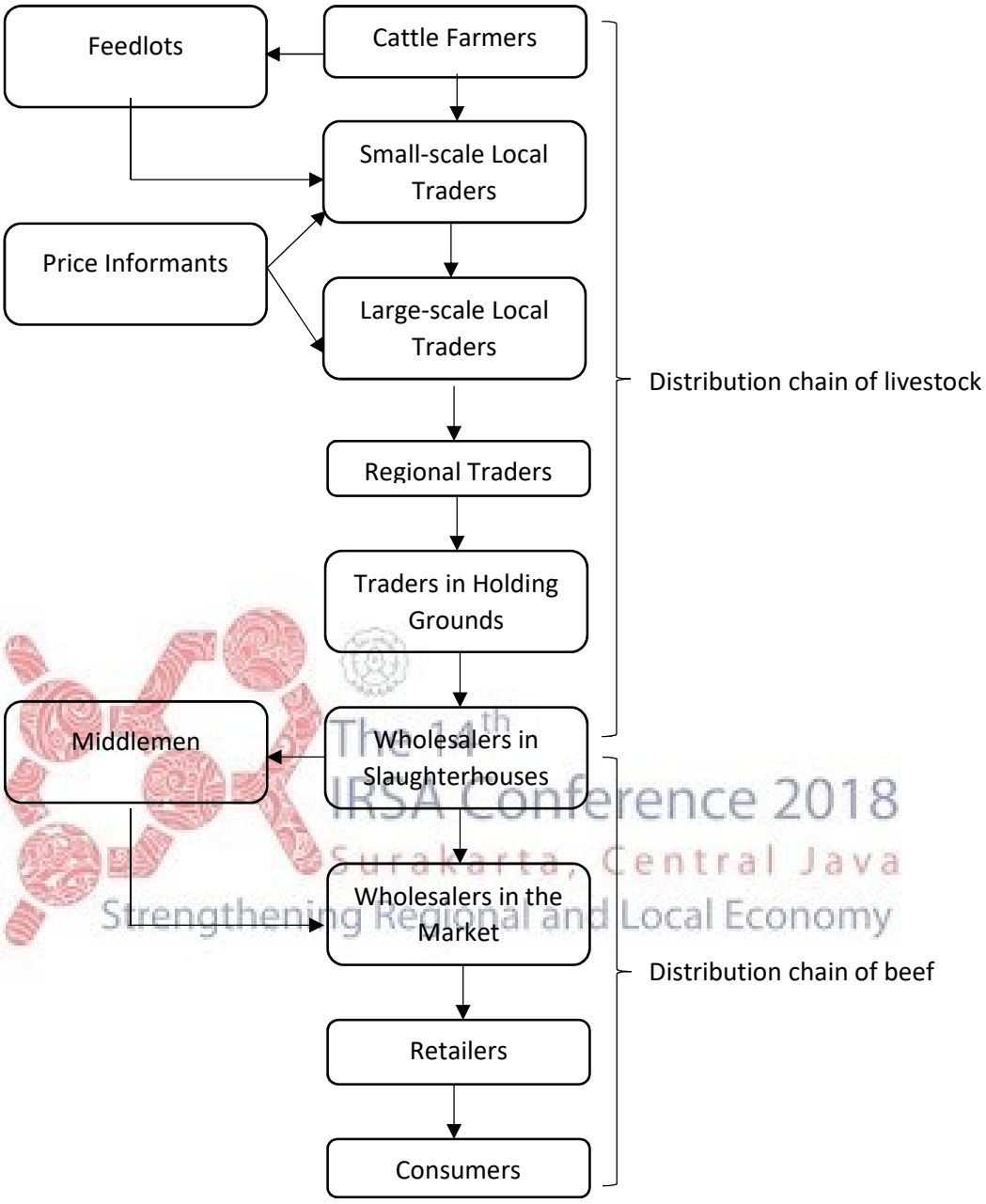
Beef is one of the most widely consumed sources of animal protein in Indonesia, with annual national consumption estimated at 709,540 tons (OECD and UN-FAO, 2017). Beef holds additional value as a favorite dish during holiday and festival seasons such as the fasting period, Eid Al-Fitr and Eid Al-Adha, when demand increased by around 20% to 25% in 2016 (Nuryati & Haryana, 2017).

The national average beef price reached IDR 108,072 in August 2017 (Statistics Indonesia, 2017, p.95), nearly twice the World Bank reference price[1] of IDR 55,704/kilogram[2] in the same period. For around 28 million poor Indonesians (The World Bank, 2015), high beef prices present a massive challenge, contributing to Indonesia's low per capita beef consumption (1.9 kilogram) compared to neighboring countries such as the Philippines (3.25 kilogram), Malaysia (4.80 kilogram), and Vietnam (7.31 kilogram) (OECD and UN-FAO, 2017).

The government claims that 572,989 tons (76.05% of the beef in the country) is supplied by domestic production (Ministry of Trade, 2016b, p.38) and that beef prices remain high due to a long and complex distribution chain for domestic beef (Anti-Monopoly Commission [Komisi Pengawas Persaingan Usaha], 2016) (Masbulan, Putu, Diwyanto, Priyanto, & Setianto, 2000; Supply Chain Indonesia, 2015), illustrated in Figure 1. Livestock from cattle farmers passes through between seven and nine distribution stages before reaching consumers as beef.

[1] For chucks and cow forequarters part, frozen beef from Australia and New Zealand.
[2] With the exchange rate USD 1 = IDR 13,326.39 (x-rates.com).

Figure 1
Distribution Chain of Domestic Beef and Livestock in Indonesia



Sources are collated from (Masbulan et al., 2000) and Rachman (2016, p.24)

A. Domestic trade policies

To reduce the complexity of the beef distribution chain, the government urges the National Logistics Agency (*Badan Urusan Logistik /* Bulog) to take over the whole distribution process (Permana, 2016). This is possible because of Presidential Regulation 48/2016, which authorizes Bulog to take any required steps to stabilize the supply and price of beef as long as it is officially mandated by the ministerial coordination meeting on economic affairs.

To reduce high beef prices, the government imposes a nationwide price ceiling in September 2016. Regulation of the Minister of Trade (MOT) 63/2016, renewed via MOT 27/2017, sets the per kilogram price ceiling at IDR 80,000 for frozen beef and IDR 98,000 for fresh beef.[3] According to

[3] For chucks and cow forequarters.

Ministry of Trade officials, the price ceiling serves as an indicator for when the government needs to further intervene the market by conducting a monitoring activity called Market Operations (*Operasi Pasar*) (Sagala & Adri, 2017). Conducted by Bulog (Ministry of Trade, 2016a), Market Operations aims to ensure that all retailers sell their beef at or below the price ceiling by revoking licenses from those who fail to comply (Masa, 2017).

B. International trade policies

The government's stated reasons for restricting beef imports are to support cattle farmers' income and to push down prices to keep beef affordable for consumers (Presidential Office, 2017). The government expects the price ceiling to keep beef prices sufficiently low (Budiyanti, 2017), while it expects restricted beef imports to ensure that domestic beef dominates the market, eventually benefitting cattle farmers (Rachman, 2013).

These import restrictions are stipulated in MOT 59/2016 on Export and Import Regulation on Animals and Animal Products. The first restriction is the process of obtaining an import license as stipulated in Article 10 (1) and Article 11 (1). It requires at least five formal documents that each importer must obtain in this specific order: (1) Trade Operation Permit (SIUP); (2) Certificate of Customs Registration; (3) Importer Identification Number (API); (4) Recommendation from the Minister of Agriculture; and (5) Import Approval from the Minister of Trade (WTO, 2016).

The second restriction in MOT 59/2016 Article 9 (1 and 2) stipulates that beef from countries that are not entirely free from animal diseases can only be imported by state-owned enterprises, and even then only after obtaining official permission from the Minister of State-Owned Enterprises. This regulation may imply that its purpose is to avoid the introduction of animal diseases and zoonosis into the country. However, the Director General of Animal Husbandry and Animal Health of the Ministry of Agriculture explains that this restriction is necessary to avoid a sudden influx of cheaper imported beef into the market, thus keeping domestic beef prices stable (KabarBisnis.com, 2016).

The third restriction applies to market access for imported beef. MOT 59/2016 Article 19 states only industry, hotel chains, restaurants, and catering service can use imported beef. The Ministry of Trade further prohibits imported beef from sale in traditional markets (Ministry of Trade, 2016b, p.25), in order to protect domestic beef producers from direct competition with imported beef (Simanjuntak, 2011). While the government claims that they are considering removing the restriction (Widyastuti, 2016), this regulation remains in force to date.

METHODS

A. Data description

This study derives the data from secondary sources. The model for selecting variables replicates (Ravallion, 1986) as well as Varela and Taniguchi (Varela & Taniguchi, 2014). We analyze the relationship between the logarithm (log) of domestic retail price (which means, same as consumer price, ***PD***) of the food items in Indonesia expressed in Rp/kg and the log world price for same food items (***PW***) expressed in USD/kg, while controlling for movements expressed in rupiah/dollar exchange rates (**ER**) also in logarithm form and all logarithms are natural. The average monthly data on retail prices (***PD***) were obtained from the (Statistics Indonesia, 2017a) (BPS) for the period May 2009 until July 2017 (97 observations). World prices (***PW***) were obtained from the (World Bank, 2017) Database (The Pink Sheet) for the same period. The nominal rupiah/dollar exchange rates (**ER**) were obtained from the (X-Rates, 2017) Converter Exchange Rates for same period.

B. Estimation approach

This paper combines the qualitative method and the quantitative method. For the qualitative method, we derived secondary data from textbooks, academic papers and journals, as well as official reports from the government, the World Bank, the United Nations, and the Organization for Economic Cooperation and Development (OECD). This paper also uses the result of semi-structured interviews with the officials of the Directorate General of Domestic Trade of the Indonesian Ministry of Trade, and with a representative of the state-owned beef company operating in DKI Jakarta Province. For the quantitative method, we used error correction models (ECM). An ECM is a dynamic model in which the movement of the variables in any period is related to the previous period's gap from long-run equilibrium (cointegrated). If the series is cointegrated and the ECM validated then it will encompass any other dynamic specification, such as the partial adjustment mechanism.

The first step in estimating a long-run relationship between domestic prices (**PD**) and international prices (**PW**) while controlling for foreign exchange rates (**ER**) is to use a two-step method of Engle & Granger (Engle & Granger, 1987), called symmetric ECM test. According to this approach, if the variables are cointegrated in the same order, then those variables are integrated in order one (I(1)) with a cointegration relation of the form as in equation (1):

$$\boldsymbol{PD_t = \alpha_0 + \beta_1 PW_t + \beta_2 ER_t + \varepsilon_t} \qquad \textbf{(1)}$$

After estimating equation (1) with an ARIMA (autoregressive integrated moving average) procedure, where α and β are estimated parameters, the equation would produce a stationary $\hat{\varepsilon}_t$ term (error term/residuals). If the residuals of equation (1) are stationary, then an error correction mechanism exists.

In the second step, the ECM is specified by using lagged residuals from the co-integrating regression in equation (1) as error correction terms (ECT) and using Δ as the difference indicator (differencing means subtracting P_{t-1} from P_t) as follows in equation (2):

$$\boldsymbol{\Delta PD_t = \alpha_0 + \beta_1 \Delta PD_{t-1} + \beta_2 \Delta PW_t + \beta_3 \Delta PW_{t-1} + \beta_4 \Delta ER_t + \beta_5 \Delta ER_{t-1} + \beta_6 ECT_{t-1} + v_t} \qquad \textbf{(2)}$$

RESULTS AND DISCUSSION

A. Potential cost of beef distribution by the government

If the government wants to handle the distribution process by itself, then it must be ready to cover the associated transportation costs. While most feeder cattle originate from outside Java island, beef production is still mainly concentrated in Java because most of the slaughterhouses are located there (Ministry of Agriculture, 2015). Furthermore, the Indonesian archipelago requires distributors to transport cattle both by road and in sea vessels, further adding to transportation costs. These circumstances mean that handling beef distribution would be a costly operation for the government.

The distribution chains of beef in West Java and East Java illustrate this problem. The province of West Java has some of the highest beef consumption levels, while East Java is the top beef-producing province in the country (Statistics Indonesia, 2017c). The transportation cost of a beef distribution chain in West Java reached IDR 1,284.29 per kilogram in 2016 (Table 1), while in East Java the same costs reached only IDR 445.83 per kilogram, due to East Java's close proximity to the beef production phase of the distribution process. Using these two provinces as benchmarks yields an estimated average transportation cost in the beef distribution chain of IDR 1,004.81 per kilogram. National demand reached 709,540 tons in 2017 (OECD and UN-FAO, 2017), meaning that the government must be prepared to pay nearly IDR 713 billion (USD 52.8 million) to cover transportation costs if it wants to control the whole beef distribution process.

Table 1

Transportation Cost of Beef Distribution Line in West Java and East Java Provinces

Place	Distribution Line	Transportation Cost (IDR/kg)*
Bogor, West Java	Slaughterhouses → Wholesalers I → Wholesalers II → Retailers	IDR 1,642.90
Garut, West Java	Slaughterhouses → Wholesalers → Retailers	IDR 925.69
Average transportation cost in West Java		IDR 1,284.29/kg
Jember, East Java	Cattle farmers → local traders → Slaughterhouses → Retailers	IDR 445.83
Average transportation cost in all sample areas		**IDR 1,004.81/kg**

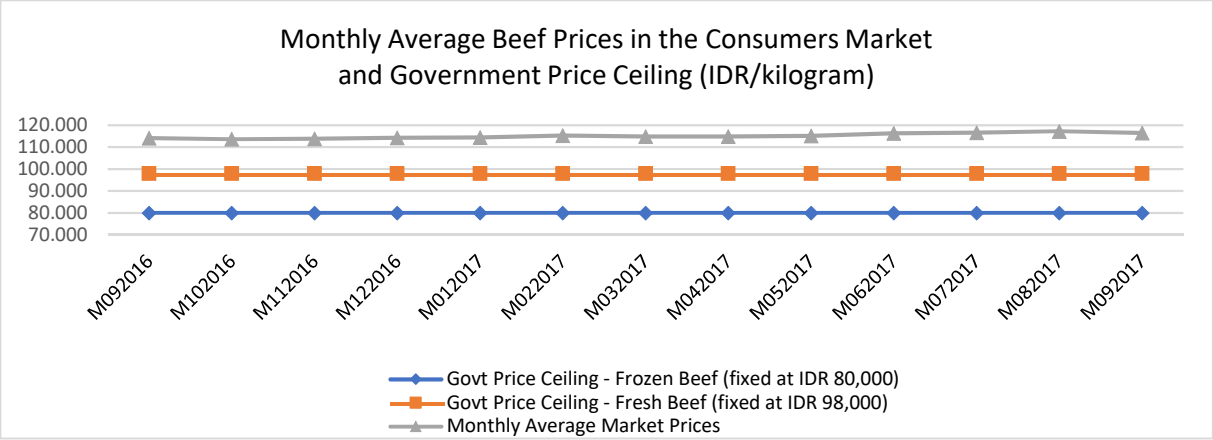
* Assuming each cattle weighs 240 kilogram and one truck carries 12 cattle per trip.

Sources are collated from (Amirah, 2015; Emhar, Aji, & Agustina, 2014; N. M. Rachman, 2016).

B. Price ceiling policy

The price ceiling is unable to lower beef prices. The national average beef price per kilogram from September 2016 to September 2017 reached up to IDR 115,708.53 (Ministry of Trade, 2017), 17.53% more expensive than the price ceiling for fresh beef, and 43.97% above the price ceiling for frozen beef (Figure 2).

Figure 2



Sources are collated from (Ministry of Trade, 2017)), MOT 63/2016, and MOT 27/2017

According to a representative of the state-owned beef company operating in DKI Jakarta Province (Interviewee 1, 2017),[4] the government price ceiling of IDR 80,000 is unrealistic and unsustainable, especially for domestic beef. Although Bulog and the Ministry of Agriculture have managed to sell beef to consumers at the set price, they did so with beef imported from India.[5] Because they are government institutions, both Bulog and the Ministry managed to obtain privileges and preferential treatment in order to bypass several import licensing requirements, enabling them to save at the level of procurement and sell beef at or below the price ceiling. In addition, the quantity supplied by Bulog and the Ministry is severely limited and insufficient to meet consumers' demand. This practice is unfair for small-scale, private importers and retailers that do not have the special rights that Bulog and the Ministry use to sell at the price ceiling, and so this policy ends up distorting market prices.

[4] Interviewee is kept anonymous for privacy reasons.

[5] Bulog sells beef at "cheap markets", while Ministry of Agriculture sells at Indonesian Farmers Shops. These shops and markets are organized by either private or state-owned companies that have connections with the government and enjoy special rights in their procurement processes. As the result, these shops and markets manages to sell beef and other food items at lower prices compared to the regular traditional markets. Examples: http://ekonomi.metrotvnews.com/mikro/VNnxOeak-daftar-lokasi-penjualan-daging-sapi-murah

The failures of price ceilings have been documented in several countries. From January to May 2011 (Assefa, Abebe, Lamoot, & Minten, 2016), the Ethiopian government put price ceilings on 18 products, including sugar, palm oil, and wheat. Instead of lowering the prices, this policy triggered shortages due to rationing issues, creating long queues in many parts of the country's capital, Addis Ababa (pp.99-100). Due to their ineffectiveness, most of price ceilings were removed in late May 2011.

In Serbia, the government imposed a maximum 10% limit on retailers' trade margins for 11 basic food products, including sugar, wheat flour, pork meat, and freshwater fish (Radukić & Marković, 2015) beginning in December 2011. This policy was intended to limit the rise of food prices resulting from a lack of competition in the Serbian food market. Once again, price ceilings failed to lower prices, and a large number of small shops were forced to suspend their business because they were unable to turn a profit. This situation eventually weakened market competition even further when only large retail chains were able to survive.

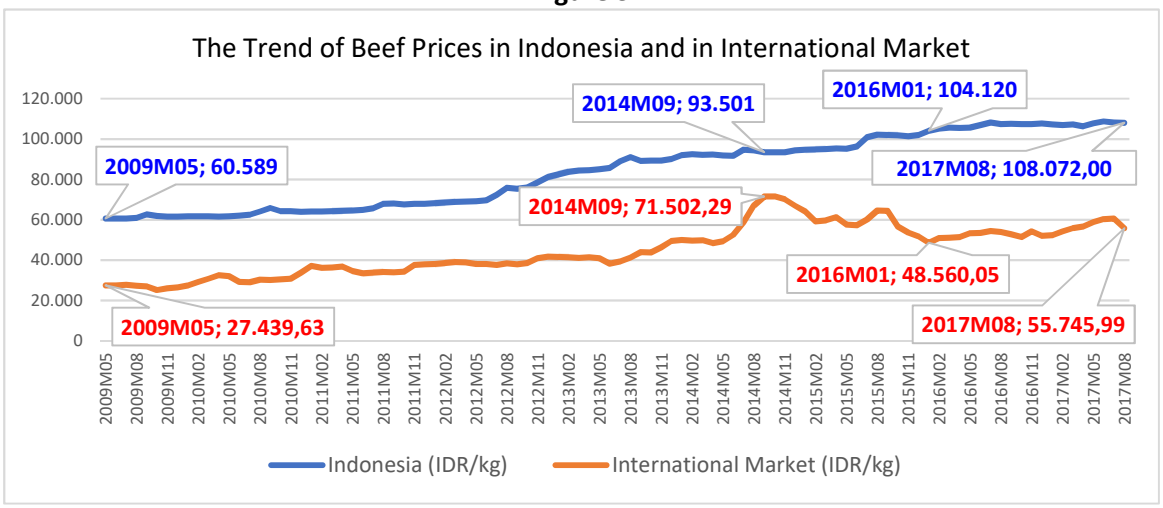
The implementation of price ceilings in Indonesia carry similar risks: If production and distribution costs become higher than the price ceiling, the producers could potentially decide to reduce their outputs, while the distributors may hoard their supply to avoid losses. For consumers, the lack of supply may force them to turn to the black market where prices rise above the government price ceiling (Budiyanti, 2017; Fontinelle, 2017).

C. Beef prices in Indonesia and the international market

Although there were fluctuations in the price on the international market between May 2009 and July 2017, beef prices in Indonesia steadily increased every year. In May 2009, the per kilogram price of beef in Indonesia was IDR 60,589, more than twice (120.81%, more expensive) the price of beef in international markets, at IDR 27,439.63. By September 2014, this gap was reduced, to 30.76% more expensive, when increasing demand for beef in emerging economies (The World Bank, 2014) such as China and India drove the international price to its peak at IDR 71,502.29 (a 160% increase from its price in May 2009). In the same period, the per kilogram price of beef in Indonesia experienced a more modest increase to IDR 93,501 (54% increase from its price in May 2009).

Although the gap between Indonesian and international beef prices shrunk in this time, a different trend emerged after 2014. By January 2016, favorable global supply conditions (The World Bank, 2016) lowered the per kilogram price of beef in the international market to IDR 48,560.05, a 32.09% decrease from its peak in September 2014. Beef consumers in Indonesia did not enjoy the fall in price. Instead, per kilogram beef prices rose even further (by 11.36%) to IDR 104,120. By August 2017, the per kilogram price of beef in Indonesia reached IDR 108,072, or nearly twice the price of IDR 55,745.99 on the international market.

Figure 3



Sources are collated from Statistics Indonesia (2009), The World Bank (2009), and X-rates.com (2017).

The relationship between beef prices in Indonesia and the international market in the short term is different than in the long term. In the short term, a 10% decrease in the international price corresponds with a 0.6% increase in Indonesia. In the long term, a 10% increase in the international price leads to a 3.3% increase in the domestic price, and vice versa. International beef prices decreased by nearly 8% between July and August 2017, and the United Nations Food and Agriculture Organization (UN-FAO) predicts that it will continue to fall (UN-FAO, 2017a, 2017b).[6] Beef prices in Indonesia may experience another surge, at least in the short term, before they have a chance to follow the movement of the international price in the long term.

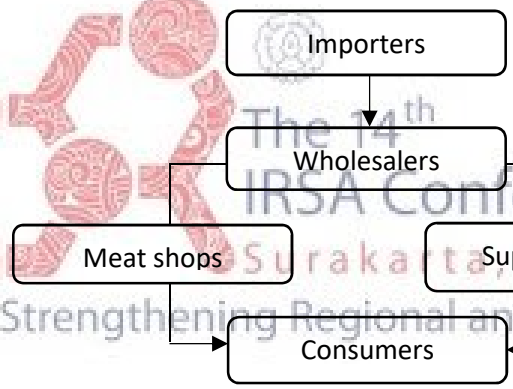
D. Distribution system of imported beef

Imported beef has a much shorter distribution chain than domestic beef. While domestic beef goes through between seven to nine distribution stages before reaching the consumer (Figure 1), imported beef goes through at most two (Figure 4). This beef is sold by importers to wholesalers, and by wholesalers to the supermarkets and meat shops who sell to consumers.

This short distribution chain is possible because imported beef is a ready-to-cook product that does not require feedlots, slaughterhouses, and traders in the holding grounds to prepare it for consumption. As a result, imported beef provides fewer opportunities for distribution actors who may attempt to take advantage of the system by charging high prices that would eventually be passed along to the consumers.[7]

Figure 4

Distribution Chain of Imported Beef in Indonesia



Sources are collated from (Masbulan et al., 2000), (Purba, n.d.), and (N. M. Rachman, 2016)

E. Import restrictions hurt the private sector and consumers alike

With its shorter distribution chain and cheaper price, the international market should be able to provide the poor with more affordable beef, but it cannot do so due to government restrictive trade policies. These policies also puts the private sector at a disadvantage. Obtaining an import license as stipulated in MOT 59/2016 Article 10 (1) and 11 (1), requires undergoing a process that takes around 30 working days as a result of the legal requirements for obtaining each supporting document (Table 2), and can often take much longer. Sometimes the process can even take months to complete (USAID, 2013). According to government officials from another beef producing country, this regulation harms importers, particularly the small-scale ones (who lack political connections), by making it difficult for them to import beef based only on the market situation since they cannot do so without a license (Duckworth et al., Personal Interview, 2017).[8] Instead, this regulation burdens them with the additional time and cost required to complete the importation process (WTO, 2013a, 2013b).

[6] UN-FAO stated that this declining trend reflects the increasing export supplies from Australia and prospects for increasing domestic supplies in the United States.

[7] In Indonesia, it is common to find this issue on strategic food items such as beef.

[8] The licensing requirements frequently make the importers lose momentum to import when the international prices are low

Table 2
Required Documents and Time of Completion to Obtain Beef Import License in Indonesia

No.	Permit Document	Legal Bases	Estimated time of Completion (Working Days)
1.	Trade Operation Permit	MOT Regulation 36/2007 - 12 [1]	3
2.	Certificate of Customs Registration	Regulation of the Minister of Finance 59/2014 - 5 [1] and 7 [1]	8
3.	Importer Identification Number	MOT Regulation 70/2015 - 19 [1]	5
4.	Recommendation from the Minister of Agriculture	Regulation of the Minister of Agriculture 16/2016 - 26	2
5.	Import Approval from the Minister of Trade	MOT Regulation 59/2016 - 11	12
Total working days required for completion			**30 working days**

Sources are collated from MOT 36/2007, MOF 59/2014, MOT 70/2015, MOS 16/2016, MOT 59/2016, and Official Portal for Importers Registration in Indonesia (InaTrade) (2016)

MOT 59/2016 Article 9 (1 and 2) restricts beef importation by allowing only state-owned enterprises to import beef from certain countries. As a result, it severely limits business opportunities for private importers. This regulation makes it impossible for private businesses to import beef from countries such as Brazil, Argentina, and Colombia that still have cases of animal diseases, even if they only occur in some parts of the country (Morgan & Tallard, 2016). This regulation complicates the process even further as it stated that importing from these countries requires an additional permit from the Ministry of State-Owned Enterprises.

By not allowing imported beef into the traditional market, MOT 59/2016 Article 19 hampers consumers' access to more affordable beef still further. As mentioned earlier, the international price of beef, calculated from the price in Indonesia's neighboring countries, Australia and New Zealand, is nearly half the price of beef in Indonesia. Since around 70.5% of the markets in Indonesia are traditional markets (Muftiadi & Maulina, 2016),[9] keeping imported beef out of them prevents many consumers from accessing cheaper beef. This creates a major problem for urban consumers in particular, as their annual per capita beef consumption is 7 kilograms, much higher than the national average of 1.9 kilograms (Meat and Livestock Australia, 2016).

The impacts of these policies on consumer prices are measured by using nominal rates of protection (NRP). NRP calculate the proportion by which beef producer prices exceed the prices of imported beef at the country's border due to trade policy (Marks, 2015). The NRP for meat and viscera, including beef, reached 37.4% in 2015. This means the price of domestic beef from cattle farmers in Indonesia is 37.4% more expensive than beef from Australia arriving for import at major Indonesian ports.[10] Indonesian non-tariff trade policies such as import licensing and limited market access for imported beef are responsible for more than 87% of beef NRP value.[11]

[9] Followed by supermarkets (22%), and minimarkets (7.6%).
[10] Including all expenses for Cost, Insurance, and Freight (CIF) required to bring the imported beef from the producing country to Indonesia.
[11] If the NRP on beef only calculates the import tariffs and export taxes, its value would only reach 4.8%, or barely 13% of the total NRP value.

CONCLUSION AND POLICY RECOMMENDATION

The price ceiling stipulated in MOT 27/2017 has not lowered beef prices for consumers. Instead, beef prices in Indonesia are nearly twice as expensive as prices in international market. Meanwhile, import restrictions stipulated in MOT 59/2016 hurt both consumers and private importers.

This paper proposes four recommendations to improve the situation. Firstly, the government should remove the price ceiling on beef. This policy has been ineffective to lower beef prices. It is also unrealistic and unsustainable, especially for small-scale, private importers, who must deal with lengthy licensing process, and also for retailers, who must cover the high cost of the long distribution process before they can sell their beef to the consumers. Instead, this policy benefits importers and retailers with political connections to Bulog and the Ministry of Agriculture, enabling them to bypass the regulations and distribution process, creating unfair competition and distort beef prices.

Secondly, MOT 59/2016 Article 10 (1) and Article 11 must be revised to simplify and shorten the process of obtaining an import license, changing it to focus on speedy and reasonable identification and quality checks. This way, qualified beef importers do not need to concern themselves with burdensome bureaucratic procedures and can put more focus on ensuring the quality and distribution efficiency of their products.

Thirdly, MOT 59/2016 Article 9 (1 and 2) must be revised to ensure that all qualified beef importers, whether private or state-owned, have the same opportunity to import products into the country. To provide consumers with maximum protection against the risk from animal diseases, the government should focus on improving the performance of the health monitoring system by the Ministry of Health and Food and Drugs Agency (*Badan Pengawas Obat dan Makanan*/BPOM), rather than by restricting import opportunities to state-owned companies.

Fourthly, MOT 59/2016 Article 19 must be removed, since it restricts the entry of imported beef into traditional markets. This regulation hampers the people's access to more affordable beef, since 70.5% of markets in Indonesia are traditional markets. Allowing imported beef into traditional markets will ensure the beef supply is secure, since it will come from various sources. These measures will help keep beef prices competitive and eventually benefit the consumers.

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The Determinants of Balance of Payment in Six ASEAN Countries: A Panel Data Analysis

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ABSTRACT

This research investigates the determinant factors of balance of payment in six ASEAN countries using Keynesian and Monetary approaches during the period of 2002 to 2015. The regression model is conducted with panel data. This research first examines the influence of relevant economic variables to balance of payment, such as: exchange rate, gross domestic product (GDP), domestic credit, interest rate, and price level. Then, it tests the robustness of the economic variables with the two control variables: political stability and government's consumption expenditure. The Hausman test result shows that Fixed Effect Model is a better model than Random Effect Model. According to this model, some economic variables, such as: exchange rate, GDP, and interest rate, are consistent to the Keynesian approach. Meanwhile, variable of price level is consistent to the Monetary approach and variable of domestic credit is inconsistent with both Keynesian and Monetary approaches. According to the robustness test result, variable of exchange rate is still consistent with Keynesian approach, while variable of GDP and interest rate are partly consistent with Keynesian approach and partly are insignificant to balance of payment. Variable of domestic credit is inconsistent with both Keynesian and Monetary approaches and variable of price level is consistent with Monetary approach. Variable of political stability shows has a negative relationship with balance of payment, whereas variable government's consumption expenditure is insignificant to balance of payment. This research concludes that Keynesian approach is more appropriate in examining the case of six ASEAN countries. The main reason is because the financial sector in ASEAN countries' economies are inflexible and susceptible to pressure. In addition, there is a strict capital control in some of those six ASEAN countries. Hence, this research suggests that the government and monetary authorities in those six ASEAN countries should adopt a combined policy of expansionary fiscal and contractionary monetary policy. The combination of expansionary fiscal and contractionary monetary policy will be efficient in generating adequate capital mobility in order to maintain the stability of balance of payments in the long run.

Keywords: balance of payment, Keynesian approach, Monetary approach, panel data.

1. Introduction

Balance of payment (BOP) theory is a part of international economics theories which explains that a nation should have trade relations with other nations in order to collect foreign exchange reserves as the capital for development (Bird, 1981). The number of foreign exchange reserves depends on various factors that influence balance of payment. We can analyze those factors through Keynesian or Monetary approach. Keynesian approach of balance of payment is a one that focuses on the short-term analysis. Keynesian approach assumes that balance of payment in a country automatically would not be in an equilibrium, hence it requires government intervention. Another assumption of Keynesian approach is that wage rate and price level are rigid. Therefore, government should make some policies to set the wage rate and price level in order to make new equilibrium. In addition, Duasa (2004) wrote that Keynesian theory analyses balance of payment through

the components of trade balance (BOT). Therefore, the disequilibrium in trade balance will lead to disequilibrium in balance of payment.

Monetary approach of balance of payment is an explanation of the overall balance of payment by looking at the dynamics of foreign exchange reserves in the long-term adjustment from economic disturbances through money market mechanism. Monetary approach also emphasizes that disequilibrium in money market leads to disequilibrium in balance of payment. If the demand of money is greater than the supply of money from the central bank, it will lead to excess demand for money. This condition can be met by money inflows from abroad. On the other hand, if the money supply from central bank is greater than the demand, the excess supply for money can be eliminated by outflowing the money to other countries. Therefore, we can see the dynamics of money market mechanism leading to a change in the volatility of international reserves and then leads to a change in the volatility of balance of payment, which sometimes can be imbalanced and at other times remains balanced.

The equilibrium of balance of payment has a close relationship with economic stability and market behavior. For example, the global economic crisis in 2008 had some impacts on balance of payment's behavior in several ASEAN countries. A decrease in export share to several European countries and the US, an increase in Chinese products in ASEAN competitive market, and a high number of import in some ASEAN countries have led to a change in the stability of trade balance. According to the theory, it would lead to a deficit in trade balance. However, trade balance in several ASEAN countries showed a different trend with surpluses during 2008-2009. Singapore had the largest trade balance surplus with US$ 45.03 billion in 2009. The reason is because their income from export was higher than their cost of import. Figure 1.1 shows the current account in six ASEAN countries. According to it, in 2008, with the exception of Malaysia and Brunei Darussalam, trade balance in four ASEAN countries were decreasing. Singapore suffered from the largest decrease in trade balance, reaching US$ 4.0 billion. In 2009, trade balance in those countries were increasing. In Indonesia, the increase was US$ 1.13 billion from the previous year while in Singapore it reached USD 5.08 billion. In Thailand, the increase in trade balance was at US$ 2.25 billion and in the Philippines, it remained at US$ 7.71 billion. In 2010, the trade balance in those countries suffered from a decrease.

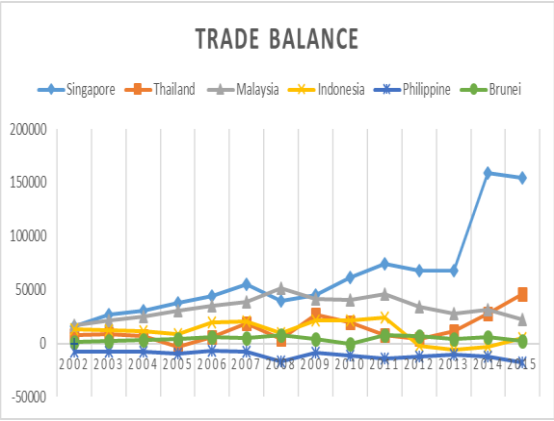

Figure 1.1. Trade balance in six ASEAN ASEAN countries (in million unit)
Data source: IMF website (2017)

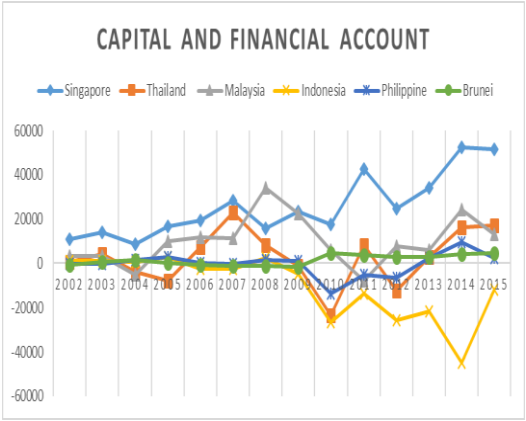

Figure 1.2: Capital and financial account in six Countries (in million unit)
Data source: IMF website (2017)

Another component which is also determining the equilibrium of balance of payment is capital and financial account. During the period of global economic crisis, there was an increase in capital traffic from developed countries, which were affected due to the crisis, to some developing countries (Dulien, et.al, 2010). A higher investment risk in these crisis countries led to investors' decision to secure their capital by moving it to another country to gain higher returns. On the other hand, these countries also need liquid capital to fund and recover their condition and hence increased their interest rate to attract and give incentive to investors. Therefore, during this global economic crisis period there were a lot of capitals moving back from developing countries to some crisis ridden countries. However, during the period of 2008-2009, in some ASEAN countries, there were surpluses in capital and financial account as well. Figure 1.2 shows capital and financial account in six ASEAN countries. The characteristics of capital and financial account movement in these countries, however, were different. In Indonesia, capital and financial account was decreasing as much as US$ 9.70 billion although the number was still surplus in 2008. In Thailand, the number of capital and financial account was decreasing to US$ 9.9 billion in 2008 although the condition was also still surplus. Surplus of capital and financial account was happening too in Malaysia and the Philippines. In Malaysia, capital and financial account was increasing towards US$ 6.24 billion, whereas in the Philippines it was decreasing to US$ 6.85 billion. A different situation happened in Brunei Darussalam, where the deficit of capital account was taking place as to US$ 1.34 billion on 2008.

1.1 Literature Review

Previous researchers have examined several variables that influence balance of payment in which they have different results. Duasa (2004) investigated the Malaysian balance of payment uses Keynesian and Monetary approaches from the 1st quarter of 1974 to the 4th quarter of 1995. She used the dynamic model of time series regression to analyze the influence of exchange rate, GDP, price level, money supply, and interest rate. Her finding showed that Keynesian approach is more appropriate in the Malaysian case.

Fleermuys (2005) employed Monetary approach to balance of payment in examining the case of Namibia during the period of 1993 to 2003 using Error Correction Model (ECM). He used some independent variables such as GDP, inflation, interest rate, and domestic credit. His research showed that monetary variables are not playing an overwhelming role to determine the balance of payment in Namibia. He also concluded that the balance of payment phenomenon in Namibia is not a monetary phenomenon.

Ali, *et.al* (2008) analyzed the influence of political stability on balance of payment and the relative importance of political stability and economic freedom in balance of payment and exchange rate stability. His study focused on ten selected Asian countries of various income levels and tested the factor of political stability and economic freedom in the stability of balance of payment using a simple econometric model with various techniques. His findings showed that stable political stability with visionary leadership leads to improve balance of payment.

Tijani (2014) conducted a study of empirical analysis of balance of payment adjustment mechanism in Nigeria through monetary approach during the period of 1970 to 2010. He used linear regression estimation to analyze the influence of exchange rate, inflation, balance of trade, domestic credit, and GDP to balance of payment. His findings showed that Monetary approach is more appropriate in the case of Nigeria.

Brown and Bidemi (2015) investigated fiscal policy measures and balance of payment in Nigeria during the period of 1980 to 2012. He used some independent variables such as government expenditure, government tax revenue, and government debt. The data was analyzed using Error Correction Model (ECM). The major findings showed that in Nigeria, the success of fiscal policy in order to promote balance of payment depended over the level of public revenue available, the direction of public expenditure and its implementation.

2. Theoretical Framework

2.1 Keynesian Approach to Balance of Payment

The idea of Keynesian approach is based on the macroeconomics theory of John Maynard Keynes (1883-1946). Keynesian theory does not believe that market mechanism automatically can work towards equilibrium point. Keynes argues that equilibrium point can be achieved by government intervention and he also argues that wage rate and price level are rigid and state is always beset with unemployment issues.

Keynesian approach is divided into several approaches, such as: elasticity approach and absorption approach. Both elasticity and absorption approach have some weaknesses, such as: those approaches can only be viewed as balance of payment theory in a world without capital flows.

2.2 Monetary Approach to Balance of Payment

Monetary approach of balance of payment defines that balance of payment is the change in international reserve of a country. Monetary approach argues that balance of payment is a monetary phenomenon. Monetary approach also assumes that external disequilibrium is transitory and will revert back to the equilibrium point in the long run. In the monetary approach money market disequilibrium is an important factor causing balance of payment disequilibrium. If demand of money is greater than the supply of money, it will lead to the excess money demand. This condition can be met by inflow of money from overseas. On the other hand, if the money supply is greater than the demand, the excess supply can be eliminated by outflowing the money to the other countries. Therefore, the volatility in money market mechanism then will lead to change the number of international reserve and then leads to change the number of balance of payment.

2.3 The Determinant of Balance of Payment

According to both Keynesian and Monetary approaches, there are some variables that influence balance of payments, such as; exchange rate, GDP, domestic credit, interest rate, and price level. Even though both approaches have similar variables, those variables have different influence on how they can affect balance of payment.

The Keynesian approach to balance of payment explains that depreciation in domestic currency will lead to an increase of output. An increase in output leads to an increase in import. This condition will lead to a decrease of trade balance and hence, a balance of payment decreases. Then, an increase in domestic income will lead to a negative way to balance of payment. The reason is because an increase in domestic income leads to an increase import and therefore the trade balance and the balance of payment decrease. As for domestic credit, an increase in domestic credit will lead to an increase in money supply. An increase in money supply leads to a decrease in interest rate, which will increase investment, then increases income. An increase in income leads to an increase in import. The impact of an increase in import leads to a decrease in trade balance. A decrease in trade balance leads to a decrease in balance of payment. As for interest rate, an increase in

domestic interest rate leads to a decrease in investment. A decrease in investment will lead to a decrease in aggregate demand. A decrease in aggregate demand leads to a decrease in domestic income, and then leads to a decrease in import. A decrease in import leads to an increase in trade balance, and hence will improve balance of payment. Price level has negative relationship to balance of payment. The reason is the lower domestic price level will increase demand of export, and hence will lead to increase trade balance and will improve balance of payment.

According to monetary approach to balance of payment, exchange rate has a negative relationship to balance of payment. Depreciation in domestic exchange rate will lead to an increase in export and demand for domestic currency, which will improve international reserve and then improve balance of payment. Then, GDP has a negative relationship to balance of payment. An increase in domestic income will lead to an increase in demand of domestic money. Therefore, an increase in demand of domestic money leads to an increase in international reserve then leads to an increase in balance of payment. An increase in domestic credit will lead to a decrease in balance of payment, because a rise in domestic credit leads to an increase in money supply. If there is an excess in money supply, this condition will lead to capital outflow increase. Then, an increase in capital outflow leads to a decrease in international reserve then leads to decrease balance of payment. The effect of interest rate in the monetary approach is not clear, because interest rate has two ways in influencing balance of payment. An increase in domestic interest rate leads to a decrease in demand foreign exchange, then leads to reduce international reserve and balance of payment decreases. On the other hand, an increase in domestic interest rate also leads to an increase in capital inflow. Then, an increase in capital inflow will increase international reserve, hence, balance of payment increases. An increase in domestic price level will lead to increase on the money demand of a country, and hence international reserve increases and then balance of payment increases.

2.4 Other Control Variables Used in Literature for Robustness Test

Political stability can be defined as the durability and integrity of a current government regime. The index of political stability is determined on the basis of the number of terrorist attacks and violence which takes place in that state. World Bank measures the index of political stability in the range between 2.5 to -2.5. The higher the number of index means that the political stability of country is good. Good political stability has a potential to increase the balance of payment of a country.

In the meanwhile, government's consumption expenditure is defined as any money spent by the government for funding their operations including health, social service, national defense, unemployment packages, and government bailouts to bank but excludes government military expenditures that are parts of government capital formation. The number is shown in the percentage of GDP. Higher government's consumption expenditure will lead to an increase in income and then leads to increase import. An increase in import will lead to a decrease in trade balance, hence, balance of payment of payment decreases.

3. Methodology

This research uses both cross-section and annual data. These data are collected from World Bank website and International Monetary Fund website, and Philippine Central Bank website such as data of net foreign asset, exchange rate, GDP, domestic credit, interest rate, price level, political stability, and government's consumption expenditure in six ASEAN

countries, i.e. Singapore, Thailand, Malaysia, Indonesia, Philippines, and Brunei Darussalam in the period of 2002 to 2015.

3.1 Estimation Model

This research uses regression model based on Keynesian and Monetary approach in which balance of payment is selected as the dependent variable and exchange rate, GDP, domestic credit, interest rate and price level are the independent economic variables. This model is adopted from Tijani (2014). In his work, Tijani develops a simple OLS regression model at level value and takes into account variables of exchange rate, inflation rate, trade balance, domestic credit, and GDP. This study also uses level value but only takes into account, variables of exchange rate, GDP, interest rate, domestic credit, price level, political stability and government's consumption expenditure, using panel data analysis technique. Furthermore, this research is conducted as follows: First, we examine the influence of relevant economic variables balance of payment. Second, we test the robustness of the economic variables with the two control variables, political stability and the size of government by government's consumption expenditure. Then, the empirical model can be written as;

$$NFA_{it} = \beta_1 Exch_{it} + \beta_2 GDP_{it} + \beta 3\ DC_{it} + \beta 4\ i_{it} + \beta 5\ CPI_{it} + \beta 6\ Polstab_{it} + \beta 7\ GS_{it} + \mu t \quad (3.1)$$

Where:

NFA= net foreign asset
Exch = exchange rate
GDP = gross domestic product
DC = domestic credit
i = interest rate
CPI = consumer price index
Polstab = political stability
GS = government's consumption expenditure
μt = error term

4. Result of Estimation

In the first step, the Fixed Effect Model and Random Effect Model of the panel data are conducted to analyze the influence of economic variables such as exchange rate, GDP, domestic credit, interest rate, and price level to balance of payment.

According to Table 5.1, column (1) and (2) show the regression estimation of the relevant economic variables on balance of payment. The Hausman test result shows that the number of chi-square statistic is 352.86 and the number of chi-square table is 15.09. The chi-square table result is based on the α = 5%, df = k= 5, and the total of observation number = 84. Hence, this research concludes that the number of chi-square statistic > chi-square table. It means that this research should reject H0 or, in other words, the best result is Fixed Effect Model.

Hausman test shows that H0 hypothesis of random effect model is rejected. Moreover, the fixed effect model in column (1) has an adjustment R-square value of 0.92 which is greater than 0.58 in the random effect model. Both results show that the use of fixed effect model is more appropriate for the estimation of the six ASEAN countries.

From column (1) exchange rate variable has a positive and significant coefficient. It means that a decrease in exchange rate will lead to a decrease in balance of payment on the ceteris paribus assumption. Therefore, the positive effect of exchange rate variable on balance of payment is consistent with Keynesian approach.

Variable of GDP has a negative and significant coefficient. It means that an increase in GDP will lead to a decrease in balance of payment on the ceteris paribus assumption. Therefore, variable of GDP has a negative and significant influence on the balance of

payment. This is consistent with Keynesian approach. Variable of domestic credit has a positive and significant coefficient. It means that an increase in domestic credit will lead to an increase in balance of payment on the ceteris paribus assumption. This finding, however, is not consistent with both Keynesian approach and Monetary approach. Interest rate variable has a positive and significant coefficient. It means that an increase in interest rate leads to an increase in balance of payment on the ceteris paribus assumption. This finding is consistent with the Keynesian approach. Price variable has a positive and significant coefficient. It means that an increase in price leads to an increase in balance of payment on the ceteris paribus assumption. This finding, however, is consistent with the Monetary approach.

Table 5.2 shows the robustness test with other control variables in Fixed Effect Model. Column (3) shows the influence of economics variables and political stability to balance of payment in Fixed Effect Model. Column (4) shows the influence economics variables and government's consumption expenditure to balance of payment in Fixed Effect Model. Then, column (5) shows the influence economics variables and two control variables to balance of payment in Fixed Effect Model.

According to regression result of Table 5.2, each of the exchange rate variable on the column (3), (4) and (5) has a positive coefficient and significant to influence balance of payment variable, and this finding is still consistent with Keynesian approach. This research finding is also similar to the finding of Duasa (2004). Her research suggested that exchange rate has a negative and significant influence on balance of payment. However, this finding is not similar to the finding of Ismalia (2005) who found that exchange rate has a positive and significant influence on balance of payment in both short and long terms, and Tijani (2014) found that exchange rate is insignificant to balance of payment.

Table 5.2 shows the robustness test with other control variables in Fixed Effect Model. Column (3) shows the influence of economics variables and political stability to balance of payment in Fixed Effect Model. Column (4) shows the influence economics variables and government's consumption expenditure to balance of payment in Fixed Effect Model. Then, column (5) shows the influence economics variables and two control variables to balance of payment in Fixed Effect Model.

Table 5.1. Estimation results of balance of payment:
Fixed Effect Model vs. Random Effect Model

	Balance of payment	
	Fixed Effect Model	Random Effect Model
	(1)	(2)
Constant	-108	41.10
	(0.0006)***	(0.0167)**
Exchange rate	129	93.30
	(0.0153)**	(0.0000)***
GDP	-0.10	0.051
	(0.0510)*	(0.0019)***
Domestic credit	0.19	0.324
	(0.0000)***	(0.0000)***
Interest rate	3.29	-2.97
	(0.0750)*	(0.0049)***
Price level	1.24	-0.39
	(0.0004)***	(0.0090)***
Observation	84	84
F statistic	99.91	23.67
(Prob) F statistic	(0.0000)***	(0.0000)***
Adjusted R-square	0.92	0.58
Hausmant Test		
Chi-square statistic	352.866384	
Probability	(0.0000)***	

Chi-square	
df	5

Note:
* significance at 10% level
** significance at 5% level
*** significance at 1% level

Table 5.2. Robustness test with other control variables

	Balance of payment		
	(3)	(4)	(5)
Constant	-103	-108	-103
	(0.0008)***	(0.0025)***	(0.0032)***
Exchange rate	140	129	139
	(0.0076)***	(0.0226)**	(0.0125)**
GDP	-0.056	-0.10	-0.06
	(0.3125)	(0.0539)*	(0.3158)
Domestic credit	0.163	0.19	0.16
	(0.0001)***	(0.0000)***	(0.0003)***
Interest rate	2.31	3.29	2.30
	(0.2115)	(0.0777)*	(0.2172)
Price	1.13	1.24	1.13
	(0.001)***	(0.0004)***	(0.001)***
Political stability	-10.40	-	-10.40
	(0.0306)**	-	(0.0317)**
Government's consumption expenditure	-	3.36	-47.08
	-	(0.9974)	(0.962)
Observation	84	84	84
F statistic	96.08	89.58	86.85
(Prob) F statistic	(0.0000)***	(0.0000)***	(0.0000)***
Adjusted R-square	0.93	0.92	0.93

Note:
* significance at 10% level
** significance at 5% level
*** significance at 1% level

According to regression result of Table 5.2, each of the exchange rate variable on the column (3), (4) and (5) has a positive coefficient and significant to influence balance of payment variable, and this finding is still consistent with Keynesian approach. This research finding is also similar to the finding of Duasa (2004). Her research suggested that exchange rate has a negative and significant influence on balance of payment. However, this finding is not similar to the finding Tijani (2014) found that exchange rate is insignificant to balance of payment.

Each variable of GDP on the column (3), (4) and (5) has a negative coefficient. However, only coefficient of column (4) that deems significant to influence balance of payment and consistent to Keynesian approach, while the coefficient of column (3) and column (5) are not significant. The reason is because in the six ASEAN counties, almost every country has adopted budget deficit. Therefore, they are more focused to use their GDP for paying their state debts and the debts interest. In addition, some countries also use their GDP for paying their civil servant salary and use as the capital for building domestic infrastructures. This finding is similar to the finding of Duasa (2004) who found that GDP has a negative and significant influence on balance of payment. However, this finding is not similar to the findings of Fleermuys (2005 and of Tijani (2014). Their finding suggested that GDP has a positive and significant influence on balance of payment.

Each variable of domestic credit on column (3), (4) and (5) has a positive coefficient and significant. This finding is still not consistent with both Keynesian and Monetary approaches, because domestic credit almost in these six ASEAN countries is more distributed to production credit than consumption credit, particularly as investment credit

and working capital credit. Hence, an increased domestic credit leads to an increase in capital of production sectors. In the assumption of fixed production cost, an increase in capital leads to an increase in quality of goods and services. Then, an increase in quality of goods and service will lead to an increase in competitive price, then it will lead to an increase in export. An increase in export leads to an increase in trade balance, hence balance of payment increases. This finding is not similar to the finding of Fleermuys (2005) in the long term. Their findings suggested that domestic credit has a negative and significant influence on balance of payment. Furthermore, this finding is also not similar to the finding of Tijani (2014) who found that domestic credit is insignificant to balance of payment.

Each variable of interest rate on the column (3), (4) and (5) has a positive coefficient. However, only coefficient of column (4) that shows significant to influence balance of payment and consistent to Keynesian approach, while the coefficient of column (3) and column (5) are not significant. The reason is because high interest rate in some countries in those six in ASEAN countries leads to a decrease in real sector. A decrease in real sector leads to a decrease in import as the impact of a decrease in income. A decrease in real sector also will lead to a decrease in export as the impact of an increase in financing in production sector. Therefore, when the two effects of a decrease in real sector offsetting each other as the impact of high interest rate, it will lead to an unchanged balance of payment. This finding is similar to the finding of Fleermuys (2005) in both short and long term. Their findings suggested that interest rate is insignificant to balance of payment. However, this is not similar to the finding of Duasa (2004). Their findings suggested that interest rate has a negative and significant influence on balance of payment.

Each price level variable on column (3), (4) and (5) has a positive coefficient and significant. This finding is still consistent with Monetary approach. However, this finding is not similar to the finding of Duasa (2004) who found that price level has a negative and significant influence on balance of payment.

Each variable of political stability on column (3) and (5) has a negative coefficient and significance at 5 %. Therefore, this research concludes that the variable of political stability has a negative and significant influence on balance of payment variable. The reason is because political instability means that some countries in those six ASEAN are likely to improve strict capital control to safeguard them from external shock that can disturb their foreign reserves. This finding is not similar to the finding of Ali, *et.al* (2008) who found that an increase in political stability leads to an increase in balance of payment.

Government's consumption expenditure variable on column (4) has a positive coefficient, while on column (5) has a negative coefficient. However, those coefficients are not significant. The reason is because the allocation of government expenditure in some ASEAN countries is allocating more for paying the prime of state foreign debts and its debt interest, subsidy, and domestic social assistance. Therefore, this condition leads to unchanged balance of payment situation. This finding is not similar to the research finding of Brown and Bidemi (2015) who found that government expenditure has a negative and significant influence on balance of payment.

5. Conclusion and Policy Implication

The regression results of the fixed effect model show that Keynesian approach is more appropriate in the case of ASEAN countries. The reason is because the financial sectors in ASEAN countries economies are inflexible and susceptible to pressure. Besides,

there is a strict capital control in some of those six ASEAN countries. Therefore, the government and monetary authorities need a policy to maintain the equilibrium of balance of payment in the long run under flexible financial market and perfect capital mobility.

To conclude, this thesis identifies the policy implication for the government and monetary authorities in six ASEAN countries. To begin with, those respective countries should adopt combination policy among expansionary fiscal and contractionary monetary policy. The combination among expansionary fiscal and contractionary monetary policy is very efficient in generating adequate capital mobility in order to maintain the stability of balance of payments in the long run.

The combination policy among expansionary fiscal policy and contractionary monetary policy will lead to an increase in the interest rate and unchanged in income. An increase in interest rate, then, will lead to an increase in capital inflow. An increase in capital inflow leads to an increase in international reserve then leads to an increase in balance of payment. The use of expansionary fiscal policy and contractionary monetary policy is supported by Fleermuys (2005) in the case of maintain balance of payment in Namibia.

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THE STRATEGY FOR UPGRADING THE FISHERMAN'S WELFARE IN TARAKAN CITY

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ABSTRAK

The coastal society empowerment is a new trend in Indonesian's deveopment paradigm. This happen after the sea and the coastal areas have been neglected and forgotten from government's development. The coastal society was known with their unique characteritics and varieties of potent natural resources in both biological and non-biological resources. The available potent resources are used by people the coastal area to improve their welfare whether in the fishery or non-fishery sectors. The purpose of this research is to identify the problems and potencies of fishermen in the coastal society, and to determine any strategy in order to generate the fishermen's welfare (income) in the Tarakan City's Coastal Area.

The analytical result used SWOT analysis showed that the fishermen's main problems in Tarakan City are the difficulty when affording a social change from traditional to modern society. Tarakan City's geographical position surrounded by the sea is a pontency for the coastal and fishermen society. Therefore, some alternative strategies that can be implemented are 1) improving the human (fishermen) resources quality so they can optimize the utililization of the marine resources (fishery) through supplying endorsement to the welfare and supplying eduction and training through some association/family bonding in the fishermen society continually in order to improve the trade system quality to open the gate for the local society and regional marketing; 2) to improve the technology quality, to assist the financial capital, to proide the education and training for the fishermen society in order to improve the welfare; 3) held some training and development related to maritime and fishery social issues so they can face some threatening disasters.

Key words : Fishermen's Welfare, Coastal area, SWOT, Traditional Fishermen, succeed

Background

The empowerment of fishermen society is a new for the phenomena of development in Indonesia. Although Indonesia is a maritime country, fishermen society lives restrictively in economic, social, political and educational field. Though some of them can be categorized succeed, this is because they do another job for they living. This means they are not depended on their fishing from the sea. The fishermen

society is one of society members with the lowest welfare. In the other word, the fishermen society is the poorest if comparing to other subsistence society (Purwanto, 2007).

The naval and coastal resources are important asset for Indonesia. With the width of the sea 5.8 million km2, Indonesia has vary and huge fishery resources. The sustainable potension of fishery resources in Indonesia is 6.7 million ton per year from vary kind of fishes, shrims, and squids. If this potension is estimated to economy value base on the unit price of a fishery commodity, then it can be about US$ 15 billion (Dahuri, 2004).

Indonesia population is about 210 million people. It is about 2 million of households Today's population. Today, there are about 2 million households dependent on fisheries sector. Assuming that each fisher household has 6 people thus at least 12 million people are dependent on the sea resources includes the coastal area.

Tarakan City is an island located in North Borneo Province, Sulawesi Sea in the east side, off the northeast coast of Borneo with an area of approximately 250.80 - 657.33 km2. Judging from its geographic state, Tarakan City lies between 3014'23 "-3026'37" LU-117030'50 "-117040'12" BT. Tarakan City is directly adjacent to the Bunyu Island Sub-district area beside the north, is estimated to have a potential area of 33,529 km2 for capture fisheries and cultivation. The wealth of marine natural resources Tarakan City has not been developed intensively by the local government. Moreover invertors have not seen it as the main income. As the impact, the fishermen society life in the Borneo east sea coast area remains poor. It is like "the chicken died in the rice barn". The traditional fishermen's helplessness in this area causes the catching production facing more troublesome especially on financial capital. Therefore, they have not been prospering their family.

Based on BPS data in 2010, Tarakan City population reached 193.069 people with the poverty line (IDR/Sub-district/Month) of 17.660 (6.9%) of Tarakan City Population, some of them lived in the coastal area.

As fishermen-catchers still using simple tools and limited capital, so they are categorized as the poor people with low income. The causes of their poor condition are natural conditions, education level, life habit, catch marketing, and government programs which are impartial to the fishermen. Their life seems to have been patterned in such a way that is difficult to get out of the poverty cycle. The Kelurahan of the Selumit Pantai, Amal Pantai, and Juata Laut are some areas in Tarakan City that most of the people are fishermen and having lack fasilities for their work.

In the government efforts to increase the potency of the sea there are some basic obstacles still exist like the natural and weather conditions. Beside that the internal conditions/ factors affect the fluctuation in the fishermen income, where the fishermen still use the traditional technology whether it is the boat or the tools (tools to catch), the lack capital, low education, and the role of government institution to the fishermen. This condition can occur to any traditional fishermen by seeing from the annual fish production. The study results of the fishermen welfare showed that the economic social gap, and poverty, or the inequality income is a crucial problem faced

by the fishermen and not easy to overcome. Therefore, a comprehensive plan and a measurable purpose with gradual attainments are needed by considering the ability of the development resources of the local people (Kusnadi, 2007).

Judging from those problems, the focus of this research is to figure out the strategy to increase fishermen welfare in Kelurahan of Selumit Pantai, Pantai Amal, and Juata Laut in Tarakkan city.

The Fishermen Society. Koentjaraningrat (1996) defined a society as a group of human beings that interacting to each other. While as stated by Sadly (1980), a society is a big or small group consisting of several human beings who by or due to themselves related in groups and influencing to each other.

Fishermen in Ensiklopedia Indonesia (1983) were stated as persons who actively do catching fish both direct and indirect as the livelihood. M.Khali Mansyur defined fishermen more broadly fishermen are not only those who catch fish in the sea for living but also those who are integral to that neighborhood.

The characteritics of the Fishermen Society. In short, the fishermen society has distinctive characteristics with other societies, such as:

1. The fishermen society has homogeneous characteristics in term of livelihood, cultural value, and etiquette and behavior.
2. Likely having rough personality.
3. Tolerance
4. Having relatively higher sexual desire.
5. Member relationship is more intimate and has higher sense of mutual help.
6. The way of speaking tends to use loud voice.

A coastal society in general is a tranditional society with very low economic social status (Pramono, 2005). The education of the coastal society is relatively low and often categorized as the people who familiar with the poverty and backwardness (M.Khali Mansyur).

Methodology

Reseach Method

The research method used is a survey method by using direct observation in the field. The amples used are 60 respondens. The biggest is in 3 Kelurahan (areas). Those are kelurahan of Selumit Pantai, Pantai Amal and Juata Laut. The sampling is using proportional random sampling method.

The analitical tools used is the SWOT analysis. The SWOT analysis where S means strength, W is weakness, O is opportunity and T is threats. The collected data will be evaluated based on the respondent and dianalysis perception descriptively by analyzing the strength, weakness, opportunity, and threat (SWOT analysis) as bases to determinate the formulation of income generation strategy for the fishermen society in Tarakan City (Rangkuti, 2000:19)

Analysis and Discussion

The condition of strengths, weaknesses or limitations, opportunities, and threats of household fishery welfare in coastal area of Tarakan is analized by SWOT:

1. The dominant factors in the strength factor were the the potency of human resources (the fishermen), the strong bond of kinship among the fishermen, and the strong homogeneity among them especially due to the same profession.

2. The dominant factors in the weakness factor were the traditional technology (means) used by the fishermen society, the low of capital and education, and the difficulty to change the society from the traditional into modern society, and the non-functioning government role.
3. The dominant factors in the opportunity factor were the overflowing of the marine and fishery resources, the government supports for the fishermen society still high like giving some facilities such as the fishery means, fish processing sites and harbour, the assistant programs, the counseling and training programs, and the high demand of fishery from both local and regional.
4. The threat factors to be anticipated were the unpredictable nature condition like strom, foreign fishermen doing the fish catching in Tarakan City area and the uncertain fish demand.

The Income Generation Strategy for the Fishermen Society in Tarakan City

1. The S-O Strategy
   a. Improving the quality of human resources (the fishermen) so they enable to use the potency of the fishery resources. Giving the supporting assistance to improve the welfare and giving the counseling and training through forums of kinship among the fishermen society continually so it can be used well to improve the fishermen society's welfare (income).
   b. Improving the quality of the commerce to increase the marketing access for both local and regional market. Empowering the fishermen institutions to open the marketing access professionally and independently for both the local and regional market. Thus the fishermen society's welfare (income) can be realized because the need of market demand for fish will be fulfilled.

2. The W-O Strategy
   a. Improving the technology quality in order to optimize the utilization of the natural resource potency and increase the fishermen society's income.
   b. The capital assistance for the operational activities of the fishermen society.
   c. Assisting the quality improvement of the social institutions of the fishermen society by reactivating the institution activities to increase the productivity of the fish catch.

3. The S-T Strategy
   a. Doing the counseling of marine and social matters in fishermen society neighbourhood.
   b. Doing the training in the fishermen society neighbourhood to face any threatening disasters. The government technical and non technical instancies

have training to the fishermen society in facing the predicted disasters when doing the fish catch so the fishermen can anticipate any disaster happen. The government supposed to be giving the social empowerment for the fishermen society with good coordination so the overlapping programs can be avoided. Then, it is expected that the fishermen society in Kelurahan of Selumit Pantai, Pantai Amal, and Juata Laut can accept the government instruction related to the welfare (income) improvement well.

4. The W-T Strategy
   In order to improve the fishermen society resistance of any threatening threats, some improvements have to be done in the internal weakness of the technology use (the fleet and the catch tools), the low of capital and education, and the difficulty to change the society from the traditional into modern society, and the non-functioning government role.

Conclusion

Based on the result analysis, some alternative strategies have been formulated as the following:

1. The dominant factors in the Strong factor are the potency of human resources (the fishermen society), the strong bond of kinship among the fishermen, and the strong homogeneity among them especially due to the same profession,
2. The dominant factors in the weakness factor were the traditional technology (means) used by the fishermen society, the low of capital and education, and the difficulty to change the society from the traditional into modern society, and the non-functioning government role,
3. The dominant factors in the opportunity factor were the overflowing of the marine and fishery resources, the government supports for the fishermen society still high like giving some facilities such as the fishery means, fish processing sites and harbour, the assistant programs, the counseling and training programs, and the high demand of fishery from both local and regional,
4. The threat factors to be anticipated were the unpredictable nature condition like strom, foreign fishermen doing the fish catching in Tarakan City area and the uncertain fish demand.

Suggestion

By evaluating the conclusion above, some suggestions that can be stated are as the following:

1. The needs to increase the capacity of the skilled human resources. The government programs such as trainings, scholarships, health insurance, improvements of road and residential quality, facility and infrsstucture should be well managed.

2. The job opportunity should be widened. The activity programs are related to the increasing of job opportunity, the skill improvements and trainings for the labors, the empowerment of the productive labors.
3. The diversification for the business activities is needed so the fishermen's business activities will get more value added.

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TAX REVENUE AND ECONOMIC ACTIVITY: SEASONALITY, COINTEGRATION AND CAUSALITY ANALYSIS

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ABSTRACT

The role of taxation is very important for the financing of development in Indonesia. However, the performance of tax revenue has not been optimally indicated by the low ratio of tax to Gross Domestic Product (GDP) which in 2015 the ratio is 10.7% of GDP. This tax ratio is still lower than the tax ratio of neighboring countries such as the Philippines (13.6%), Malaysia (14.3%) and Thailand (16.5%). Even in 2016 the tax ratio declined slightly to 10.3% of GDP.
With the scope of the study limited to non-oil and gas income tax and value added tax which contributes more than 80 percent of total tax revenue, this study objective is to understand the relationship between tax revenue and economic activity that can provide insight into the effectiveness of tax policy.
This study uses monthly realization of tax revenue both total and sectoral. For economic activity data, we use data derived from national account data or GDP based on expenditure and production approach (sectoral). Monthly tax revenue data is then aggregated into quarterly data to match the frequency of GDP data. Period of data being studied is Q1 2010 - Q4 2017. Tax revenue and economic activity data needs to be seasonal adjusted and then separated into trends and cycles. To examine the relationship between tax revenue and economic activity, we performed several tests such as unit root test, cointegration test and causality test.
The main contribution of this study are the empirical testing on the lingkage between tax revenue collection and economic activity and the policy implication of this study which in order to increase the tax revenue collection, government should formulate policy to increase production, investment and consumption because production, investment and consumption will increase tax base.

Keywords: tax revenue, economic activity, seasonality, cointegration, causality, Indonesia

1. INTRODUCTION

1.1. Background

The role of taxation is very important for the financing of development in Indonesia. However, the performance of tax revenue has not been optimally indicated by the low ratio of tax to GDP which in 2015 amounted to 10.7% of GDP which then decreased to 10.3% of GDP in 2016. This tax ratio is still lower than the tax ratio of neighboring countries such as the Philippines (13.7%), Malaysia (13.8%) and Thailand (15.7%). Although in 2017 the tax ratio slightly increased to 10.7% of GDP. This tax ratio should certainly be increased to 17% of GDP to provide fiscal space with high demand to finance development programs that can promote growth such as education, health and infrastructure spending.
Beside low tax ratio, other Indicators shows that tax performance is not yet optimal. For example, high tax gap where in 2011 the realization of tax revenue was 11.9% of GDP but the tax capacity was 28% of GDP (Poesoro 2015), declining elasticity of GDP growth to the growth of tax revenue (tax buoyancy) for example corporate income tax buoyancy from 1.42 (2011) to minus 0.89 (2016) and the most important is not reaching target of tax revenue.

1.2. Objectives

With the scope of the study limited to non-oil and gas PPN and VAT which contributes more than 80 percent of the total tax revenue, the objective of this study is to understand the relationship between

tax revenue and economic activity that can provide insight into the effectiveness of tax policy. The results of this study can be used to see the potential for future taxes.

1.3. Methodology and Data

The methodology used in this research is to use several tests to examine the relationship, the linkage between tax revenue and economic activity. These tests, among others, by looking at seasonal patterns and cycles between tax revenue and economic activity data, as well as tests of cointegration and causality between tax revenue and economic activity.

The data used in this study comes from the Ministry of Finance for tax data and from the Central Statistics Agency for data of economic activity. The data period is January 2010 to December 2017. The tax data does not include receipts from the Amnesty Program in Q3 - Q4 2016 and Q1 2017. The tax data is the monthly realization of income tax and Value Added Tax (VAT). Meanwhile, economic activities data is GDP, investment and consumption data which has quarterly frequency.

2. LITERATURE REVIEW

2.1 Tax and Economic Activity

2.1.1 Tax

Tax revenues in this paper are revenues from Income Tax (direct tax) and Value Added Tax (indirect tax). Income tax is the tax imposed on income derived or accrued in the tax year. Taxable income is defined as income in the broadest sense or worldwide income, namely that the tax is levied on any additional economic capability received or earned by a Taxpayer from whichever origin may be used for consumption or increase the taxpayer's wealth. The income tax includes corporate income tax and individual income tax (Uppal (2003) & Direktorat Jenderal Pajak (2013)). Tax rates applied to Taxable Income for corporate income tax is 28% but for individual income tax depends in taxable income layer, the range between 5% and 30%.

Value Added Tax (VAT) is a tax on the consumption of goods and services in the Indonesian custom region which are charged at various stages in production and distribution line. The imposition of VAT depends on the pattern of consumption in the community and the development of business transactions (Kementerian Keuangan 2009). The Value Added Tax rate is 10%.

2.1.2 Economic Activity

There are three economic activities in this paper. They are production, consumption and investment activities (see Iriqat and Anabtawi (2016), Saqib *et al* (2014) and Lescaroux and Mignon (2008)). According to Badan Pusat Statistik (2015) the production is economic activity to produce goods and services or output using available resources or input. The proxy used for production activity is Gross Domestic Product (GDP). Consumption activity is an activity of purchasing goods and services conducted by consumers (Mankiw, 2016). Generally consumption for goods and services are disposable. The data proxy that can be used to reflect consumption activity is the expenditure of Household Consumption in GDP Expenditure. Instead, investment activity is the activity of purchasing goods either by individuals or companies to increase the stock of capital (Mankiw, 2016). In contrast to consumption that tends to be disposable or directly discharged, investment goods have a life period or service life more than one year. The data proxy that can be used to reflect investment activity is Gross Fixed Capital Formation in GDP by expenditures. Consumption activities are subject to VAT. Production and investment activities are not taxable. However, the returns derived from production and investment activities are subject to taxation.

According to the Central Bureau of Statistics (2015) there are three approaches in measuring GDP: the production, expenditure and income approaches. According to Mankiw (2011) these three approaches will yield the same result where GDP Production = GDP Spending = GDP Revenue. Production GDP is the sum of value added by business field plus tax minus subsidy on the product. GDP Spending is the sum of the final demand minus imports. GDP Revenue is the sum of labor compensation, gross business surpluses, taxes minus other subsidies on production plus taxes minus subsidies on products.

2.2 Seasonality

Time series data is a sequence of data of economic activity obtained in a regular time span. Data obtained on a monthly or quarterly basis will cause an appeal issue because the data still contains seasonal elements.[1] Some examples of seasonal influence are retail sales or consumptions in Indonesia typically rise significantly during Ramadhan or Eid Al-Fitr, and Christmas or New Year.

Research conducted by Barsky and Miron (1989) shows that seasonal fluctuations are an important source of variation across all macroeconomic quantity variables. Seasonal influences are often large enough to mask other characteristics of data that are important for the analysis of economic trends. For example, if every month there are different seasonal factors on the high or low value it will be difficult to detect the general direction of the data whether it is up, down, reversed, no change, or consistent with other economic indicators. Therefore, this seasonal influence should be eliminated from time-varying data to obtain non-seasonal factors that affect data. The process of eliminating seasonal factors is commonly called seasonal adjustment.

According to Enders (2015), any time series data can be decomposed into four components: trend, seasonal, cyclical and irregular components. The seasonal adjustment mechanism is to separate the four components of a time series of data. To make the seasonal adjustment process, we use EViews software programs that already have seasonal adjustment facilities like Census X13.

2.3 Unit Root Test

Testing for unit roots is necessary to prevent spurious regression. According to Harris and Sollis (2003) "if a series must be differenced *d* times before it becomes stationary, then it contains *d* unit roots." Unit root testing includes testing for the order of integration of the series. A notation $y_t \sim I(d)$means that a series y_t is said to be integrated of order *d* (Harris and Sollis 2003).

The most commonly employed methods for unit root testing is Augmented Dickey-Fuller (ADF). There are three possible formulations of ADF unit root test that include three different combinations of the deterministic part (Widarjono 2017). If the value of ADF statistic is smaller (more negative) than its critical value, the null hypothesis of nonstationary is rejected.

2.4 Cointegration Test

Cointegration concept has two essential characteristics. First, cointegration requires the variables have the same order of integration, and second, if there are N variables in the model, it is possible that the model has N-1 cointegrating vectors (Enders (2015) and Harris and Sollis (2003)). For example, if two series are both integrated of order one, *I*(1), there can be one cointegrating vector. One of the most popular cointegration tests is the Johansen cointegration test (Widarjono 2017).

2.5 Causality Test

The Granger causality test applied to the following two series, y_t and z_t, to answer the following question: does the change in the z_t variable cause the variable change y_t? if the variable z_t causes the variable y_t then the lag of the z_t variable should be significant in the y_t equation. Then the past z_t can help to estimate y_t or *z* Granger cause *y* (Brooks, 2014).

2.6 Previous Studies

Previous studies conducted by Chigbu *et al* (2012) in Nigeria during the period 1970-2009 suggest a cointegration and causality between tax and economic growth. A study conducted by Takumah (2014) in Ghana for the period of 1986-2010 shows that there is a cointegration between economic growth and tax revenue and unidirectional causality from tax revenue to economic growth. Zakaria and Nabi (2016) examined the Granger causality relationship between two types of taxes (direct taxes and indirect taxes) and the main macroeconomic variables (consumption, investment, government spending and exports) using Malaysia data 1996-2013. Their research shows that both types of taxes Granger cause household consumption and private investment but did not Granger cause government spending and exports. Different results can be found from research conducted by Iriqat and Anabtawi (2016) in Palestine during 1999-2014 that tax revenues does not Granger cause GDP, government spending, consumption, investment and balance of trade.

[1] *U.S. Census Bureau, "FAQs on Seasonal Adjustment,"* http://www.census.gov/const/www/faq2.html

3. RESEARCH METHOD

This study uses monthly realization of tax revenue both total and sectoral. For economic activity data, we use data derived from national account data or GDP based on expenditure and production approach (sectoral). Monthly tax revenue data is then aggregated into quarterly data to match the frequency of GDP data. Period of data being studied is Q1 2010 - Q4 2017.

The methodology used in this study consists of several stages. The first stage is to analyze tax data consisting of 21 sectors to see the relationship with GDP data consisting of 17 sectors. Then aggregate the tax data and GDP data into 9 sectors. After the aggregation of tax and GDP data, tax revenue and economic activity data needs to be seasonal adjusted and then decomposed into two components of the data, seasonal and cycle. The two components of data are analyzed to examine the relationship between tax revenues and economic activity. The next stage is to conduct cointegration and causality test by firstly testing unit root to see the order of integration of time series data.

4. RESULT AND DISCUSSION

4.1. Unit Root Tests

Unit root testing is necessary to determine the order of integration. According to the Engle-Granger definition, cointegration requires that the variables be integrated of the same order. The ADF test includes some lags of dependent variables to eliminate serial correlation from the error terms. Choosing the optimal lag length for the ADF test for a small sample is rather difficult. Too many lags will cause the losing of a degree of freedom and too few lags will cause the test to be incorrect (Wooldridge 2016). For annual data, Wooldridge (2016) suggest using one or two lags. Alternatively, choosing the optimal lag length can be based on the information criterion.

Table 4.1 in the Appendices shows the result of the ADF test together. The figures are the ADF statistics. If the ADF statistic is smaller than the critical values at the 1% levels; the variables are stationary. The ADF statistics in Table 4.1 indicate all variables are integrated of order one.

4.2. RESULT OF ANALYSIS OF INCOME TAX DATA NON-OIL & GAS

4.2.1. Overall Seasonal Patterns

Based on Table 4.2 we can see that income tax receipts tend to be high on every Q2 & Q4. This seasonal pattern of income tax receipts follows the seasonal pattern of economic data as follows: a) GDP that tends to be high in every Q2 & Q3; b) high tendency consumption in every Q3 & Q4; and c) investments that tend to be high in every Q3 & Q4.

4.2.2. Sectoral Seasonal Patterns

Economic developments on a quarterly basis are heavily influenced by seasonal factors. Table 4.3 in the Appendices shows that almost all sectors have decreased their activities in Q1.

Seasonal pattern of sector GDP 01 (Agriculture, Animal Husbandry, Livestock and Fishery) shows that there is a relatively low activity in Q1 which then the activity increases in Q2 and Q3. The activity at Q4 is lower than that of Q1. This pattern is influenced by planting season and harvest pattern of agriculture sector. For example the peak harvest of rice which is a food crop generally occurs in Q1 and Q2 every year. Later on the plantations generally have a harvest period in Q2 and Q3. While in Q4 generally the agricultural sector entered the planting period.

The seasonal pattern of non-oil income tax revenue from sector 01 indicates an increase in revenues in Q2 and Q4. This pattern is slightly different from the seasonal pattern of GDP sector 01. This difference can be caused by quite a lot of tax deposit types whose patterns do not follow GDP seasonal patterns such as income tax article 25 which tends to be flat monthly, Final Income Taxes such as interest income tax and tax bills) that can be quarterly and semesterly.

The seasonal pattern of GDP sector 02 (Mining and Quarrying) shows a more uniform seasonal pattern where there is an increase in activity in Q2, Q3 and Q4. Sector 02 is strongly influenced by commodity price movements and global demand. The seasonal pattern of non-oil sector income tax revenues 02 is clearer where there is an increase in revenues in Q2 and Q4.

Similar to the seasonal pattern of GDP sector 02, seasonal pattern of GDP sector 03 (Processing Industry) shows an increase in activity in Q2, Q3 and Q4. The seasonal pattern of sector 03 is also influenced by domestic demand which in turn is influenced by other seasonal patterns such as fasting month, Eid Al-Fitr holidays, Christmas, new school year, school holidays, and year-end holidays. Activity in Q1 is relatively low because at the beginning of the year is the preparation of production process. The seasonal pattern of non-oil income tax revenue sector 03 indicates an increase in revenue in Q2.

The seasonal pattern of GDP sector 04 (Electricity, Gas and Water) shows an increase in activity in Q2 and Q4. Sector 04 as public utility companies that support community activities widely influenced by public utility demand from other sectors so that the seasonal pattern is in line with the production activities of other sectors (Hidayat 2016). The seasonal pattern of non-oil income tax revenue sector 04 indicates an increase in revenue in Q2.

Seasonal pattern of GDP sector 05 (Construction) shows an increase in activity in Q3 and Q4. Patterns in accordance with the pattern of government infrastructure development tend to be high in the last two quarters each year. The seasonal pattern of non-oil income tax revenues sector 05 indicates an increase in revenues in Q2 and Q4.

Seasonal patterns of GDP sector 06 (Trade, Hotel and Restaurant) show an increase in activity in Q2 and Q3. The trade sub-sector is a sector that distributes goods produced by the goods-producing sector such as agriculture and processing industry so that the pattern can be influenced by the seasonal pattern of related industries (Hidayat 2016). In addition, sector 06 is also influenced by routine community activities such as holidays and school holidays. The seasonal pattern of non-oil income tax revenue sector 06 shows an increase in revenue in Q2.

The seasonal pattern of GDP sector 07 (Transport and Communications) shows an increase in activity in Q3 and Q4. Sector 07 is influenced by seasonal activities such as holidays, school holidays, New Year. The seasonal pattern of non-oil income tax revenue sector 07 indicates an increase in revenue in Q2.

Seasonal patterns of GDP sector 08 (Finance, Real Estate, and Financial Services) indicate an increase in activity in Q1 and Q3. Financial and financial services sub-sectors are affected by the cycle of funding/loan needs. Loan demand has generally increased since March to June then leveled until October. The seasonal pattern of real estate subsector is influenced by seasonal patterns in general such as holidays, new school year. The seasonal pattern of non-oil income tax revenue sector 08 indicates an increase in revenue in Q2.

The seasonal pattern of GDP sector 09 (Services) shows an increase in activity in Q3 and Q4. The seasonal pattern of non-oil income tax revenue sector 08 indicates an increase in revenue in Q4.

The seasonal pattern of non-oil/non-tax revenues that tend to be high in Q2 and Q4 indicates the existence of tax planning in all sectors where the payment and tax refund of both individual and corporate income taxpayers are done before the income tax return is submitted. The deadline for submitting an annual tax return is three months after the end of the tax year.

4.2.3. Overall Cycle Patterns

The pattern of income tax cycle follows the pattern of GDP cycle. The pattern of income tax cycle before 2015 follows the consumption cycle pattern but during 2015-2017 the cycle pattern of income tax has the opposite direction to the consumption cycle pattern. The pattern of income tax cycle generally follows the investment cycle pattern although the investment cycle pattern is more volatile than that of the income tax.

4.2.4. Sectoral Cycle Patterns

The conformity of cycle patterns between the sectoral GDP cycle and the sectoral income tax cycle as follows: in general, the pattern of GDP cycle of sector 01, 02, 03, 05, 06, 07,and 09 have similar pattern with income tax sector 01 01, 02, 03, 05, 06, 07, and 09. However, the cycle pattern of income tax for sector 04 and 08 have slightly opposite cycle pattern compare to GDP cycle pattern of sector 04 and 08, meaning that when GDP has an ascending cycle, income tax revenues cycle for sector 04, and 08 are descending.

4.2.5. Overall Cointegration and Causality Test

The cointegration tests show that income tax revenue is cointegrated with GDP, investment and consumption meaning that there are long run relationships amongst those variables. Causality test indicates that income tax revenues have a causal relationship with GDP, investment and consumption where those economic variables Granger cause the income tax so that the income tax is a lagging variable that moves following the variable of GDP, investment and consumption (Please see Table 4.4).

4.2.6. Sectoral Cointegration and Causality Test

The sectoral cointegration tests show that there are cointegration amongst the variables of GDP and income tax receipts sectoral. Sector 01 and 02 have a unidirectional causality from income tax to GDP. These causality direction is unusual because the process of taxation should be done after economic activity is occurred not the opposite. Sector 04 has a bi-directional causality both from income tax to GDP and from GDP to income tax. Other sectors have a unidirectional causality from GDP to income tax. The direction of causality is more reasonable where economic activity precedes the process of taxation (Please see Table 4.4).

4.3. RESULTS OF SECTORAL VALUE ADDED VALUE DATA ANALYSIS

4.3.1. Overall Seasonal Patterns

Table 4.2 shows that VAT revenues tends to be higher close to Q4. This seasonal pattern follows the seasonal pattern of economic activity data for GDP, consumption and investment.

4.3.2. Sectoral Seasonal Patterns

Table 4.3 shows that all sectoral VAT receipts are increasing in Q4. There are two sectors that have increased VAT revenue in Q1 and Q4 that is sector 02 and sector 04. Meanwhile, there are two sectors that experienced increased VAT revenues in Q2 and Q4 namely Sector 03 and sector 07

4.3.3. Overall Cycle Patterns

The pattern of VAT cycles follows the GDP and consumption cycle pattern although some VAT cycle pattern has the opposite direction to the GDP and consumption cycle pattern. The pattern of VAT cycles generally follows the investment cycle pattern although the investment cycle pattern is more volatile than VAT.

4.3.4. Sectoral Cycle Patterns

The conformity of cycle patterns between the sectoral GDP cycle and the sectoral VAT cycle can be explained as follows: in general, the pattern of GDP cycle for sector 01, 02, 04, 05, 06, and 08 have similar pattern with that of VAT cycle for sector 01, 02, 04, 05, 06, and 08. However, the pattern of VAT cycle for sector 03, 07, and 09 is somewhat opposite to GDP cycle for sector 03, 07, and 09.

4.3.5. Overall Cointegration and Causality Test

Cointegration test shows that there are cointegrations between GDP and VAT, and consumption and VAT. However, the test does not indicate cointegration between investment and VAT. Granger causality test indicates unidirectional causality from GDP to VAT so that VAT is a lagging variable that moves following the variable of GDP. The lagging variable is still useful for to confirming the movement of consumption and investment variables but cannot be used to forecast the economic variable. The bi-directional causality between consumption and VAT indicates that VAT is coincidence variable for consumption. However, the test does not indicate causality between investment and VAT (Please see Table 4.4).

4.3.6. Sectoral Cointegration and Causality Test

The sectoral cointegration tests show that there are cointegration amongst the variables of GDP and VAT receipts sectoral. Almost all sectors have a unidirectional causality from GDP to VAT, except Sector 02 which bi-directional causality and Sector 03 which unidirectional causality from VAT to GDP (Please see Table 4.4).

5. CONCLUSIONS AND RECOMMENDATIONS

The main contribution of this research is empirical testing on the linkage between tax revenue collection and economic activity and the conclusions that can be drawn from the above discussion are: a) Seasonal patterns and cycles of Income Tax and VAT revenues data generally follow economic data; and b)The Income Tax and VAT revenues data are cointegrated with economic data but the tax data is lagging against economic data so that it can only be used to confirm the development of economic data rather than for forecasting economic activity.
The policy recommendations of this study that can be provided in order to increase the collection of tax revenues is that the government must formulate policies to increase production, investment and consumption which in turn will increase tax revenue. And as mention by Tanzi (1988) that sound macroeconomic policies have a good impact on tax policies to raise tax revenues

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APPENDICES

Table 4.1 Augmented Dickey-Fuller Test Results

No	Variables	ADF Statistics	Critical Values 1% level	Stationarity
1	GDP_NOM	--8.97	-4.32	1st
2	CONS_NOM	-6.32	-4.31	1st
3	INV_NOM	-7.26	-4.30	1st
4	PPH_NOM	-27.04	-4.30	1st
5	PPN_NOM	-9.23	-4.30	1st
6	PDB_01	-5.31	-4.47	1st
7	PDB_02	-3.77	-2.67	1st
8	PDB_03	-4.97	-4.44	1st
9	PDB_04	-5.21	-4.50	1st
10	PDB_05	-5.14	-4.47	1st
11	PDB_06	-9.45	-4.47	1st
12	PDB_07	-8.01	-4.47	1st
13	PDB_08	-7.01	-4.44	1st
14	PDB_09	-8.87	-4.50	1st
15	SEK_01_PPH	-10.51	-4.44	1st
16	SEK_02_PPH	-7.84	-4.44	1st
17	SEK_03_PPH	-7.36	-4.50	1st
18	SEK_04_PPH	-10.56	-4.44	1st
19	SEK_05_PPH	-18.50	-4.44	1st
20	SEK_06_PPH	-6.42	-4.50	1st
21	SEK_07_PPH	-13.1	-4.44	1st
22	SEK_08_PPH	-14.65	-4.44	1st
23	SEK_09_PPH	-13.98	-4.50	1st
24	SEK_01_PPN	-6.29	-4.44	1st
25	SEK_02_PPN	-7.38	-4.44	1st
26	SEK_03_PPN	-5.38	-4.49	1st
27	SEK_04_PPN	-8.55	-4.47	1st
28	SEK_05_PPN	-19.02	-4.49	1st
29	SEK_06_PPN	-10.43	-4.49	1st
30	SEK_07_PPN	-5.45	-4.49	1st

31	SEK_08_PPN	-11.49	-4.49	1st
32	SEK_09_PPN	-23.89	-4.49	1st

Source: Author's calculation

Tabel 4.2 Average Seasonal Factor per Quarter for the GDP, Consumption, Investment and Non-Oil & Gas Income Tax and VAT

	GDP	Consumption	Investment	Income Tax	VAT
Q1	0.98	0.95	0.97	0.88	0.82
Q2	**1.00**	0.98	0.99	**1.14**	0.94
Q3	**1.03**	**1.02**	**1.01**	0.89	0.96
Q4	0.99	**1.05**	**1.04**	**1.09**	**1.28**

Source: Author's calculation

Tabel 4.3 Average Seasonal Factor per Quarter for the Sectoral of GDP Production, Non-Oil & Gas Income Tax and VAT

		GDP	Income Tax	VAT
Sek01 (Agriculture, Livestock, Forestry and Fisheries)	Q1	**1.05**	0.90	0.98
	Q2	**1.11**	**1.20**	0.97
	Q3	0.86	0.92	0.89
	Q4	0.98	0.98	**1.16**
Sek02 (Mining and Quarrying)	Q1	**1.00**	0.93	**1.03**
	Q2	**1.00**	**1.08**	0.93
	Q3	**1.02**	0.89	0.92
	Q4	0.99	**1.11**	**1.11**
Sek03 (Processing Industry)	Q1	**1.01**	0.91	0.84
	Q2	**1.00**	**1.19**	**1.05**
	Q3	**1.00**	0.94	0.96
	Q4	0.98	0.97	**1.16**
Sek04 (Electricity, Gas and Water Supply)	Q1	**1.01**	0.98	**1.05**
	Q2	0.99	**1.22**	0.93
	Q3	**1.02**	0.86	0.84
	Q4	0.97	0.92	**1.18**
Sek05 (Construction)	Q1	0.98	0.87	0.69
	Q2	**1.01**	**1.10**	0.75
	Q3	**1.04**	0.90	0.90
	Q4	0.98	**1.12**	**1.66**
Sek06 (Trade, Hotel and Restaurant)	Q1	**1.01**	0.93	0.92
	Q2	**1.02**	**1.19**	0.92
	Q3	0.99	0.89	0.96
	Q4	0.98	0.99	**1.20**
Sek07 (Transportation and Communications)	Q1	0.99	0.85	0.91
	Q2	**1.02**	**1.26**	**1.01**

	Q3	**1.01**	0.91	0.98
	Q4	**1.00**	0.98	**1.10**
Sek08 (Finance, Real Estate, and Financial Services)	Q1	**1.00**	0.92	0.95
	Q2	**1.01**	**1.25**	0.93
	Q3	**1.00**	0.88	0.94
	Q4	0.95	0.96	**1.18**
Sek09 (Services)	Q1	0.98	0.67	0.67
	Q2	**1.02**	0.86	0.71
	Q3	**1.05**	0.97	0.78
	Q4	0.98	**1.49**	**1.85**

Source: Author's calculation

Table 4.4 Cointegration and Causality Test Results

No	Variables	Lag	Cointegration	Causality
1	GDP_NOM & PPH_NOM	2	Yes	GDP_NOM → PPH_NOM (1%)
2	CONS_NOM & PPH_NOM	2	Yes	CONS_NOM → PPH_NOM (1%)
3	INV_NOM & PPH_NOM	2	Yes	INV_NOM → PPH_NOM (1%)
4	GDP_NOM & PPN_NOM	2	Yes	GDP_NOM → PPN_NOM (10%)
5	CONS_NOM & PPN_NOM	6	Yes	PPN_NOM → CONS_NOM (1%) CONS_NOM → PPN_NOM (5%)
6	INV_NOM & PPN_NOM	5	Yes	No
7	GDP_01 & SEK_01_PPH	1	Yes	SEK_01_PPH → GDP_01 (5%)
8	GDP_02 & SEK_02_PPH	1	Yes	SEK_02_PPH → GDP_02 (5%)
9	GDP_03 & SEK_03_PPH	2	Yes	GDP_03 → SEK_03_PPH (1%)
10	GDP_04 & SEK_04_PPH	2	Yes	GDP_04 → SEK_04_PPH (1%) SEK_04_PPH → GDP_04 (10%)
11	GDP_05 & SEK_05_PPH	2	Yes	GDP_05 → SEK_05_PPH (1%)
12	GDP_06 & SEK_06_PPH	2	Yes	GDP_06 → SEK_06_PPH (1%)
13	GDP_07 & SEK_07_PPH	1	Yes	GDP_07 → SEK_07_PPH (1%)
14	GDP_08 & SEK_08_PPH	2	Yes	GDP_08 → SEK_08_PPH (5%)
15	GDP_09 & SEK_09_PPH	2	Yes	GDP_09 → SEK_09_PPH (10%)
16	GDP_01 & SEK_01_PPN	4	Yes	GDP_01 → SEK_01_PPN (5%)
17	GDP_02 & SEK_02_PPN	3	Yes	GDP_02 → SEK_02_PPN (1%) SEK_02_PPN → GDP_02 (5%)
18	GDP_03 & SEK_03_PPN	4	Yes	SEK_03_PPN → GDP_03 (5%)
19	GDP_04 & SEK_04_PPN	2	Yes	GDP_04 → SEK_04_PPN (5%)
20	GDP_05 & SEK_05_PPN	2	Yes	GDP_05 → SEK_05_PPN (1%)
21	GDP_06 & SEK_06_PPN	2	Yes	GDP_06 → SEK_06_PPN (1%)
22	GDP_07 & SEK_07_PPN	4	Yes	GDP_07 ←→ SEK_07_PPN (1%)
23	GDP_08 & SEK_08_PPN	2	Yes	GDP_08 → SEK_08_PPN (10%)
24	GDP_09 & SEK_09_PPN	2	Yes	GDP_09 → SEK_09_PPN (5%)

Source: Author's calculation

THE ECONOMIC IMPLICATIONS OF DEMAND PRICE ELASTICITY ON CONSUMER PRICE INDEX INDONESIA

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ABSTRACT

This paper aims to investigate how demand price elasticity affects the resulted inflation rate in Indonesia. It is commonly known that people are easily to change their consumption along with the change of prices. However, inflation rate which is calculated by using Modified Laspeyres Index formula assumes that quantity demanded is constant over time until new weight based on Cost Living Survey obtained. The ignorance of price elasticity of demand causes the systematically generated index numbers to push the overstated inflation rate. In other words, the resulted inflation rate may be higher than the actual situation since inability of Consumer Price Index (CPI) to change responsively in consumption patterns due to the price changes. Constructing a consumer price index that is more responsive to people's consumption patterns becomes an urgent need. The hypothetical cases show that the CPI would be lower than the actual case if the price elasticity of demand is taken into account. In turn, the resulted inflation becomes overstated as well. The price elasticity of demand needs to be considered in constructing the CPI so that the CPI becomes a realistic and accurate price indicator as a measure of inflation rate both in national and regional level.

Keywords: Demand Price Elasticity, Consumer Price Index, Inflation Rate

INTRODUCTION

A Consumer Price Index (CPI) is one of the strategic data of the BPS-Statistics Indonesia which is needed as a basis for determining economic policy. Changes of the CPI from time to time indicate price movement of commodity basket which includes goods and services consumed by households. The percentage change in the CPI is better known as the rate of inflation or deflation, one of the important indicators in the economy. This inflation rate is a measure that describes the dynamics of price development of a group of goods and services commonly consumed by the households. The development of prices of these goods and services in turn has a direct impact on the level of purchasing power and living costs of society, changes in the value of assets and liabilities, as well as the value of contracts or business transactions. Furthermore, inflation is also an indicator of movement between demand and supply in the real market, which is closely related to changes in the interest rates, economic productivity, exchange rate of rupiah with foreign exchange, budget indexation and other economic parameters. Therefore, society, businessmen, banking, and government are very interested in inflationary development.

Given the importance of the inflation rate in the national economy, improving the quality of inflation data, especially CPI needs to be improved over time. The calculation of inflation in Indonesia is done by measuring the change of CPI calculated using the formula Modified Laspeyres Index. The use of the formula is used to facilitate index calculation since it uses a single year basis which can be updated

every 4-6 years, following Cost of Living Survey. The base year is usually determined by considering relatively normal or stable economic conditions. However, in fact, the frequency of updating the weight that has been too long has caused problems in calculating the CPI where the volume of consumption of goods or services consumed in the current period is not necessarily the same as the volume of consumption of in the base period caused by changes in consumption patterns. In this context, CPI is calculated by using the Modified Laspeyres Index which assumes a constant consumption volume when a price change is considered irrational does not even reflect actual consumer behavior. In other words, the CPI calculated so far is not responsive to the consumption pattern of the community.

One of the causes of this problem is that the assumption used in the Modified Laspeyres Index is the fixed weight for each commodity during the non-renewal of the base year.

$$I_L = \frac{\sum_{i=1}^{N} (p_i^t / p_i^o) p_i^o q_i^o}{\sum_{i=1}^{N} p_i^o q_i^o} \quad \text{.....(1.1)}$$

However, at the same time, this assumption is also a weakness of the Modified Laspeyres Index formula because the resulting inflation tends to be overstated (higher than in reality on the ground). This situation is in line with Boskin Commission Report which reported that the CPI calculated with the Laspeyres Index formula has led to overstated inflation of 1.1 percent in 1995-1996 in the United States (Gordon, 2000). Thus, the use of the Modified Laspeyres Index formula is considered to be less relevant because it is unresponsive to the changing pattern of consumption. In other words, the calculated CPI can not accurately represent the present circumstances. Indeed, in the short run, consumers can change their consumption patterns in response to changes in relative prices.

Meanwhile, in the long run, changes in consumer consumption patterns to new services will be influenced by other factors besides prices such as changes in the level and distribution of home income as well as demographic factors such as population age, technological changes also affect consumer behavior in shopping (International Labor Organization, 2004). Furthermore, the use of fixed weights in the Modified Laspeyres Index formula results in systematically generated index numbers pushing the resulting inflation numbers to be overstated (Clark, 1999). The resulting inflation rate is higher than the actual situation. This is related to the assumption used in the Modified Laspeyres Index formula that consumers do not make changes in consumption patterns even though the prices of goods and services they consume change both the increase and decrease in prices. Whereas in fact, consumers have a tendency to substitute from one commodity to another if there is a change in the price of the commodity. Therefore, it can be said that the Modified Laspeyres Index ignores the concept of demand-price elasticity factor where if prices rise generally demand will fall for the normal type of goods.

CURRENT METHOD OF CPI CALCULATION

In essence, the CPI calculated by the index is a fixed basket price and is not a cost of living index (COLI). Both of these indices are relatively similar but actually the meaning is very different. In economic theory, the COLI is a price index that measures changes in the cost of consumption needed to maintain a constant standard of living. The cost-of-living index theory provides a conceptual rationale for constructing a practical CPI (Triplett, 2001). In other words, COLI is defined as the expense ratio required to maintain a constant utility. The price index with the COLI concept allows for substitution between one commodity and another, which means the substitution bias, is possible. Meanwhile, the price index with

fixed basket will not capture any substitution by consumers of goods and services despite the relatively high price increase. Generally, statisticians in charge of the CPI may claim that the price index with fixed basket does not undergo substitution bias because its basic concept is to measure changes in the price of a basket of goods and services over a period of time. Nevertheless, the fact is the CPI is used for the adjustment of living expenses. Consequently, regardless of the substitution effect, the cost of living becomes overestimated. Schultze (2003) also states that it is important to make CPI improvements into a cost of living index should still be based on the basic concept of measuring changes in the required expenditure for consumers to maintain a certain standard of living in the face of price changes.

THEORY OF CONSUMER BEHAVIOR

The individual demand function explains how an individual tends to buy more goods and services at a lower price level. Graphically, the demand function is described as a function that has a negative slope (Graphic 1). When prices become higher, the quantity of goods or services purchased becomes lower.

$q = f(p)$ ..... (1.2)

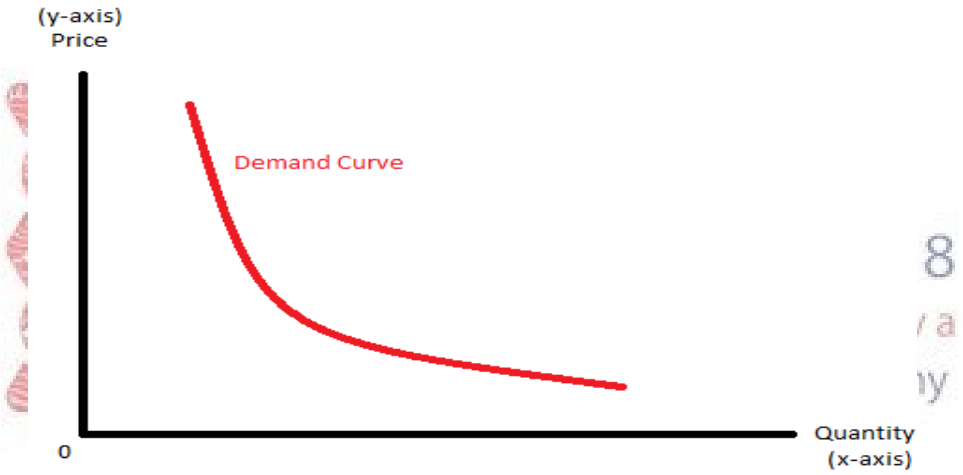

Figure 1. Demand Function

The demand function also explains the consumer behavior used to identify the factors that influence the choices made by consumers. Based on this theory, it is known that the purpose of the consumer is to maximize the satisfaction (utility) with the limitations of preferences, income, and prices of goods and services they have. The opposite relationship between price and volume of consumption or quantity of demand function is caused by income effect and substitution effect.

The income effect has the sense that when the price of goods or services purchased by an individual increases in price while income or expenditure is relatively fixed, the actual income of the individual has decreased because the individual cannot buy as much goods or services as they can earn as when prices have not changed. Conversely, when prices decrease, they can obtain more goods or services from the previous period when prices have not changed. Meanwhile, substitution effects have the sense that individuals will react to higher prices by finding substitutes for goods or services that are cheaper (see Figure 2).

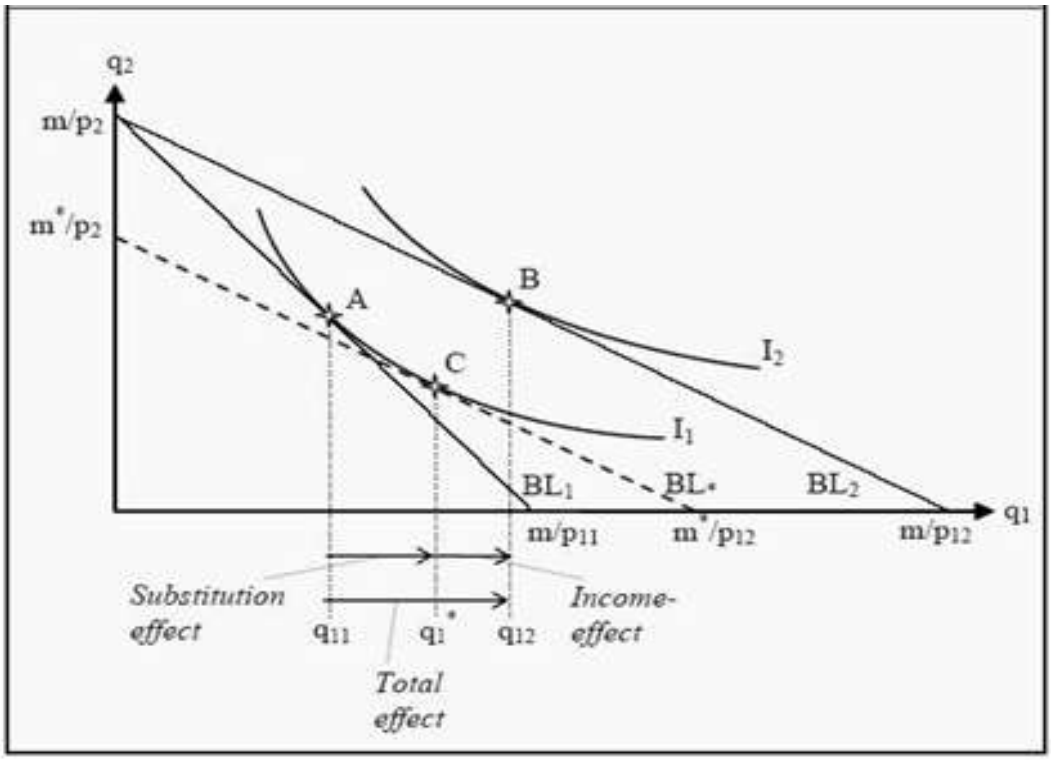

Figure 2. Income and Substitution Effects

However, in practice, the CPI has not been able to take into account the substitution effect. The ability of consumers to substitute goods or services is not taken into account in the calculation of the CPI when a price changes. The CPI formula used is actually using the fixed basket concept that does not allow the change of commodity package up to certain period of time. In fact, the Modified Laspeyres Index formula used in current CPI calculations assumes that consumption volumes are constant despite price changes. In fact, changes in prices that occur can cause changes in consumption patterns of society. Hence, it poses a problem that CPI built today is considered unresponsive to the pattern of public consumption.

CONSTRUCTION OF A RESPONSIVE CPI

Formula Modified Laspeyres Index used for this need to be modified again. This is important because the formula has not been able to reflect the pattern of public consumption that is happening. In fact, the pattern of consumer consumption is easily changed along with the occurrence of price changes. In other words, the CPI formula calculated using the Modified Laspeyres Index formula has not been built based on the conceptual framework of economic approach because consumption volume is assumed to be constant when the price changes. The facts on the ground show that retail prices vary over time, as well as allow for changes in people's consumption patterns. This means that the weight in the calculation of the CPI should be updated to reflect the current consumption pattern of the community (the weight of the base period will be out of date). Technically, the weight is updated based on the Cost of Living Survey which is implemented every 5 years. Indeed, the weight of these commodities reflects how income is generated by households in their respective regions. In the case of normal goods, the law of demand function states that the higher the price level, the less the quantity of goods that is willing to be requested, and the lower the price level, the more the quantity of goods is

asked if other factors such as income, and so on unchanged (ceteris paribus). Based on this law, a higher price on a commodity will allow a change in the pattern of consumption of the commodity.

Schultze (2003) argues that it is important to make CPI improvements a cost-of-living index should still be based on the basic concept of measuring changes in required expenditure for consumers to maintain a certain standard of living in the face of price changes. Therefore, it is important to conduct a more in-depth assessment of the impact of price changes on changes in the volume of consumption of a commodity in relation to the formation of inflation figures. In order to calculate a responsive CPI to the consumption pattern, the demand elasticity factor needs to be considered in the CPI formula. Elasticity measures the demand responsiveness to price changes. This means that changes in the volume of consumption are considered when a price change is calculated with a certain level of elasticity of demand. The demand elasticity formula (Ep) is as follows:

$$E_p = \left| \frac{\%\Delta q_i}{\%\Delta p_i} \right| \quad \text{.....(1.3)}$$

$$E_p = \left| \frac{\frac{q_i^t - q_i^{(t-1)}}{q_i^t}}{\frac{p_i^t - p_i^{(t-1)}}{p_i^t}} \right| \quad \text{.....(1.4)}$$

$$E_p = \left| \frac{\frac{\Delta q_i}{q_i^t}}{\frac{\Delta p_i}{p_i^t}} \right| \quad \text{.....(1.5)}$$

$$E_p = \left| \frac{\Delta q_i}{\Delta p_i} x \frac{p_i^t}{q_i^t} \right| \quad \text{.....(1.6)}$$

where E_p is the price elasticity of demand. The price elasticity of this demand measures how much the sensitivity of changes in the amount of demand for goods on price changes. When the price of an item falls, the amount of demand for it usually rises-the lower the price, the more it is bought. Price demand elasticity is indicated by the ratio of percentage changes of quantity demanded and percentage changes of prices. When the price elasticity of a product's demand shows a value of more than 1, then the demand for the goods is said to be elastic in which the quantity of goods demanded is greatly influenced by the size of the price. Meanwhile, goods with a value of elasticity of less than 1 are called inelastic good which means the effect of the magnitude of the price on the quantity of demand is not too large. In practice, the elasticity of demand can be calculated with the support of a preliminary survey in the form of a survey of changes in the volume of consumption, which then changes in the volume of consumption can be compared with the price changes that occur.

Taking into account the elasticity of the demand, the CPI calculated using the Modified Laspeyres Index formula can be modified again utilizing the assumption that there will be a change in the volume of consumption (Δq_i) when the price changes (Δp_i)

$$q_i^t = q_i^{t-1} + \Delta q_i \quad \text{.....(1.7)}$$

$$\Delta q_i = q_i^t - q_i^{t-1} = q_i^t - q_i^o \quad \text{.....(1.8)}$$

Referring to the concept of cost of living which is based on the idea that the expenditure function of an individual as follows:

$$e(p^t, u) = \min_{q_r^i} \sum_{i=1}^{N} p_i^t q_i^t : U(q^t) \geq u \quad \text{.....(1.9)}$$

where p_i^t (q_i^t) denotes the price (quantity) of the i-goods or services consumed in which $p^t = (p_1^t, p_2^t ..., p_N^t)$ and $q^t = (q_1^t, q_2^t ..., q_N^t)$. The spending function will provide the minimum cost for the individual in achieving the level of satisfaction (utility), u, when facing the price for goods and services. The true cost of living index is built on the expenditure function. Specifically, the index of life cost changes in achieving the same level of utility when the price changes from p_o to p_t as shown in equation as follows:

$$\frac{e(p^t, u^*)}{e(p^o, u^*)} \quad \text{.....(1.10)}$$

where p^o and p^t shows the price in the base period and price in the current period respectively. Thus, the cost of living index (I_M) that simultaneously reflects the consumer price index can be calculated in the following way:

$$I_M = \frac{\sum_{i=1}^{N} p_i^t (q_i^o + \Delta q_i)}{\sum_{i=1}^{N} p_i^o q_i^o} \quad \text{.....(1.11)}$$

$$I_M = \frac{\sum_{i=1}^{N} Z_i^t + E_{pi} Z_i \left[RH_i^t - 1 \right]}{\sum_{i=1}^{N} p_i^o q_i^o} \quad \text{.....(1.12)}$$

$$Z_i^t = \frac{p_i^t}{p_i^{(t-1)}} p_i^{(t-1)} q_i^o \qquad RH_i^t = \frac{p_i^t}{p_i^{(t-1)}}$$

which $\left[1+E_{di}(RH_i^t-1)\right]$ is a correction factor for CPI calculation. In this case the volume of consumption will be corrected when there is a change in the price of a commodity. The figure of elasticity of demand (E_{pi}) obtained illustrates the responsiveness of changes in consumption volume when a price change occurs. This elasticity number can also be updated at any time without having to wait for weighted changes result from Cost of Living Survey which is generally held 5 (five) years. In addition, elasticity figures can also be applied over a period of time as long as the consumer behavior is considered unchanged significantly. In addition to utilizing regular surveys of price enumeration, demand price elasticity (E_{pi}) can be obtained by conducting a support survey in the form of a consumption volume survey. This consumption volume survey can be carried out at any time when it is known that there is a significant change of consumption pattern when the price changes are relatively extreme. Note that demand for goods and services is more elastic in the long run than the demand for goods and services in the short run. Basically, consumers need time to make changes to their behavior in changing their consumption patterns when price changes occur. Thus, the demand price elasticity (E_{pi}) can be assumed to remain unchanged in a relatively short period of time.

CONCLUSION

In principle, construction CPI that is responsive to the consumption pattern of the community can be done by considering consumer behavior to the volume of consumption caused by the price changes. How much consumers adjust to changes in consumption volumes due to price changes at the same time shows how responsiveness to price changes occurs or known as the elasticity of demand. Therefore, it is important to take into account the elasticity of consumer demand for a commodity in the calculation of the CPI.

In addition, it is known that the calculation of CPI using the formula Modified Laspeyres Index produces CPI numbers greater than the CPI calculated by taking into account the price elasticity. It means that the calculated CPI using Modified Laspeyres Index which does not take into account consumer responsiveness to the price changes can form overstated CPI. Therefore, the improvement of CPI formula must be done so that the CPI becomes a realistic and accurate price indicator as a measure of inflation rate.

It is realized that the selection of price index formula also depends on the availability of data. Therefore, it is important to identify commodities that are estimated to have considerable price elasticity when price changes occur especially when the commodity has a contribution in the formation of inflation. Please note that BPS-Statistics Indonesia has conducted regular survey of price enumeration. Thus, the application of the CPI formula that takes into account price elasticity emphasizes the importance of information of consumption volumes as well. This consumption volume survey can be conducted at any time in line with the alleged changes in consumption volume due to price changes. The author also realizes that not only is the price elasticity of demand to be considered in calculating the CPI but also the cross price elasticity of demand.

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COMPARATIVE ANALYSIS OF *BROAD MONEY* , ECONOMIC GROWTH, *EXCHANGE RATE* OF FOREIGN LOAN FOREIGN INVESTMENT IN ASEAN 5

PERIOD 2000 -2015

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Siti Aisyah Tri Rahayu

Lukman Hakim

Sebelas Maret University

ABSTRACT

The purpose of this study was to analyze the *Broad Money* Comparison , Economic Growth, *Exchange Rate on* Foreign Direct Investment in ASEAN 5 (Indonesia, Malaysia, Philippines, Singapore, and Thailand) . In addition, this study also analyzed the influence of macroeconomic factors on whether or not the influence of the *shock* .

This study uses secondary data period 2000 -2015 using Data Panel model. Variables used are macroeconomic factors (*Broad Money* , Economic Growth, *exchange rate*) effect on *Foreign Direct Investment* in ASEAN 5 (Indonesia, Malaysia, Philippines, Singapore, and Thailand) .

This research gap is to combine macroeconomic factors (*Broad Money* , Economic Growth, *exchange rate*) effect on *Foreign Direct Investment* . The results of this study indicate that macroeconomic factors have a positive influence in ASEAN countries 5 as the Country *Home Country ,* as well as *Host Country* . Meanwhile, due to the impact of *FDI* has a negative influence of one of the macroeconomic factors of *exchange rate.* The policy implications of this study suggest that monetary authorities oversee the flow of direct investment by either government or private entities into *host country* countries .

Keywords: *Broad Money* Comparative Analysis , Economic Growth, *Exchange Rate* Against Foreign Direct Investment In ASEAN 5 (Indonesia, Malaysia, Philippines, Singapore, and Thailand) , Data Panel

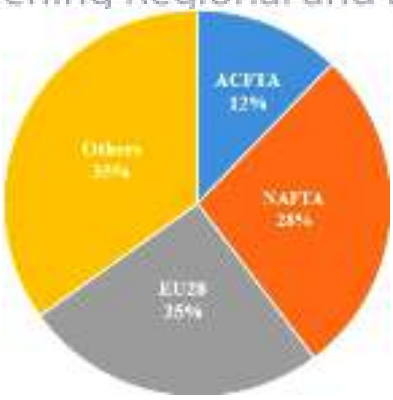
1. Introduction

Research studies on Foreign Direct Investment (FDI) that occurred in a country has been widely practiced. Research on the influence of Foreign Direct Investment (FDI) in a country has been investigated by Rodolphe Desbordes, Shang-Jin Wec (2017), George S. Chen, Yao Yao, Julien Malizard (2017), Arijit Mukherjee , Uday Bhanu Sinha (2016), Qiaomin Li, Robert Scollay, Sholeh Maani (2016) , Carmen Boghean and Mihaela State (2015), Agyenim Boateng, Shaista Nisar, Junjie Wu, Xiuping Hua (2015), Juthathip Jongwanich, Archanun Kohpaiboon), M. Fabricio Perez, Josef C. Brada Zdenek Drabek (2012), ShinjiTakagi, Zongying Shi (2011) examines comparing how Broad Money , Economic Growth, Exchange Rate affecting Foreign Direct Investment in ASEAN 5 (Indonesia, Malaysia, Philippines, Singapore, and Thailand) . But for the writer of Broad Money is also a macro instrument that also affects Foreign Direct Investment in a country and always interesting to discuss.

In the framework of the economic development of a country, requires a flow of capital as a supporter of the running of the policy. Capital flows are tailored to the characteristics of a country . Large financing in economic development for every country can not be entirely derived from the flow of domestic capital , but financing coming from foreign capital is needed to meet the shortfall in financing the economic development of a country.

Alfaro (2008) in his research concludes that the increasing flow of international capital as a result of financial openness is in line with the improvement of institutional quality. Second, capital market imperfection due to asymmetric and sovereign risk information Empirical studies Herrmann and Kleinert (2014) in countries incorporated in the European Monetary Union (EMU) indicate, market imperfection will hinder the efficiency of capital allocation. As a result, the flow of capital into poor countries and in perspective.

Figure 1. GDP of the three largest trade blocs in the economy world in 2010



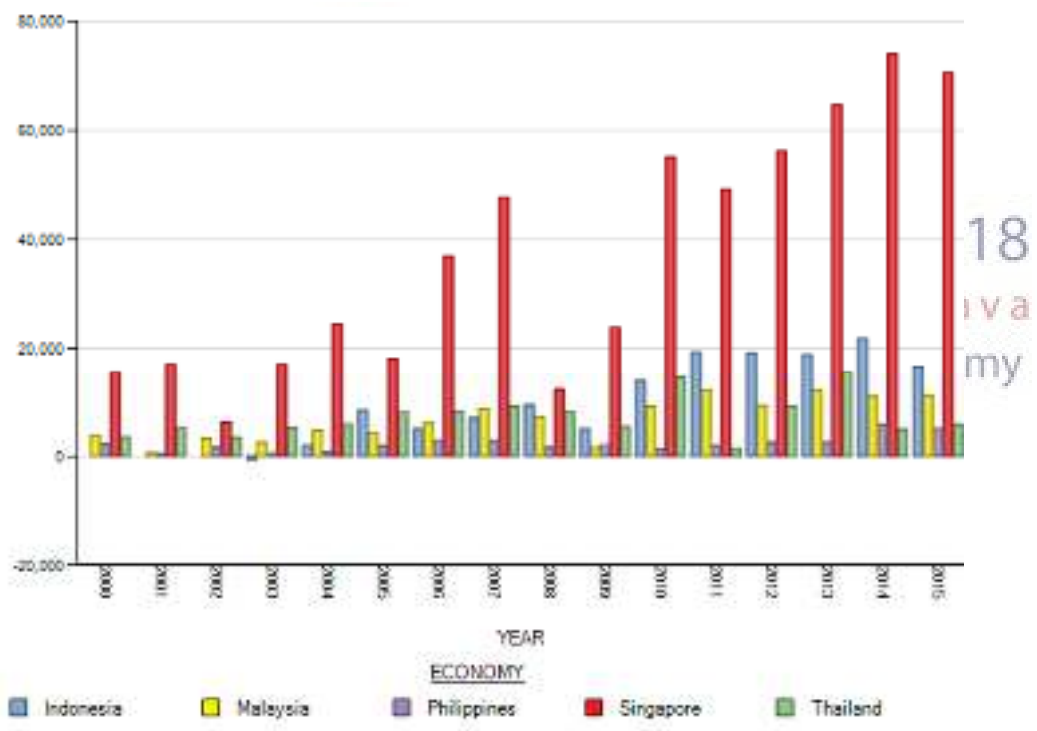
Data Source: UNCTAD.

FTA *(Free Trade Agreement)* ASEAN-China formed the third largest economic group in the world, after the EU and NAFTA (*North America Free Trade Aggreemnet*) . Have 1.85 billion people and covers an area of 14 million square kilometers. In 2010, China's total GRDP and ASEAN-68 were US $ 7.79 trillion, accounted for 99% of China's combined GDP and 10 ASEAN members, and 12% of the world economy. Between 2000 and 2010, the annual GDP growth rate was 10.8% for China and 5.5% for ASEAN-6. This rapid growth

coinciding with the growing importance of ACFTA members *(Asean-China Free Trade Area)* in the world economy. (Qiaomin Li, Robert Scollay , Sholeh Maani , 2016) .

Foreign investment coming into the country consists of foreign direct investment (FDI) and portfolio investment. Both types of investment are equally positive for the process of economic development of a country, but in its development FDI gives more significant advantages when compared with portfolio investment. *Foreign Direct Investment* (FDI) consists of *inward* and *outward* . FDI *inward* is an investment sourced from other countries to countries in the ASEAN region almost most classified as a developing country. Economic development that runs in developing countries must be lagging behind compared to developed countries.

Figure 2. Foreign direct investment flow (FDI): *inward* and *outward* on ASEAN (Indonesia, Malaysia, Philippines, Singapore, and Thailand) 2000 -2015.



Along with the rapid economic growth in ASEAN (Indonesia, Malaysia, Philippines, Singapore and Thailand) thus experiencing the growth of its FDI inflows . Foreign direct investment in ASEAN (Indonesia, Malaysia, Philippines, Singapore and Thailand) from 2000 to 201 5 , FDI grew slowly, with FDI shares in ASEAN (Indonesia, Malaysia, Philippines, Singapore and Thailand). Between these tables FDI in Singapore is highest compared to other countries in ASEAN.

The associated growth patterns conical variables of interest to be analyzed (*Broad Money* , Economic Growth, *exchange rate*) have an influence on *Foreign Direct Investment.*

analysis of panel data (*pooling data*) that is by connecting data that is *time series cross section* .

2. Literature Review

The emergence of foreign investment, especially FDI can not be separated from the thoughts that became the basis of the use of FDI in the international world. These thoughts can in essence be explained as follows:

a) The Theory of Sthepen Hymer Market Imperfections

This theory suggests that FDI is a direct effect of an imperfect market. Stephen Hymer himself is considered a pioneer in foreign investment theory, which emphasizes the role of specific corporate excellence and market imperfection in explaining the underlying motivation or objectives of the firm in making investments.

Higher returns on investment abroad do not guarantee the completeness of the explanation of capital flows, since the return on investment itself can mean that capital will be more efficient when allocated through the capital market and does not require corporate transfers. In connection with higher investment returns by acquiring and mergers with existing and potential firms in the host country , it is expected to offset the disadvantages of the company's operations abroad.

By having certain advantages such as, access to easier and relatively large sources of capital, the presence of large-scale raw material markets, and having management skills, marketing skills encourage greater returns on investment.

b) JH Dunning's *Eclectic Approach* Theory

This theory explains that the phenomenon of FDI distribution can be understood through three main frameworks namely *Ownership, Location,* and *Internalization* (OLI), as the explanation of the three components are as follows (JH Dunning, 1994, 2001; Krugman and Obstfeld, 2003; Griffin and Pustay, 2009):

- *Ownership (Ownership advantage)*

  Dunning explained that the ownership factor is the main condition that should be owned by investors who want to invest in other countries. To be able to make foreign direct investment a company must have a product or a production process that is not owned by other companies.

  Do not rule out the possibility that the shape of the ownership of intangible objects, but may be trademarks or quality reputation. The benefits of *ownership* or *ownership* is to give the company a very valuable competitiveness so as to reduce the unfavorable things in managing business abroad.

- *Location (Location Excellence)*

  Location has a very big role in terms of direct foreign investment. A good overseas location will provide benefits for investors to produce abroad compared to their own country. Transportation costs and barriers to trade will determine location eligibility from FDI. Good location is usually also connected with the availability of resources. For example the Caterpillar company manufactures bulldozers in Brazil to enjoy cheaper labor costs and avoid high tariff barriers on goods exported from its factories in the United States.

- *Internalization*

  In this section it is explained that FDI will be more profitable for multinational companies to conduct transactions eg input, technology, and management within a firm *(within a firms)* . This will ensure ownership of the specific advantages they already have. In other words , the company must gain greater profit by controlling its business activities abroad than by hiring an independent local company to provide such services.

c) *Macroeconomic* Theory *Approach* Kiyoshi Kojima

Each country has several different factors of production and demand internationally. Although some countries are also equipped with manpower or natural resources they can not afford efficiency because of the unavailability of *intermediate* goods , namely managerial capacity, science and technology. Kojima (1982) attempts to integrate the theory of trade with FDI and suggests that FDI is needed to make market factors more competitive and efficient at the International level. In addition, also to improve the production process in a country blessed with certain resources.

With the entry of FDI will lead to increased production and exports if transferred in the form of capital packages, managerial and technological expertise of an industry that has a comparative weakness in state investment compared to the recipient country. Thus contributing to productivity gains and comparisons of host countries . Then kojima named the condition as FDI with *trade oriented* which is specifically applied by Japan.

On the other hand, if FDI moves out of an industry that has a comparative advantage in investments to other countries, it will lead to efficiency losses by blocking the reorganization of international trade. The way is then referred to as FDI with anti-trade orientation (*anti-trade oriented*) . This type is often used by investors from America.

According Jhingan (2004) Foreign Investment (PMA) has a role in the economic growth of a country. The first foreign capital can be utilized as a tool to accelerate investment and economic growth. Both economic growth is increased should be followed

by the structure of production and trade in the country. Last foreign capital as the mobilization of funds that have an important role. These three things must be supported also by the role of the government that uses the foreign capital for the purpose of building infrastructure.

According to UNCTAD (2006) that there are 3 motivations or reasons to make direct investment abroad. The first *market - seeking* , where investors aim to penetrate from the market and is generally linked between the size of the market with per capita income, economic growth, trade access between the surrounding countries, and the tastes of the people of the country to be selected. Second *Resource - asset* , where investors are based on the amount of raw materials starting from natural resources, labor costs, labor force, skilled labor, physical infrastructure (roads, ports, and telecommunications), and technology. Finally, *efficiency - seeking* , investors have the motivation to create new competitiveness for the company because of lower production costs in doing their productivity.

3. Data and facts

The greater the flow of incoming FDI will increase public confidence to the government, and vice versa. In this study to see the development of FDI flow into ASEAN countries 5 (Indonesia, Malaysia, Philippines, Singapore, and Thailand) period 2000 - 2015. FDI *inflow* data obtained from world bank. The development of FDI in ASEAN 5 (Indonesia, Malaysia, Singapore, Thailand, Philippines) which can be explained below.

Table 3.1. Development of FDI in ASEAN 5 (Indonesia, Malaysia, Philippines, Singapore and Thailand)

	FDI, net inflows (% of GDP)				
Tahun	Indonesia	Malaysia	Philipina	Singapore	Thailand
2000	-2.7574	4.0384	1.8352	16.1898	2.6631
2001	-1.8557	0.5970	0.9966	19.0476	4.2122
2002	0.0742	3.1661	2.1744	6.6969	2.4882
2003	-0.2543	2.9209	0.5864	17.5785	3.4359
2004	0.7382	3.5079	0.6479	21.3597	3.3895
2005	2.9161	2.7344	1.6144	14.1977	4.3396
2006	1.3479	4.7272	2.2154	24.9828	4.0213
2007	1.6030	4.6869	1.9542	26.5212	3.2836
2008	1.8263	3.2808	0.7693	6.3471	2.9382
2009	0.9039	0.0567	1.2265	12.3805	2.2759
2010	2.0252	4.2686	0.5363	23.2956	4.3232

2011	2.3030	5.0744	0.8955	17.8360	0.6671
2012	2.3098	2.8291	1.2857	19.4481	3.2446
2013	2.5571	3.4943	1.3749	21.3826	3.7895
2014	2.9137	3.1412	2.0168	24.0105	1.2239
2015	2.2965	3.7001	1.9261	23.7770	2.2552

Source: World Bank Data (processed)

The table shows that the development of FDI entering the ASEAN 5 countries (Indonesia, Malaysia, Philippines, Singapore and Thailand) shows a varied trend in the period 2000 - 2015. The occurrence of crisis in some countries in ASEAN began private policy in Thailand to *leveraging* . By applying for large-scale credit to developed countries such as Japan, driven by a stable Thai economic trend, in 1996 private debt in Thailand was due to payments but could not fulfill its obligations , so its capability fell 1.2762% of growth its economy . Private companies with debts maturing in 1997 are finding it increasingly difficult to repay loans because the Baht is declining sharply. It also happens in other ASEAN countries Indonesia, Malaysia, Singapore . So that raises a negative sentiment for investors to invest capital to countries, especially ASEAN 5.

4. Methodology

Panel data is a combination of *time series* and *cross section* data . Time-consuming data usually includes one object / individual (eg: FDI, *Broad Money* , Economic Growth, *exchange rate*), but includes several periods (daily, monthly, quarterly, or yearly bias). Cross data consists of several or many objects, often called respondents (eg companies) with some types of data (eg, profit, advertising costs, retained earnings, and investment rates) in a given period of time. When we conduct an observation of the behavior of an economic unit such as a household, a company or a State, we will not only observe these units at the same time but also the behavior of the units over various time periods.

To see the impact of *Foreign Direct Investment* from *Broad Money* factors , Economic Growth, *exchange rate* . Can be written in mathematical models

$$FDI = f(BRM, GDP, EXR)$$

Panel data is a combination of *time-series* data and *cross-sectional* data , where the same cross section unit is measured at different times. Panel data analysis is used to observe the relationship between one *dependent variable* with one or more *independent variables* . The use of panel data can provide many advantages in statistics as well as in economic theory, among others (Gujarati, 2003):

1.Dat a panel is capable of explicitly accounting for individual heterogeneity by allowing individual-specific variables to allow panel data to be used to test and build more complex behavior models.

2.If the specific effect is significantly correlated with other explanatory variables, then the use of panel data will substantially reduce the *omitted-variables* problem .

3.Panel data based on repeated *cross section* observation so that panel data method is suitable for *study of dynamic adjustment* .

4.The high number of observations has implications for more informative, more varied data, the collinearity between the diminishing variables, and the increased degree of freedom (*degree of freedom*) so that more efficient estimates can be obtained. The above advantages have implications for the unnecessary testing of classical assumptions in the panel data model, according to what is in some of the literature used in this study (Maddala 1998, Pindyck and Rubinfield, 1991 and Gujarati, 2003) .

The linear regression model uses *cross section* and *time series data* .

1. Model with *cross section* data

$Yi = \alpha + \beta Xi + \varepsilon i; i = 1,2, ..., N$ (1)

N: number of *cross section* data

2. Mode with *time series* data

$Yt = \alpha + \beta Xt + \varepsilon t; t = 1,2, ..., T$ (2)

N: number of *time series* data

Considering panel data is a combination of *cross section* data and *time series* data , the model is written with:

$Yit = \alpha + \beta Xit + \varepsilon it; i = 1,2, ..., N; t = 1,2, ..., T$ (3)

where:

N = number of observations

T = amount of time

N x T = number of panel data

5. Empirical Results

In analyzing research data with panel, the researcher uses three types of model estimation, *pooled least square (PLS), fixed effect method (FEM), and Random effect method (REM)* . The results to be used in drawing conclusions in this study are the results of the best model of model testing performed. The results of the calculation of the three

models are obtained by using software eviews 9, while the estimation results that have been done are as follows:

Table 5.1. Panel data estimation results with PLS Determinant FDI ASEAN 5 Period 2000 - 2015:

Variabel Dependen : FDI

Variabel	PLS	FEM	REM
C	-13.96799	0.253577	-4.569095
	(-8.083903)	(0.062147)	(-1.438363)
BRM?	0.008503	-0.003385	0.028254
	(0.574675)	(-0.076758)	(0.929882)
GDP?	42.35326	0.431592	0.462316
	(10.48875)	(3.548550)	(3.897338)
EXR?	0.450069	8.666381	13.12162
	(2.597145)	(1.740748)	(2.806526)
Indonesia		-3.587447	-1.412372
Malaysia		-2.029957	-3.055122
Philipina		-3.869087	-2.517713
Singapura		10.94631	8.684569
Thailand		-1.459822	-1.699363
R-squared	0.697759	0.873226	0.245758
F-statistic	58.48510	70.84843	8.254473

Source: EVIEWS Data Processing Results 9

Based on the above table it is known that the estimation result using the PLS approach shows that *Broad Money* , Economic Growth, *exchange rat*e have a positive and significant influence on FDI in ASEAN 5 on = 5 *exchange rate* , economic growth

$$FDI_{it} = (-13.96799) + 0.008503\ BRM_{it} - 42.35326\ GDP_{it} + 0.450069\ EXR_{it}$$

t = -8.083903 0.574675 10.48875 2.597145

$R^2 = 0.697759$ $F = 58.48510$ $d = 0.973$

Judging from the value of the coefficient of determination (*goodness of fit test*) shows that the FEM model has the value of R-squared 0.873226 better than R-squared PLS value of 0.697759 and REM of 0.245758 . It can be interpreted that the independent variable (*broad money* , economic growth, exchange rate) in the FEM model is able to explain 87.3 % variance of FDI dependent variable. Meanwhile, 12.7 % described other variables not included in this research model.

In the FEM model the value of interception in each country is, Indonesia amounted to -3.587447 , Malaysia of -2.029957 , Ph ilipina of -3.869087 , Singapore amounted to 10.94631 , Thailand amounted to -1.459822 . Thus the *Fix Effect Methode* (FEM) approach explains the differences in FDI determinant behavior of the five countries.

5.1 Model Selection Test Results

After estimating panel data with *Pool Least Square* (PLS) approach , *Fixed Effect Methode* (FEM), and *Random Effect Methode* (REM), then the next step is to choose the model to determine the best model which result will be used to make the conclusion from the analysis that has been done in this study. Adapaun test panel data model can dijelaskam as follows.

1) *Common Effect* or *Individual Effect*

To find out which model is suitable for use in this research *Common Effect* or *Individual Effect* , can be seen from *Chow Test* results *Test* or often called F statistical test. As already explained before that to conduct this test used hypothesis that is:

H_0 = Model *Common Effect (Restricted)*

H_1 = Model *Individual Effect (Unrestricted)*

Table 5.2 . Test Results *Chow Test* panel data Fix Effects Methode (FEM) Period 2000 - 2015 :

Effects Test	Statistic	d.f.	Prob.
Cross-section F	24.913558	(4,72)	0.0000
Cross-section Chi-square	69.505284	4	0.0000

Based on the results of the test F_{count} is 24.91 , while F_{table} with *df of numerator = 3 , df of denumerator* = 76 , at a 5% confidence level of 2.7 2 . Please note that It can be seen that $F_{count} \geq F_{table}$ means to receiveH_0, and H_1 is rejected, which means the model to be used is Pooled Least Square. In other words, the interception for all cross section units is the same.

So that panel data model is suitable for use in estimating FDI in ASEAN 5 (Indonesia, Malaysia, Philippines, Singapore, and Thailand) is a *Common Effect (Restricted)* Model , compared to the *Individual Effect* Model *(Unrestricted)* .

2) *Fixed Effect Methode* (FEM) or *Random Effect Methode* (REM)

From the results of previous model selection shows a conclusion that the *Common Effect* (REM) is a suitable model for use in conducting analysis in this study. Next is the *Hausman Test test* , to determine what model is used *Fixed Effect Methode* (FEM) or *Random Effect Methode* (REM). In this test the hypothesis used is:

H_0 = Model Random Effect Methode (REM)

H_1 = Model Fixed Effect Methode (FEM)

The Hausman Test by using EVIEWS 9 software obtains the following results:

Table 5. 3 . *Hausman Test* Result Test panel data Random Effects Methode (REM) Period 2000 - 2015 :

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	12.724791	3	0.0053

Source: EVIEWS Data Processing Results 9

It can be seen that the result of Hausman Test above has probability value of 0.0053 less than alpha 0,05 (0.0053< 0,05), then rejects the initial hypothesis H_0 and receives correct model by using Fix Effect Model.

It also can be seen the Hausman Test results above obtains value of chi square ($\chi 2$) counts as much as 12.724791, while the value of chi square ($\chi 2$) table df = 5, at 5% confidence level is 11.07. Thus, it can be seen that chi square ($\chi 2$) counts larger than the chi square ($\chi 2$) table, thus H_0 is rejected.

This indicates that the panel data model that is suitable to estimate FDI determination in ASEAN 5 (Indonesia, Malaysia, Philippines, Singapore, and Thailand), is panel data models with Fixed Effect Methode (FEM) approach.

5.2. Approach Method of Fixed Effect Method (FEM) with General Least Square

The study that uses cross section data has a tendency of heteroscedasticity (non homogeneous data) in research data. Therefore, in this study the researcher tries to see whether heteroscedasticity will occur from the estimation that is made through the method of Fixed Effect Method (FEM) approach.

The way that can be done to see the heteroscedasticity on Fixed Effect Method (FEM) estimation is by doing FEM estimation with GLS then compare the sum of squared residuals at weight statistics at sum of squared residuals unweight statistics. If the sum of squared residuals value of weighted statistics is smaller than in sum of squared residuals unweight statistics, then heteroscedasticity occurs.

The estimation result using software EVIEWS 9 obtains:

Table 5.4 . Panel estimation results with EGLS (Cross-section weights) Determinants of ASEAN FDI Period 2000 - 2015 :

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-9.068252	1.443567	-6.281836	0
BRM?	0.012711	0.010077	1.261359	0.211
EXR?	26.87274	3.773566	7.121312	0
GDP?	0.385142	0.146361	2.631447	0.0103
Indonesia	-3.587447			
Malaysia	-2.029957			
Philipina	-3.869087			

Singapura	10.94631
Thailand	-1.459822
R-squared	0.599536
F-statistic	27.61298

Source: EVIEWS Data Processing Results 9

Based on Table 5.4 above, it is known that the estimation result using Fixed Effect Methode (FEM) GLS approach shows independent variable that is economic growth, labor, transport service have positive and significant influence at α = 5%. Meanwhile, the variable of broad money, exchange rate, industry have negative effect and also significant α = 5%. The value of R2 resulted from the estimation is relatively smaller compared to the previous approaches of 8=59 , 9 % during the observation period. This means that the estimation made by using *Fixed Effect Methode* (FEM) GLS, independent variable (*Broad Money* , *exchange rate* , and Economic Growth) in this research is able to explain 59,9 % variance variable depend en FDI. For the rest of 40.1 % explained other variables that are not included in this research model. Value intercept (c) of -9.068252 the FEM model of the GLS is the average value of the component errors *(error).* While the value of *individual effect* in each country shows how big the difference of component error (*error*) of a country to the average value of the intercept of all countries. Based on the above results can be explained that the difference of the components of the state error on the average value of all countries namely Indonesia (-3.587447), Malaysia (-2.029957) , Philipines (-3.869087), Singapore (10.94631), Thailand (-1.459822), From the results of the above estimation can be written an equation of the determinant model of FDI ASEAN 5 (Indonesia, Malaysia, Thailand, Singapore, Philippines) China and Japan are:

- Indonesia

  FDI = -3.587447 + 0.012711 * BRM - 0.43878 * EXR + 0.07876 * GDP + μ_i

  (-6.281836) (1.261359) (7.121312) (2.631447)

- Malaysia

  FDI = -2.029957 + 0.012711 * BRM - 0.43878 * EXR + 0.07876 * GDP + μi

  (-6.281836) (1.261359) (7.121312) (2.631447)

- Philipina

  FDI = -3.869087 + 0.012711 * BRM - 0.43878 * EXR + 0.07876 * GDP + μ_i

  (-6.281836) (1.261359) (7.121312) (2.631447)

- Singapore

  FDI = 10.94631 + 0.012711 * BRM - 0.43878 * EXR + 0.07876 * GDP + μ_i

  (-6.281836) (1.261359) (7.121312) (2.631447)

- Thailand

  FDI = -1.459822 + 0.012711 * BRM - 0.43878 * EXR + 0.07876 * GDP + μ_i

  (-6.281836) (1.261359) (7.121312) (2.631447)

5.3.Statistical Test Results Model

The next step in this study is to test the model statistics that have been selected before. The stages of statistical test of this research model consist of:

a) The Statistical T Test (Partial Test)

Test t statistic or partial test is a test of individual variables or individually done to see whether the independent variable statistically affect the dependent variable. The self-test of the regression coefficients of each independent variable using 5% level of significance obtains the following results:

Table 5.5 Test Results t-statistics (α = 5%) Model Fixed Effects (FEM) GLS period 2000 - 2015

Variable	t-Statistic	t-tabel df (α/2,n-k) df	Prob.	Kesimpulan
C	-6.281836	±1.99006	0.0000	Signifikan
BRM?	1.261359	±1.99006	0.2110	Not Signifikan
EXR?	7.121312	±1.99006	0.0000	Signifikan
GDP?	2.631447	±1.99006	0.0103	Signifikan

Source: EVIEWS Data Processing Results 9

a. Variable BRM (*broad money*)

Based on data estimation results obtained t_{count} value 1.261359 $< t_{table} \pm$ 1.99006 , has a significance value of 0.2110 which means above α = 0.05. It can be concluded that H_{0} is accepted and rejects H_{a} meaning that the *broad money* variable has less statistically significant effect on FDI entering the ASEAN 5 countries (Indonesia, Malaysia, Philippines, Singapore, and Thailand) .

b. Variable EXR (*Exchange Rate* / exchange rate)

Based on estimates of data obtained $_{t}$ value 7.121312 > $t_{table} \pm$ 1.99006 , has a significance value of 0.0000 which means under α = 0 , 05 . Hence it can be concluded that H_{0} is rejected and accepts H_{a} which means the *Exchange Rate* variable has a statistically significant influence on the FDI entering the ASEAN 5 countries (Indonesia, Malaysia, Philippines, Singapore and Thailand) .

c. GDP Variables (Economic Growth)

Based on estimates of data obtained $_{t}$ value 2.631447 > $t_{table} \pm$ 1.99006 , has a significance value of 0.0103 which means below α = 0.05. It can be concluded that H_{0} is accepted and rejects H_{a} which means Economic Growth variables have statistically significant influence on FDI entering ASEAN 5 countries (Indonesia, Malaysia, Philippines, Singapore, and Thailand) .

b) Test F statistics (test together)

Stage F test is a test that aims to determine the magnitude of the effect of independent variables on the regression coefficient of independent variables using 5% *significant level of* obtained as follows:

Table 5.6 F-statistical test results (α = 5%) Model Fixed Effects (FEM) GLS period 2000 - 2015

Dependent Variable: FDI

Independent Variable	F-statistic	t-table df (α, k-1, nk) df (5, 4 , 76)	Conclusion
BRM, GDP, EXR	27.61298	2.72	Significant

Based on the results of testing the F statistic of the model *Fixed Effect Method* (FEM) GLS on the degree of significance of 5% was obtained F_{count} 27.61298> F_{table} 2.7 2 . This means that the *Fixed Effect Methode* (FEM) model of GLS together with *broad money* variables , economic growth, labor, exchange rate, *industr* y, and *transport service* have a statistically significant effect on FDI entering ASEAN countries 5 ((Indonesia, Malaysia, Philippines, Singapore, and Thailand) .

c) Test R^2 (Coefficient of Determination)

The purpose of the Coefficient of Determination Test (R^2) is to know how far the ability of the model in explaining the variance of the dependent variable (dependent). The magnitude of R^2 shows the effect described by the dependent variable.

Based on the results of data processing using Fixed Effect Model approach (FEM) GLS obtained R^2 value of 0.873226 or about 87.3 %. This means that 87.3 % of FDI variables can be explained by *Broad Money* , *exchange rate* , and Economic Growth variables , while the remaining 12.7 % are explained by variables outside the model.

In general, this research is able to answer the initial hypothesis of previous research that the determinant variable of FDI which is categorized into macroeconomic and state characteristics are equally well in explaining the determinant of FDI inflow specially, in ASEAN 5, China and Japan. Furthermore, there will be further discussion to see the consistency of empirical findings with theories and previous researches, those are:

a) Broad Money Influence on FDI

Based on the model equation with Fixed Effect Methode (FEM) approach of GLS, it shows that the broad money variable has positive and statistically significant influence on α = 5% towards FDI flow that enters ASEAN 5 countries, China and Japan. The regression coefficient value of the broad money variable is 0.00108. It can be interpreted that if the change in broad money in ASEAN 5, China and Japan is 1% then it will cause the change of FDI flow into ASEAN 5, China and Japan of 0.00108 with the same relationship direction (unidirectional) and other variables are assumed to be *ceteris paribus*.

The results are consistent with the findings of Rodolphe Desbordes and Shang-Jin Wei (2017) which indicate that the source and development of direct-country financial objectives increase access to external finance and indirectly support economic activity.

Other result from a research by Agyenim Boateng, Shaista Nisar, Junjie Wu, Xiuping Hua (2015) suggests that the rapid increase of capital inflow into a country may result in an appreciation of the currency (real), especially when capital flow takes the form of an investment portfolio. Encouraging capital outflow all can help improve the pressure of currency appreciation. However, a major concern should be capital outflow of a country, spurring countries to accumulate excessive savings without structural adjustment in economic fundamentals. Thus, encouraging and liberalizing capital outflows should be implemented, together with rearranged austerity issues, in some Asian countries, especially the People's Republic of China, as well as promoting efficient use savings to improve the quantity and quality of investments in those countries.

b) Effect of Economic Growth on FDI

Based on the model equation with Fixed Effect Methode (FEM) approach of GLS, it shows that the economic growth variable has positive and statistically significant influence on α = 5% towards FDI flow that enters ASEAN 5 countries, China and Japan. The regression coefficient value of the economic growth variable is 0.07876. It can be interpreted that if the change in economic growth in ASEAN 5, China and Japan is 1% then it will cause the change of FDI flow into ASEAN 5, China and Japan of 0.07876 with the same relationship direction (unidirectional) and other variables are assumed to be *ceteris paribus*.

The result is consistent with the findings of George S. Chen, Yao Yao, Julien Malizard (2017). First, the Chinese government should be selective in granting treatments and fiscal concessions to foreign investors. Secondly, the Chinese government should provide financial and nonfinancial support to companies that want to form EJVs with foreign investors. As we have shown, the promotion of EJVs produces positive information not only for partners but also for the Chinese economy globally in focusing on reorientating the export-driven economic. However, the critical pillar for the success of this venture depends on creating an conducive environment to sustainable growth.

The result is consistent with the findings of Qiaomin Li, Robert Scollay, Sholeh Maani (2016). The impact of FDI on economic growth has focused on the existence and level of technology and productivity spillovers associated with the transfer of technology by multinational corporations, reflecting an understanding of modern growth theory that increased productivity is supported by advancement technology to sustain economic growth in the long run, against the possible convergence of percapita income.

c) Effect of Exchange Rates on FDI

Based on the model equation with Fixed Effect Methode (FEM) approach of GLS, it shows that the exchange rate variable has negative and statistically significant influence on $\alpha = 5\%$ towards FDI flow that enters ASEAN 5 countries, China and Japan. The regression coefficient value of the exchange rate variable is -0.43878. It can be interpreted that if the change in exchange rate in ASEAN 5, China and Japan is 1% then it will cause the change of FDI flow into ASEAN 5, China and Japan of -0.43878 with the same relationship direction (unidirectional) and other variables are assumed to be *ceteris paribus.*

As one of Hiroyuki Nishiyama's (2017) research result, the short-term effect of nominal exchange rates changes on the theoretical and empirical intra-industrial resource biases. The finding is the depreciation of the domestic currency lowering the productivity of cut-offs and exports of firms. The depreciation effect on industry-wide productivity is uncertain in pure theoretical analysis. But empirical tests using company data from the Japanese manufacturing industry (general machinery, electrical machinery, and means of transportation) show that the host currency (yen) depreciation tends to increase the industry's productivity widening. These results have some important policy implications. First, a policy that allows the host currency to fall

in the market value of Foreign Exchange can increase the average productivity in some manufacturing industries depending on the situation. Second, such a policy can be a protector for export companies, but not always useful for FDI.

Just as Juthohip Jongwanich's research result, Archanun Kohpaiboon (2013) suggests that the rapid inflows of capital rising to a country can result in an appreciation of the currency (real), especially when capital flows take the form of an investment portfolio. Encouraging capital outflow all can help improve the pressure of currency appreciation. However, it is a major concern that capital out of the country, spurring the country to accumulate excessive savings without structural adjustment in economic fundamentals. Thus, encouraging and liberalizing capital outflows should be implemented, together with rearranged austerity issues, in some Asian countries, especially the PRC, as well as promoting efficient use savings to improve the quantity and quality of investments in those countries.

M. Fabricio Perez, Josef C. Brada, Zdenek Drabek (2012) in their research result shows that bilateral FDI flows come from economic samples, host country samples encourage non-economic motivation such as the desire to facilitate illegal actions of capital transfers and money laundering, with using a bilateral FDI flow model. We show that an average of 29% percent of total FDI is directed to countries that are money laundering centers of about 20%. The econometric results show that non-traditional FDI flow determinants, including money laundering, should be integrated into foreign investment theory.

Likewise with Shinji Takagi's research, Zongying Shi (2011), the impact of the Asian financial crisis on the volume of FDI flows does not occur statistically significant, especially when China and India are excluded from data, FDI flows in the manufacturing sector, more stable than portfolio flows. A new outcome has noticed a significant FDI negative response to the three exchange rate changes: the volume of FDI flows to Japan is smaller when the distribution is positively skewed (ie, the yen has a bias towards a relatively large volatile depreciation). This result is strong, with other standard control variables having statistically significant coefficients.

The country's home investors, that are interested in the flow of earnings and returns in future currencies, are policymakers in developing countries who want to maintain FDI inflow stable. To what extent actual FDI inflows respond to flows and expectations of exchange rate changes, and expected changes are influenced by large fl ows, sharp exchange rate fluctuations can exacerbate the volatility of FDI inflows

through multiple channels. Avoiding unreliable exchange rate behavior, in relation to it the currencies of major source countries should help prevent the movement of FDI inflows indefinitely.

The 1997 exchange rate crisis showed the depreciation trend was not proven to attract FDI into the country, as evidenced by the declining number of FDI in ASEAN 5 countries post crisis. In Indonesia, the value of FDI was recorded to be decreasing into minus until 2000. This indicates that the currency in ASEAN 5 countries was not merely profit in the eyes of investors; it happened because of systemic impact of the currency of Thailand Bath was corrected instead.

The currency crisis had an unstable social and political impact. Therefore, it was concluded that the depreciation of currency in some ASEAN 5 countries did not mean that foreign investors would expand, but investors considered the social, economic and political stabilization aspect at that time which were also not conducive to invest especially in Indonesia, Thailand, Philippines and Malaysia.

In 2008, a series of impacts of the European crisis happened on banks in Europe and other countries, such as the U.S. and Japan. One of Greek's debts was owned Italy, while Italy's debt was held by France. Even the barrage continued to extend all the way to the United States. All of these were related where the U.S. also had a lot of debts to French, Japanese, English and German banks.

The crisis occurring in Europe and the United States created a dominant effect from the financial crisis that spread to other countries in the European Union. The crisis in Europe and the United States brought influence to commodity prices that tended to decline. The decline of commodity prices in the world market was mainly for raw materials. The drastic decline in commodity prices had also occurred before the global crisis of 2008. However, even in the crisis there was still a tendency to increase prices on investment commodities that were related to the nature of gold investment in the long term.

In the longer term (medium long), the global crisis is expected to have a major impact on the real sector, especially trade related to the slowdown in the world economy, especially in advanced countries. Global crisis does not have a major effect on direct trade between Indonesia and Europe, nor with the United States. But Indonesia's indirect trade route with Europe and America will be affected through China. China, which is the largest importer of Indonesian goods, is expected to reduce its imports due to declining demand for the declining nations towards Chinese goods.

6. Conclusions and recommendations

a) Conclusion

This study uses a model analysis of *Panel Data* where *Foreign Direct Investment* (FDI) affects the Macro Economic Factors In ASEAN 5 (Indonesia, Malaysia, the Philippines, Singapore, and Thailand) in the period 2000 -2015. Based on the discussion of the previous chapter , it can be drawn some conclusions as follows:

1. Increased capital inflows into a country can result in excessive appreciation of the currency (real), especially when capital flows take the form of investment portfolios.
2. The impact analysis of FDI is concentrated on wages and quality of work, and so on income inequality . The quality of work can be seen from the point of view of the worker, with a focus on the company's relatively high level of wages overseas against the wage rate in domestic firms, and from a national perspective, focusing on how work created by FDI affects overall productivity in the economy.
3. Short-term exchange rate exchange rate changes in domestic currency depreciation decreases domestic *cut-off* productivity and company exports. the effect of depreciation on productivity industry is uncertain in pure theoretical analysis. But empirical tests using company data from the Japanese manufacturing industry (general machinery, electrical machinery, and means of transportation) show that the *host currency* tends to increase industrial productivity. These results have some important policy implications. First, a policy that allows the *host currency* which fall on the market value of Foreign Exchange can increase the average productivity in some manufacturing industries depending on the situation. Secondly, such a policy could be a safeguard for export companies, but not always beneficial for domestic and FDI.
4. FDI can improve the domestic export market performance of the company. If the increase in export market income is large then overall impact on society will be positive. FDI can improve domestic export market performance of domestic companies at the expense of their market performance . If the increase in export market income is large then overall impact on society will be positive. Overall, it seems that FDI in the industry has a positive effect on the total revenue of domestic companies. Other companies in the textile industry seems to benefit from FDI, to identify which industries FDI has a positive impact on revenue from those

companies. Increases in total company earnings can be attributed to increased employment.

5. The vertical FDI growth is associated with the development of a production network, which in turn is related to the liberalization of semi-finished goods trade. The hypothesis that the ACFTA (*ASEAN-China Free Trade Agreement*) vertical fragmentation effect will occur substantially, generates a positive impact on vertical FDI. The horizontal FDI findings imply that the effect of market expansion may also contribute to explaining bilateral FDI in China and ASEAN. Horizontal FDI will increase due to the effect of market expansion, that is, the effect of reducing trade barriers in expanding the market size available to producers within the *Free Trade Agreement* , and Effects of this market enlargement in attracting MNCs (*Multinational Corporation*) looking for a market.

b) Suggestion

Based on the results of the above research, suggestions that can be given author are as follows:

1. In order to maintain sustainable FDI flow, the government and stakeholders as policy makers need to pay attention to the development of FDI itself, especially in the money market. Given these variables is an important factor that into consideration foreign investors. Government and private sectors are also expected to be selective in choosing trading partners, which are related to FDI, which takes into account the returns on foreign direct investment (FDI), because if FDI is not regulated it affects the exchange rate. Stability of exchange rate also need to be maintained volatility, because the stability of the exchange rate is an indicator of certainty of return on investment to be received by investors.
2. Government as policy maker is expected to take policy, manage and monitor FDI must pay attention to aspect of risk and prudence, especially in fiscal financing. Where the ratio of financing instruments is not greater than the domestic debt so that, able to encourage economic growth to continue to grow, given the economic growth as one of the macroeconomic variables that become important considerations of foreign investors in investing capital.
3. The government is also concerned with infrastructure, where good infrastructure is also one of the investors' attraction, especially transport service. Because a positive industrial climate is formed from a broad market and also a good distribution.

4. Labor as a specific force owned by the state also deserves more attention from the government and stakeholders involved in it. Then the need to improve the quality of labor becomes very important with the demands of the labor market that demands the provision of manpower with adequate skills. So that human resource investment in the form of skill improvement up to the level of education should be the main agenda of the current government.
5. In addition to the preparation of good human resources, the government is expected to provide protection for domestic workers, along with the inclusion of FDI labor from the country of origin as well as entry, so it takes government policy to regulate the entry of foreign workers so that the demand for domestic labor is also not diminishes, on the other hand excessive exploration may adversely affect domestic workforce, it is also related to the problem of bringing about cultural transfers from the country of origin of the investor, for example Korean culture that enters through investors in domestic companies.
6. The amount of FDI that goes into the country can also have negative impact, we can see from the private sector, where the dominant ownership of foreign investors can affect the company's policy, which can sometimes destroy the domestic industry. This is because the competition in the same sector in the global market, for example a tobacco company. Yields are sometimes unbalanced that benefit foreign investors. Another impact is the exclusion of ecosystems, social communities in the environment for example is a mining company in Irian Jaya.

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CROWDING OUT EFFECTS OF PRIVATE INSURANCE: EVIDENCE FROM UNIVERSAL HEALTH COVERAGE IN INDONESIA

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Abstract

Indonesia first introduced universal health insurance (BPJS) scheme in 2014. One interesting feature is single payer system administration. Private employees insurance administrator changes from a previously private employer may provide either private or public insurance for their employees. Currently, they have to register their employee in BPJS scheme. The price differential between public and private insurance premium could create substitution between those types of the insurance scheme. On the other hand, public insurance benefits perceive to have lower quality than private insurance ones. Therefore, the impact depends on whether premium price effects outweigh quality effects or vice versa. I use difference-in-difference (DID) matching DID methodologies with private employees as a treatment group, and government employees as a control group, by exploiting timing of policy changes in insurance policy mandate. I employ representative data from Indonesia Family Life Survey (IFLS). I find private employee families less likely to have private insurance although they more likely have insurance in general after the intervention. My results are robust to many specifications. These findings suggest that individuals substitute between public and private health insurance.

Keywords: Public Insurance, Private Insurance, Health Policy, Government Policy.
JEL Classification: I13, I18. This draft: June 2018

1. Introduction

Indonesia mandated for each private employer with certain criteria to provide their employee families either private or public insurance that covered parents and some of their children in 1992. Therefore, provider choice depends on citizens' employer-provided health insurance; private employees could have more health provider choices if their employers provide them with private insurance. A universal health coverage scheme (*Badan Penyelenggara Jaminan Sosial / BPJS*) started on January 1, 2014, mandated for all citizen to join the new insurance scheme, including private employees. This study examines the causal effect of government-provided insurance for private employee families on their public and private insurance holding in Indonesia.

I use difference-in-differences (DID), and matching DID with private employee families because of the policy change as a treatment group and government-employee families as a control group. I find that private employee families are two percentage points less likely to have private insurance, corresponding to an 18 percent decrease from the pre-intervention period or 30 percent public insurance take-up associate with a reduction in private insurance. However, they are more likely to have insurance in general because of increase in public insurance possession. That is, universal health coverage create substitution between public and private insurance.

2. Review of the relevant previous literature

Many countries had legislation mandating health insurance; 75 out of 192 countries studied had a bill about universal health care (Stuckler, Feigl, Basu, & McKee, 2010). Universal health insurance definition varies in several ways, including potential recipients, costs sharing, the range of services, and quality of care. World Health Organization (2008) proposes three ways of moving towards universal coverage as depicted in figure 1: the breadth of coverage, the depth of coverage, and the height of coverage.

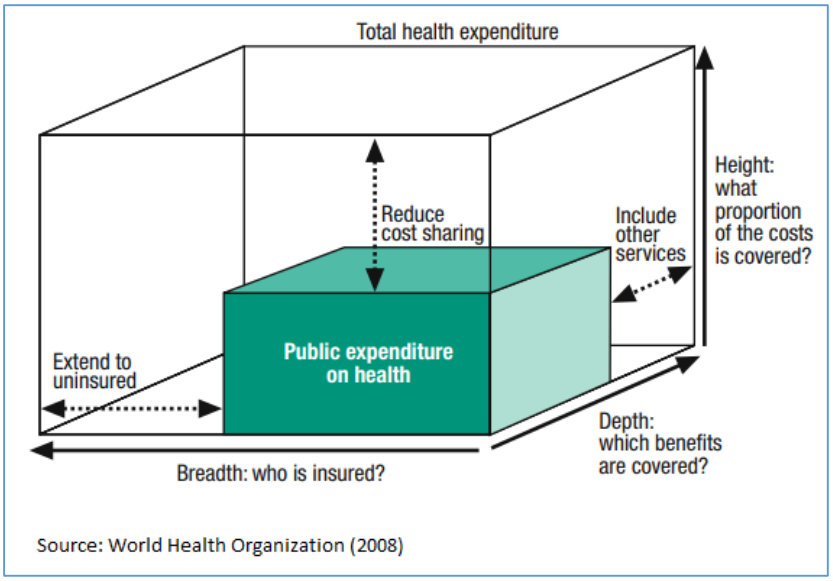

Figure 1. Three ways of moving towards universal coverage

The breadth of coverage asks how much population covered by the insurance scheme and whether it covers the poorest and most vulnerable population groups. (Stuckler et al., 2010; World Health Organization, 2008). Figure 1 suggests universal health coverage should extend insurance to uninsured. The cost of expanding public sector health programs depends critically on the extent to which public eligibility will cover just the uninsured, or will crowd out existing private insurance coverage (Cutler & Gruber, 1996b).

The literature generally concludes that there is a substitution between public health insurance and private health insurance. But the extent to those results might depend on the type of coverage and the population of interest. Medicaid expansion to pregnant women and children over the 1987–1992 period was associated with a 50% reduction in private insurance coverage, and crowd-out was still significant in the 1996–2002 period (Cutler & Gruber, 1996a; Gruber & Simon, 2008). Similarly, Crowd-out of private health insurance was estimated to be nearly 50% from the SCHIP expansions (Sasso & Buchmueller, 2004). However, virtually no crowding out effect for women living in poverty and Medicaid expansion was only created little crowd out among children. (Kolstad & Kowalski, 2012; Miller, 2012a, 2012b). Minnesota, Washington State, Oregon and Tennessee subsidize health insurance for low-income families only create very little effect crowd-out of private insurance (Kronick & Gilmer, 2002).

3. History of insurance for private employees in Indonesia

Law 3/1992 regarding the Social Security Act (SSA) mandates each private employer who has at least ten employees or at least pays IDR 1 million per month to have health insurance. The health benefit is compulsory but which type of insurance is optional. If a private employer already provides private protection for their employees, then they are not required to provide public

coverage managed by *Jamsostek*, a state-owned company, to their employees. In practice, *Jamsostek* covered less than 1.5% of the population in 2001 (Thabrany, 2008).

Different from private employees, the Indonesian government-provided insurance health reform started in 1968 when the government issued Presidential Decree 230 concerning government employee and retirees' health benefits (Indonesia, 1968). This policy mandated that each government employee have public insurance and pay the insurance premium, around five percent of their salary. The insurance scheme, *Askes*, covered parents and two children within a household after 1994 and before 2014.

In 2014, Indonesia introduced universal health coverage (*BPJS*) through law number 24/2011 and government regulation number 111/2013 that mandated each Indonesian citizen to join the national government health insurance starting January 1, 2014 (Indonesia, 2011, 2013). While civil servant is still in the public insurance scheme, private employees who were covered by private insurance mandated to join the new public insurance scheme as well.

4. Data and identification strategy

I employ three waves' of datasets (2000, 2007, and 2014) from the Indonesian Family Life Survey (IFLS). I use private employee families and government families 15 years old and above since IFLS classify two different datasets for individuals 15 years old and above and individuals below 15 years old. For my study, I exclude households that have twin sibling children for children samples because I don't know which sibling is older or younger.

Our treatment group is household head, spouse and the first three children of a private employee's family. Our control groups are household head, spouse and the first two children of a government employee's families. We use a different number of children between private and

government employees based on Law 3/1992 and *Askes* scheme after 1994. The basic approach is a difference-in-differences estimation. Our baseline regression is the following:

$$Y_{imt} = \alpha_0 + \alpha_1(T_{im} * Post_t) + \alpha_2 T_{im} + \alpha_3 X`_{imt} + \gamma_m + \mu_t + \epsilon_{imt} \quad (1)$$

where Y_{ibmt} is the probability of having insurance for individual i living in province m at time t. T_{im} is equal to one if an individual is either household head, spouse or the first three children private employee family. $Post_t$ indicates whether period t is after the implementation of the 2014 policy. $X`_{imt}$ is an individual, or a household, level vector of control variables including gender, age, whether an individual is working, household size, religion fixed effect and ethnicity fixed effects. Also, I include a province fixed effect (γ_m) to capture unobserved differences in space. Instead of using $Post_t$, I include year fixed effect (μ_t) to capture unobserved diffference in time, and ϵ_{imt} is the idiosyncratic error term.

We expanded the standard DID approach above with a matching-DID approach, due to the various demographic characteristic that may differ between private employee and civil servant. Also, the possibility of compositional traits changes over time between the treatment and control group that may confound the impact of the treatment (Hong, 2013). We first estimated multivariate propensity score using standard propensity score matching methods (see, for examples Angrist & Pischke, 2008; Rosenbaum & Rubin, 1983) using the following:

$$P(T_{imt} = 1 \mid X_{imt}) = \phi(X`_{imt}\alpha_t) \quad (2)$$

where T_{imt} , X_{imt} are as described in equation (2). Each year, propensity score matching is used to balance the sample characteristics for both pre- and post-treatment periods from repeated cross-sectional data.

5. Empirical results

5.1. Descriptive statistics

Table 1 shows means and standard deviations for insurance outcomes and covariates. The insurance variable would be a binary variable equal to one if an individual has particular insurance. I break down coverage into two types: public insurance and private insurance.

Table 1. Means and Standard Deviations

Description	Pre-Intervention (2000,2007)		Post-Intervention (2014)	
	Treatment	Control	Treatment	Control
(1)	(2)	(3)	(4)	(5)
Outcomes				
Insurance	0.278(0.448)	0.597(0.491)	0.563(0.496)	0.785(0.411)
Public Insurance	0.167(0.373)	0.511(0.500)	0.442(0.497)	0.659(0.474)
Private Insurance	0.111(0.315)	0.086(0.280)	0.121(0.327)	0.126(0.332)
Control				
Male	0.509(0.500)	0.491(0.500)	0.505(0.500)	0.502(0.500)
Age	33.341(10.197)	38.218(11.360)	34.425(11.430)	37.215(11.762)
Working	0.822(0.383)	0.765(0.424)	0.763(0.425)	0.769(0.422)
Married	0.815(0.389)	0.835(0.372)	0.812(0.390)	0.823(0.381)
HH Size	4.480(2.583)	5.857(2.551)	4.640(2.251)	5.077(2.217)
Rural	0.289(0.454)	0.329(0.470)	0.283(0.451)	0.304(0.460)
Religion	1.193(0.684)	1.278(0.791)	1.198(0.692)	1.282(0.799)
Ethnicity	6.397(12.714)	7.378(13.355)	4.939(7.536)	6.019(7.788)
N	9,753-9,761		12,028-12,053	

In general, the treatment group holds smaller public insurance compared to the control group before the intervention period, but then the gap is lower after the intervention. For private insurance, the treatment group holds more private insurance than the control group. It is as expected, as the treatment group is eligible for having private insurance. In contrast, the treatment

group holds less private Insurance after the intervention period. Both the treatment group and the control group mostly come from urban areas and Muslim. The control group is older than the treatment group. Also, they come from larger household size.

5.2. The impact on insurance

Figure 2 provides the trend in private insurance possession for the treatment and the control group. Figure 3 shows similar figures for public insurance.

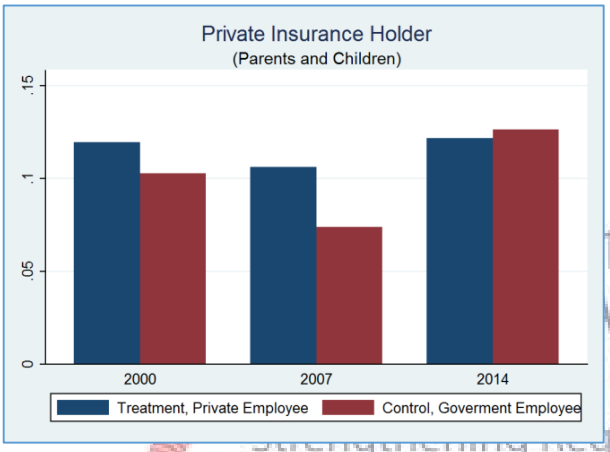

Figure 2. Private Insurance

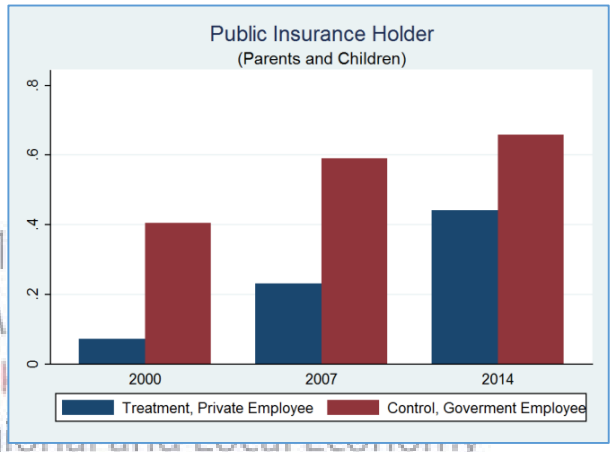

Figure 3. Public Insurance

The figures suggest private employee families have higher private insurance before the intervention period, but then smaller private insurance after the intervention period. Although private employee families hold smaller public insurance in all periods, the gap is smaller after the intervention.

Table 2 provides difference-in-difference estimators and matching DID estimators for the probability in the insurance possession. Panel A is estimators for the difference-in-difference approach; Panel B are estimators for the matching difference methodology. Observations and R-

squared are populated in one field for DID and matching DID. Column (1) is insurance (private and public), column (2) is public insurance, and column (3) is private insurance.

Table 2. The impact on insurance

VARIABLES	Insurance	Public Insurance	Private Insurance
	(1)	(2)	(3)
Panel A: DID			
Treatment * Post	0.098***	0.120***	-0.022**
	(0.014)	(0.014)	(0.010)
Panel B: Matching DID	0.078***	0.103***	-0.026**
Treatment * Post	(0.014)	(0.014)	(0.010)
Observations	21,766; 21,747	21,766; 21,747	21,747
R-squared	0.140; 0.128	0.142; 0.128	0.044; 0.042
Controls*	YES	YES	YES
Religion FE	YES	YES	YES
Ethnicity FE	YES	YES	YES
Province FE	YES	YES	YES
Year FE	YES	YES	YES

* Gender, age, married, working, hhsize, rural residency

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The difference-in-differences and matching DID models suggest private employee families are more likely have insurance by more than eight percentage points or corresponding to a 28 percent increase from the pre-intervention period. Private employee families more likely hold public insurance by more than ten percentage points or corresponding to a 61 percent increase from the pre-intervention period. In contrast, private employee families less likely have private insurance by more than two percentage points or corresponding to a 20 percent reduction from the pre-intervention period. It suggests 30 percent increase in public insurance comes from crowd-out of private insurance. In general, universal health coverage scheme benefits private employees of having insurance in general. However, substantial crowd-out of private insurance exists. Crowd-out of private insurance reduces net impact of insurance expansion.

I employ robustness checks and falsification tests of our primary result (results are available on request). Our results are robust to three different specifications. The identifying assumption for the difference-in-differences approach is common parallel trends between treatment and control groups without any intervention. To check this assumption, I estimate various specification tests for artificial effect during pre-treatment years. I use the years 2007 as our artificial effects. In general, the model suggests no estimators are statistically significant and reduce the estimation magnitude. These results support the notion that the actual interventions likely drive the difference in outcomes.

6. Conclusion and discussion

Indonesia first introduced its universal insurance scheme in 2014 that mandated all Indonesia citizen to join the new public insurance scheme (*BPJS*) including individuals who already have private insurance. We examine the impact of universal health coverage scheme on crowding out the effect of private insurance for private employees. Our results suggest there is the substantial crowd-out effect of private insurance after the My findings suggest crowd-out private insurance reduces the impact of public insurance extension to the uninsured. There are some potential advantages of having private insurance into the program: Let the citizen choose their insurance scheme could reduce crowd-out effect and fit their preferences; private insurance competition to attract customer could reduce private insurance premium; government could save medical costs if they subsidize private insurance premium instead of paying full medical cost in BPJS scheme; given different type of health care provider offered by private insurance compare to public protection, it could decrease hospital load. On the other hand, having private insurance into the program could lead adverse impact to the insurance and citizen if only people who need medical treatment join the private insurance scheme.

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OVERSHOOTING EXCHANGE RATE IN INDONESIA

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ABSTRACT

This study aims to test whether there is overshooting phenomenon of Rupiah / USD exchange rate in Indonesia. Exchange rate is one of indicator that must be considered in achieving the stability of a country's economy. A stable exchange rate will push an increasing in investment, consumption, and international trade that will ultimately have an impact on economic growth.

This study used the Rupiah / USD exchange rate variable as the dependent variable. In addition, in this study used Money Supply (JUB), Gross Domestic Product (GDP), Interest Rate, and Consumer Price Index (CPI) as independent variables. This study used Error Correction Model (ECM) method to see the short-run effects on exchange rates and the Autoregressive Distributed Lag (ARDL) method to see the effect of exchange rate in the long run.

The test results showed that the exchange rate of Rupiah / USD did not experience overshooting. This was indicated by the adjustment of the Rupiah / USD exchange rate was -0.822 smaller than the value in the long-run that was -0.883. The results did not match to the Dornbusch theory where overshooting occurs when short-run exchange rate adjustments are greater than the long-run.

Keywords: Autoregressive Distributed Lag (ARDL), Error Correction Model (ECM), Swap Value, Overshooting

A. BACKGROUND

The macroeconomic stability of a country has an influence to the country's economic growth. Some of the indicators affecting the achievement of macroeconomic stability are low inflation rates and stable exchange rates. Economic growth will also depend on the international monetary system applied to the country. The selection of a good international monetary system aims to reduce or minimize the risk of exchange rate fluctuations that will have an impact on the country's economy where any changes in the exchange rate will have an impact to the economic activity of the country. One application of the international monetary system is the application of free floating exchange rate system since August 14, 1997 in Indonesia. The system causes the national economy to be vulnerable to external disturbances, including large capital flows as well as exports and imports (Bank Indonesia, 2016). Under the policy of the free floating exchange rate system, the determination of the rupiah exchange rate is left entirely to the market mechanism. However, the next development shows that this exchange rate regime caused the exchange rate of rupiah / USD experienced overshooting, so that depreciated very deep about Rp14.900 / USD in June 1998. These conditions provide an early indication of the possibility of exchange rate overshooting phenomenon although without the existence of speculation activity.

According to Frankel (1979) the exchange rate in the short-run is determined by a change in the estimate of the relative return rate on domestic assets that causes the shift of demand curve, any factor that changes the estimate of the relative return rate on domestic assets will lead to changes in exchange rates. Those factors are money supply, GDP, interest rate, and inflation rate. The variables

closely related to the exchange rate changes include the money supply between Indonesia and United States.

Policy-making needs to know which factors (variables) influence inflation in order to formulate appropriate policies to solve it. Based on those backgrounds, the research questions to be solved in this study are: (1) does the Indonesian exchange rate overshooting occur as well as Dornbusch's exchange rate overshooting theory? (2) Does the money supply variable, interest rate, GDP, and CPI have a significant effect on the exchange rate of Rp / USD?

B. LITERATURE REVIEW

1. Overshooting

Overshooting exchange rates can occur when exchange rates adjust faster than goods and services. Dornbusch treats the exchange rate as a jump variable where the exchange rate adjusts quickly to economic disturbances, while other variables such as output, prices, and interest rates are sluggish which means the slow adjustment so that barely move. Dornbusch expands the perfect capital mobility version of Mundel-Fleming. Dornbusch includes exchange rate expectations to explain volatility in exchange rates and incorporate dynamic elements (Dornbusch, 1976). Characteristics of the Dornbusch model are sticky prices in the short-run. Overshooting models concerning the adjustment process in exchange rates and prices which not move in the same rate. Suppose there is a monetary expansion. The expansion of monetary policy in the short-run causes the interest rate to fall. The decline of interest rate immediately prompts the adjustment in the exchange rate, but the price adjusts gradually. In responding to the gap of the economy, the exchange rate will be overshooting against the new equilibrium level. First of all the exchange rate will move to levels above equilibrium then will gradually return to long-run balance.

2. Influence of Amount of Money Supplied to Exchange Rate Rp / USD

The increasing of money supply will cause the price of the Indonesian currency depreciate, this is because the increasing of money circulating, ceterisparibus, will raising the interest rate of Indonesia. The increasing of Indonesian interest rates will cause the demand for dollar assets will decrease (Mishkin, 2008).

3. Influence of Gross Domestic Product to Exchange Rate Rp / USD

According to Keynesian, an increasing in Indonesian revenues will lead to the increasing of imports capability. The increasing in import capability will increase import, therefore there will be increasing in demand for overseas currencies, which causes Indonesia's exchange rate to depreciate.

4. Influence of Interest Rate to Exchange Rate Rp / USD

The increasing in Indonesian interest rate will cause the demand for dollar assets to drop so that there will be an increasing in demand for Indonesian currency which causes Indonesia's exchange rate to depreciate (Mishkin, 2008).

5. Influence of Consumer Price Index to Exchange Rate Rp / USD

According to Boediono (1998) in Wahidah (2005) said that inflation is the tendency of prices to increase in general and continuously. This rising prices in general result the real value of a currency to goods and services fall, thus increasing the demand for Indonesian currency which will cause the exchange rate of Indonesia depreciated.

C. EMPIRICAL REVIEW

Several previous studies have shown different results for the influence of economic fundamental factors in explaining exchange rate movements. Hosein *et al* (2014) in *Monetary Policy and Exchange Rate Overshooting in Iran,* examined monetary policy and overshooting of the exchange rate in Iran as well as to analyze the changes in the exchange rate in the short-run as well as commodity prices and asset markets by using Vector Error Correction Model *(VECM)* , the result showed that money supply, GDP, and inflation are positively related to the Rial / USD exchange rate.

Gunes S & Karul C (2016) in *The Exchange Rate Overshooting in Turkey*, examined the application of the Dornbusch model against the exchange rate of whether there is an overshoot response in the short-run and long-run money supply change response in Turkish case study by using *Error Correction Model (ECM)* and *Autoregressive DistributedLag (ARDL) method*, the result of money supply and interest rate relate negatively to exchange rate. Meanwhile, the index variable of industrial production of consumer price index is positively related to Lira / US exchange rate.

Rulyusa Pratikto (2014) in the Analysis of *Exchange Rate Overshooting* through the *Error Correction Model* (ECM) Approach, examined the effects of changes in money supply, inflation, interest rates, and GDP in short-run and long-run to exchange rate Rup / Dollar using *Error Correction Model* (ECM) method, the result showed that the changes of variables such as money supply, inflation, interest rate, and GDP in the short-run have positive and significant influence to Rupiah / Dollar exchange rate. While in the long-run the changes of variables such as money supply, inflation, and interest rates positive and significant impact on the rupiah / dollar, while GDP has a significant negative effect on the rupiah / dollar.

Telisa A. Falianty (2003) in *Exchange rate overshooting:* An Empirical Study in Indonesia in the Exchange Rate System Floating, examined the fluctuations in exchange rate and to determine whether the value of the rupiah in Indonesia on *free* floating regime experience overshooting by using *Error Correction Model* (ECM), the result showed that the increasing of JUB caused deep depreciating exchange rates in short-run exceeds the value of the long-run balance. Adjustment to the balance of the long-run is slow. The expansion of money supply has an influence which very strong to the depreciation of the rupiah exchange rate. The expansion of domestic JUB may cause overshooting of the exchange rate in the short-run.

D. RESEARCH METHODS

1. Types and Data Sources

The data used in this research was quarterly quantitative data obtained by researchers from Bank Indonesia (BI) and Central Bureau of Statistics (BPS) in Indonesia from 2005: 1-2016: 2. The secondary data used by the writer was time series data. The data sources were derived from data collected from various data centers of existing documents, BI, BPS, IFS, and also from various sources on the internet.

2. Data analysis

Referring to Dornbursch's overshooting exchange rate theory, an increasing in money supply will cause the depreciated exchange rate exceed its long-run depreciation value. The approach used was ARDL (*Autoregressive Distributed Lag Approach*) and ECM (*Error Corections Model*) .

The formulation of the regression model is written as follows:
Econometric model with *Autoregressive Distributed Lag Approach* (ARDL) technique as follows:

$$S_t = \beta_0 + \beta_1 m_t + \beta_2 y_t + \beta_3 i_t + \beta_4 p_t + \varepsilon_t$$

Description:
S : Exchange Rate Rp / USD,
β_0 : Constant,
β_1 : The Regression Coefficient,
m_t : The difference in the Amount of Indonesian-American Money Supply,
y_t : The difference of Gross Domestic Product Indonesian-American,
i : The difference of Indonesian-American Interest Rate ,
p : The difference of Indonesian-American Consumer Price Index , and
ε : *error term* .

The data obtained by reducing money supply, gross domestic product, interest rate and American consumer price index in the form of logarithm to money supply data, gross domestic product, interest rate and Indonesian consumer price index were used for testing the exchange rate overshooting phenomenon in Indonesia. Meanwhile, to see the influence of independent variables such as money supply, gross domestic product, interest rate and consumer price index to Rupiah / USD exchange rate used Indonesian country data. The reason for choosing this model was because the researcher wanted to test whether Dornbusch's overshooting model can be explained in terms of monetary model. The model used in this research was monetary model. Explanatory variables of exchange rate volatility were money supply, gross domestic product, interest rate, and inflation rate. The exchange rate may be subject to overshooting as predicted by Dornbusch.

The regression model that incorporates variable in which value explaining either the present value or the *lag* of the independent variable in addition to the model entering the *lag* value of the dependent variable as one of the explanatory variables is known as Autoregressive Distributed Lag model (ARDL). The ARDL model is very useful in empirical econometrics, as it makes the static economic theory become dynamic by taking explicitly the role of time. This model can distinguish short-run and long-run responses from dependent variables to one unit of change in explanatory variable (Gujarati, 2012).

In the short-run there may be an imbalance which means what is desired by economic actors is not necessarily the same as what happened actually. The difference between what the economic actors want and what happens needs adjustment. Models that incorporate adjustments to make corrections for imbalances are referred as the *Error Correction Model* (ECM) (Widarjono, 2013). ECM analysis is used to determine the effect of independent variables on the dependent variable in the short-run. Econometric model with *Error Correction Model* (ECM) technique as follows:

$$D(S_I)t = \beta 0 + \beta 1\, D(M_I)t + \beta 2\, D(Y_I)t + \beta 3\, D(P_I)t + ect(-1) + \varepsilon_t$$

Description:
S : Exchange Rate Rp / USD,
β0 : Constant,
β : Regression Coefficient ,
$M_I t$: Total Money Supply in Indonesia
$Y_I t$: GDP in Indonesia
$I_I t$: Indonesia interest rate
$P_I t$: CPI of Indonesia
ε_t : *error term* .

E. RESULTS AND DISCUSSION

1. Test Stationarity

Based on the results of data processing using ADF *test* method at α = 5% obtained the following results:

Table 1. *Unit Root* Test at *First Difference* level with ADF *Test*

Variables	t-stats ADF	Critical Value of MacKinnon 5%	Conclusion
ER	-5,172	-2,931	Stationary
Md	-4,984	-2,931	Stationary
Yd	-5,021	-2.929	Stationary
I.	-4,490	-2.939	Stationary
P	-6,793	-2.929	Stationary

Source: Data processed by using software Eviews 9.0

Based on the data in the above table, by using the ADF test method at α = 5% it could be concluded that the variable ER, M_{I} , Y_{I} , I_{I} and P_{I} stationary at first difference level .

2. Cointegration Test

Table 2 . The results of the Engel-Granger Cointegration Test (EG)

Variables	Augmented Dickey Fuller (ADF)
Resid01	-2.307

Source: Processed data by using software Eviews 9.0

Based on the results of Engel Granger Cointegration test (EG), it could be seen that the value of Augmented Dickey Fuller (ADF) was -2.307 and based on the calculation, t-critical value was -1.683 (α = 0,05 df = 62). The value of Augmented Dickey Fuller (ADF) was -2.307 greater than the critical value which only -1.683, then the cointegrated residual means there was a long-run relationship between the independent variable and the dependent variable as expected by the *overshooting* exchange rate theory . To see if the long-run relationship also applies for the short-run, by linking the cointegration approach with the *Error Correction Model* (ECM) approach .

3. *Autoregressive Distributed Lag* Test (ARDL)

Table 3. ECM Estimation Results in ARDL (4, 4, 0, 4, 4)

Variable	Coefficient	t-Statistic	Prob. *
C	0.007	1.869	0.076
D (M)	-0.978	-1,056	0,000
D (M (-1))	0.128	0.622	0.540
D (M (-2))	-0.163	-0.926	0.365
D (M (-3))	-0.513	-0.697	0.105
D (M (-4))	0.493	2,212	0.038

Source: Processed data by using software Eviews 9.0, data processed

With the cointegration hypothesis, the result of *error correction model* and output estimation of ARDL can be used for further analysis. The coefficient for M or money supply on *lag* 0 was -0.978, then the next *lag* became 0.128 and the next *lag* was -0.163. So at first time exchange rate of Rp / USD was appreciated then depreciated further before it was appreciated again. The coefficient for M in *lag* 0 was significant at α = 5%. Thus by this explanation, the hypothesis of *overshooting* was rejected in Indonesia for the 2005 study period: Q1 through 2016: Q2 because it was not appropriated with Dornbusch's theory where the first exchange rate will depreciate first before appreciate and depreciate again.

4. Error Correction Model Test (ECM)

The ECM model can be established when there was cointegration between independent variables and dependent variables indicating a long-run or *equilibrium* relationship between independent and dependent variables that may be there was no imbalance in short duration or both of them are not equal to equilibrium. ECM was used to test model specifications.

Table 4 . *Error Correction Model* Test Result (ECM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007	0.001	7.911	0,000
D (MI)	-0,822	0.072	-11,359	0,000
D (YI)	-0,053	0.044	-1.23 3	0.225
D (II)	0.003	0.001	1,993	0.053
D (PI)	0.025	0.03 2	0.798	0.429
ECT (-1)	-0.056	0.023	-2.399	0.021
R-squared 0.912		Durbin-Watson stat 2.063		
Adjusted R-squared 0.900		Prob (F-statistic) 0.000		

Source: Processed data using software Eviews 9.0

Based on table 4, the data were differentiated in the ECM model to determine the relationship in the short-run. The short-run equations obtained were:

$$D(ER) = 0{,}007 - 0{,}822\ D(M_I) - 0{,}053\ D(Y_I) + 0{,}003\ D(I_I) + 0{,}025\ D(P_I) - 0{,}056\ EC_t$$

Based on the equation, it showed that the ECM model specification had been valid as evidenced by ECt which was negative and significant at α = 5%. While the coefficient C showed if all independent variables equal to 0 (zero) then the exchange rate of Rp / USD equals to 0.007. Furthermore coefficient of independent variable M_I is negative and significant to ER at the level of α = 5%. The results showed that partially in the short run, the variable of Indonesian money supply had an influence on the exchange rate of Rp / USD. Where, any change of 1 unit of money supply will decrease the exchange rate change Rp / USD about 0.822 or can be interpreted that the increasing of money supply, *ceteris paribus,* caused the exchange rate of Rp / USD to be appreciated.

Coefficient of independent variable Y_I was negative but not significant at α = 5%. While coefficient of independent variable I_I was positive and significant to ER at the level of α = 10 % but not significant at the level of α = 5%. The results showed that partially in the short run, the Indonesian interest rate variable had an influence on the exchange rate of Rp / USD. Where, any change of 1 unit of interest rate will increase the exchange rate of Rp / USD about 0, 003 or can be interpreted that the increasing of interest rate, *ceteris paribus,* caused the exchange rate of Rp / USD to be depreciated.

Coefficient of independent variable P_I was positive but not significant on α = 5% and α = 10 %. This means that the independent variable such as interest rate and Indonesian consumer price index partially in the short-run did not influence to exchange rate of Rp / USD.

5. Estimation In Long-run

From table 5 it could be seen that the speed of long-run adjustment about -0.883 larger than the adjustment of the money supply in the short-run about -0.822 (Table 8). The coefficient of money supply in the short run and long-run was negatively significant at α = 5% meaning, the increase in the money supply by 1%, *ceteris paribus,* will cause depreciation of 82,288% in the short-run and 88,351% in the long run. This explanation also proved that the hypothesis of *overshooting* was rejected in Indonesia for the 2005: Q1 through 2016:Q2 because it was inconsistent with

Dornbusch's exchange rate theory where the first exchange rate will depreciate in the short-run over its long-run equilibrium value.

Table 5. Long-run Estimation Results

Variable	Long-run	
	Coefficient	Prob.
C	-0.785	0.005
M	-0,883	0,000
Y	0.019	0.553
I.	0.011	0,000
P	-0.179	0, 000

Source: Processed software Eviews 9.0

6. Classical Assumption Testing

a. Multicollinearity Test

Table 6. Multicollinearity Test Results with VIF Method

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0	1.062	NA
D (M)	0.005	2,653	2,521
D (Y)	0.001	2,609	2,535
D(I)	-0,000	1,181	1,179
D (P)	0 , 001	1,320	1,316
ECT (-1)	0,000	1.185	1,183

Source: Processed data using software Eviews 9.0

It could be seen from the result that there was no multicollinearity occurred. It can be seen from the *Variance Inflating Factor* (VIF) value of all the variables not more than 10 (as *rule of thumb* if the VIF value exceeds the number 10 then it says there is multicollinearity).

b. Heteroscedasticity Test

In the test results can be concluded that there was no heteroskedasticity or the data was homoscedasticity. This is indicated by the value *Obs*R-squared* (18,682) which was greater than 1,683 (α = 0,05 df = 62) .

7. Hypothesis testing

a. Partial Test

Table 7 . T-Test Results

Variable	t-Statistic	t-Table	Prob.	Information
D (MI)	-11,359	-1,682	0,000	H_o rejected
D (YI)	-1.233	-1,682	0.224	H_o accepted
D (I I)	1,992	1.682	0.053	H_o rejected
D (PI)	0.797	1.682	0.429	H_o accepted

Source: Processed data using software Eviews 9.0

- **The influence of money supply to exchange rate Rp / USD**

  Based on table 7, it showed that the value of t-statistics of money supply was -11.359 while t-table value was -1.682. This showed that the t-statistic value was greater than the t-table value. Thus H_o rejected and H_a accepted, meaning that the money supply variable had a significant influence to exchange rate of Rp / USD.

- **The influence of gross domestic product to exchange rate of Rp / USD**
  Based on table 7, it showed that the t-statistical value of gross domestic product variables was -1.233 lower than the t-table value of -1.682. This showed that the t-statistic value was smaller than the t-table value. Thus H_o accepted and H_a rejected, meaning that the gross domestic product variable had no significant influence to exchange rate of Rp / USD .

- **The influence of interest rate to exchange rate Rp / USD**
  Based on table 7, it showed that the value of t-statistics of interest was 1,992 while t-table value was 1.682. This showed that the t-statistic value was greater than the t-table value. Thus H_o rejected and H_a accepted, meaning that the interest rate had a significant influence on the exchange rate USD / USD.

- **The Influence of price level to exchange rate of Rp / USD**
  Based on table 7, it showed that the t-statistical value of gross domestic product variables was 0.797 lower than t-table value was 1.682. This showed that the t-statistic value was lower than the t-table value. Thus H_o accepted and H_a rejected, meaning that the product price level variable had no significant influence to the exchange rate of Rp / USD .

b. F-Test

Based on the calculation results, obtained results F-statistical value about 81.05 and F-table value about 2.60, since the F-statistic value was greater than F-table, then H_o rejected and Ha accepted, meaning that independent variable tested together have a significant effect on the dependent variable.

The results of data processing in this study stated that the money supply has a negative coefficient and significant influence to the exchange rate Rp / USD both of in short and long-run. This means an increasing in the money supply will increase economic growth and will increase the value of the domestic exchange rate to foreign currencies so that the domestic exchange rate will appreciate (Ayu, 2016).

An increasing in the money supply, *ceteris paribus*, will increase the prices of domestic goods and services. The increasing in price of domestic goods and services relative to the price of goods and services abroad will cause domestic imports will increase. The increasing in imports will cause the demand for foreign currency increases so that the domestic currency will appreciate.

According to Keynesian and Sticky Price Monetary Model*,* the increasing in the money supply will reduce interest rates and lead to capital outflow*.* The foreign capital outflow causes the domestic exchange rate to depreciate. Thus, this output did not conform to the SPMM and Keynesian predictions.

The coefficient in long-run for money supply was -0.883 (table 9) which means in the long-run, an increasing in the money supply had a permanent effect. With the increasing in the money supply, it turns out the exchange rate appreciates permanently. Given the 1% increasing in money supply, *ceteris paribus* in the short-run, the exchange rate appreciated by -0.822 then in the long run the impact was -0.883. This indicated that the exchange rate appreciates in the short-run but did not exceed the value of its long-run equilibrium. This showed that the exchange rate was not *overshooting* because it was not in accordance with the Dornbusch theory where the exchange rate in the short-run will experience greater depreciation than the long-run. If the monetary authority issues a policy to increase the money supply it will cause greater long-run impact, for that money supply can be used by the government to control the rupiah exchange rate.

Furthermore, gross domestic product had negative coefficients in short-run and had positive value in the long-run but not significant to the exchange rate of Rp / USD. This is in accordance with Keynesian prediction. An increasing in domestic income will lead to an increasing in the ability of imports. The increasing in import capability will increase imports so that there will be an increasing in demand for foreign currency which causes the domestic exchange rate to depreciate.

The long-run coefficient results were inconsistent with the SPMM and FPMM views in the relationship between domestic income and exchange rates. According to SPMM, an increasing in domestic real money demand will cause interest rates to rise and *capital inflows* occur so that the domestic exchange rate will appreciate. Meanwhile, according to FPMM, an increasing in output or domestic income relative to output or foreign revenues will lead to an increasing in real money demand. An increasing in the demand for real money, *ceteris paribus*, will cause the domestic exchange rate to appreciate. In the long run the SPMM mechanism will be the same as FPMM.

While the interest rate variable coefficient was positive and significant in the short and long-run. This was due to an increasing in interest rates will reduce the demand for domestic money so that the exchange rate of Rp / USD will experience appreciated. According to the Flexible Price Monetary Model, the increasing in domestic interest rates relative to foreign interest rates, *ceteris paribus*, will cause a decreasing in domestic money demand. A decreasing in domestic money demand will cause the price of domestic goods and services to rise. An increasing in the domestic price will cause the exchange rate to depreciate.

Different views of the SPMM and Keynesian, the increasing in domestic interest rates relatively to foreign interest rate, *ceteris paribus,* will lead to capital inflow resulting in large amounts of foreign currency or foreign currency coming in which causes the exchange rate of the domestic currency to appreciate.

The coefficient for the price level in the short-run was positive but not significant at $\alpha = 5\%$. This was because in the short-run, the increasing in price level will cause a decreasing in public purchasing power so that the public will increase the demand for domestic money which will cause the exchange rate of Rp / USD to depreciate.

While in long-run the coefficient of price level was negative and significant at $\alpha = 5\%$. In general, an increasing in the price level will cause inflation so that it will cause an increasing in interest rates so that the money supply will fall. This will cause the domestic currency to appreciate.

Different views according to the Flexible Price Monetary Model, an increasing in the domestic price level to overseas price level, *ceteris paribus*, will cause depreciation in the domestic exchange rate. This was because an increasing in the domestic price level will cause the price of domestic goods and services to tend to be cheaper compared to abroad so that people will import goods and services and increase demand for foreign currency and cause the domestic currency to depreciate. Because the price level was significant in the long-run, the price level was strong enough to affect the exchange rate, thus supporting the need for the inflation target in maintaining the stability of the rupiah.

Apart from the problem of positive and negative signals of the money supply variable, gross domestic product, interest rate, and price level, what more focused in this research was whether or not *overshooting* was acceptable.

F. CONCLUSION

Using the *Error Correction Model* (ECM) and *Autoregressive Distributed Lag* (ARDL), the overshooting hypothesis was not accepted in Indonesia for the 2005 study period: Q1 to 2016: Q2. With the rejection of the overshooting hypothesis, the increasing in money supply did not cause the exchange rate of Rp / USD to depreciate in the short-run beyond the long-run balance. This proves that Dornbusch's exchange rate theory did not apply in Indonesia in the study period.

Moreover, from the research above, we can conclude that the variable of money supply has a negative and significant effect on the rupiah exchange rate in Indonesia both in the short-run and long-run. Gross domestic product variables did not significantly influence the exchange rate of Rp / USD in Indonesia both in the short and long-run. The interest rate variable has a positive and significant influence on the exchange rate of Rp / USD in Indonesia both in the short and long-run. Consumer price index variable has a positive influence but not significant to the exchange rate of Rp / USD in Indonesia in the short-run, while in the long-run the price variable of consumer price index has a negative influence and significant to the exchange rate of Rp / USD in Indonesia.

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SUBSIDY REFORM FOR INCLUSIVE GROWTH

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ABSTRACT

Since late 2014, the Government of Indonesia has started to take significant steps to reforms old subsidy policy that has ballooned the state budget and often fallen short of its asserted goal of helping the poor. The first step was removal of fuel subsidy for Premium Petrol RON-88 (October 2014) and Diesel (November 2014). In terms of budget efficiency, those policies have worked. Total energy subsidies went down considerably, from Rp191.0 trillion in 2014 to Rp34.9 trillion in 2015. Currently, there are still energy subsidy reforms that will be addressed, such as: one fuel prices policy, closed distribution of LPG 3 Kg, and electricity tariffs adjustment for 900 VA and 450 VA. Tariff adjustments for 900 VA has been started in January 2017 and considered to be continued, especially for people who are not eligible for subsidy. Regarding this, it is important to examine the impact of electricity tariffs' adjustment for 900 VA and 450 VA on economic growth, poverty, inequality, and environment, both in rural and urban area. This study employs Computable General Equilibrium(CGE) Indonesia E3 with three scenarios: (i) remove electricity subsidy of 900 VA without any compensation; (ii) remove electricity subsidy of 900 VA and 450 VA and give compensation for 40% of low income family (for both 900 VA and 450 VA users); (iii) remove electricity subsidy of 900 VA and 450 VA and give compensation only for 450 VA users which are categorized as 40% of low income family. This paper found that electricity subsidy removal with sufficient compensation given only to those who are eligible is potent to increase economic growth, reduce poverty and inequality, as well as improve the quality of environment by reducing total CO2 emission.

Keywords: Subsidy, Electricity, Economic Growth, Poverty, Inequality, Environment

I. Background

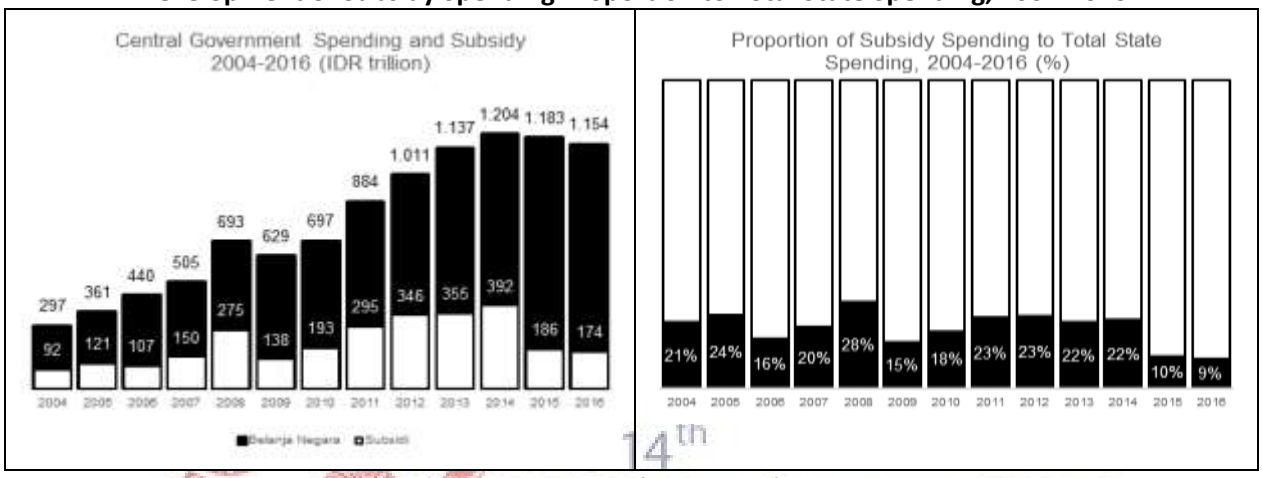
The Government of Indonesia has been constantly improving its pocilies to establish a just and prosperous society, and to be equal with advanced countries in the world. The Nawacita Agenda, introduced by President Joko Widodo, is seeking a breakthrough which is enable to protect the whole nation and promote their quality of life. One of the strategies to achieve its goals is by improving the quality of social security programs and targeted subsidies.

Subsidy is a fiscal instrument that used to carrying distribution function that assuring each individual can equally bennefited from development outcomes. As a matter of fact, each member of society holds different capability to fulfill their substancial needs. In relation to that, subsidy is a solution to help those in needs. Without the presence of subsidies, the rate of poverty and inequality might be increased. Nevertheless, in the midst of fiscal policy limitations in Indonesia, in order to achieve efficiency and effectiveness of the State Budget (APBN) allocation, the implementation of subsidy policies must be well targeted. Designing a new concept of targeted subsidies is a must, in the sense that the policy enables the poor to taste the benefit from the economic growth equally and sustainably.

The implementation of subsidy policies has been contested. During Repelita I (1969/1970), Indonesia had conducted subsidy of imported fertilizers and cottons. The distribution of subsidized fertilizers to farmers was aimed to increase agricultural productivity through fertilization technology. Furthermore, it was also an attempt to increase agricultural products in achieving a sustainable food security. Later on, the subsidy policy on fertilizers was eliminated. There were numerous changes from direct price-based subsidy to raw materials' price subsidy (LPG subsidies), and the combination both. In 1997, fuel subsidies had implemented with the purpose of preserving the national economic stability through establishment of fuel price stability as a strategic commodity. As Indonesia became an oil exporting country, which registered in OPEC (before 2008), fuel subsidy didn't get much of attention as a

strategic issue at that time. It is because it was regarded as normal case – every increase of oil price was a net additional income for the country. However, the implementation of fuel subsidy had induced some problems when the raise of consumption was not accompanied by the increase in oil production. This condition shifted a paradigm of fuel subsidy. Initially, its policy was once considered as governmental strategy to shield the people from adversity. However, later on, it considered as a misdirected intervention as the upper-middle class was being its main beneficiary. Also, fuel subsidy inflicted to the Government State Budget and regarded as a counterproductive policy to achieving a powerful, equal, and sustainable economic growth. Figure 1.1 shows the development of subsidy spending and the proportion of subsidy spending to the overall state spending during 2004-2016 period. During 2004-2016, subsidy spending had increased constantly up to Rp392,0 trillion, or 21 percent of the total state spending.

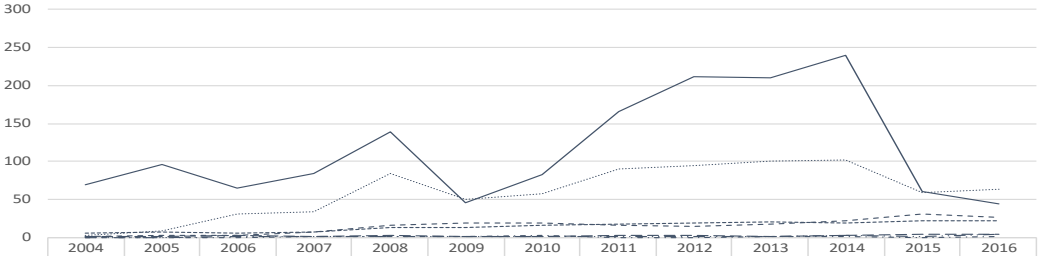
Figure 1.1
Development of Subsidy Spending Proportion to Total State Spending, 2004-2016



Source: Ministry of Finance, refined

Figure 1.2 shows that during 2004-2016 periods, energy subsidies (fuel, LPG, electricity) spending far exceeds non-energy subsidies spending, therefore becoming a significant fiscal burden to the state. In the said period, energy subsidies became an oppressive burden to the State Budget because the funding of energy subsidies forced the government to sacrifice a more productive spending such as infrastructure spending to support investment and national competitiveness. The government also had to sacrifice other non-energy subsidies such as agricultural subsidies (food, fertilizers, and seeds) to support farmers' productivity, public service subsidies, and credit interest subsidies for Micro, Small and Medium Enterprises.

Figure 1.2 Development of Subsidy Spending Components 2004-2016 (IDR Trillions)



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Fuel	69,0	95,6	64,2	83,8	139,1	45,0	82,4	165,2	211,9	210,0	240,0	60,8	43,7
Electricity	2,3	8,9	30,4	33,1	83,9	49,5	57,6	90,4	94,6	100,0	101,8	58,3	63,1
Food	4,8	6,4	5,3	6,6	12,1	13,0	15,2	16,5	19,1	20,3	18,2	21,8	22,1
Fertilizer	1,2	2,5	3,2	6,3	15,2	18,3	18,4	16,3	14,0	17,6	21,0	31,3	26,9
Seed	0,1	0,1	0,1	0,5	1,0	1,6	2,2	0,1	0,1	0,4	0,3	0,1	0,4
PSO	0,7	0,9	1,8	1,0	1,7	1,3	1,4	1,8	1,9	1,5	2,1	3,3	3,7
Credit Interest	0,1	0,1	0,3	0,3	0,9	1,1	0,8	1,5	1,1	1,0	2,5	1,6	4,6

Source: Central Government Financial Report (LKPP), refined

Subsidy reform was conducted significantly when President Joko Widodo announced the abolishment of fuel subsidy (premium fuel) on December 31st, 2014. The overall subsidy reform policy carried by President Joko Widodo to this time had covered three aspects, which are using a new pricing scheme for fuel (premium and solar), implementing closed-distribution scheme for 3kg LPG, and revoking the 900VA electricity subsidy for middle-class households and above. The reform was shown in the sharp decline of energy subsidies spending (kerosene, premium and solar fuels) from Rp191,0 trillion in 2014 to Rp34,9 trillion in 2015, and the numbers kept on decreasing in 2016. Another supporting factors in subsidy reform is the decline on Indonesian crude oil prices from 96,5 USD/barrel to 49,2 USD/barrel, which was a 49 percent decrease. The decreasing energy subsidies spending had cause a significant decrease in total state spending of 52,6 percent. On the other side, income taxes from oil and gas industry had caused the government revenue to decrease up to 43,2 percent. The industry's non-tax revenue also went through a 64 percent decrease as the aftermath of the decline on oil prices mentioned before. It was based on this reasoning that subsidy reform became a pressing and urgent matter.

In general, the total of subsidy spending had sharply declined since 2015. Nonetheless, there is still another high-cost energy subsidy that is the electricity subsidy. Since 2015, the spending on electricity subsidy had occupied the highest rank and proportion to the total subsidy spending, and the amount still increased in 2016. If this condition persists, the State Budget will be burdened and met with difficulties in maintaining its continuity and, as a result, not able to support economic growth. In addition to that, there is also the necessity to obey the maximum state budget deficit of 3,0 percent of GDP. This is why the government had been trying to make sure that electricity subsidy spending is efficient, effective, and able to meet its purposes.

Unfortunately, a study from Indonesia Labor Force Study (SAKERNAS) and National Team for the Acceleration of Poverty Reduction (TNP2K) in 2013 showed that electricity subsidy in Indonesia is misdirected because it was allocated more towards the upper-middle income people. The main target, which was the poorest 40 percent of society, were only put through 30 percent of the electricity subsidy. Aside from that fact, electricity subsidy was also regarded disproportionate because of the low of electrification ratio in Indonesia, which only reached 88.3 percent (Ministry of Energy and Mineral Resources, 2015). The ratio reflected that there was approximately 29 million people, or 11.7 percent of Indonesians that was not connected to electricity and therefore experience to access the subsidy. Electrification ratio of Indonesia is significantly low compared to neighboring countries in Southeast Asia that had exceeded 98 percent.

As an effort to make sure that subsidy spending is effectively supporting development purposes, the government had keep on trying to improve energy subsidy spending allocation mechanism, specifically electricity subsidy, from what was an input/price subsidy for producers to a direct subsidy for end users. Subsidy mechanism was also implemented in non-energy subsidy spending such as food and fertilizer subsidy. Allocation of food subsidy will take form of Raskin (beras miskin/rice for poor households) distribution, with improvements in its management and accountability. The distribution scheme for fertilizer subsidy will have some changers, from price subsidy to direct subsidy through the form of cash or coupons for farmers to buy fertilizers and pesticides. With direct subsidy, the price difference between subsidized local products with the same product across the country can be avoided, so there will be no smuggling attempts that can cause product shortage inside the country.

The various efforts conducted for subsidy reform is hoped to reduce inequality and poverty, and in the end will lead to a high quality economic growth of Indonesia. The reform of price subsidies to direct subsidies is hoped to recover the Government State Budget and to support the sustainability of the budget as well as affecting related industries, especially energy industries including fuel and electricity, and non-energy industries including food and fertilizers to assist food sustainability in Indonesia. Subsidy reform can accelerate the economy through a more efficient resource allocation that can cause specific impacts on poverty alleviation, inequality reduction, and employment growth. Subsidy

reform will also give a bigger space for fiscal activities, therefore allowing the government to conduct a better-quality spending allocation on various fields.

This study will review the impacts of subsidy reform towards economic growth, real household consumption, Consumer Price Index (CPI), poverty rate, inequality on national level including both rural and urban areas, and environmental aspects on CO_2 emission. This study will specifically look at the impact of electricity subsidy abolishment and the change of its allocation mechanism, that was given to producers (PLN/State Electricity Company) to a direct subsidy received by the rightful people as end users.

The scope of this study is focused on electricity subsidy offered to households from 450VA to 900 VA. On early 2017, the government had abolished 900VA electricity subsidy by raising electricity tariff three times in January, March, and May[1]. The 90 VA abolishment was directed towards middle-class households based on an accurate data. Out of 23,7 million people costumers of the 900VA electricity, only 6,54 million have the rights to subsidized electricity. On the long run, the mechanism will change to direct subsidy. Electricity subsidy for all 900VA and 450VA costumers will be abolished, and those affected will be given compensation in the form of cash that can only be used to pay for electricity bills with a special card. The compensation is specifically given to 40 percent of lowest income.

Problem identification of this study is focused to find out:

1. How is the misdirected 900VA electricity subsidy abolishment without compensation affecting: economic growth, real household consumption, Consumer Price Index (CPI), poverty rate, inequality on national level including both rural and urban areas, and environment.
2. How is the mechanism change from price subsidy for producers to direct subsidy for end users affecting: economic growth, real household consumption, Consumer Price Index (CPI), poverty rate, inequality on national level including both rural and urban areas, and environment.

II. Theoretical Framework

A subsidy in general is payment done by the government to households or enterprises to achieve a specific goal that allows them to produce or consume a product on a bigger quantity, or a lower price. Economically, the aim of a subsidy is to reduce prices or increase outputs. Subsidy (transfer) is a type of government spending that is interpreted as a negative income tax, for it is able to increase the income of the receivers or cause an increase of real income if they consume or buy subsidized goods on a relatively low price.

On the economical context, subsidies have some similarities with taxes, in a way that it can be called negative income tax that causes an opposite effect caused by taxes. Subsidies increase the quantity of goods and services. Briefly, subsidy can be interpreted as a price difference between the seller and the buyer where the subsidy is used to make buyer price is lower than seller price. Subsidy is also a government policy used for redistribution and stabilizer. Government spending in the form of subsidies will affect economic efficiency, individual behavior, and equitable distribution of income.

Aside from that, subsidy is also a form of intervention on market mechanism done by the government. Government intervention on the process of achieving equilibrium is justified by some consideration such as efficiency reasons and market failure existence including public goods, positive and negative efficiency, asymmetrical information, monopoly market structure, and consideration of equality and equity.

Table 2.1 Key Criteria of Subsidy Programs

Criteria	Description
Well-targeted	Subsidies should go only to those who are meant and deserved to receive them.

[1] The abolishment is written down on Ministry of Energy and Mineral Resource Regulation Number 28 Year 2016 on Electriciy Tariff PT PLN (Persero), regulating on non-subsidized tariff establishments for 900 VA powered households that is economically capable to support its needs, and Ministry of Energy and Mineral Resource Regulation Number 29 Year 2016 on subsidized electricity tariff allocation for households.

Efficient	Subsidies should not undermine incentives for suppliers or consumers to provide or use a service efficiently.
Soundly based	Subsidies should be justified by a thorough analysis of the associated cost and benefits.
Practical	The amount of subsidy should be affordable and it must be possible to administer the subsidy in a low-cost way.
Transparent	The public should be able to see how much a subsidy program costs and who benefits from it.
Limited in time	Subsidy program should have limited duration, preferably set at the outset, so that consumers and producers do not get "hooked" on the subsidies and the cost of the program does not spiral out of control.

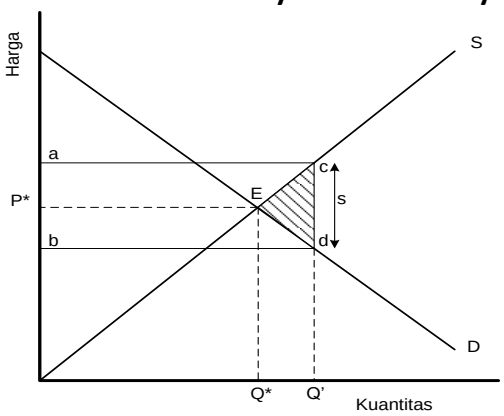
Source: Energy Subsidies: Lessons Learned in Assessing Their Impact and Designing Policy Reforms, United Nations Environment Program (2003)

A subsidy can be grouped into two categories; one is based on the subject of subsidy receivers, second is based on the fundamental purpose of the subsidy. Based on the subject of receivers, a subsidy can be categorized to direct and indirect subsidy. Direct subsidy is a subsidy where the receiver is given the subsidized product directly. The example of this type of subsidy in Indonesia is Rastra and Unconditional Cash Transfer (Bantuan Langsung Tunai/BLT). Indirect subsidy can also be called price subsidy, because in this scheme the subsidized goods and services is not given to the targeted receivers, but instead sold in a relatively lower price because the market price is reduced by the amount of subsidy. Types of subsidies based on receivers can be indirect subsidy or price subsidy, either input or output prices. This type is applied on commodities such as fuels (output), electricity (input and output), agricultural (output and input), and public service obligations (input).

In addtion, based on the fundamental purpose, subsidy can be classified as price stabilizer and transfer payment instrument. The precedent for a subsidy functioned as a price stabilizer in seen on fuel commodities, while the precedent for subsidy functioned as transfer payment tool is seen on cash transfer and Rastra program. The examples of this type of subsidy are credit interest subsidy, seeds and fertilizer subsidy, energy subsidy (electricity and fuels), and public service obligations subsidy.

The impact resulted by a subsidy towards national economy and to the state budget is significantly different. This is caused by the fundamental character of subsidy impact towards economy is different between a distortive subsidy (price subsidy) and direct subsidy (lump-sum subsidy). Classic economy literatures had underlined economic inefficiency as the outcome of distortive subsidies in the form of a deadweight loss in economy. Subsidy burden is the amount of welfare loss known as consumer surplus and producer surplus caused by economic activity beyond the efficient production and consumption rate forced by the government. Philosophically, inefficiency happened as a result of individuals doing substitutions of distorted market price. Relatively, individuals will increase subsidized goods consumption if the price is relatively lower after the subsidy. In the long run, supply and demand elasticity on commodities will influence total deadweight loss (Davis, 2014). The more elastic the supply and demand, the amount of subsidy burden borne by the government will be higher if the enacted price is lower than production cost. The effect of subsidy on commodity price is explained by supply and demand curve in Figure 2.1 below:

Figure 2.1 The Effect of Subsidy on Commodity Price



As can be seen from the graphic above, the Ecd triangle depicts the s amount of inefficiency of a subsidy on a certain commodity, because the consumer surplus is increased on the amount P*Edb and producer surplus is increased on the amount of P*Eca while the cost of subsidy is abcd. The quantity of economy equality is pushed up from Q*

Some empirical showed that energy subsidy reform without compensation will cause the effect of reduction on household welfare and an increase on poverty rate, specifically in developing countries. A study done by Ikhsan (2005) showed that a decline on fuel subsidy done by Indonesian government in 2005, with no compensation, caused a raise in Indonesia's poverty rate from 16,3 percent to 16,7 percent. Yusuf and Resosudarmo (2008) stated that a progressive price reform can reduce inequality if the reform is only implemented in vehicle fuels; but in the reality the price escalation caused an increase in equality, especially on urban areas that went through price escalation on kerosene. Cast transfers to poor households without considering heterogeneity tend to give more compensation to rural than urban households. Consumption patterns of urban citizens depends on output of industry and transportation, where a rise in fuel prices will directly affect prices of both outputs, so energy reform will cause a more significant impact of reduction on household welfare in urban compared to rural areas.

A study by Saboohi (2001) in Iran found that a decline in energy subsidy will increase living cost of low income households. Breisinger (2012) found that in general a decline in subsidy will affect growth development in Yemen, but the poverty rate can either increase or decrease. If the reform is conducted without giving compensation, it will cause an impact of 2,6 rise of poverty rate, while a reform with compensation (cash transfer to low income households) will reduce poverty rate for approximately 4,0 percent. The result is supported by a research done by Adriamihaja and Vecchi (2017) who predicted the impact of fuel price escalation towards living standards in Madagascar, where a 17,0 percent increase of fuel price will increase household spending of 2,1 percent for low income households and 1,5 percent for high income households indicating that the benefit of the subsidy is experienced more by high income households.

III. Method and Simulation Scenario

The analysis tool used in this study is Computable General Equilibrium (CGE) Indonesia E3. INDONESIA-E3 (Economy-Equity-Environment) is a multi-sector, multi-households Computable General Equilibrium (CGE) model that incorporate carbon emissions and taxation and with a strong feature in distributional analysis (Yusuf, 2008), the detailed explanation of which is elaborated in Chapter II.

The simulation scenario used in this study is briefly shown in Table 3.1 below:

Table 3.1 Simulation

Description	SIM 1		SIM 2				SIM 3	
			A		B			
	450VA	900VA	450VA	900VA	450VA	900VA	450VA	900VA
Increase in Electricity Price[2] (%)	0	131	226	131	226	131	226	131
Price Increase Compensation (IDR/month)	0	0	80.000	80.000	95.000	95.000	105.000	0

Table 3.1 above shows three scenarios used as simulation on identifying how subsidy abolition and mechanism changes affect some macro-economy indicators related to the objectives of this study. The simulations are:

a) Simulation 1 (SIM 1): Abolition of misdirected 900 VA electricity subsidy, without compensation.

[2] Price escalation is calculated based on real TTL price data per kWh from PT PLN on 2017

a. There are 23,7 million 900VA electricity users. From that number, the people eligible to receive subsidy is only 6,54 million[3], with the remaining 17,16 million do not have the rights for subsidy and therefore will be met with a rise in electricity tariff corresponding economical price.
b. The price change for the other 17,16 million 900VA electricity users is from Rp586/kWh to Rp1.352/kWh, approximately 131 percent raise.
c. Because the 17,16 million users do not have the right for subsidy, therefore there are no compensation offered. (SIM 1)

b) Simulation 2 (SIM 2): Abolition of 900VA and 450VA electricity subsidies, with compensation given to eligible customer, which are 40 percent of the lowest level electricity users.

a. There are 6,54 million 900VA electricity users and 23,17 million 450VA electricity users that will go through electricity tariff escalation corresponding to economical price, as follows:
   i. 6,54 million 900VA electricity users will go through 131 percent price escalation from Rp586/kWh to Rp1.352/kWh.
   ii. 23,17 million 450VA electricity users will go through 226 percent price escalation from Rp415/kWh to Rp1.352/kWh.
   iii. Compensation will be given to 40 percent of lowest income users in the form of cash transfer through a special card worth of Rp80.000 per month (SIM 2A)
   iv. Compensation will be given to 40 percent of lowest income users in the form of cash transfer through a special card worth of Rp95.000 per month (SIM 2B)

c) Simulation 3 (SIM 3): Abolition of 900VA and 450VA electricity subsidies, with compensation given only to eligible 450VA users, which are 40 percent of the lowest level 450VA electricity users.

a. There are 6,54 million 900VA electricity users and 23,17 million 450VA electricity users that will go through electricity tariff escalation corresponding to economical price, as follows:
   i. 6,54 million 900VA electricity users will go through 131 percent price escalation from Rp586/kWh to Rp1.352/kWh.
   ii. 23,17 million 450VA electricity users will go through 226 percent price escalation from Rp415/kWh to Rp1.352/kWh.
   iii. Compensation will be given to 40 percent of lowest income users in the form of cash transfer through a special card worth of Rp105.000 per month (SIM 3).

The next assumption used to determine the amount of compensation in each scenario is calculated by considering average electricity consumption of 450VA and 900VA users, as well as the average electricity subsidy each level of users received each month as the following table 3.2:

Table 3.2 Calculation Assumption on Compensation Amount

User	Number of Households	Consumption (KWH/month)	Consumption (KWH/year)	Subsidized Electrity Tariff (IDR/KWH)	Economical Price Of Subsidized Electricity (IDR/KWH)	Electricity Subsidies (IDR per HH/month)	Electricity Subsidies (IDR per HH/year)	Electricity Subsidy (IDR/year)
450VA	23.176.299	82	22.805.478.216	415	1352	76.834	922.008	21.368.733.088.392,000
900VA	6.540.000	123,7	1.617.996.000	586	1352	94.754	1.137.050	7.436.309.616.000,000
	29.716.299		**24.423.474.216**					**28.805.042.704.392,000**

Average Electricity Subsidy of 450VA users/month	**76.834**
Average Electricity Subsidy of 900VA users/month	**94.754**
Average Electricity Subsidy of 450VA and 900VA users/month	**80.778**
Average Electricity Subsidy Given Only to 450VA users/month	**103.572**

Basis of Compensation Calculation	
Compensation By Using Average Subsidies For 450VA and 900VA users	**80.000**
Compensation By Using Average Subsidies For 900VA users	**95.000**
Compensation By Using Assumption Electricity Subsidy Per Year Shared Only to 450 VA users	**105.000**

Source: PLN, refined

[3] The source for eligible costumer count data is Integrated Database of National Team for the Acceleration of Poverty Reduction (TNP2K), Integrated Database of Poverty Management Program (PPFM) where the main source of PPFM Database is the result of Integrated Database Update conducted by Central Bureau of Statistics on 2015.

IV. Analysis

The outcome from CGE Model analysis used in this research is shown in Table 4.1, as follows:

Table 4.1 Impact Analysis Outcome (% *change from baseline*)

No	Description	SIM 1	SIM 2A	SIM 2B	SIM 3
1	Real GDP from expenditure side	0,091	0,071	0,071	0,070
2	Aggregate Real household consumption	-0,777	-1,271	-1,234	-1,290
3	Consumer price index	-0,574	-0,425	-0,366	-0,454
4	Poverty				
	Change (Urban)	-0,138	0,038	-0,017	0,064
	Change (Rural)	-0,061	-0,056	-0,118	-13,930
	Change (Urban + Rural)	-0,102	-0,006	-0,065	-6,519
5	Inequality Index				
	Change (Urban)	-0,200	-0,130	-0,150	-0,110
	Change (Rural)	-0,280	-0,410	-0,470	-0,400
	Change (Urban + Rural)	-0,250	-0,240	-0,270	-0,220
6	Total CO_2 emission	-1,966	-3,756	-3,742	-3,763

Based on the simulations, it can be seen that in the medium term, whether or not an electricity subsidy abolishment is followed by compensation, the real economic growth does not receive a positive impact. Simulation 1 caused the biggest impact among other simulations in intensifying economic growth. In SIM 1, abolishment of the misdirected 900VA electricity subsidy without giving compensation can increase real economic growth by 0,09 percent from the baseline. Which means, in the medium term, electricity sub-sector will go through an output increase because the price paid by 900VA users corresponds to the increase of its economic price. However, usually when a subsidy is abolished, real household consumption is decreased in each scenario. The biggest decline happens in SIM 3 where the policy is abolishing both 900VA and 450VA electricity subsidy, with compensation given only to 450VA users (lowest 40 percent of the users). A subsidy is in its essence a condition where the government bears half of the payment made by households. When the subsidy is reduced, the quantity of household consumption is automatically reduced because they need to spend more money for the same quantity of consumption. In Simulation 3, where the subsidy for 900VA and 450VA electricity is abolished, the number of users affected is too many.

On its impact to Consumer Price Index (CPI), 900VA electricity subsidy abolishment with no compensation (SIM 1) cause the biggest impact on declining CPI. When the subsidy is abolished, the electricity bill that people have to pay becomes more expensive, shooting up the need for electricity. This condition suppresses the demand for other goods and services, causing aggregate prices to decline significantly. SIM 2B cause the slightest impact on CPI, where an adequate compensation is given to two groups of users, so the spending capacity towards other goods and services remains high. In SIM 2A the compensation given to 900VA electricity subsidy users is inadequate in coping with subsidy abolishment, causing a sharp decline in CPI. An adequate compensation for costumers appears as effective in preserving CPI.

Electricity subsidy abolishment in each simulation cases an impact on the decline of poverty rate, either on the national, urban, or rural scope. The most impactful simulation in reducing aggregate poverty rate is SIM 3, the 450VA and 900VA users adjust to economical price, and the government only subsidize eligible 450VA users with the biggest amount of compensation among other simulations. In SIM 3, poverty rate in urban area increases similarly with SIM 2A because the population concentrated in urban areas are the near-poor 900VA electricity users whose household spending is pressured due to subsidy abolishment. While in rural areas, the majority are 450VA users who went through a significant poverty decline due to the compensation that not only covers the electricity tariff but also offers additional cash.

Each simulation also shows that inequality decline appears more in rural areas compared to urban areas. SIM 2B causes highest decrease of aggregate inequality compared to other simulations,

specifically in rural areas. This means that when the government gives out compensation to eligible 450VA and 900VA users, the spending from the lowest 40 percent who receives compensation and the spending adjustment of the upper-middle class will cause a significant decline on inequality rate.

The same goes for environment indicator, where SIM 3 causes the biggest impact on reducing total CO_2 emission. This is due to electricity use rationality in both 900VA and 450VA electricity users. With the subsidy abolishment, the price paid by both groups increased, thereby rationalizing their behavior in using electricity. In SIM 1, depletion applies only to 900VA users, resulting in less environmental impact due to the rationality usage occurs only to 900VA users and not to 450VA users.

V. Conclusion and Recommendation

In the research, every simulation indicated that a subsidy mechanism that offers a direct adequate compensation to help eligible electricity consumption combined with subsidy removal is able to help reduce poverty and inequality rate in aggregate level, as well as give a positive impact to the environment. Electricity tariff adjustment corresponding to the economical prices will cause people to be more careful and rational in using electricity, which leads to reducing CO_2 emission.

This simulation also gives a new perspective to the government in determining policies. If the government's focus is to reduce poverty and equality, then the most suitable choice would be SIM 2B and SIM 3, but with the relatively high amount of compensation. If the issue is to boost economic growth, then the medium-term SIM 1 simulation is better. Aside from that, if the issue concerns more on environment then the option of abolishing electricity subsidy for every customer level, is highly recommended because it can heighten the rationale of electricity usage in aggregate.

The government must design an effective and targeted compensation that can increase real income level. Before implementing a reform, the government should educate people on the importance of carrying out an energy reforms, so that the policy can be implemented effectively. There are some ways in which the government can protect the lower-middle income households. A study by Plante (2014) showed that replacing subsidy with governmental transfer can minimize welfare loss. IEA (2010) stated that the government can offer cash transfer or near-cash transfer in the form of special cards, as well as indirect transfer through the abolition of health, education, and public transportation service costs. However, the compensation distribution must consider some indicators on the receivers' eligibility. The information from cash transfer program can be used to determine the eligible beneficiaries, since Indonesia has an experience in organizing targeted cash transfer program before.

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The Effect of Decreasing Cost of Borrowing Money in Promoting Quality Economic Growth in Indonesia

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ABSTRACT

Financial intermediary institutions have an important role in the economy. Economic theory says that financial intermediary can boost the economy because it is able to help channel resources for productive activities and encourage the allocation of resources more efficiently. In the intermediation process, the interest rate is an important thing because the interest rate represents the cost of borrowing money for the debtor. Interest rate is one of the considerations in the decision of the borrower because the interest rate determines the amount of installment and interest that the borrower should pay.

As a country with bank-based characteristics (74.9 percent of banking assets dominate the financial services sector in Indonesia), banks are still the main source of financing in Indonesia.
When compared to other countries in ASEAN, Indonesia is the country with the highest credit interest rate, even Indonesia only has a double-digit credit interest rate.

The high cost of borrowing money in Indonesia can influence the economy, including inequality. In other words, the high cost of borrowing money can hamper the access of finances of people, especially those with low incomes to reach banking credit, both for productive and consumptive activities. Thus, the decline in interest rates can encourage people to be able to 'borrow more and spend more', so the decline in interest rates has a tendency to be able to reduce inequality.
This study aims to provide an overview of the effect of decline in bank lending rates (cost of borrowing money) on quality economic growth in the long term.

The methodology used in this study is the Computable General Equilibrium (CGE) model based on the dynamic Indoterm model. Adjustments were made to the growth of the financial services sector in the base model with the real growth of the financial services sector.

Based on the simulation results, the decrease in cost of borrowing money in the financial services sector could have an impact on the output of the financial services sector. Seen from the simulation results, from 2018 to 2022 it is estimated that the financial service sector output will be 1.9 to 3.36 percent lower than the baseline (in the absence of a decrease in cost of borrowing money).

In general, the decrease in cost of borrowing money will have a positive impact on the output of the Indonesian economy. In 2018, a decrease in the cost of borrowing money in the financial services sector will cause Indonesia's GDP 1.02 percent higher when compared to the baseline.
In line with the positive impact of decreasing cost of borrowing money on general economic growth, the decrease in cost of borrowing money also has a positive impact on sectoral growth. The decline in cost of borrowing money in the long term will have a positive impact in almost all economic sectors, especially dominated by capital-intensive sectors. Furthermore, this study also found out that the reduction of cost of borrowing money in general will reduce inequality, where inequality occurs if the income of the owner of capital is higher than the wage of labor.

Keywords: Cost of Borrowing Money, Quality Economic Growth

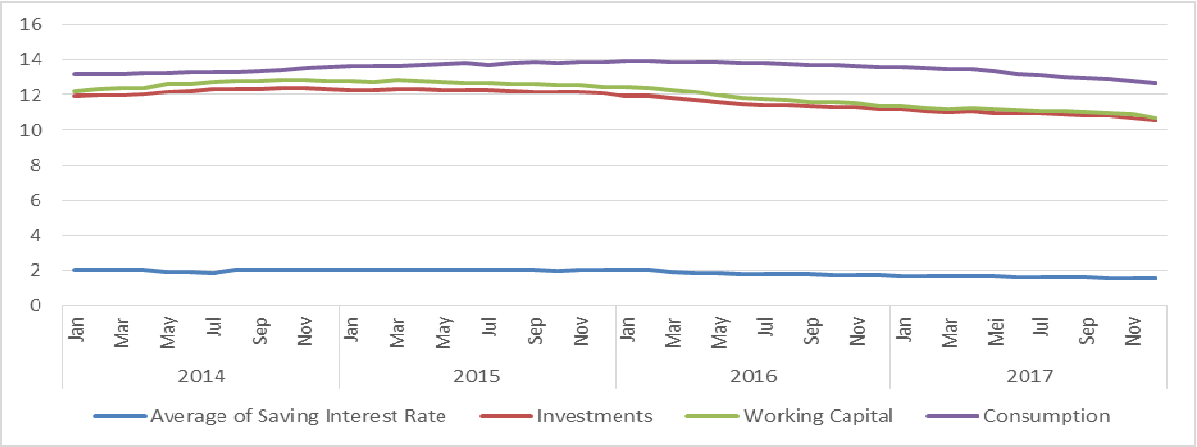
INTRODUCTION

Financial intermediaries have a significant role in the economy, as they perform the function of intermediation. Financial intermediaries stimulate economic growth by making transfer of funds more efficient. Demirgüç-Kunt and Levine (2008) argue that the general function of financial intermediary is minimizing the cost of transaction that can hamper the economic activities. Financial intermediaries occur when it is too costly for investor and lender to have a transaction directly with borrower in money market. Therefore, financial intermediaries have a role to create better and more efficient transaction. Demirgüç-Kunt and Levine (2008) also state another function of financial intermediaries, such as (1) giving information related to investment and resources allocation, (2) controlling investment and providing company management, (3) facilitating trade, diversification, and risk management, (4) mobilizing and collecting funds, (5) making the exchange of goods and services easier and more efficient. Therefore, financial intermediaries determine the flow of funds within corporate, government, and even individuals.

In intermediation process, interest rate is an important part because it represents the cost of borrowing money for borrower (Keynes, 1937). Interest rate is one of the considerations in the decision-making of the borrower because it determines the amount of instalment payment they have to pay. If interest rate is low, then the cost of doing business and investing is low too. In other words, interest rate can affect real sector activities, especially for industries that have a relatively high intermediate component from financial sector. Thus, if interest rate is high, it can burden the borrower, either individual or company. Dabla-Norris and Floerkemeier (2007) also state that higher interest rate can increase the cost of borrowing money for borrower, so it can decrease the investment potential growth and economic growth.

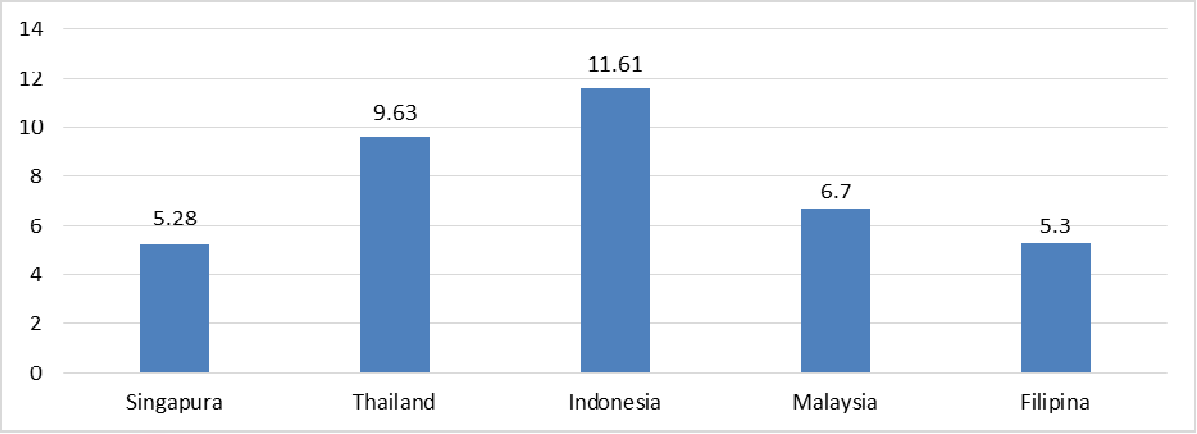
As a bank-based country (74,9 percent banking assets dominate financial sector in Indonesia), banking sector is still the main source of fund in Indonesia. Nevertheless, banking credit interest rate (cost of borrowing money) is relatively high. Although it is decreasing (figure 1.1), but interest rate either investment credit, working capital credit, and consumption credit is still above 10 percent. Interest rate in Indonesia is the highest compared to other ASEAN countries (figure 1.2).

Figure 1.1. Banking Interest Rate in Indonesia



Sources: Financial Services Sector Authority (December 2017)

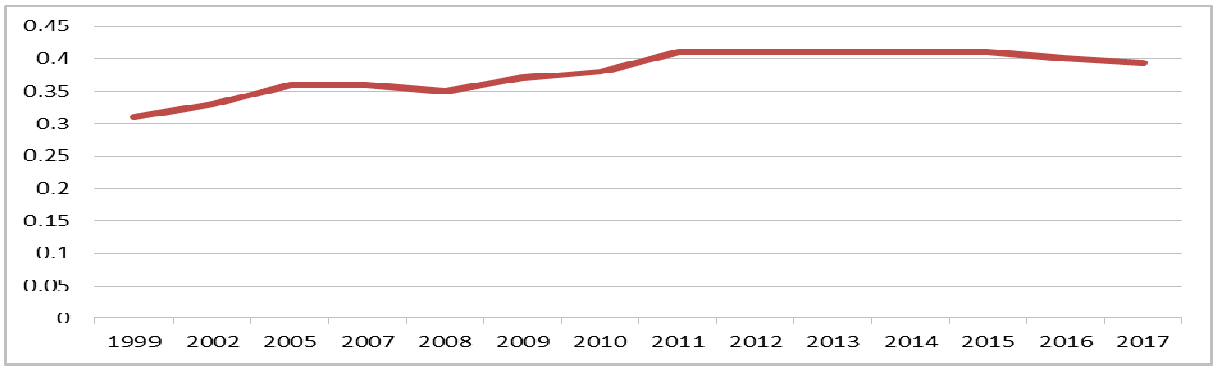
Graphic 1.2. Credit Interest Rate in ASEAN Countries



Sources: Monetary Authority of Singapore, Bank of Thailand, Financial Services Sector Authority, Bank Negara Malaysia, and Bangko Sentral ng Pilipinas.

High cost of borrowing money in Indonesia affect the economy, including inequality. Furthermore, Indonesia is a country that is the inequality is relatively high, represented from high gini coefficient. Gini coefficient was reported at 0.39 percent in March 2017 (figure 1.3). High cost of borrowing money can hamper the access of finance, especially for low income society, to access baking credit, either for productive or consumptive activities. Therefore, decreasing interest rate can encourage people to borrow more and spend more, thus the decreasing interest rate tend to decrease economic gap.

Figure 1.3. Gini Coefficient in Indonesia



Sources*:* Financial Services Sector Authority

THEORIES AND LITERATURE REVIEW

Financial services sector has a close relationship with economic growth. Cournede and Denk (2015) argue that conceptually, the development of the financial services sector will increase economic growth over the long term by allocating capital for productive activities. Furthermore, Cournede and Denk explained that the development of the financial services sector allows firms and households to access loans for activities that can promote economic growth.

On the other hand, Cournede, Denk and Hoeller (2015) in his journal entitled 'Finance and Inclusive Growth', provides another important finding that the growth of the financial services sector could potentially foster greater income inequality. Increasing inequality arises because upper-middle class people have easier access to credit and benefit from their investment opportunities (ibid). On the other hand, the lower middle class is more difficult in accessing credit, one of which is influenced by risk factors.

The same thing is also stated by Denk and Cazenave-Lacroutz (2015) that credit growth will widen the inequality in society. Denk and Cazenave-Lacroutz argue that upper middle class people have a higher chance of investing. Furthermore, Denk and Cazenave-Lacroutz also argue that low-income households are more likely to be rejected in applying for credit. This will be worsened by the reduction of interest rate (cost of borrowing money) to consumers who have higher incomes, due to lower risk in lending.

In another study, Denk (2015) argued that the high income of workers in the financial sector also exacerbated inequality. Denk argues that in Europe, workers in the financial

services sector account for 19 percent of 1 percent of Europe's most expensive labour. In fact, the total proportion of total employment in the financial sector in Europe is only 4 percent of total workforce in Europe.

SIMULATION SCENARIO

This study aims to provide an overview of the effect of decline in bank lending rates (cost of borrowing money) on quality economic growth in the long term. The methodology used in this study is the Computable General Equilibrium (CGE) model based on the dynamic indoterm model. Adjustments were made to the growth of the financial services sector in the base model with the real growth of the financial services sector. Adjustments are made to the variable "alab_o", i.e. labour productivity in the financial sector. This is intended to provide a more representative picture of the actual condition of the Indonesian financial services sector when shock is made.

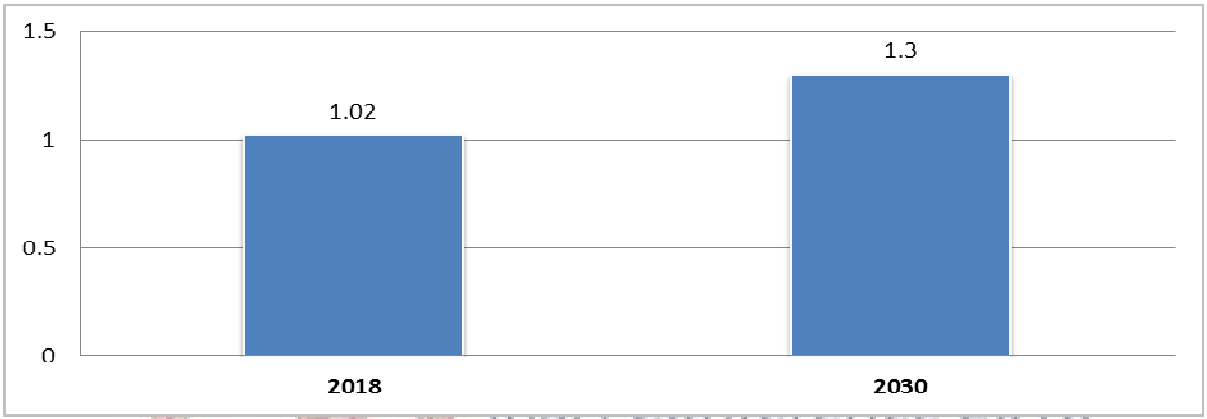
Then, the simulation scenario is the reduction of the cost of borrowing money in the financial services sector by 10 percent of the current cost of borrowing money. The results of this scenario are expected to provide an overview of the effect of cost of borrowing money on general economic growth, which can then be seen from the sectoral and regional side. Furthermore, this study will also see the effect of such scenarios on efforts to reduce inequality.

RESULTS

Based on the simulation results, the decrease in cost of borrowing money in the financial services sector could have an impact on the output of the financial services sector. Seen from the simulation results, from 2018 to 2022 it is estimated that the financial service sector output will be 1.9 to 3.36 percent lower than the baseline (in the absence of a decrease in cost of borrowing money). Then in the long run, i.e. in 2030, the decrease in cost of borrowing money causes the financial service sector output 2.8 percent lower when compared to the baseline. This suggests that a decrease in cost of borrowing money will lead to lower levels of output in the financial services sector in both the short and long term. Nevertheless, the decrease in cost of borrowing money can provide greater benefits or positive impacts on the economy.

In general, the decrease in cost of borrowing money will have a positive impact on the output of the Indonesian economy. In 2018, a decrease in the cost of borrowing money in the financial services sector will cause Indonesia's GDP 1.02 percent higher, compared to the baseline. In the long run, in 2030, a decrease in the cost of borrowing money in the financial services sector will cause Indonesia's GDP to be 1.3 percent higher than the baseline (See Figure 4.1). Thus, the decrease in cost of borrowing money in the financial services sector will increase the output of the economy in the long run.

Figure 4.1. GDP Output in the Long-Term
After the Decrease of Cost of borrowing money



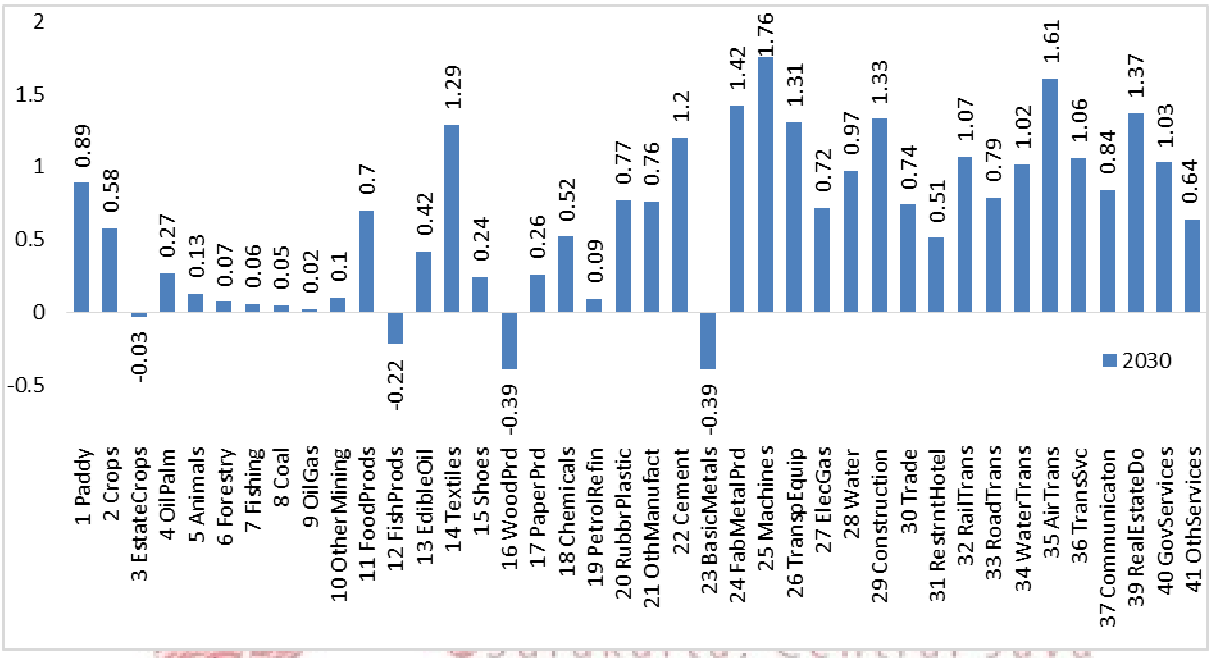
Source : Results of Model Calculations

In line with the positive impact of decreasing cost of borrowing money on general economic growth, the decrease in cost of borrowing money also has a positive impact on sectoral growth. The decline in cost of borrowing money in the long term will have a positive impact in almost all economic sectors, especially dominated by capital-intensive sectors. These sectors benefit substantially by decreasing cost of borrowing money because the input-between-component products in those sectors are predominantly in need of financial services products.

The decrease in cost of borrowing money will provide the highest long-term increase in output in the sector: (1) Machinery 1.76 percent, (2) Air Transportation (1.61 percent), (3) Metal Production (Fab Metal Production) of 1.24 percent, (3) Real Estate by 1.37 percent, and (4) Construction (1.33 percent) (see Figure 4.2). While the sectors that actually experienced a decrease in growth include the following sectors: (1) Fish Production of 0.22 percent, (2) Wood Production by 0.39 percent, (3) Basic Metals by 0.39 percent, (4) Estate Corps of 0.03 percent and (5) the financial services sector itself of 2.8 percent. This shows

that these sectors do not rely too much on the financial services sector in their business activities. Therefore, the capital-intensive sectors will divert their owned capital to purchase capital goods so that they can expand their business activities that will have long-term impacts.

Figure 4.2. The Effect of Decreasing the Cost of Borrowing Money on The Sectoral Growth (exclude Financial Services Sector)*



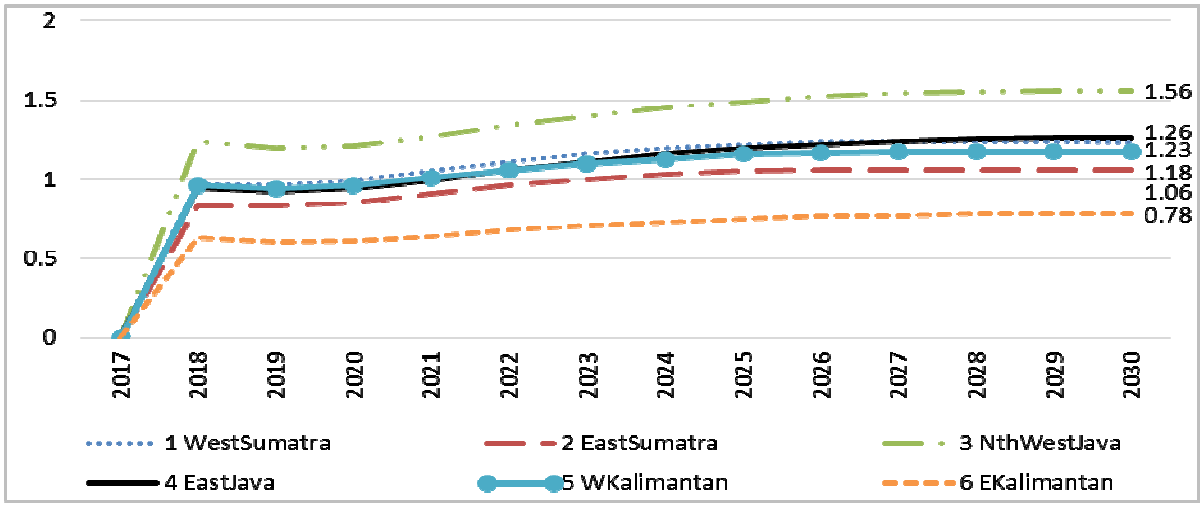
Source : Results of Model Calculations
Note : Outside the financial services sector

When viewed regionally, the decrease in cost of borrowing money will have an impact on increasing regional output. In the long run, the average increase in regional output grew by 1.15 percent with different increases in each region.

For West Indonesia, West Java is the region with the highest growth of output at 1.56 percent, considering that West Java is a centre of economic growth. Followed by East Java (1.26%), West Sumatra (1.23%), West Kalimantan (1.18%), East Sumatra (1.06), and East Kalimantan (0.78%) (figure 4.3.).

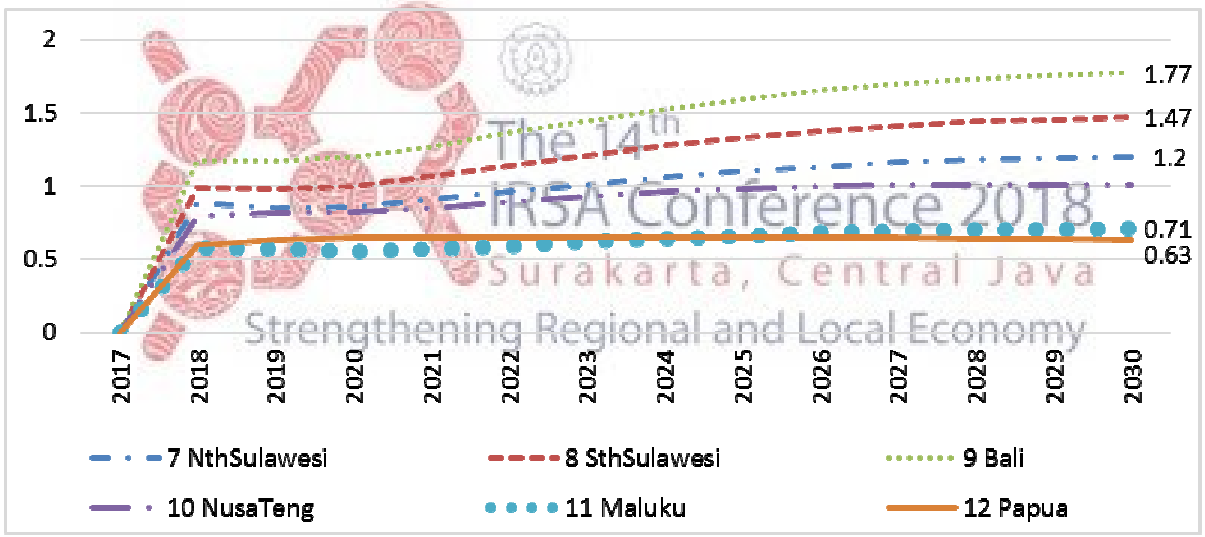
While for the eastern part of Indonesia, Bali is the region with the highest increase of output, which is 1.77% followed by South Sulawesi (1.47%), North Sulawesi (1.2%), Nusa Tenggara (0.71%), Maluku (0.71%) and the last of Papua (0.62%) (figure 4.4.).

Figure 4.3. The Effect of Decreasing Cost of borrowing money on Regional Growth - Western Indonesia



Source: Results of Model Calculations

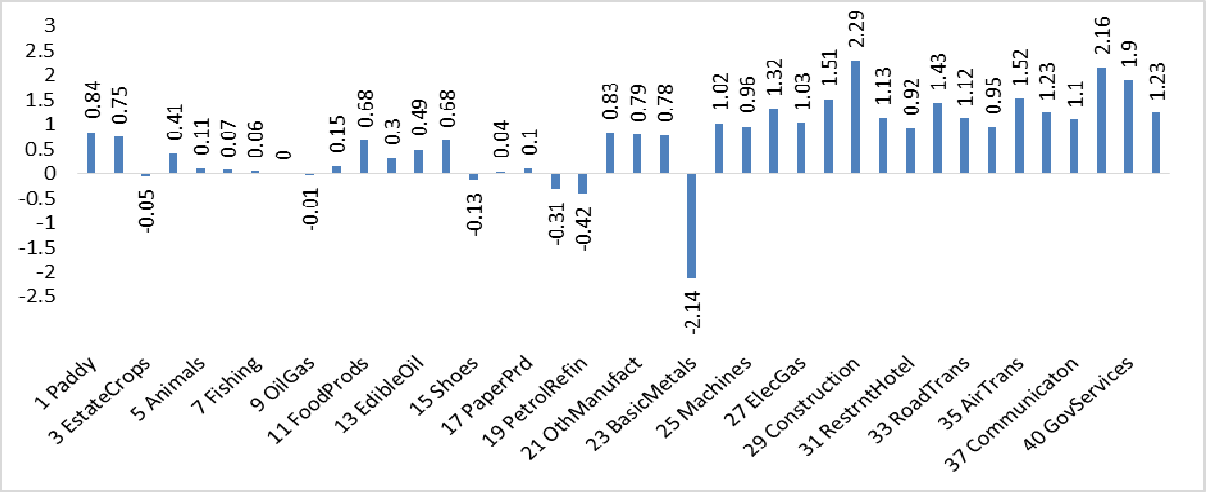
Figure 4.4. The Effect of Decreasing Cost of borrowing money on Regional Growth - Eastern Indonesia



Source: Results of Model Calculations

Bali is a region in Eastern Indonesia which has the highest output increase. Based on the shock result, the increase of sectoral output which dominates Bali area such as construction sector which increased by 2.29 percent, Real Estate sector by 2.16 percent, government service sector by 1.9 percent and Air Transportation sector which is 1.52 percent (figure 4.5.). This is in line with the condition of Balinese economy which is dominated by these services.

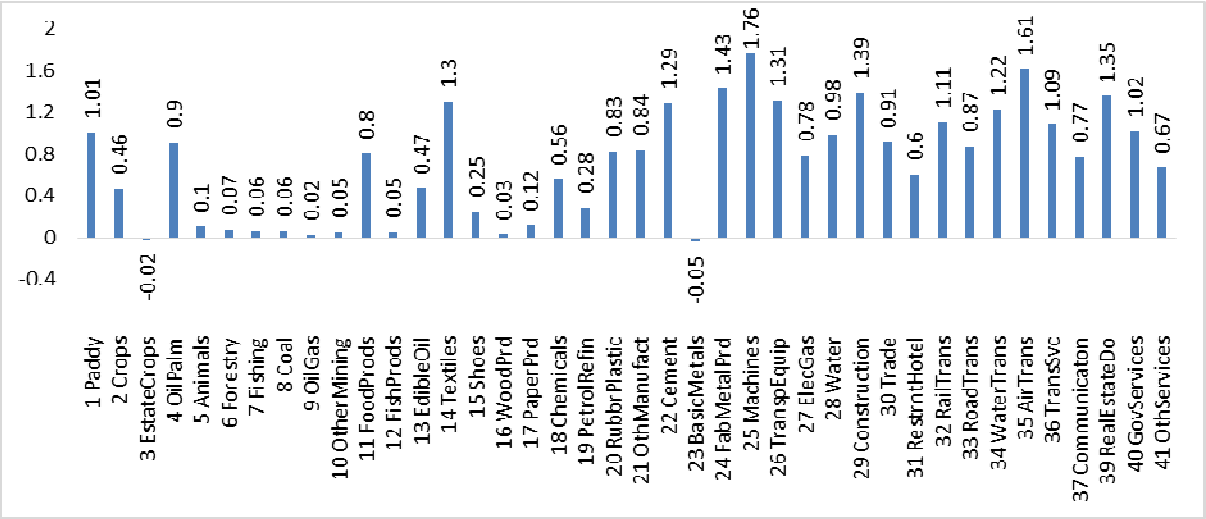
Figure 4.5. The Increased Sectoral Output (Bali Region)*



Source : Results of Model Calculations
Note : *Outside the financial services sector

For the Western Indonesia region, West Java experienced the greatest increase in output. The sectors that dominate the output increase in West Java are: (1) the machinery sector is 1.76, (2) the air transportation sector is 1.61 percent, (3) and the metal production sector is 1.43 percent (Figure 4.6.). This is in line with the economic condition of West Java which is the region with the characteristics of the capital-intensive economy and dominated by industry-based sectors.

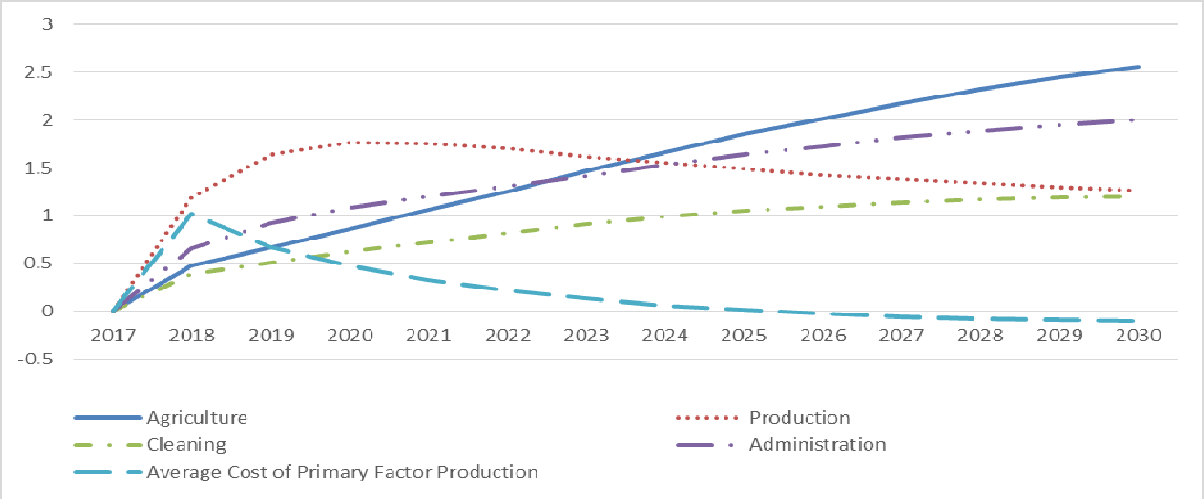
Figure 4.6. The Increased Sectoral Output (Western Indonesia Region)*



Source : Results of Model Calculations
Note : *Outside the financial services sector

Furthermore, this study also found out that the reduction of cost of borrowing money in general will reduce inequality, where inequality occurs if the income of the owner of capital is higher than the wage of labour. With the decrease in cost of borrowing money, labour wages in general have increased by 2.56 percent in agriculture, 2 percent in the Administration sector, and 1.27 percent in Production sector (figure 4.7). While profits for the owners of capital decreased by 0.08 percent. Thus, the decrease in the cost of borrowing money in the financial services sector will have an effect on quality economic growth, namely the effort to reduce inequality.

Figure 4.7. The Effect of Decrease Cost of borrowing money on Price of Production Factor



Source : Results of Model Calculations

CONCLUSION

Based on the simulation results, the 10 percent reduction of cost of borrowing money in the financial services sector can affect several things:

1. Decrease in cost of borrowing money will cause the level of output of the financial services sector slightly lower, in both the short and long term. In the long run, the financial services sector output is 2.8 percent lower than the baseline (in the absence of a decrease in cost of borrowing money).
2. On the other hand, the decrease in cost of borrowing money will have a positive impact on the output of the Indonesian economy. In the long run, by 2030, a decrease in the cost of borrowing money in the financial services sector will cause Indonesia's GDP to be 1.3 percent higher than the baseline.

3. The decrease in cost of borrowing money has a positive impact on sectoral growth. The decline in cost of borrowing money in the long term will have a positive impact in almost all economic sectors, especially dominated by capital-intensive sectors.
4. The decrease in cost of borrowing money will have an impact on increasing regional output. In the long run, the average increase in regional output grew by 1.15 percent. In the eastern part of Indonesia, Bali is the region with the highest increase of output, which is 1.77. As for West Indonesia, West Java is the region with the highest increase of output of 1.56 percent.
5. Decrease in cost of borrowing money in general will reduce inequality. With the decrease in cost of borrowing money, labour wages in general have increased, on the other hand profits for capital owners have decreased. Thus, the decrease in the cost of borrowing money in the financial services sector will have an effect on quality economic growth, namely the effort to reduce inequality.

POLICY IMPLICATION

Thus, although the output of the financial services sector declined slightly due to a decrease in the cost of borrowing money in the financial services sector, on the other hand it could have a positive impact on the economy in general. Therefore, the decline in loan interest rates that reflect the cost of borrowing money is the outcome to be conveyed in this study.

The decline in lending rates should be followed by an analysis of the components of the lending rate. According to Muljawan et al. (2) Overhead Cost (OHC), (3) Margin, and (4) Risk Premium (2014), in general, there are four interest-forming components, namely: (1) Cost of Fund for Credit (HPDK);

According to Muljawan et al. (2014), from the four components, the largest component of the interest rate is HPDK, which is 45.81 percent for corporations and 43.30 percent for retail. Furthermore, Muljawan et al. (ibid) explains that as much as 74.48 percent calculation of HPDK is contributed by the interest expense of Third Party Funds (DPK). However, as of December 2017, deposit rates (including deposits) are in fact in decline. Thus, the decline in deposit interest rates should be immediately followed by a decrease in loan interest rates, given that the deposit interest rate becomes the largest component of credit lending.

Furthermore, according to Muljawan et al. (2014), the second largest component is Overhead Cost (OHC). Labour cost is the biggest contributor to Overhead Cost (OHC) with a share of 46.42 percent. In this regard, Muljawan et al. (2014) is still very relevant to be done, namely efforts to improve labour productivity, both in terms of lending, fund raising, and earnings, so as to improve bank performance.

In addition, Muljawan et al. (2014) explains that the components of HPDK and OHC are an illustration of the level of bank efficiency. Both of these components greatly affect the calculation of the formation of interest rates of credit by 70 percent (ibid). Muljawan et al. (2014) strongly emphasizes that the efficiency of HPDK and OHC greatly affects the formation of loan interest rates. Thus efforts to reduce lending rates can be focused on improving banking efficiency.

The increase in bank efficiency is expected to encourage the decline in loan interest rates. The downturn in lending rates is expected to be one of the right steps to encourage quality economic growth, given the lending rates describe the cost of borrowing money that must be issued by the debtor. If lending rates can go down, the cost of borrowing money for the debtor goes down. Costs previously used to pay the burden of lending rates, can then be transferred to more productive activities and ultimately can boost the economy.

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FINANCIAL DEEPENING: COMPARISON BETWEEN INDONESIA AND THAILAND

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ABSTRACT

The main purpose of this research is to know the influence of the determinants of financial deepening such as GDP per capita income, trade, inflation, real interest rate and exchange rate in Indonesia and Thailand and to know how the independent variables affect the financial deepening between the two countries. Indonesia and Thailand are chosen because both countries have a similarity in social and cultural conditions. The measurement of financial deepening used in this study is the ratio of M2 / GDP of each country. The analysis uses panel data with common effect method to find the influence factor of financial deepening in Indonesia and Thailand. The results showed that the variables of trade openness and exchange rate have a significant effect on financial deepening.

Key words: data panel, Indonesia, Thailand, financial deepening, trade openness, interest rate, exchange rate.

INTRODUCTIONS

In this years, many studies have examined the link between financial deepening and economic development as well as the link between financial development and real sector via economic growth from both micro and macro perspectives, example, Levine (2004), Fitzgerald (2008), Nzotta and Okereke (2009), etc. In this study we will look at how selected variable is linked to financial sector deepening. Few will doubt that GDP per capita, Trade, Inflation, Real interest rate and Official exchange rate through access to financial services leads to improvement in people‘s lives. Claessen and Feijen (2006) found that without a developed financial sector, for example, domestic savers and foreign investors would be more hesitant to part with their money to otherwise sound investments, resulting in lower economic output as measured by GDP and household welfare. Financial intermediation of growth leads to financial deepening, which refers to the greater financial resource mobilization in the formal financial sector and the ease in liquidity constraints of banks and enlargement of funds available to finance projects, Fisher (1933).

Several studies have employed methods for cross-sectional data analysis with a hope that the causalities between the variables of interest could be generalized (e.g., Yanikkaya, 2003; Harrison, 1996). The problem of using a cross-sectional method is that by grouping countries at different stages of trade openness, financial and economic development could not take into

account the country-specific effects of trade openness and financial depth on economic development and vice versa. Particularly, it fails to explicitly address the potential biases arising from the existence of cross-country heterogeneity, which may lead to inconsistent and misleading estimates (Ghirmay, 2004; Casselli et al., 1996).

In Indonesia and Thailand, finance deepens in it is necessary to ascertain if the financial regulators have maintained a good balancing between regulating the financial sector effectively for the determinants of financial deepening to work effectively at all levels of the economy and providing a good environment that will promote sufficient and widely accessible financial services with less systemic crises. Studies have shown that, several indicators of aggregate welfare has fallen dramatically in the aftermath of a disappointing financial sector reforms, severely affecting the most vulnerable and poorest people and resulting in a substantial welfare loss, Honohan (2004b), Jalilian and Kirkpatrick (2001). Although, high and sustainable economic growth is central to improvement of aggregate welfare, studies by Asenso-Okyere et al (1993) revealed that promotion of efficient, sufficient and widely accessible financial services (rural banking inclusive) is a key to achieving pro-poor growth and welfare gains. Financial deepening can affect aggregate welfare in various ways and in many outcomes. Most literature has shown that firms‘ and households‘ access to financial services rises with financial deepening, Beck et al (2006).

A well function of financial system creates strong incentives for investment in order to increase productivity. Foster trade and business-linkages in order to facilitate technology transfer and improved resources used. Provide broad access to assets and markets in order to build up the asset base of the poor as well as increase the returns to such assets.

A well function of financial system creates strong incentives for investment in order to increase productivity. Foster trade and business-linkages in order to facilitate technology transfer and improved resources used. Provide broad access to assets and markets in order to build up the asset base of the poor as well as increase the returns to such assets. Remittances from abroad and domestic transfers are important source of income for the poor, thus, reducing vulnerability. Where financial sector deepening leads to lower costs, the poor will benefit from more secure and rapid transfers, and easier access to transferred funds. Also, they enable the poor to draw down accumulated savings and borrow to invest in income-enhancing assets and start micro enterprises, thus, wider access to financial services, generates employment which increase incomes and welfare gains, DFID (2004).

Based on the foregoing discussion, the study is designed to answer this critical question; how GDP per capita, trade openness, inflation, real interest rate and official exchange rate affect the financial deepening to work effectively at all levels of the economy and providing a good environment that will promote sufficient and widely accessible financial services with less systemic crises?

The countries with a relatively well-developed financial sector have a comparative advantage in industries and sectors that rely on external finance (Kletzer and Bardhan, 1987). Extending this argument and allowing both sectors to use external finance, one being more credit

intensive due to increasing returns to scale, the level of financial development is found to have an effect on the structure of the trade balance (Beck, 2002). On the one hand, reforming the financial sector might have implications for the trade balance if the level of financial development is a determinant of countries' comparative advantage. On the other hand, the effect of trade reforms on the level and structure of the trade balance might depend on the level of financial development. More recently, in building a model with two sectors, one of which is financially extensive, Do and Levchenko (2004) find that openness to trade will affect demand for external finance, and thus financial depth, in the trading countries. In particular, their model predicts that in wealthy countries, trade should be related with faster financial development. On the contrary, in poor countries, more trade should slow financial development, because these countries import financially intensive goods rather than develop their own financial system.

Multi-causal linkages among trade openness, economic development and financial deepening emerge from the evidence that not only financial development favourably impacts but the extent of financial activity itself depends positively on growth (e.g., Bencivenga and Smith, 1998). This is because the cost of financial services carries a fix component that falls with the volume of financial transactions. As such, financial markets will develop only when a threshold level of income is attained. But, if financial outcomes are endogenous to economic development, the question of interest would be how greater trade integration affects the state of financial development itself.

Gries et al. (2009) contends that linkages between financial depth and trade could allow for more complex paths to economic development. In particular, if increasing trade contributes to a higher level of financial development, this may promote economic growth where financial depth is found to enhance growth via the allocative and accumulative channels. But if financial deepening induces trade, it may subsequently foster economic development where openness to trade is found to be a growth factor.

Blackburn and Hung (1998) employs the well-known endogenous growth model of Romer (1990) to explore the multi-causal relationships among trade openness, economic growth and financial development. In the model, economic growth is driven by horizontal innovation in intermediate goods, which are encouraged by expanding the markets for new goods, e.g., through trade liberalization. This implies that more firms would enter the research sector and seek for external financing of risky and independent research projects. As a result, the agency cost related to the need for depositors to monitor the intermediary portfolio is reduced. The reduction in the agency cost of financial intermediation leads to higher economic growth. This is because firms in the research sector start operating at positive profits and this encourages new firms to enter the market. The rate at which new process are invented is thus increased. This is an indirect financial market's gain from trade. Specifically, trade liberalization can accelerate innovations and the development of financial markets through scale effects. Hence, there theoretically exists a complementary relationship between trade and financial development.

METHODOLOGY

In this research, we used descriptive analysis and panel data regression analysis using Microsoft Excel software and Stata 13. Descriptive Analysis to describe the data of each variable for each country with Microsoft Excel software through diagrams and histograms. Interpret or describe data for each variable based on diagrams and histograms. The regression analysis of panel data used in the study aims to determine the effect of independent variables on the dependent variable, as well as to see the positions of intercept or cross effect during the study period Mercan et al (2013) and Bibi et al (2014). The type of data used in this study is secondary data in the form of panel data, which is a combination of time series data and crosssection data. The time series data in the study consisted of 1970-2016 and cross sections covering 2 countries namely Indonesia and Thailand. The data in the study were obtained from several international institutional database sources such as ADB, IFS, Worldbank, IMF and various other sources related to the research.

Annual time-series observations are used as they are sufficient to ensure the quality of the analysis, as argued by Hakkio and Rush (1991). The choice of the countries to be included in the sample of this study is due to the availability of comprehensive data set. As for economic development, the real GDP per capita is used and labeled as X1. For trade openness, the sum of exports plus imports to real GDP is used and labeled as X2 because this measure is a simple and common indicator of trade openness as suggested by Harrison (1996). The inflation is used and labeled as X3 because this captures the macroeconomic environment. The real interest rate is used labeled as X4, exchange rate is used and labeled as X5. The panel data regression model is formulated in the form of the equation below:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \varepsilon_{it}$$

Y = Financial deepening (broad money of GDP)
X1 = GDP per capita
X2 = trade openness
X3 = inflation
X4 = real interest rate
X5 = official exchange rate
α = constants
β = coefficient
ε = error

This research uses regression analysis of panel data. The regression analysis of panel data in the study used the best model approach between common effect, fixed effect and random effect determined based on Hausman test, Chow test and Lagrange Multiplier test. In panel data regression analysis requires classical assumption test such as heteroscedasticity, autocorrelation and multicollinearity.

1. Chow test. is a test of whether the true coefficients in two linear regressions on different data sets are equal. In econometrics, it is most commonly used in time series

analysis to test for the presence of a structural break at a period which can be assumed to be known a priori (for instance, a major historical event such as a war). In program evaluation, the Chow test is often used to determine whether the independent variables have different impacts on different subgroups of the population. Basically, to choose between common effect and fix effect model. If, p-value < α, we used fix effect.

$$F - \frac{RSS_c - (RSS_1 + RSS_2)/k}{RSS_1 + RSS_2 / n - 2k}$$

2. Hausman Test. The specification test devised by Hausman is used to test for whether the random effects are independent of the right hand side variables. This is a general test to compare any two estimators. The test is based on the assumption that under the hypothesis of no correlation between the right hand side variables and the random effects both fixed effects and random effects are consistent estimators of but fixed effects is inefficient (This is the assumption with random effects). Whereas under the alternative assumption (i.e. that with fixed effects) fixed effects is consistent but random effects is not. The test is based on the following Wald statistic:

   $W = [\beta_{FE} - \beta_{RE}]' \Psi^{-1} [\beta_{FE} - \beta_{RE}]$, where
   $Var[\beta_{FE} - \beta_{RE}] = Var[\beta_{FE}] - Var[\beta_{RE}] = \Psi$

   W is distributed as X^2 with (K-1) degrees of freedom where K is the number of parameters in the model. If W is greater than the critical value obtained from the table then we reject the null hypothesis of that both estimators are consistent i.e. of "no correlation between the right hand side variables and the 'random effects'" in which case the fixed effects model is better.
3. The Lagrange Multiplier test is used for detecting autocorrelation and to choose between random effect and common effect model.

$$y_t = \alpha + \beta x_t + u_t$$
$$u_t = \delta_0 + \delta_1 x_t + \delta_2 u_{t-1} + \delta_3 u_{t-2} + \varepsilon_t$$

   An hypothesis that is often times tested when estimating a random-effects model is the null hypothesis of no random effects (classical linear regression model is the appropriate model) against the alternative hypothesis of random effects (random-effects model is the appropriate model). This hypothesis is specified as follows

   H_0: $\sigma_\omega^2 = 0$ (Classical linear regression model is appropriate)
   H_1: $\sigma_\omega^2 \neq 0$ (Random-effects model is appropriate)

   Note that if $\sigma_\omega^2 = 0$ then each unit has the same intercept, and therefore the classical linear regression model is the appropriate model. If $\sigma_\omega^2 \neq 0$ then different units have different intercepts, and therefore the random-effects model is the appropriate model.

ANALYSIS AND RESULT

Financial deepening as noted before means an increase in the supply of financial assets in the economy. It is important to develop some models of the widest range of financial assets, including money. The sum total of all the financial assets is one broad measure that represents financial deepening. The range of financial assets to be considered in this study as measures of financial deepening include, ratio of broad money (MS2) to GDP, GDP per capita, trade openness, inflation, real interest rate and official exchange rate.

Test Result: The model specification test conducted in this research is Hausman Test which is aimed to have the accuracy of the model used between fixed effect or random effect. From the table below we can see that prob>chi2 is not positive definite so this model is appropriate in random effect model.

Table 1. Hausman Test

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
X1	.0017061	.0017061	0	0
X2	.7792902	.7792902	0	0
X3	-.1913513	-.1913513	0	0
X4	.338524	.338524	0	0
X5	-.0010634	-.0010634	0	0

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(0) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 0.00
Prob>chi2 = .
(V_b-V_B is not positive definite)

Source: stata 13, computed by researcher

The next model specification test is Lagrange Test. That test is intended to have the accuracy of the model used between random effect or a common effect. From the table below we can see that prob>chi2 > α (0,05) so this model is appropriate in common effect model or simply pooled least square model.

Table 2. Lagrange Multiplier Test

Breusch and Pagan Lagrangian multiplier test for random effects

Y[NEGARA,t] = Xb + u[NEGARA] + e[NEGARA,t]

Estimated results:

	Var	sd = sqrt(Var)
Y	966.475	31.08818
e	62.23432	7.888873
u	0	0

Test: Var(u) = 0

chibar2(01) = 0.00
Prob > chibar2 = 1.0000

Source: stata 13, computed by researcher

Table 3. Heteroskedasticity Test

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of Y

         chi2(1)      =     5.96
         Prob > chi2  =   0.0146
```

Source: stata 13, computed by researcher

There is heteroscedasticity in the model so that the pls model used regression with Driscoll-Kraay standard errors. Driscoll and Kraay (1998) standard errors for coefficients estimated by pooled OLS/WLS or fixed-effects (within) regression. The error structure is assumed to be heteroskedastic, autocorrelated up to some lag, and possibly correlated between the groups (panels). Driscoll-Kraay standard errors are robust to very general forms of cross-sectional ("spatial") and temporal dependence when the time dimension becomes large. This nonparametric technique of estimating standard errors does not place any restrictions on the limiting behavior of the number of panels. Consequently, the size of the cross-sectional dimension in finite samples does not constitute a constraint on feasibility - even if the number of panels is much larger than T. However, note that the estimator is based on large T asymptotics. Therefore, one should be somewhat cautious with applying this estimator to panel datasets with a large number of groups but a small number of observations over time. This implementation of Driscoll and Kraay's covariance estimator works for both, balanced and unbalanced panels, respectively. Furthermore, it is capable to handle missing values.

Table 4. Regression with Driscoll-Kraay Standard Errors

```
Regression with Driscoll-Kraay standard errors   Number of obs      =        72
Method: Pooled OLS                               Number of groups   =         2
Group variable (i): NEGARA                       F(  5,     40)     =    256.82
maximum lag: 3                                   Prob > F           =    0.0000
                                                 R-squared          =    0.9224
                                                 Root MSE           =    8.9812
```

Y	Coef.	Drisc/Kraay Std. Err.	t	P>|t|	[95% Conf.	Interval]
X1	.0017061	.0015885	1.07	0.289	-.0015044	.0049166
X2	.7792902	.1017056	7.66	0.000	.5737356	.9848448
X3	-.1913513	.3475535	-0.55	0.585	-.8937831	.5110805
X4	.338524	.5766239	0.59	0.560	-.8268764	1.503924
X5	-.0010634	.0002966	-3.59	0.001	-.0016628	-.0004639
_cons	7.858676	9.893634	0.79	0.432	-12.1371	27.85446

R-square shows the value of 0.9224 is smaller than the critical value of α so that the data is distributed evenly. It is also show that all independent variables difine the dependent variable of 92.24%. the rest is affected by variables outside the model.

F-test shows the value 0,000 which is means all independent variables simultaneously have a significant effect on dependent variable.

T-test (partial test) shows that variable X2 and X5, trade openness and official exchange rate is said to be significant at the 5% level because both of them show a value below 0.05.

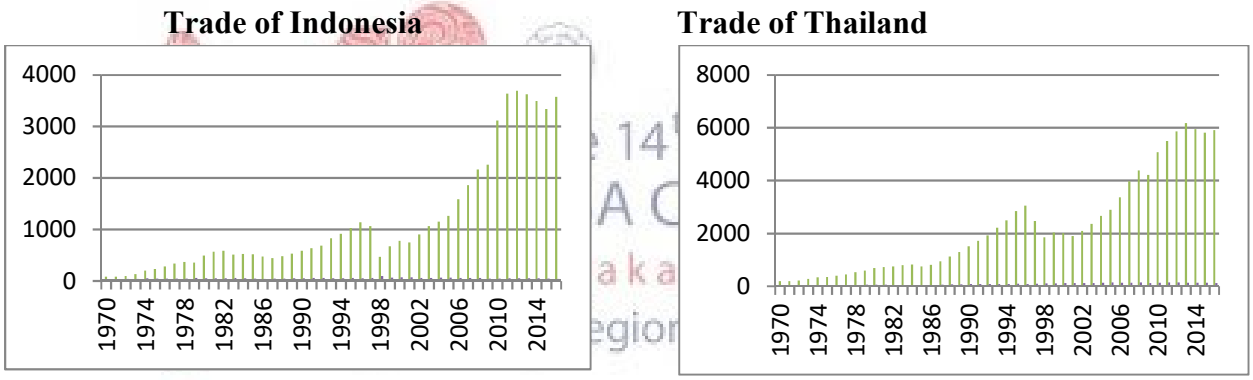
Root MSE shows the value 8,9812 less than standard deviation value 33,59, which is means that the regression model is appropriate.

Then the regression equation is:

$$Y_{it} = 7{,}86 + 0{,}0017\ X_{1it} + 0{,}7792\ X_{2it} - 0{,}1913\ X_{3it} + 0{,}3385\ X_{4it} - 0{,}0011 X_{5it} + \varepsilon_{it}$$

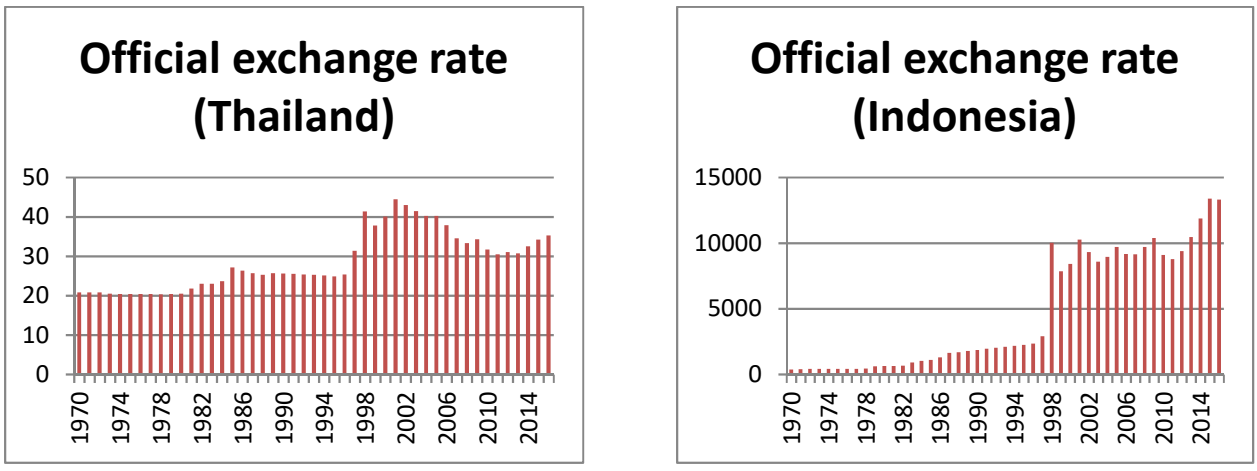
Further, trade openness and exchange rate in both Indonesia and Thailand has a significant affect on the financial deepening to work effectively at all levels of the economy and providing a good environment that will promote sufficient and widely accessible financial services with less systemic crises by increase trade both in export and import sectors. From this histogram below we could see that trade in Indonesia is more fluctuating than Thailand which tends to increase. In this trade sector, Thailand is higher than Indonesia. Both of Indonesia and Thailand has a sharp decline in 1998 because of the crises.

Figure 1. Trade in Indonesia and Thailand



Source: ADB (Asian Development Bank)

Figure 2. Official Exchange Rate in Indonesia and Thailand



Source: ADB (Asian Development Bank)

From the regression table above we could see that exchange rate has a negative correlation to financial deepening which is means the higher the exchange rate the weaker the economy. Sethapramote (2010) argues that Thailand's external-oriented economy has relatively small output growth relying on international trade movements, but is highly dependent on international financial channels as movements in the financial channel create a marginal effect on domestic consumption and Thailand's international capital flows. The IMF and Thailand worked together to create a program which should be successful because of Thailand's dedication. However, in the short run, Thailand's economy has contracted due to declines in manufacturing and private investment. One of the main reasons for the contraction is the high interest rates imposed as part of the IMF's rescue package. Although Thailand's exchange rate is still low, the raised interest rates have steadily appreciated the currency, as well as kept inflation down (Hill, 1998). Indonesia's exchange rate turnover is significantly lower than in most Emerging Markets peers. Indonesia has high exchange rate value which is means that the rupiah is weak. Since 1998, rupiah the rupiah continues to decline.

CONCLUTION

As conclusion in this research that partially or simultaneously openness of trade (export and import) have positive and significant impact to financial deepening. a positive effect which means increase in trade openness will also bring an increase for financial deepening which is expected to work effectively at all levels of the economy and providing a good environment that will promote sufficient and widely accessible financial services with less systemic crises by increase trade both in export and import sectors. Strengthening exports sector would be better for both Indonesia and Thailand to increase its financial deepening so that the aggregate welfare of both countries can be increased.

Besides, maintaining exchange rate stability and strengthening the currency of both countries to maintain financial security for the 1998 crisis does not happen again. Strengthening the currency will also bring an increase for financial deepening. Some of the things that governments or policy makers can do to boost the economy in Indonesia and Thailand include: boosting export growth through commodity exports that have comparative advantages, importing for certain commodities such as production raw materials, setting taxes to restrict imports of goods consumptive and luxurious, and optimizing the use of L/C in all international trade transactions in every leading commodity, so that the source of income received from trade channels can increase and be able to suppress current account deficit. Then on the financial channel can be done several steps such as providing incentives to investors who do long-term reinvestment, and the government can strengthen institutions that are tasked to oversee international trade and finance activities, so that some privileges are set directed to the right sector.

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TRANSMISSION MECHANISM OF WORLD OIL PRICE FLUCTUATIONS EFFECTS ON MACROECNOMICS IN INDONESIA (IS-MP-PC MODEL)

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ABSTRACT

The issue of world oil price fluctuations has been a concern in recent decades, as countries in the world both exporting and oil importing countries are affected by world oil price fluctuations. Indonesia as a country that has the characteristics of small open economy certainly can not be separated from the effects of world oil price shocks. This study aims to see whether or not the effect of short-term and long-term effects of world oil price fluctuations on macroeconomics in Indonesia from 1985 to 2016 using the Vector Error Correction Model (VECM). The Indonesian macroeconomic variables used are economic growth, exchange rate, government expenditure and tax revenue included into Investment-Saving (Model IS), interest rate included into Monetary Policy (MP Model), and inflation included into Philips Curve (PC Model). Impulse response functions (IRF) are used to describe the response of world oil price shocks to macroeconomics in Indonesia. The results of this study indicate that in the short term all variables included in the model of IS-MP-PC in the previous year have a significant effect due to the effects of world oil price fluctuations. However, in the long run only four variables that have a significant effect on the effects of world oil price fluctuations include inflation, interest rates, government spending and tax revenues. Meanwhile, the response shown by each macroeconomic variables on the effect of world oil price fluctuation varies according to the condition of Indonesian economy. Overall all macroeconomic variables show stability response in the period of 10 to the end of the period. However, of all variables only economic growth variables and exchange rates that respond negatively to the effects of world oil price fluctuations.

Keywords: World Oil Price, Government Expenditure, Tax Revenue and VECM.

INTRODUCTION

The oil price shocks have been one of the issues discussed in the energy economy literature since the mid-1970s. Therefore, the oil price shock in 1973 continued to increase and become the talk of the economy that has never happened before. Changes and fluctuations in oil prices can directly hamper the growth of emerging economies and oil importing countries (Aimer, 2016). Indonesia as a developing country highly vulnerable to affected world oil price shocks. The increase in world oil prices continue to cause rising prices in the country increased the impact will be inflation.

The movement of world oil prices fluctuated causing almost all countries to worry about this condition. The increase of world oil prices could put pressure on macroeconomic variables of a country. Based on the results of research Cunado and de Garcia (2005) states that in the short term the world oil price shocks have a less significant effect on inflation and economic activity in Asian countries. While Jimenez and Sanchez (2004) stated that the increase in oil prices had a significant effect on inflation only in a few countries that joined the OECD in the short term.

Brown and Yucel (2002) stated that the increase in oil prices is temporary, the effect on output in the short term becomes greater in than the long-term effects can be managed so that the level of consumption. In addition, it can increase the real interest rate in equilibrium conditions. With the slowdown in output growth and rising real interest rates, the demand for real cash balances fall, and to a certain monetary aggregate growth rate, inflation rate increases. Therefore, the oil price increase lowers GDP growth and increases in real interest rates and the inflation rate measured (Ito, 2010).

Based on the data Reports U.S. Energy Information Administration The development of world oil prices from 1985 to 2016 as a whole can be said to have 4 fluctuations.

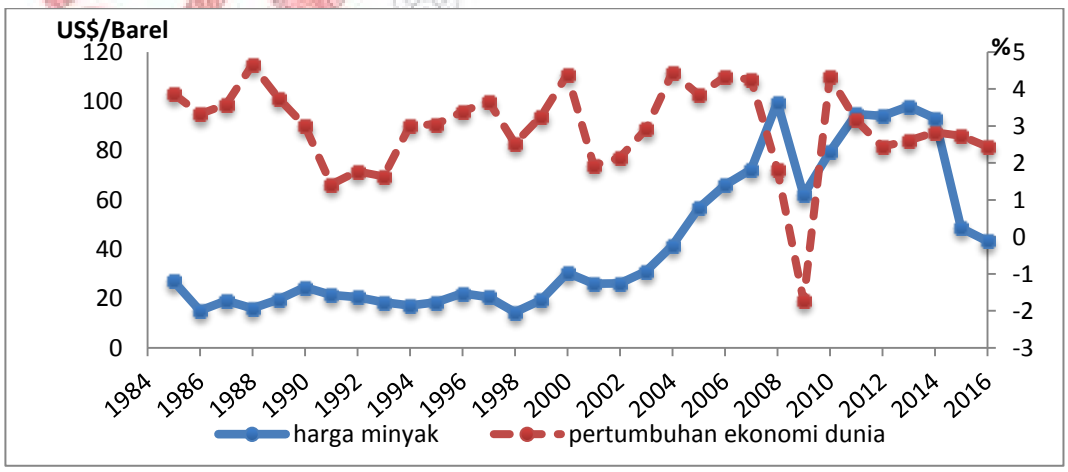


Figure 1. The movement of world oil prices and World Economic Growth Year 1985-2016 (Source: U.S. Energy Information Administration and the World Bank, processed).

World oil price in 1985 reached 27.01 US $ / barrel ago in 1986 decreased by 15,05 US $ / barrel then increase until 1990 become equal to 24,53 US $ / Barel. In 1991 the world oil price again decreased by 21.54 US $ / barrel and the lowest point was in 1998 which amounted to 14.42 US $ / barrel, then increased drastically until the year 2008 amounted to 99.67 US $ / Barel. In 2009 it decreased by 61.95 US $ / barrel and increased again from 2011 to 2013 at 94.05 US $ / Barel to 97.98 US $ / Barel but in the following year decreased until 2016 by 43 , 29 US $ / Barrel. On the demand side, the behavior of oil prices is strongly influenced by world economic growth. Experience has shown that an increase in demand for oil which then drives up oil prices is preceded by high global economic growth.

From the facts of world oil price movements indicate that Indonesia needs to understand the conditions in the global market. Therefore, if the Government of

Indonesia misunderstands the impact of world oil price fluctuations shocks, it will be under threat in the economic instability of the country. Efforts to anticipate and soak the negative impact of world oil price shocks required an effective and efficient macro policy. Macro policies are essential to maintain economic stability by promoting economic growth and people's welfare by utilizing a transmission mechanism to overcome the effects of world oil price fluctuations on macroeconomics in Indonesia. The purpose is to analyze the influence of the mechanism of transmission of the effects of world oil price fluctuations on macroeconomics in Indonesia in the long run.

METHODOLOGY

This research uses Vector Autoregressive (VAR)/VECM method to know the influence and response of world oil price fluctuation in influencing macroeconomic variable in Indonesia. The model specification used in this study IS-MP-PC model or also called Three Equation Model is a macroeconomic model used to combine demand side, economic supply side, and monetary regulation from central bank at any given period (Whelan, 2015) .

The IS function (Investment-Saving) model

$$Y = f(Y,\ r,\ Tx, G,\ \varepsilon)$$

The MP function (Monetary Policy) model

$$r = f(r,\ \pi,\ \pi^e)$$

The PC function (Philips Curve) model

$$\pi = f_{\pi}(\pi^e, \epsilon^{\pi})$$

where Y is GDP, r is the interest rate, Tx is tax revenue, G is government expenditure. while ε is the exchange rate, π is inflation, π^e as inflation expectation and π is the world oil price. the adoption of the model will then get the simplification of the model in accordance with the proxy macroeconomic variables. So get the economic model as follows:

$$OIL = f(GDP, INF, INTR, ER, TX, GOV)$$

INF as inflation notation, INTR is the interest rate, ER as the exchange rate. While Tx is tax revenue and GOV is government expenditure. The characteristics of the VAR / VECM model lie in the variables present in the VAR / VECM model in which between the endogenous and exogenous variables are indistinguishable, but all endogenous and exogenous variables are treated equally without distinction (Gujarati, 2004; Nachrowi, 2006). In general can be written the basic form of VAR model that is (Gujarati, 2004):

$$X_t = \beta_0 + \beta_1 X_{t-1} + \beta_n X_{t-n} + e_t$$

Then the above VAR model is derived into the basic model of VECM. The basic model formulation of VECM can be written as follows: (Achsani et al, 2005).

$$\Delta X_{t-1} = \propto_0 + \sum_{i=1}^{k-1} \Gamma \Delta X_{t-i} + \alpha\beta' X_{t-k} + \varepsilon_t$$

Where, $\Gamma \Delta X_{t-i}$ is a short-term relationship variables, $\propto_0$ is the intercept coefficient, α yaitu *parameter* atau *speed of adjustment* . β' is a long-term equilibrium coefficients, and k is the length of the lag. To overcome the first-difference VAR and to recover the long-term relationship between variables, VECM can be used, as long as there is cointegration between variables. The trick is to put the original equations in the level into the new equation. The following equation VECM models (Ascarya, 2012):

$$\Delta Y_t = b_{10} + b_{11}\Delta Y_{t-1} + b_{12}\Delta Y_{t-1} - \lambda(y_{t-1} - \alpha_{10} - \alpha_{11} y_{t-2} - \alpha_{12} z_{t-1}) + \varepsilon_t$$

$$\Delta Z_t = b_{20} + b_{21}\Delta Y_{t-1} + b_{22}\Delta Y_{t-1} - \lambda(y_{t-1} - \alpha_{20} - \alpha_{21} y_{t-2} - \alpha_{22} z_{t-1}) + \varepsilon_t$$

Where α is the long-term coefficient, and b is the short-run coefficient, λ is the error correction parameter, and the y and z variables must indicate cointegration or phrase in parentheses denoting cointegration between variables y and z.

RESULTS AND DISCUSSION

Estimation of Vector Error Correction Model (VECM) is a form of VAR model terestriksi. Additional Restriction of this VAR model can be done because of a data that is not stationary but occurs cointegration. VECM model estimation is able to see a long-term relationship endogenous variables that converge into a cointegrated relationship, but still allowed and can explain the existence of dynamic models in the short term. in Table 1. It shows that there are several variables that show significant in the long run against other variables such as inflation, interest rate, government expenditure and tax revenue. A significant variable can be determined by looking at and comparing t-statistics with t-tables of 1%, 5%, and 10%. In this study, t-tables were used in sequence ie 2.78744; 2.05954; and 1.70814.

Table 1. Test Results VECM estimates in the Long Term

Long Run		
Variables	Coefficient	T-statistik
LOGOIL(1)	1.00000	-
GDP(-1)	0.05523	0.53528
INF(-1)	0.253274	6.40571*
INTR(-1)	0.155922	4.36669*
LOGER(-1)	0.20953	0.95013
GOV(-1)	-0.604524	-4.41521*
TR(-1)	0.202043	2.19470**

Description: *) significant at α = 1%, **) significant at α = 5%, ***) significant at α = 10%,

Based on the results of VECM estimates in the short term in Table 2 below, it shows that in one lag the pattern of world oil price developments is influenced by interest rate variable in the previous year. Economic growth, inflation, government spending are affected by world oil prices in the previous year in the short term.

Table 1. Test Results VECM estimates in the Short Term

Jangka Pendek			
Variabel Dependen	variabel Independen	Koefisien	T-statistik
D(LOGOIL)	D(INTR(-1))	0.020909	1.81812***
D(GDP)	D(LOGOIL(-1))	4.301938	2.10771**
	D(GOV(-1))	2.280879	2.46243**
D(INF)	D(LOGOIL(-1))	12.75006	2.15346**
	D(GDP(-1))	-2.191486	-2.01205***
	D(INF(-1))	-0.816885	-1.92621***
	D(GOV(-1))	-7.411235	-2.75823**
D(INTR)	D(GDP(-1))	-2.389001	-3.43283*
	D(INF(-1))	-0.972412	-3.58863*
	D(GOV(-1))	-4.27624	-2.49080**
D(LOGER)	D(INF(-1))	-0.023511	-2.27063**
	D(LOGER(-1))	0.628003	1.71040***
	D(GOV(-1))	-0.162636	-2.47904**
	D(TR(-1))	0.031476	1.84851***
D(GOV)	D(LOGOIL(-1))	1.376196	3.00034*
	D(GOV(-1))	0.379734	1.82425***
D(TR)	D(TR(-1))	-0.482846	-2.74607

Description: *) significant at α = 1%, **) significant at α = 5%, ***) significant at α = 10%,

First, the long-term estimation results are seen in the PC model (Phillips Curve), which has significant and positive impact on the world oil price uncertainty. The world oil price fluctuations can result in high inflation pressures in the economy (Hooker, 2002 and Tang et al, 2010). The increase in world oil prices create high inflation rate by providing a consequence for oil importing countries to keep oil imports at high prices (Barsky and Kilian, 2004; Farzanegan and Markwardt, 2009). In the short term shows that the world oil price fluctuations positively significant effect on inflation. This is consistent with the results of research from Wake, Dhany (2012) where the world oil price shocks have an impact on the high inflation rate in the short term. This means that an increase in world oil prices may increase the price of oil-based products and industrial costs in importing countries which are then transmitted to the inflation path and encourage an overall price increase in the country (Mariyani, 2007: 78).

Second, the long-term estimation results are seen in the MP model (Monetary Policy), which indicates that the interest rate variable has significant and positive influence on the fluctuation of world oil price. The results of this analysis is congruent with research conducted by Ito (2010) which states that the increase in oil prices can be reduced GDP and may increase the interest rate and inflation targets. The decline in industrial production growth triggered a rise in price of the product (cost push inflation) along with rising inflation due to world oil price innovation. In an effort to curb inflation and as a result of world oil price shock that the central bank issued a tight monetary policy (tight money policy) as seen from the increase in the domestic interest rate or BI rate (Kumar, 2009).

While in the short term, the estimation of MP (Monetary Policy) model is the interest rate of the year is now influenced by other macroeconomic variables such as economic growth, inflation and government expenditure in the previous year. It is indicated that economic growth, inflation and government expenditures significantly and negatively affect interest rates in Indonesia. These results are in line with the findings of Harahap, et al (2015) that external shocks can respond to an increase in the interest rate of the United States of America in line with the pressure of capital outflow and a negative impact on economic growth in Indonesia.

Third, the long-term estimation result is seen in the IS-Investment (Saving) model, which is Government Spending variable indicated to have a significant and negative influence on the fluctuation of world oil price. The result of this analysis is similar to the research conducted by Dizaji (2014) stating that the existence of world oil price shocks causes state spending to decline in the long term. In addition, in the long run the government will reduce the level of economic dependence on the use of oil and switch to more environmentally friendly energy sources. This has prompted the government's efforts to slowly reduce subsidies to allow people to shift to the use of cleaner and environmentally friendly energy sources.

While in the short run the estimation result of IS (Investment-Saving) model that is Government expenditure year is now influenced by variable of world oil price in previous year. Indicated that world oil prices in the previous year had a significant and positive effect on government spending in the current year in Indonesia. These results are in line with the findings of Aprilta (2011), namely the fluctuation of world oil prices in the short term affect the government spending through fuel subsidies (Fuel Oil). To ensure the purchasing power of the people at a time when world oil prices are soaring,

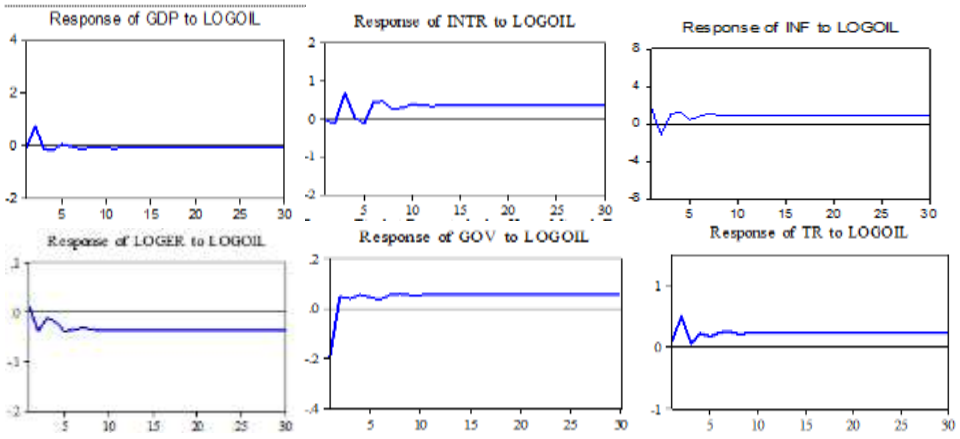
the government continues to implement subsidized policies. The burden of subsidies to be borne by the government is greater when oil prices continue to increase.

Fourth, the long-term estimation is seen in the IS-Investment (Saving) model, which indicates that tax revenue variable has significant and positive influence on the fluctuation of world oil price (Table 4.9). The results of this analysis are consistent with research conducted by Farzanegan (2011) which states that when world oil prices experience a shock will cause a budget deficit that the government begins to pay attention to state revenues by encouraging increased tax revenues to cover the fiscal deficit in the state budget.

Fifth, the long-term estimation is seen in the IS (Investment-Saving) model, which is the indicator of economic growth indicated to have an insignificant effect on the fluctuation of world oil price. The result of this analysis is similar to the research conducted by Nuraini, 2012 which stated that the GDP response to the shock of world oil price is due to the subsidized domestic fuel price. So that the world oil price hike responded by increasing the subsidy of domestic fuel price in order to be able to reach the society, then economic growth will remain stable will not be affected by the fluctuation of world oil price. But in the short run, the estimates show that economic growth is affected by fluctuations in oil prices in the previous year and government spending in the previous year.

Sixth, long-term estimation results are seen in the IS-Investment (Saving) model, which indicates that the exchange rate variable has no significant effect on the fluctuation of world oil price. This result is in line with Aprilta research, F (2011) which states that the increase of world oil price has no significant effect on rupiah exchange rate. Then, the exchange rate will be maintained or stabilized when the world oil fluctuates, because the government's exchange rate system in maintaining the stability of the rupiah is from the floating exchange rate system is controlled to float free despite rising world oil prices. While in the short term, the estimation result on IS model (Investment-Saving) model indicates that the exchange rate variable is not influenced by the fluctuation of world oil price in the previous year. But it is influenced by the exchange rate itself, government spending and tax revenue in the previous year.

In this study, in analyzing the response of world oil price shocks can be proxyed with macroeconomic variables that enter into IS-MP-PC model during the next 30 periods. From the IRF test results found that all macroeconomic variables in Indonesia responded to the world oil price shocks in the early period until the 9th period. However, in the period 10 to the end of the macroeconomic variable response period it shows the pattern of development of the response to balance and stable.



Overall, in relation to the transmission mechanism is not the main focus of the analysis in this study, since the VECM model has restricted the VAR model according to the theoretical relation so that the relation between the mechanism of transmission of the effects of fluctuations and the shocks of world oil prices becomes clear. Disclosure of the transmission mechanism in this study is intended to strengthen the suspicion of transmission of oil price shocks to macroeconomic variables. However, in analyzing the transmission mechanism (relationship map), the main analysis of the study remains based on analysis of VECM estimation results and impulse response functions (IRF).

Figure 3. Transmission Mechanism Effects of World Oil Price Fluctuations on Macroeconomics in Indonesia (Source: Prepared Writers, 2018)

The relationship mapping (mechanism of transmission) of the impact of world oil prices on Indonesia's macroeconomic variables in this study, uses the VECM estimation model results seen in (Figure 3). Simply put, the mechanism of external shock transmission to macroeconomic variables can be seen through the shocks of world oil and food prices. Furthermore, world oil price shocks can push the real exchange rate depreciate and inflation. The rise in prices of domestic goods causes consumer purchasing power to decline. While on the industrial side, high world oil prices are transmitted through inflation and impact on increased production costs. Then, the output produced by the company or industry decreases. The fall in output causes unemployment to increase so that economic growth slows.

CONCLUSION

1. In the short run oil price fluctuations have a significant and positive effect on economic growth (GDP), but in the long term economic growth (GDP) does not significantly influence the fluctuation of world oil prices.
2. In the short run and long term oil price fluctuations have a significant and positive effect on inflation.
3. In the short term oil price fluctuations have a significant and negative effect on the interest rate through the variable of economic growth (GDP), inflation, and government expenditure. However, in the long term the interest rate has a significant positive effect.
4. In the long term oil price fluctuations have no significant effect on the exchange rate. However, in the short term the exchange rate has significant and negative effect through Inflation variable and government expenditure on the fluctuation of world oil price.
5. In the short run oil price fluctuations have a significant and positive effect on government spending. However, in the long run, government expenditures have significant and negative effect on world oil price fluctuation.
6. In the short term oil price fluctuations have no significant effect on tax revenues. However, in the long term, tax revenues have a significant and positive effect on world oil price fluctuations.

Based on the results of Impulse Response (IRF) that has been done can be concluded that the response of macroeconomic variables Indonesia over the shocks of world oil prices found more significant and permanent. Overall all macroeconomic variables in Indonesia show stability response from period to 10 until the end of period. Meanwhile, world oil price shocks are responded negatively by economic growth (GDP) and exchange rate (LOGER). While other variables such as inflation (INF), interest rate (INTR), government expenditure (GOV), and tax revenues respond to world oil price shocks positively.

Then for the transmission mechanism itself in this study is not the main focus in analyzing the estimation results. However, from various empirical studies it can be seen that the effects of external shocks through world oil prices are directly seen most dominantly transmitted through inflationary channels, interest rates and government spending. While other variables transmit the external shock effect of world oil prices indirectly. It can be concluded that to reduce the effects of external shocks that fluctuations in world oil prices can be used by using policy approaches on the visible side with macroeconomic variables in determining the policies used for the world oil price shocks, especially Indonesia as an oil importer country.

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THE EFFECT OF MACROPRUDENTIAL POLICY TO THE DEVELOPMENT OF BANK CREDIT IN INDONESIA: JANUARY 2010 – JUNE 2017

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ABSTRACT

Macroprudential policy is a policy that leads to the analysis of the financials systems as whole as of financials individuals including banking. This research want to show the effect of macroprudential policy on the development of banking credit in Indonesia by using monthly time series data from January 2010 until June 2017. This research uses several variables namely credits, exchange rates, Return on Assets (ROA), Loan to Deposits Ratio (LDR), Capitals Adequacy Ratio (CAR) and interest rates. The method used in this research is using Autoregressive (VAR). The result of this study indicate that macroprudential policy has an effect on the development of bank credit in Indonesia. Macroprudential policy that is Loan to Deposits Ratio (LDR) have an influence in improving credit development in Indonesia. In addition, the change in interest rate from the BI Rate to BI 7 Day Repo Rate affect the development of credit in Indonesia. Profit earned and capital owned by banks also affects the development of credit in Indonesia. These results are supported by Impulse Response Function (IRF) and Variance Decompotition (VD) tests where macroprudential policy appears stable in response to credit shocks.

Keywords: Macroprudential Policy, Credit, VAR

INTRODUCTION

Macroprudential policy is a policy that leads to the analysis of the financial system as a whole as a collection of financial individuals including banking. Macroprudential policies can prevent and mitigate systemic risk, encourage more balanced and quality intermediation function, and improve financial system efficiency and financial access. The financial system is a framework or system that facilitates savings and loan of funds or money (the function of banking intermediation). The stability of the financial system depends on the health of financial institutions and financial market stability. The financial system has an important role in the economy where the financial system can help reallocate resources especially the funds so that excessive funds from the excess funds can be utilized by the under-funded parties.

Banking is one of the economic sectors within the framework of a very important financial system role in the economic development of Indonesia. Because economic growth will be faster with better banking role. The role of good banking can be seen from the efficiency of each banking. Efficiency is a performance parameter that theoretically underlies the entire performance of a company. Ability to produce maximum output with existing input. Banking efficiency is one of the indicators that can know and analyze the strength of a bank. With the identified input output allocation, it can be further analyzed to see the cause of inefficiency (Hadad et al., 2003).

Systemic risk becomes an empirical debate in various studies conducted in developed and developing countries. Schularsik and Taylor (2010) show that the importance of credit as a guide in understanding the financial cycle as well as its impact on the crisis. Research from Calderon and Kubota (2012) suggests that private capital inflows may encourage a credit boom. In mitigating systemic risks not only can be done using one indicator, but a comprehensive set of measuring tools

(Aaron et al., 2015) is required. Risks can be addressed using macroprudential policy instruments, a study conducted by Lim et al. (2011) argue that the increasing number of instruments used will be more effective in reducing the procyclicality and effectiveness of the shocks caused by the financial sector. The familiarity of macroprudential policy in Spain can help in overcoming the increasing credit losses during the global financial crisis.

A research conducted by Purnawan and Nasir (2015) in analyzing macroprudential policy roles in Indonesia found that the movement of macroprudential policy components done after the 2008 financial crisis is relatively following the average of economic conditions, especially in terms of encouraging optimal GWM + LDR policies in risk management credit and maintain the volatility of the rupiah. Credit growth and changes in the ratio of credit to GDP have the best and most significant signal properties against credit to GDP in almost all policies (Gersl and Jasova, 2017). A study conducted by Surjaningsih et al. (2014) indicates that the bank's liquidity ratio could signal a year before the 2008 financial crisis.

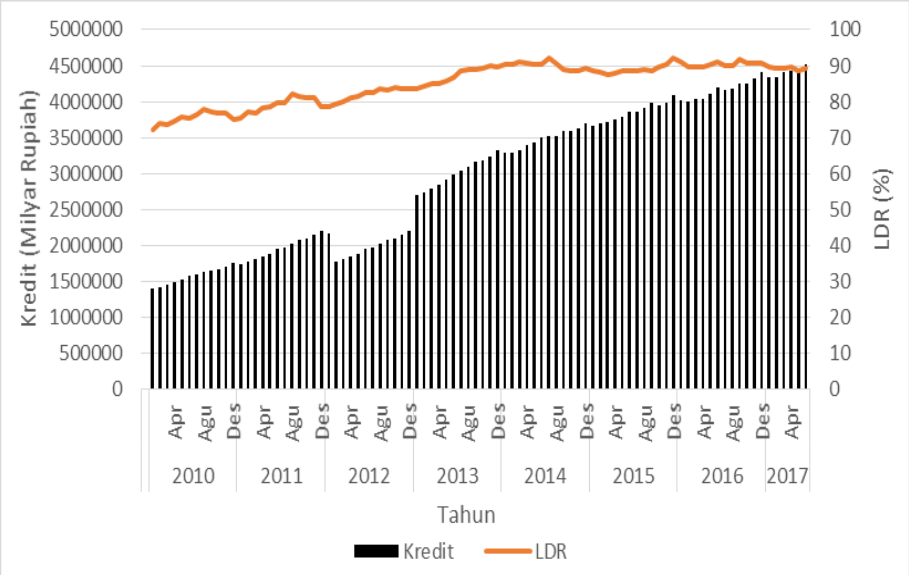

Figure 1. Development of Credit and LDR (Source: Financial Services Authority (OJK))

Broadly speaking, the development of bank credit in Indonesia has increased. In 2010 to 2011 banking credit movement increased, then at the end of 2011 credit movement showed a decline. In 2012 the movement of credit is lower than the previous year. From the year 2013 to June 2017 the movement of credit shows its essence with the continuous increase of credit by banks. The movement of Loan to Deposite Ratio (LDR) continued to increase from during the observation period although the increase was not significant. In the period 2013 - 2017 which ranges in the number 83.47% - 89.31%. In 2012, the increasing movement of LDR is not accompanied by credit growth, the high ratio of loans provided by banks is not responded by credit growth. This is evidenced by the decline in loan growth in 2012 than in the previous year although the LDR has increased. Increased credit movement is also not accompanied by good banking performance, global economic pressures and declining oil prices since mid-2014 have an impact on the mining sector. These conditions resulted in slightly declining credit growth (Bank Indonesia, 2012, Bank Indonesia, 2015). The implementation of macroprudential policy in managing credit development became the background in this research. The focus in this research is to know how the role of macroprudential policy in managing credit growth of banking sector.

THEORY

1. CREDIT

J. E. Stiglitz who proposed a new paradigm in the theory of monetary economics based on credit demands (credit matters) (Stiglitz and Greenwald, 2003). The Bank has different information (imperfect information) about the condition of the debtor so that it encounters credit risk. Understanding and the ability of banks to manage risks is very important when faced with the imperfections of information in the provision of credit given the development of credit affect the overall economic activities. Sitglitz and Greenwald (2003) provide a detailed elaboration in the new paradigm of monetary economics theory. There are four characteristics in the new paradigm of economic monetary theory that is as follows:

a. The quantity of credit can directly affect the output and other real variables. The quantity of loans disbursed has a close relationship with the needs of financing both in terms of production and consumption side.
b. Interest rates are not exactly the right instrument to present monetary policy. The gap between demand deposit, savings, and time deposits with lending rates is not always stable due to operational cost, profit and loss of credit risk.
c. Conditions and behavior of banks have a major impact on the development of credit and the economy. Banking conditions such as capital, liquidity, profitability and bad debts greatly affect the ability of banks in providing credit.
d. The availability of complete and accurate information about the condition of the economy, business development, or the internal condition of the customer is very important for the banking.

2. MACROPRUDENTIAL POLICY

A stable financial system will be able to allocate resources and absorb shocks that may prevent disruptions to real sector activities and financial systems. The stable financial system will have an impact on other factors in a country's economy. The instability in the financial sector can be driven by various factors and turmoil. This could happen due to market failure both from structural factors and behavior. Market failures can result from both external and domestic shocks, resulting in risks in the financial system such as credit risk, liquidity, markets and operations. The financial system is a collection of institutions and markets in which there is interaction in it with the aim to mobilize funds from the excess funds to party who lack of funds by using financial instruments. Macroprudential policies are used to limit the risks and costs that can be generated from systemic crises (Galati and Moessner, 2011). This policy aims to maintain the stability of the financial system which is oriented to the overall financial system by limiting the systemic risk that may arise in the financial system. Simply put, macroprudential is a prudent principle in the financial system to maintain a balance between macroeconomic and microeconomic goals. The focus in macroprudential policy focuses not only on financial institutions but on other financial elements such as financial markets, corporations, households and financial infrastructure. Because macroprudential policy is a policy to minimize the occurrence of systemic risk. Systemic risk is a risk that can eliminate public confidence and increase uncertainty in the financial system that disrupts the economy. Negative effects of systemic risks include increased interruption in payment systems, credit flows, and impairment of assets.

Table 1. Some Macroprudential Policy Instruments

Problems	Instruments
Leverage (potential for prosessuality)	Adjustment of risk weight in capital
	Application of capital ratios to weighted assets
Credit	Implementation of countercyclical provisioning
	Limit the loan to value
	Limit credit to certain sectors
	Reserve requierement change
Liquidity	Implementation of *buffer*
	Implementation of *loan to deposit ratio*

Source: Warjiyo and Juhro, 2016

METHODOLOGY

This research uses Vector Autoregressive (VAR) method. Vector Autoregressive was introduced by C. A Sims (1972) as thought of Granger (1969) which was then used extensively in econometrics. Granger says if two variables, eg x and y have a causal relationship where x affects y then x's past information can help predict y. There are several advantages VAR, one of which is a simple model, so no need to determine the endogenous and exogenous variables because all variables are endogenous. The general VAR equation according to Baum (2013) is as follows:

$$y_t = v + A_1 y_{t-1} + \cdots + A_p y_{t-p} + B_0 x_t + B_1 X_{t-1} + \cdots + B_s X_{t-s} + u_t$$

where y_t is the vector of the variable K, each model as a function of lag p for each variable and always put the exogenous variable X_t. Assumed that $(u_t) = 0, E(u_t u_t') = \sum$ and $E(u_t u_s') = 0 \forall t \neq s$.
The method used to know how much influence of exchange rate, Return on Assets (ROA), Loan to Deposits Ratio (LDR), Capital Adequacy Ratio (CAR) and interest rate to credit. The equation model in this research is as follows:

$$LogKREDIT_t = \beta_0 + \beta_1 LogKREDIT_{t-1} + \beta_2 LogNER_{t-1} + \beta_3 ROA_{t-1} + \beta_4 LDR_{t-1} + \beta_5 CAR_{t-1} + \beta_6 I_{t-1} + \varepsilon_t$$

RESULT

A stable financial system will be able to allocate resources and absorb shocks that may prevent disruptions to real sector activities and financial systems. The rapid development of credit shows that the role of banks is very important in financing infrastructure in Indonesia so that the availability of credit in the economy is highly dependent on banking behavior. The instability in the financial sector can be affected by internal or external shocks. Such instability can lead to credit, liquidity, market and operational risks so that macroprudential policies are used to limit the risks and costs that may arise from the instability of the financial system.

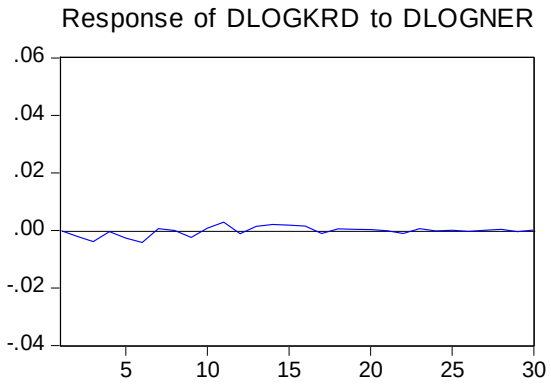

Figure 2. Impulse Response Function Result of Credit to Exchange Rate

The effect of shocks from credit variables, exchange rates, ROA, LDR, CAR and interest rates can be seen through impulse response function (IRF) in VAR model analysis. The results of the IRF test show that credit response to exchange rate shocks is stable and vice versa, the exchange rate response to credit shocks is stable in Indonesia. The statement indicates that both credit and exchange rate have a great influence in Indonesia. This study is in line with research Arsana (2005) which states that changes in exchange rates will affect the decision on credit. The result is supported by the banking capital that is still secure so that credit growth in Indonesia continues to grow. The Indonesian banking industry has also developed a number of strategies to deal with the weakening of the rupiah exchange rate, in the case of credit channeling of its banks, mostly to the micro, small and medium enterprises (MSMEs) sector which are relatively not directly affected by the rupiah depreciation.

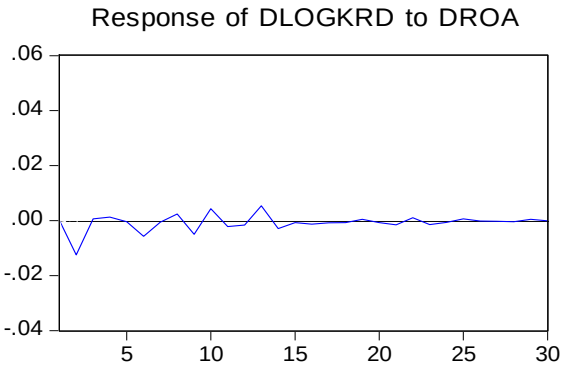

Figure 3. Impulse Response Function Result of Credit to ROA

Credit on ROA shocks appears stable and vice versa, the ROA response to credit shocks is stable, meaning that both credit and ROA are equally influential. This study is in line with the theory where ROA is an indicator that indicates that if ROA increases then bank asset has been used optimally to gain profit so that ROA and credit have a positive relationship (Francisca, et al., 2009; Oktaviani, 2010). The greater the ROA of a bank, the greater the rate of profit achieved so that the bank has the opportunity to channel its credit is greater. This study concurs with the research of Francisca, et al. (2009) and Meydianawathi (2007) which states that ROA has a positive and significant impact on credit development.

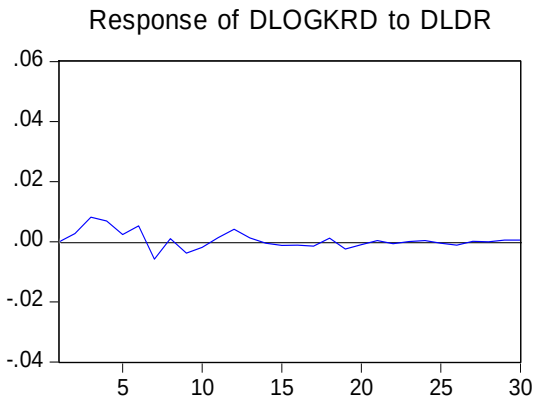

Figure 4. Impulse Response Function Result of Credit to LDR

LDR responds to stable credit shocks as well as on the contrary, credit response to LDR is stable in Indonesia, indicating that both LDR and credit have a big influence. This research is in line with the policy of Bank Indonesia in Bank Indonesia Regulation Number 17/11 / PBI / 2015 which is to encourage economic growth through banking credit growth, adjustment of GWM policy through LDR calculation. This study concurs with the research of Yuliana (2014) which shows that LDR has a significant effect on lending. Macroprudential policy by using LDR instrument is very influential to the development of credit in Indonesia where the higher LDR in a bank hence credit ability which has been channeled by banking also higher, this is indicated by the development of LDR period 2013 - 2017 which is around 83.47% 89.31% as well as the continuous development of credit during the observation period.

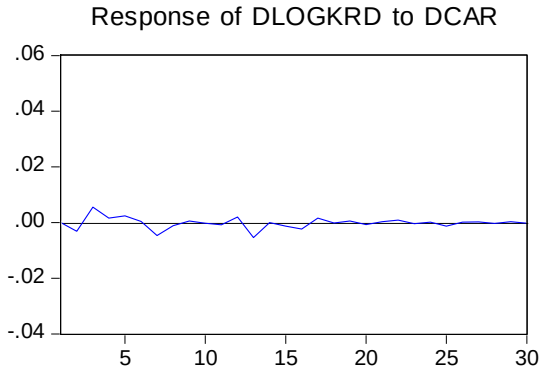

Figure 5. Impulse Response Function Result of Credit to CAR

Credit response to CAR shocks is stable and vice versa, the CAR response to credit is stable, indicating that both credit and CAR have a big influence. Muljono (1996) argues that there are two internal factors that affect the volume of credit granting CAR and ATMR. Factors that usually influence banking behavior in offering credit are caused by low banking assets, high Non Performing Loan (NPL) or a drop in banking capital due to depreciation, thus decreasing the ability of banks to provide loans (Agung, 2011). This study concurs with the research of Yuliana (2014) who argues that CAR has a significant influence on credit. This research is supported by Bank Indonesia Regulation Number 3/21 / PBI / 2001 concerning the obligation of minimum capital provision for commercial banks, in which each bank is required to provide minimum capital of 8% of risk-weighted assets procured by CAR. This regulation is supported also by the development of CAR during the observation period which ranges from 18.66% - 22.75%. This research is in line with the above-mentioned theory which states that the behavior of banks in offering credit is very influential on the CAR so it can be said that the greater the value of CAR then the possibility of banks to make credit offer is also greater.

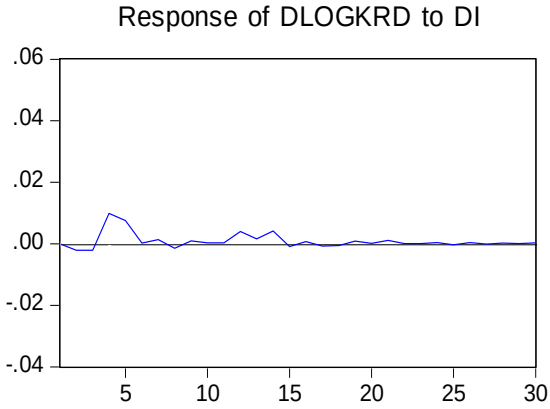

Figure 6. Impulse Response Function Result of Credit to Interest Rate

Credit responds to interest rate shocks is stable and vice versa, the interest rate response to credit shocks is stable. The statement indicates that both credit and interest rates have a large influence. This research is supported by research conducted by Ditria, et al. (2008) and Haryati (2009) who argue that interest rates have an effect on the amount of credit in Indonesia. According to Subagyo, et al. (2002) the interest rate is the amount received by the person who lends and is paid by the borrower a certain percentage agreed by both parties. In 2017, Bank Indonesia's interest rate decline to be 4.50%, this is done to improve banking liquidity. The decline in interest rates was responded by banks, so that demand for loans is higher than the previous year due to lower loan interest rates.

CONCLUSION

Based on the results of the analysis using Vector Autoregressive (VAR) method on the effect of exchange rate, ROA, LDR, CAR and interest rate on credit, it can be concluded as follows:

1. Exchange rates have a significant effect both positive and negative on credit, this indicates that if there is a change in the exchange rate it will affect the development of credit in Indonesia.
2. ROA has a significant influence both positive and negative to credit, it indicates that if there is a change to the ROA it will affect the development of credit in Indonesia.
3. LDR has a significant influence both positive and negative on credit, it indicates that if there is a change to LDR it will affect the development of credit in Indonesia.
4. CAR has a significant effect both positive and negative on credit, it indicates that if there is a change to the CAR it will affect the development of credit in Indonesia.
5. Interest rates have a significant effect both positive and negative on credit, this indicates that if there is a change in interest rates it will affect the development of credit in Indonesia.

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ANALYSIS OF INFLUENCE OF MACROECONOMIC FACTORS ON NON-PERFORMING LOANS (NPL) AT CONVENTIONAL BANK IN INDONESIA

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ABSTRACT

The aim of this research is to analyze the impact of macroeconomic factors on non-performing loans (NPL) at conventional bank in Indonesia. The method used in this research is multiple linear regression analysis with independent variables as follows: industry production index (IPI), inflation, credit interest, exchange rate, and credit growth. The data used in this research is secondary data of monthly time series from January 2014 to June 2017. The results show that partially the industry production index (IPI) and the exchange rate give positive and significant influence on non-performing loans (NPL). While the inflation, credit interest rate, and credit growth give negative and insignificant influence on non-performing loans (NPL). Simultaneously, all the independent variables give significant influence on non-performing loans (NPL). The explaining ability of independent variable is 83.8% while the rest of 16.2% is influenced by other variables outside the model that has not been included in this research. The government along with the banking actors should provide policy stimulus that encourages the increase in the industrial sector output in order to increase the acceleration of economic growth such as the policy of maximum lending rate limitation that is affordable for every society and industry in order to increase the better credit growth and to maintain the public trust to increase the consumption and investment so that the inflation can be maintained.

Keyword : NPL, Macroeconomics, Industrial Production Index , Inflation, Interest Rate, Exchange Rate, Credit.

INTRODUCTION

Bank is a significant institution for a country's economy. Considering that bank's existence is very required, Indonesia provides a legal umbrella to the bank's existence in the country through the Act of Republic of Indonesia No. 10 of 1998 on Banking that aims at increasing people's standard of life.

Guitan (1997) in Warjiyo (2006) thought that basically a bank is a financial intermediary institution with one product dominating the fund distribution that is credit. In conducting its distribution of business, bank is always faced by the credit risk. Kuncoro and Suhardjono (2002) mentioned that non-performing loan is a state in which

the customer has not been able to pay part of or the whole obligations to the bank as agreed before.

The increase or decrease in the credit risk or the non-performing loans can be reflected by ratio of the Non-Performing Loans (NPL). The more the NPL ratio is, the worse the bank healthy level will be which impact on the bank's failure potential is getting greater and vice versa.

Table 1.
Macroeconomic Condition and NPL at Conventional Bank in Indonesia in 2014 - 2016

Year	NPL (%)	Industry Production Index	Credit Interest Rate (%)	Inflation (%)	Exchange Rate (Rp)	Credit Growth (%)
2014	2.16	124.94	12.92	8.36	11865.21	11.58
2015	2.49	126.84	12.83	3.35	13389.41	10.44
2016	2.93	132.27	12.06	3.02	13308.33	7.87

Source : Various Sources, processed (2017)

Based on the development hypothesis on the causality of the financial and real sectors, Permono and Kuncoro (1990) in their research presented that in these cases Indonesia is experiencing the growth-led finance phenomena. This proves that the financial sector still depends on the growth of the real sector. The phenomena of the increasing of the non-performing loans (NPL) is one of the indications.

Festic and Beko (2008) thought that the exposure of the macroeconomic risk factor on the bank is the systemic risk source that influences the banking sector performance, which is stated as the ratio of non-performing loans on the total credit. The increase in the ratio of the non-performing loans indicates the sign of decrease in the banking sector performance and in the credit portfolio quality.

Industrial sector is one of the (basic) main driving force in economy, which can absorb the work force, decrease the poverty rate and the technology utilization gap (Cho and Moon, 2003 in Karsinah, Oktavilia, Firmansyah, and Wahyu 2017). Therefore, it is not wrong if the industrial sector is considered as the strong foundation in supporting the triple track strategy of development strategy those are: encouraging the economy development to reduce the unemployment and poverty problems (Prasetyo, 2011) that require great credit/work capital finance and investment. So if the IPI rate is increasing, it will indicate the increase in production (output) from the industrial sector that may increase the public income in a country, so that people will have ability to pay the credit better and the impact may decrease the NPL rate on the banking (Jumono and Sugiyanto, 2014).

The risk of finance will appear due to the inflation; if there is an unexpected increase in the inflation, the life cost will be higher because the cost increases due to the increase in consumption prices. When the inflation occurs, it will really decrease the public income and the company's revenue, so it will be difficult for the debtor (the lender) to return the loans to the bank and finally this will increase the credit risk potential (failed to pay) (Ginting, 2016).

Exchange rate or foreign exchange rate according to Sukirno (2006) is the currency value of a country that is stated in another country's currency value. De Bock and Dem Yanets (2012) in Kamaludin and Berto et.al (2015) explained that the depreciation on the local currency on the US Dollar currency makes a number of local currency issued to get one US Dollar is getting higher. Specifically such a condition indicates that the general economy is experiencing attenuation. Depreciation will also cause the price of imported goods relatively more expensive in which this may give pressure on the letter of credit (LC) issued by the commercial bank for the trader (importer) that makes the risk of non-performing loans at the bank is getting higher (Badar et.al, 2013).

Credit growth is the percentage of increase in the total number of credit distribution. In other side, the credit growth also indicates the general condition of credit market and reflects whether the banking is easy or not to provide credit to the people because this reflects that the risky credit is easily agreed (Kattai, 2010 in Castro, 2013). According to Louzis (2012) and Castro (2013), the credit growth has positive correlation with the Non-Performing Loans (NPL). This indicates that there possibly will be an increase in the ratio of Non-Performing Loans (NPL) if there is an increase in credit growth in excess.

Based on table 1 it can be seen that yearly in 2014 – 2016 the industry production index is experiencing an increase year by year. The credit interest rate, inflation, and credit growth is experiencing the decreasing trend. The exchange rate is experiencing the increasing trend. This indicates that the economy can be getting better although the credit growth is decreasing and the exchange rate is depreciating.

This is slightly on the contrary with the Indonesian macroeconomic condition that shows the increasingly better condition. The economic condition that is getting better indicates that it runs fluently, which means that people and the company can pay back the loans to the bank better in order to decrease the ratio of NPL. However, according to table 1, NPL of the conventional bank is increasing when the economy runs to better direction.

This research aims at analyzing the correlation among the macroeconomic variables and their influence on the NPL rate at the Conventional Bank in Indonesia.

METHOD OF RESEARCH

This research uses the quantitative analysis approach. The quantitative research is the one consisting of formulating the problem, setting a model, searching for data, conducting the result analysis, and implementing the result of research itself (Kuncoro, 2013). The data used in this research is the secondary data in time series form that is sourced from the reports of the Central Bureau of Statistics, the Financial Services Authority, and the International Financial Statistic, which are issued by the International Monetary Fund (IMF). The data frequency is monthly data during the period of January 2014 – June 2017.

The data analysis method is a method used by the researcher in analyzing data, whereas the steps conducted in the data analysis in this research is through the Multiple Linear Regression Analysis, which consists of several statistic tests such as the hypothesis test (t test, F test), the determinant coefficient (R_2), and the classical assumption test consisting of normality test, heteroscedasticity, multicollinearity, and autocorrelation with the Eviews 9.0 estimation Software.

The regression equation model in this research can be written as follows:

$$Y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

$$NPL = \beta_o + \beta_1 LOG(IPI) + \beta_2 INF + \beta_3 INT + \beta_4 LOG(ER) + \beta_5 CREDIT$$

Annotation:

Y	= Non Performing Loan (NPL)
B_o	= Constanta
$\beta_1 - \beta_5$	= Parameter Coefficient
LOG(IPI)	= Industry Production Index
INF	= Inflation
INT	= Credit Interest Rate
LOG(ER)	= Exchange Rate (Kurs Rp/USD)
CREDIT	= Credit Growth
e	=Error term (disturbing variables)

RESULT AND DISCUSSION

The T – statistic test basically indicates how great the influence of independent variable in partially explaining the variation of dependent variable (Kuncoro, 2007 in Siravati, 2018). If the probability value of F-statistic is less (<) than α (5% / 0.05), it means that the independent variable simultaneously influences the dependent variable.

Table 2.
Result of Partial Regression Model Testing

Variables	t-Statistic	Probability	Conclusion
LOG(IPI)	2.72258	0.0099	Significant on ∝ = 5%
INF	-1.2976	0.2027	Insignificant
INT	-1.6653	0.1045	Insignificant
LOG(ER)	2.77402	0.0087	Significant on ∝ = 5%
CREDIT	-1.4998	0.1424	Insignificant
R-squared			0.838811

Source: Eviews 9 Data Processing (2017)

Based on table 2, it can be seen that there are only two variables that are significant on α (5% / 0.05) those are the industry production index and the exchange rate. While the three other variables, inflation, credit interest rate, and credit growth, do not significantly influence the performing loans (NPL).

The F-statistic is used to test the influence of independent variable simultaneously on the dependent variable. If the probability value of F-statistic is less (<) than α (5% / 0.05), it means that the independent variable simultaneously influences the dependent variable.

Table 3
Result of F-statistic Test

F-statistic	Prob(F-statistic)	Conclusion
37.46796	0.000	Significant

Source: Eviews 9 Data Processing (2017)

Based on table 3, it can be seen that the result of probability value of F-statistic on a model is amounted 0.000. If it is compared with α (5% / 0.05), it means that the probability value of F-statistic is less than it. So it can be concluded that the independent variables in this research, such as the industrial production index, inflation, credit interest rate, exchange rate of US Dollar/Rp, and credit growth, simultaneously influence the dependent variable that is Non-Performing Loans (NPL) on the Conventional Banks in Indonesia significantly.

The determination coefficient (R^2) is used to measure the closeness between the predicting value and the real one of the dependent variable, or in other words, to explain how great the presentation of total variation of dependent variable indicated by the model. The result of analysis finds the estimation of R^2 value on table 5 shows a number amounted 0.838811, which indicates that the change of NPL value is able to explain

simultaneously by the variables in this research amounted 83.88%, while the rest amounted 16.2% is explained by other factors outside the model.

The multiple linear regression analysis with the Ordinary Least Square approach is used to find out how the independent variables influence the dependent variable. Using the Eviews 9.0 estimation tool, the result of this model regression can be found.

Table 4
Regression Result

Variables	Coefficient	Standard Error	t-Statistic	Probability
C	-33.059	6.17054	-5.3576	0.0000
LOG(IPI)	4.33051	1.59059	2.72258	0.0099
INF	-0.0574	0.04424	-1.2976	0.2027
INT	-0.2402	0.14426	-1.6653	0.1045
LOG(ER)	1.88046	0.67788	2.77402	0.0087
CREDIT	-0.0285	0.01898	-1.4998	0.1424
R-squared			0.838811	
F-statistic			37.46796	
Durbin-Watson stat			0,886077	

Source: Eviews 9 Data Processing (2017)

Based on the result of statistic test, it can be seen that the estimation of equation is as follows:

NPL = -33,059 + 4,33051*LOG(IPI) - 0,0574*INF - 0,2402*INT + 1,88046*LOG(ER) -0,0285*CREDIT

The result of estimation shows that the industrial production index (LOG(IPI)) has positive and significant influence because it has the probability value of 0.0099, which is less (<) than α (5% / 0.05), with the coefficient value of 4.330511. If the output of the industrial production increases 1%, the Non-Performing Loans (NPL) will increase of 0.0433051%.

Inflation has negative and insignificant influence because it has the probability value of 0.2027, which is more (>) than α (5% / 0.05), with the coefficient value of -0.0574. So, if the inflation increases 1%, the Non-Performing Loans (NPL) will decrease of 0.0574%.

Credit Interest Rate (INT) has negative and insignificant influence because it has the probability value of 0.2027, which is more (>) than α (5% / 0.05), with the coefficient value of -0.2403. If the credit interest rate increases 1%, the Non-Performing Loans (NPL) will decrease 0.2402%.

Exchange Rate of US Dollar/Rp (LOG(ER)) has positive and significant influence because it has the probability value of 0.0087, which is less (<) than α (5% / 0.05), with the coefficient value of 1.88046. If the exchange rate of US Dollar/Rp increases or depreciates of 1%, the Non-Performing Loans (NPL) will increase of 0.0188046%.

Credit Growth (Credit) has negative and insignificant influence because it has the probability value of 0.1424, which is more (>) than α (5% / 0.05), with the coefficient value of -0.0285. So, if the credit growth increases 1%, the Non-Performing Loans (NPL) will decrease of 0.0285%.

Influence of Industry Production Index on Non-Performing Loans (NPL)

Based on the test result, the industry production index has positive and significant influence on the Non-Performing Loans (NPL). This is not in accordance with the initial hypothesis and the research of Jumono and Sugiyanto (2014), which stated that IPI has negative influence on the Non-Performing Loans (NPL). The different result will be explained by the research of Utari, et.al, (2015), which stated that the banking sector in Indonesia has a tendency to have procyclicality. So the bank tends to consider that the risk is insignificant when the economy is booming and to exaggerate the potential risk when the economy is down that finally will increase the potential risk on the Non-Performing Loans (NPL). This also supports the research of Poetry and Sanrego (2011), which stated that when a recession occurs, in which the economic growth is declining along with the decrease in the income rate, the costumers of the conventional banking will be difficult to pay back their credit, so the NPL on the conventional banking will increase.

Influence of Inflation on Non-Performing Loans (NPL)

Based on the test result, the inflation has negative and insignificant influence on the Non-Performing Loans (NPL). This means it is not in accordance with the initial hypothesis and the result of research of Ginting (2016), which stated that inflation has positive influence on the Non-Performing Loans (NPL). However, it supports the research of Ihsan and Haryanto (2011), which stated that inflation has insignificant influence on the Non-Performing Loans (NPL).

The different result in this research can be explained by using the development hypothesis (Patrick, 1960), which stated that there is a causality relation between the real sector and the finance, and supporting the result of research of Klein (2017) with the inflation case of the United States, which shows that the low inflation can be a sign of economic problem because it can be connected to the economy weakening. When the unemployment rate is high or the consumer's trust is low, people probably will be less willing to invest and pay for consumption, and this will make the decrease in demand, so this will make the supply or the entrepreneurs are not able to do much and finally

will decrease their prospect of business. This will make the decrease in the fund cycle that implies directly to the weakening of the financial sector because a lot of fund is piled up unproductively. This is because the debtors are difficult to pay back their loans, which finally will increase the Non-Performing Loans (NPL) rate.

Influence of Credit Interest Rate on Non-Performing Loans (NPL)

Based on the test result, the credit interest rate has negative and insignificant influence on the Non-Performing Loans (NPL). This means it is not in accordance with the initial hypothesis and the result of research of Badar, et.al. (2013) and Ginting (2016), which stated that the interest rate on loans has positive influence on the Non-Performing Loans (NPL).

The different result in this research can be explained by using the theory of market for liquidity preference of Keynes, which stated that the liquidity preference depends on the interest rate on loans. So when the interest rate on loans increases, people will choose to save their money in a bank rather than borrow some fund in a bank. In the case in Indonesia in 2014-106, it is rather different because although the interest rate on loans decreases, the condition of Indonesian economy macro is weakening, which will cause the unproductive fund increase in people and have impact on the increase in the Non-Performing Loans (NPL). This can be explained by an assumption of a motive to hold money just in case, so it can be said that people's fund is not productive and they tend not to take credit (loans) in the weak economy condition, because they are anxious that they will not able to circle their money and even fail to pay back.

Influence of Exchange Rate of US Dollar / Rp on Non-Performing Loans (NPL)

Based on the test result, the exchange rate of US Dollar / Rp has positive and significant influence on the Non-Performing Loans (NPL). This means that it is in accordance with the initial hypothesis and the result of research of Badar, et.al. (2013), De Bock and Dem Yanets (2012) in Kamaludin and Berto, et.al. (2015), which stated that the exchange rate of currency has positive influence on the Non-Performing Loans (NPL).

This can be explained further by De Bock and Dem Yanets (2012) in Kamaludin and Berto, et.al. (2013), in which the depreciation of the local currency (Rupiah) on the US Dollar currency makes the amount of the local currency that should be issued to find 1 Dollar is getting higher. Specifically this condition indicates that the economy in general is weakening. The depreciation of home currency also will give impact on the import price that is relatively more expensive, in which this will give pressure on the letter of credit (LC) issued by the commercial bank for the trader (importer), which will make the risk of the Non-Performing Loans will be more increasing (Badar, et.al., 2013).

Influence of Credit Growth on Non-Performing Loans

Based on the test result, the credit growth has negative and insignificant influence. This means that it is not in accordance with the initial hypothesis and the result of research of Louzis, et.al. (2012) and Castro (2013), which stated that the growth credit has positive influence on the Non-Performing Loans (NPL).

The different result in this research can be explained by using the theory of development hypothesis (Patrcik, 1966), which stated that the financial sector development has significant influence on the economy development, and the result of research of Permono and Kuncoro (1990), which stated that Indonesia has demand following phenomena in which the financial sector growth follows the real sector. While the credit growth has insignificant influence because there is a moderator variable indicating that people's ability of purchasing power is decreasing. So it can be said that according to the theory of business cycle, the case in Indonesia in the period of 2014 – 2016 is the recession phase. It can be concluded that the decrease in the real sector performance that makes the decrease in the credit growth will directly imply in the weakening of the financial sector (the credit growth) that finally will increase the NPL rate because the non-productive fund is piled up.

CONCLUSION

Based on the result of research and the discussion, it can be seen that partially the industrial production index (IPI) and the exchange rate of US Dollar / Rupiah have positive and significant influence on the Non-Performing Loans (NPL) on the conventional bank in Indonesia, while the inflation, credit interest rate, and credit growth have negative and insignificant influence on the Non-Performing Loans on the conventional bank in Indonesia.

In order to increase the acceleration of the qualified economy growth, the government should encourage the industrial sector with its policy stimulus to increase the output and competitiveness to be better, such as the more affordable electricity rate, the better provision of distribution channel service, and building a bilateral relationship with other countries to increase the export in order to strengthen the rupiah value so that the economy can be revived. From the side of the inflation and the interest rate, the government and the banking actors should arrange joint policy such as the maximum limit determination of the credit interest rate that is affordable for everyone and every industry in order to increase the credit growth to be better and to keep people's trust to increase the consumption and investment to keep the inflation save. And further researches are expected to be able to use better estimation tool and to use other variables to find out any factors influencing the Non-Performing Loans (NPL).

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Achieving Inclusive and Sustainable Amidst Growth and Stability Dilemma: A case study in South Sulawesi

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Abstrak

Economic growth is one of the indicators that are relevant in describing the condition of the economy of a country. World Bank states that Indonesia economy tends to stable while others declining. However, World Bank reminds the importance of promoting economic growth. With high economic growth, it boosts investment so that it can absorb labor, decrease the number of poor people and lowering disparities.

South Sulawesi (hereinafter Sulsel) is one of the biggest economic backbone in Sulawesi island. In the last 5 years, the average share of the economy of Sulsel around 40% to Sulawesi island. However the economic growth of Sulsel has only shared around 2% to Indonesia, under other region in Java, such as DKI Jakarta (17,49%) and East Java (14.79%). Despite the economic growth of Sulsel in the last 5 years is always higher than Indonesia, but has a tendency to decrease. In 2016, economic growth in Sulsel reached 7,41% (yoy), while Indonesia only 5,02% (yoy).

In this study, the research methods adapted from Hausmann, Rodric, and Velasco (2005). Growth diagnostic framework is based on a strategy to take account of policy priorities. The strategy aims to identify the most binding constraint on economic activity in region, so that the government can regulate and develop policies from those constraints.

To analysis the growth diagnostic, we considered three things: (1) reform strategy should have high growth targets, so as to improve the standard of living, (2) no growth strategy that is identical for all countries, (3) the Government has limited administrative and political reasons, and so it needs to be a priority. In addition, the study can use the framework introduced by Lanchovicina and Lundstorm (2009).

Enders (2007) states that access to finance, education and infrastructure are the main factors the problems Egypt's economy. Mahajan (2005), potential economy of Bangladesh which is driven by policies implemented by the government as well as the improvement of the good governance corporation that may have an impact on increasing the quality governance, accelerate human development and infrastructure, improving quality of financial intermediation and maintaining macro stability. Hang (2013) identify the bottlenecks of economic growth in Cambodia comes from poor infrastructure, low human resources, and issues related to governance (corruption) and the high cost of finance. Anderson, et al (2013) identified factors that inhibit inclusive economic growth Indonesia using growth diagnostic methods are infrastructure. Infrastructure is one of the factors that must be completed or the binding constraint to economic growth inclusive Indonesia.

We use quantitative and qualitative methodologies to identify the most binding constraints to achieve inclusive economic growth in Sulsel. We do Focus Group Discussions on quantitative methodologies, as well as to identify critical constraints on micro level. Furthermore, qualitative

methods using computable general equilibrium to validate the simulation such as the impact of good quality of human resources, infrastructure and innovation.

Our finding is the most binding constraint in Sulsel are infrastructure (access road, transportation and electricity), poor quality of human resources and lack of innovation.

Klasifikasi JEL: E20, C14, C42
Keyword: growth diagnostic, South Sulawesi, CGE - indoterm

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1.1 Overview Economy Condition in South Sulawesi

In 2015, the Gross Regional Domestic Product (GRDP) of South Sulawesi reached Rp341,74 trillion or 2,85% (yoy) of the Indonesia GDP share. The economic growth of South Sulawesi in 2015 is 7,15% (yoy) greater than the Indonesia economic growth of 4,79% (yoy). When compared with other peer regions such as Jakarta and East Java, economy growth of South Sulawesi has higher. In 2015, growth of DKI Jakarta reached 5,88% (yoy) and East Java 5,44% (yoy). Historically, from 1984 to 2015, the average economy growth of South Sulawesi (6,37%, yoy) was also higher than the peer economy growth of DKI Jakarta (5,91%, yoy) and East Java (5, 75%, yoy), and Indonesia (5,33%, yoy).

Economy performance in South Sulawesi is also still showing good performance in the event of economic disruption after the economic crisis hit Indonesia in 1998. Average economic growth of South Sulawesi from 1984-2015 reached 6,37%, while if highlighted more deeply, the average growth of South Sulawesi 6,96% from the mid 1980 to 1990. Despite contraction -5.13% during the economic crisis in 1998, South Sulawesi could recover in early 2000.

The economy structure of South Sulawesi shows that the main sector of supply side is agriculture. However, in early 2000, the main sector of South Sulawesi experienced a transition to manufacturing and service industries (i.e. trade, hotels and restaurants) in 2006. The agricultural sector continued to decline in 1980. The contribution of agriculture in 1980 was 48,65% to 22,99% in 2015. Meanwhile, the trade subsector is the main driver of improvement in service groups. The contribution of trade and services recorded an increase from 42,94% in 1980 to 43,87% in 2015. On the other hand, the industrial sector was recorded as the group with the highest increase. In the period of 1980 - 2000, the manufacturing industry sector experienced a very rapid increase, from 8,41% in 1980 to 33,14% in 2015. However, since 2001, this sector recorded a stagnant growth.

In GDP of expenditure side, consumption share to PDRB in South Sulawesi and also Indonesia is dominated by consumption expenditure, especially household consumption. The contribution of consumption to the economy in South Sulawesi experienced significant growth, from 48% in 1990-1994 to 68% in 2010-2016.

Meanwhile, the development of investment in South Sulawesi is low due to the low contribution of private investment. Among its peer areas, private investment in South Sulawesi, both in the form of Foreign Direct Investment (FDI) and Domestic Investment (DI) is the lowest value. By comparison, in 2015, DI in South Sulawesi is only Rp9,2 trillion, much lower than Jakarta (Rp15,5 trillion) and East Java (Rp35,5 trillion). This condition is not much different from FDI recorded at USD 233 million or 0,82% of total FDI in Indonesia. The value of FDI Sulsel is much lower than Jakarta (USD 3,6 billion) and East Java (USD 2,6 billion).

Spatially, economic activity in South Sulawesi is still concentrated in Makassar. Based on data from 2000 to 2015, Makassar, East Luwu, Bone, Pangkajene and Kepulauan (hereafter Pangkep) consistently contribute significantly to the South Sulawesi GRDP. In 2015, Makassar contributes 31,29% and when combined with East Luwu, Bone and Pangkep, the four regions already represent 51,55% of the total GRDP of South Sulawesi.

1.2 Main Problem of South Sulawesi

From the deepening of the factors that are suspected to be the main problem in economic growth, it is found that low labor availability, especially labor with high educational qualifications,

infrastructure conditions, especially roads at the district or city level, reliability of electricity supply and innovation development, are the main problem in economic growth in South Sulawesi.

The most binding constraint in South Sulawesi are infrastructure availability in the form of sea and land transportation connectivity, the availability of electricity in South Sulawesi and the development of quality human resources in South Sulawesi according with Mahajan (2005), Calvo (2006), Enders (2007), Mengista (2008) and Hang (2013), study case in Bangladesh, Bolivia, Egypt, China-India and Cambodia, states that accelerated infrastructure development can boost economic growth. In addition, research on innovation in technology can lower costs so as to provide economic benefits (Aker, 2010).

The strategic geographical location of South Sulawesi makes South Sulawesi a connecting trade area. However, according to anecdotal information[1] stated that the capacity of the Soekarno-Hatta port of 500,000 TEUs has already exceeded the capacity in 2016 to reach 700,000 TEUs. Currently, the Central and local Governments are building a new port of Makassar New Port in order to increase capacity to 1,500,000 TEUs by 2018. In terms of land transportation, the percentage of roads damaged in the province / regency / city in South Sulawesi is 25%[2]. Based on research by Science Scope (2010), the low quality of roads significantly increases the logistics and maintenance costs of trucking vehicles. In addition, the construction of the railway line as a diversification of land transportation can reduce travel time and production costs. This is in line with research by Horridge (2012) and Erjavec (2014) which states that railway construction can reduce the cost of road users from road transport to rail transport.

Electricity consumption in South Sulawesi in 2013 is low and less than the national average consumption rate of 753,7 kWh. In the development of industry, one of the main requirements that investors consider is the availability of electricity. The limited power supply is also evident from the high frequency of power outages. The frequency of power outages in South Sulawesi reached 2,1 times per week (KPPOD, 2012).

Low labor quality is also one of the main problem in the economy of South Sulawesi. The low quality of human resources in South Sulawesi is seen from the level of education of workers, which is dominated by graduates of elementary and junior high school. The proportion of under-graders of elementary and junior secondary schools in South Sulawesi reached 41,23% of the total labor force. While the presentation of labor force graduated from elementary and junior high school in Jakarta (32,31%) is lower than South Sulawesi, although it is higher than East Java which reach 49,93%. The average length of school in South Sulawesi in 2013 only reaches 8,01 years, lower than the national average of 8,14 years and Jakarta Capital City is 11 years. According to Lazarov and Peterski (2016) which states that the economic growth bottleneck in Macedonia is a human resource and educational level in a country has a positive effect with a higher rate of return.

Market failure is also one of the main problem in South Sulawesi. Autor (2010) states that the lack of information leads to market failure. The lack of information hold the optimum productivity. Moreover, in the theory of economic growth[3], the discovery and advancement of technology encourages the national productivity. Technology especially information and communication can change production process. One of the development of innovation in South Sulawesi is using cellular phone in

[1] Berdasarkan FGD dengan PT Pelindo IV dan Otoritas Pelabuhan di bulan April-Juni 2016

[2] Kondisi jalan rusak tingkat kabupaten/kota dihitung dengan melakukan pendekatan, sementara data kondisi jalan rusak Nasional di provinsi diperoleh dari Balai Besar Pelaksanaan Jalan Nasional XIII

[3] Pindyck. Mikro Ekonomi edisi kelima. 2002.

spreading information. In 2012, cellular phone users in South Sulawesi only reached 6,43% of total mobile phone users in Indonesia, or lower than East Java which reached 7,67% of total mobile phone users in Indonesia (Susenas, 2012). Several related agencies have established farmer groups and sent short messages (SMS) related to agricultural commodity price data at the retail level. Similar research conducted by Klonner (2008), Aker (2010) and Bairagi (2011) related to cellular phone development have an effect on to economic development in South Africa, Africa and Bangladesh.

Table 1. 1 Matrix Binding Constraint Using HRV Method

Analisis			Penjelasan
Analisis Lingkungan Bisnis		Kendala kritikal	Infrastruktur dan SDM
Pengembalian Ekonomi	Pendapatan Sosial	Geografis	Lokasi strategis, merupakan pintu gerbang Indonesia Timur, dekat dengan Surabaya sebagai salah satu pusat perdagangan kedua terbesar di Indonesia.
		Infrastruktur	Perbaikan kualitas jaringan jalan dan kapasitas listrik wilayah masih terbatas, konektivitas pelabuhan dan jalur KA
		SDM	IPM dan tingkat partisipasi masih rendah
	Mikro	Indeks Korupsi	Indeks korupsi ketiga terendah di Indonesia
	Makro	Moneter	Inflasi rata-rata selama 5 tahun dibawah nasional
			Iklim Investasi menunjang
			Indeks daya saing cukup kompetitif (peringkat 7 nasional)
		Fiskal	Belanja APBD didominasi belanja rutin
	Kegagalan Pasar	Inovasi	Minimnya pengembangan inovasi dalam mendorong sektor ekonomi utama (pertanian)
Pembiayaan	Internasional	Penanaman Modal	Penanaman modal dibawah DKI Jakarta dan Jawa Timur
	Domestik	Biaya	Tingkat suku bunga investasi cukup tinggi, namun tidak berpengaruh terhadap perkembangan investasi
		Risiko	NPL Sulawesi Selatan lebih tinggi dibandingkan Nasional
		Kompetisi	Jumlah bank cukup banyak

Keterangan

Tidak menjadi masalah saat ini

Masalah tapi bukan prioritas utama untuk di selesaikan

Binding Constrain, masalah yang menjadi prioritas utama untuk di selesaikan

Based on the analysis above, there are 6 the most binding constraint that have been identified in the economy of South Sulawesi. The first constraint is the limited inter-regional connectivity of both land and sea connection between regions, which is marked by the high travel time between regions by land and the dwelling time at the port. Furthermore, the quality of education is still low, marked by the average length of schooling as well as the level of education of workers who are mostly graduates of elementary and junior high. Coupled with insufficient electricity distribution infrastructure by 2020 can hold economic development. The last constraint is the low level of innovation in the agricultural sector as the leading sector of South Sulawesi, which resulted in slowing growth of this sector.

1.3 Policy Simulation

The main problems that have been identified previously, both central and local governments have drafted several policies. Central and local governments have been designing and implementing various programs to improve connectivity and electricity infrastructure. In addition, education quality improvement programs and innovation development are also continuously improved. To know the economic impact of the structural reform policy, a simulation with *Multiregional Computable General Equilibrium* (CGE) model INDOTERM[4].

[4] Model build by Bappenas, CoPS Australia, CEDS UNPAD, ADB dan USAID.

In order to improve the effectiveness of land transportation, South Sulawesi has repair the road infrastructure and build port of Makassar New Port. Repair the damaged roads by 50% is expected to lower logistics costs by 9,97%. This condition is in line with research from Science Scope (2010), which states that economic growth will increase as a result of cost reduction. Good road conditions are crucial to economy of South Sulawesi, because it can reduce logistics costs so as to encourage the competitiveness of agricultural products and industries traded between islands and exports. Road infrastructure improvements also have an impact on the efficiency of transport (Horridge, 2012). Road quality improvement has the potential to increase the average GRDP growth to the baseline by 0,711%, in addition to aggregate employment growth of 0,017%.

In addition, on the simulation of other land transportation, also carried out the construction of Makassar-Parepare Railway. The construction is expected to reduce costs due to the swiching cost from road to rail. The assumption used is the absorption from road users to trains by 13,5%, and there is a decrease in fuel consumption by 3%. Railway development has the potential to increase the average GRDP growth to the baseline by 0,181%, with additional aggregate employment growth of 0,138%.

To overcome the constraints of sea transportation connectivity, the government is building a new port in South Sulawesi. The addition of the new port is due to the main port in South Sulawesi, Soekarno Hatta Port has been operating above capacity, resulting in high dwelling time. The development of Makassar New Port is expected to increase the port capacity by 47% and decrease the dwelling time from 5 days to 4 days. The impact of the development of Makassar New Port phase 1A provides an increase in the average growth against the baseline of 0,469% and 0,502% towards employment. This condition is in line with research from New Zealand Ministry of Transport (2014), which states that economic growth will increase as a result of decreased costs and travel time. The addition of new ports becomes an important thing for the economy of South Sulawesi in reducing logistics costs so as to encourage the competitiveness of agricultural and industrial products with the aim of export and inter island trade.

In the simulation of the infrastructure of both land connectivity such as road and railway construction and sea connectivity such as port development can encourage an increase in the construction sector and government services due to funding issued by the government. While employment on the manufacturing side, employment is dominated by crops where it is confirmed from the number of labor force employed by major employment in August 2016 where about 40% of the workforce in South Sulawesi works in the agricultural sector (BPS). The findings are also in line with Straub's research (2010) which states that infrastructure plays an important role in supporting growth, and has a direct impact on increasing the scale of economy and labor productivity. Roads, trains and ports provide access to a previously inaccessible area, and allow investment to grow more productively.

To increase the quality of education, the government seeks to increase the average length of schooling of Indonesians. Under national planning (RPJMN) 2015-2019, it is targeted that South Sulawesi will have an average of 9,39 years of schooling by 2020, where in 2015 it is only 7,64 years. An increase in the average length of school can provide additional to the baseline growth rate of 0,245% and the addition of employment growth of 0,578%.

Improved quality of education is expected to create inclusive economic growth, or increase labor productivity in low productivity sectors. Referring to research conducted by Anugrah (2015), the increase in the average length of school will increase the productivity of workers, especially to the unskilled labor group so that the economic disparity between its citizens is getting smaller. Wilson

(2004) and Fernandez (2000) also explain that skilled human resources are the main drivers of economic growth in developing countries, and are considered as one of the main determinants of economic growth (Mankiw, 2008, Barro, 2001).

In order to reduce of market failure, innovation is needed in order to encourage economic growth. Innovation is done based on the leading sector in South Sulawesi, agricultural sector. The use of innovation (in this case Technology) at the farm level seems minimal. This is reflected in the low number of mobile phone users in farmers. The income difference between farmers who own mobile phones and those with no Rp60,000-Rp70,000 in 2012. Through mobile phones, farmers have additional information that can be used to boost their income. Several related agencies (Regional Food Security and Economic Bureau of South Sulawesi Govenment) have disseminated information via SMS (Short Message Services) to the year group from 2013. Through cellular phone use at the farm level, it is able to provide additional to the baseline growth rate of 0,030 % and additional employment growth of 0,085%. The low increase is estimated because the sample of this assumption is only farmers in the food crops and horticulture sector.

In the simulation of the quality of human resources and the development of mobile phone usage innovation, it is able to encourage the increase in rice and crops because the largest share of South Sulawesi economy is dominated by agriculture, forestry and fishery sector about 20%. The shock simulation of human resource quality improvement and innovation development also encourage the absorption of non-service sector workers, especially rice and crops commodities. As for the service sector, improving the quality of human resources encourages the absorption of manpower in the financial services sector and the development of technological innovation encourages employment in government services because the government uses technology to strengthen and build relationships with communities[5].

The structural reform policy to address the issue of power supply is the launch of a 35.000 MW national power project. Simulation of the development of electricity infrastructure is done by multiyear investment increase in electricity sector. In the assumptions used in the simulation, the increase in electricity capacity building will increase 42% from the planned 35.000 MW electricity generation reached in South Sulawesi. The impact of the electricity policy adds to the average growth on the baseline for GRDP of 0,245%, especially in the construction sector and adds growth to aggregate employment (0,045%), especially in the non service sector (cement) and services (trade).

The simulation result that has been done, the main problem of investment and inclusive economic growth in South Sulawesi is the still low road constraction. Road constraction (and also repair) in South Sulawesi are characterized by an increase in the number of good quality roads[6] providing additional growth against the baseline (per cent per year 2016-2010) for GRDP by 0,711% and increasing employment growth by 0,017%. If these six strategies are implemented simultaneously, there is a potential growth of South Sulawesi's GRDP (baseline per year 2016-2010) of 1,881% with an increase in employment by 1,368%. In detail, the simulation results that have been done are summarized in Table 1.2 below.

[5] Ndou, Valentina (2014). E-government for developing countries: opportunities and challenges.
[6] Kategori jalan baik adalah jalan dalam kondisi baik, sedang dan rusak ringan.

Table 1. 2 Policy Simulation Result on Economic Growth and Labor Absorption of South Sulawesi

No.	Kebijakan	ASUMSI	Dampak Makro Ekonomi (Simulasi 1)		Kontribusi Industri (Simulasi 2)		
			PDRB	Tenaga Kerja	PDRB	Tenaga Kerja	
					Top Gainers	Top Gainers Manufaktur	Top Gainers Sektor Jasa
1	Perbaikan Jalan	Perbaikan jalan kondisi rusak di seluruh Sulsel sebesar 50%	0.711	0.017	Construction 0.001 Gov Serv. 0.001 Crops 0.001	Crops 0.002 Cement 0.001 Food Prd. 0.001	Construction 0.003 Gov Serv. 0.002 Education 0.001
2	Pembangunan Makassar New Port	Peningkatan kapasitas pelabuhan dari semula 500.000 TEUs di tahun 2015, menjadi 1.500.000 TEUs di tahun 2018	0.469	0.502	Construction 0.147 Gov Serv. 0.068 trade 0.063	Paddy 0.167 Crops 0.097 Cement 0.066	Finance 0.137 Communication 0.036 Rest and Hotel 0.032
3	Peningkatan Kapasitas Listrik	Peningkatan Kapasitas Listrik meningkat sebesar 42%	0.245	0.045	Construction 0.076 Real Estate 0.056 Trade 0.028	Cement 0.029 Wood Prd. 0.038 Food Prd. 0.018	Trade 0.448 Gov Serv. 0.020 Education 0.001
4	Pembangunan Kereta Api Makassar-Parepare	Pembangunan Kereta Api yang menghubungkan 2 Kota Perdagangan (Makassar dan Parepare), sehingga terdapat efisiensi biaya transportasi di kedua kota tersebut sebesar 3%	0.181	0.138	Construction 0.028 Gov Serv. 0.016 Education 0.007	Food Prd. 0.011 Crops 0.008 Wood Prd. 0.007	Construction 0.050 Gov Serv. 0.028 Education 0.012
5	Peningkatan Rata-rata Lama Sekolah	Peningkatan rata-rata lama sekolah dari yang semula selama 8,07 tahun di tahun 2014 menjadi 9,39 tahun di tahun 2020.	0.245	0.578	Paddy 0.079 Finance 0.065 Crops 0.045	Finance 0.114 Communication 0.030 Education 0.026	Paddy 0.140 Crops 0.080 Cement 0.057
6	Peningkatan Inovasi	Peningkatan pendapatan akibat informasi yang diperoleh melalui penggunaan telepon seluler	0.03	0.085	Paddy 0.011 Crops 0.008 Construction 0.004	Paddy 0.015 Crops 0.011 Estate Crops 0.002	Gov Serv. 0.004 Trade 0.003 Construction 0.003
Total			1.881	1.365			

1.4 Conclusions and Recommendations

a. Conclusions

Based on growth diagnostic research that has been done, it can be concluded that the problem of infrastructure and quality of human resources is a major barrier of investment and economy in South Sulawesi. Infrastructure connectivity becomes important in supporting economic activity in South Sulawesi. The problems of infrastructure are mainly related to connectivity such as road improvements, port capacity increase, and the construction of trains that have not been owned in South Sulawesi. In addition, other infrastructure issues such as limited electrical energy become a problem for the South Sulawesi industry. Another problem is the development of minimal innovation. Overall the problem is a major constraint factor for the economy of South Sulawesi.

Based on the simulation results, the damaged road repair policy has the greatest impact on the economy of South Sulawesi. The steady portion of roads to provincial (and also regency and city level) that has not been comprehensive or less than 90% becomes one of the things that illustrates the problems in South Sulawesi. Good road quality can encourage the smooth supply and distribution of goods, so road improvements to the whole area need to be done, especially in connecting between districts. Policy simulation results show that road improvements will have an impact of an average increase in economic growth of 0,711% from the baseline and an increase in employment by 0,017%.

The second priority development policy is the development of ports. From the simulation results, the development of Makassar New phase 1A will increase the capacity of 700.000 TEUs to 1.500.000 TEUs in 2018. Policy simulation results show that the development effort of Makassar New Port to reach the target in 2018 will give an impact of an average economic growth increase of 0,469 % of baseline and labor absorption of 0,502% of the baseline.

b. Recommendations

Based on the above conclusions, the recommendations can be given is the improvement of the availability of quality infrastructure, especially infrastructure related to land and sea connectivity, and energy. Then, improving the quality of human resources and encouraging the development of innovation as a strategy in improving the quality of labor.

1. Road Constructions
   a. Improve the steady ratio of good roads quality between province / regency / citiy in order to smooth the flow of goods distribution.
   b. Evaluation and mapping the road (good and poor), and the availability of funds (capital expenditures) owned by the province / regency / city.
2. Makassar New Port (MNP)
   a. Decrease dwelling time in Makassar port, with good internet connection to speed up document process, improve accessibility to Makassar Port, such as quality of port area road and adequate transportation facilities.
   b. The need to accelerate the completion of Makassar New Port development in order to encourage the smooth flow of goods between provinces (exports / imports between regions) as well as the State (export and import abroad).
3. Railway Makassar-Parepare
   a. The need to accelerate the completion of the construction of the Makassar-Parepare Railway line to minimize transportation costs.
   b. Accelerate the provision of land for infrastructure development especially related to connectivity (roads and railways).
4. Increasing the Quality of Human Deveopment through education
   a. Optimize the local budget in encouraging the achievement of the central government is 9 years compulsory study (first target) and 12 years compulsory study (second target).
   b. Improved formal and non formal education. Formal education can be done through the improvement of vocational schools, as well as non-formal education conducted by holding skills courses to improve skilled human resources. Changes in the economic structure of the primary sector into secondary sectors, so that required high skilled human resources.
   c. Evaluation and monitoring of education policies in the regions.
5. Construction of Electricity
   a. Providing support for the 35.000 MW project, such as providing permits and processes to private investors who will work with central and local government to build power plants in South Sulawesi.
   b. Both the central and local governments provide assurance of the sustainability of the projects to be undertaken, thus encouraging investors to invest in the region.
6. Innovation Development especially in Primary and Secondary Sectors
   a. Strategy to promote human resource quality and innovation development such as conducting regular training, "technology literacy" for workers (especially those not in school or low-ability).
   b. Provide professional certification to primary and secondary sector workers in the face of the ASEAN Economic Community.

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THE IMPACT OF UNCONDITIONAL CASH TRANSFER (UCT): EVIDENCE FROM BANTUAN LANGSUNG SEMENTARA MASYARAKAT (BLSM) IN INDONESIA

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~~UCT adalah program jangka pendek untuk membantu masyarakat miskin smoothing consumption akibat shock kenaikan harga komoditas penting. Sejak pertama kali diperkenalkan pada tahun 2005, UCT yang pada masa itu bernama BLT seringkali lebih didominasi dengan isu politik dibandingkan dengan dampaknya pada konsumsi masyarakat. Penelitian ini fokus pada dampak dari program BLSM yang mulai dilaksanakan pada tahun 2013 di Indonesia pada beberapa aspek kesejahteraan masyarakat. Kami melakukan propensity score matching kepada 15.921 rumah tangga pada data IFLS. Secara keseluruhan rumah tangga penerima program BLSM memiliki pengeluaran makanan pokok sebesar 8,1% lebih tinggi dari rumah tangga bukan penerima program. Yang mengejutkan dari penelitian ini adalah program BLSM mampu meningkatkan konsumsi rokok keluarga hingga sebesar 20,1% lebih tinggi daripada rumah tangga bukan penerima program.~~

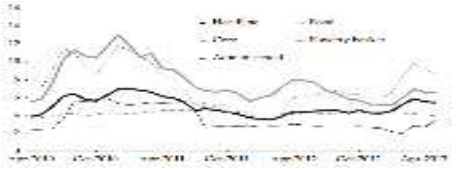
UCT is a short-term program to help poor people smooth their spending for consumption due to shocks of important commodity price increases. Since it was first introduced in 2005, UCT which was called the Bantuan Langsung Tunai (BLT) is often more dominated by political interest than its impact on public consumption. This study focuses on the impact of the BLSM program that began in 2013 in Indonesia in several aspects of community welfare. We conducted propensity score matching to 15,921 households in IFLS data. Overall, the BLSM program beneficiaries had 8.1% higher food expenditure than non-beneficiary households. What is surprising about this research is that the BLSM program can increase family cigarette consumption up to 20.1% higher than non-beneficiary households.

Keywords: BLSM, Food Expenditure, Cigarettes Expenditure

INTRODUCTION

~~In the past ten years, T~~the Indonesian government has ~~several times~~ raised fuel prices for several times in the past ten years. The shocks caused by rising fuel prices triggered rising prices in general (Chisadza et al, 2016) primarily on staple goods. The impact of rising fuel prices will be felt directly by the people, especially the underprivileged communities. As seen in Figure 1, the fuel price hike in May 2013 ~~will~~ reduced inflation and increase further costs. An average fuel price increase of Rp 1,500 per liter could add a ~~three percentage~~three-percentage point limit to the inflation rate, pushing inflation by more than 8% year on year in the last quarter of 2013 and bringing the average inflation rate this year to 7, 2% (Nehru, 2013).

Figure 1 Inflation~~si~~ ~~di~~ Indonesia ~~dari~~ during April 2010- April 2013 (%~~Persen~~)



~~Sumber~~ Source : Nehru (2013) ~~dalam~~ in Survey of Recent Development BIES

~~Pada setiap kenaikan, sejumlah program kompensasi telah menyasar masyarakat yang tidak mampu dalam membantu mereka menghadapi dampak merugikan dari kebijakan tersebut. Pada dekade yang sama, pemerintah memperkenalkan sejumlah program pengentasan kemiskinan. Walaupun masih jauh dari sempurna, program ini memperlihatkan suatu dasar untuk menciptakan suatu sistem kesejahteraan sosial yang komprehensif (Perdana, 2014).~~

~~Berbagai program pengentasan kemiskinan yang dilakukan oleh pemerintah telah menekan kemiskinan setiap tahunnya. Salah satu cara untuk mengentaskan kemiskinan yaitu melalui Program Anti Kemiskinan yang manfaatnya ditargetkan secara khusus pada masyarakat miskin. Program Anti Kemiskinan di Indonesia adalah bagian dari Jaring Pengaman Sosial atau *Social Safety Net* (SSN) yang diperkenalkan pada tahun 1998 (Daly and Fane 2002). Di bawah Presiden Susilo Bambang Yudhoyono, pemerintah Indonesia telah mengubah kebijakan pengentasan kemiskinan dari pendekatan makro dan *top down* ke pendekatan partisipatif masyarakat atau rumah tangga (Dartanto and Nurkholis 2013). Hal ini telah mengembangkan dan menerapkan beberapa kebijakan untuk mengurangi kemiskinan kronis, beberapa program jaring pengaman sosial seperti yang ditunjukkan pada Tabel 1. Pemerintah telah menyediakan jaring pengaman sosial dalam menjaga kestabilan daya beli masyarakat melalui program Bantuan Langsung Sementara Masyarakat (BLSM) akibat adanya macro shock.~~

At each increment, a number of compensation programs have targeted poor communities to help them deal with the adverse impacts of the policy. In the same decade, the government introduced ~~a number of~~several poverty alleviation programs. Although still far from perfect, the program demonstrates a basis for creating a comprehensive social welfare system (Prime, 2014).

Various government poverty alleviation programs have reduced poverty every year. One way to alleviate poverty is through the Anti Poverty Program (Program Anti Kemiskinan) whose benefits are targeted specifically at the poor. The Anti Poverty Program in Indonesia is part of the Social Safety Net (SSN) introduced in 1998 (Daly and Fane 2002). Under President Susilo Bambang Yudhoyono, the Indonesian government has changed its poverty alleviation policy from a macro and top-down approach to a participatory approach of community or household (Dartanto and Nurkholis 2013). It has developed and implemented several policies to reduce chronic poverty, several social safety net programs as shown in Table 1. The government has provided a social safety net in maintaining the stability of people's purchasing power through the Community Direct Interruption (BLSM) program due to the macro shock .

Tabel 1 ~~Skema Program Penanggulangan Kemiskinan~~Anti Poverty Program Schemes

No	~~Nama Program~~Name of Program	~~Program Perlindungan Sosial~~Social Security Programs		
		Volume	Jumlah Sasaran	Periode Pelaksaanaan
1	Subsidi Beras (Raskin)	15 Kg ~~per rumah tangga miskin setiap bulan~~for every poor HH, monthly	15.5 ~~juta rumah tangga yang berstatus penduduk miskin~~mil. Poor HH	1998 - Now~~Sekarang~~

2	Program Keluarga Harapan (PKH)	1.4 Million cash aid per household per year	2.4 million very poor households (the poor)	2007 ~~–~~ ~~Sekarang~~Now
3	Bantuan Siswa Miskin (BSM)	Bantuan tunai SD : Rp 380 ribu per tahun, SMP : Rp 450 ribu per tahun, SMA : Rp 750 ribu per tahun.	8.7 million school children	2008 – ~~Sekarang~~Now
4	Bantuan Langsung Sementara Masyarakat (BLSM)	Rp 150,000 cash aid per poor and vulnerable household	15.5 million household	2013 (durasi 4 bulan)

Source: Tim Percepatan Penanggulangan Kemiskinan (TNP2K)

~~Salah satu yang menarik dari berbagai program yang ditawarkan oleh pemerintah yaitu program yang bersifat unconditional, seperti Raskin dan Bantuan Langsung Sementara Masyarakat (BLSM) kepada masyarakat miskin. Bedanya, Raskin diberikan dalam bentuk barang berupa beras sedangkan BLSM diberikan dalam bentuk uang tunai. Sebelumnya pada tahun 2000 an pemerintah Indonesia telah mengeluarkan kebijakan yang serupa dengan BLSM yaitu Bantuan Langsung Tunai (BLT). Banyak pendapat mengatakan bahwa program ini hanya ganti cover saja. Sedangkan, mekanisme pemberian program tetap sama yaitu emergency income support (World Bank, 2012).~~

~~Setiap tahun Pemeritah Indonesia relatif meningkatkan anggaran untuk perlindungan sosial masyarakat (figure 2). Namun, peningkatan tajam terjadi pada tahun 2013, menjelang pemilu di Indonesia dan sepanjang tahun 2005 sampai 2015, anggaran pemerintah untuk perlindungan sosial tahun 2013 paling tinggi yaitu sekitar 17 triliun rupiah. Masyarakat semakin penasaran apakah program ini memang tepat sasaran atau tidak? para politisi bahkan saling menyerang program semacam ini karena banyak pemberitaan yang mengatakan bahwa program semacam Unconditional Cash Transfer (UCT) di Indonesia hanya digunakan sebagai alat politik semata. Sebuah kajian yang pernah dilakukan menyatakan bahwa program BLT dapat menciptakan peluang korupsi (Smeru, 2008~~

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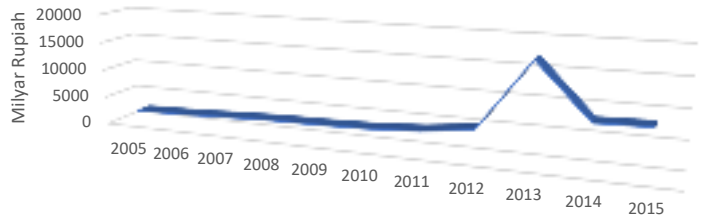
One of the highlights of the various programs offered by the government is the unconditional program, such as Raskin and Direct Community Assistance (BLSM) to the poor. The difference, Raskin is given in the form of goods in the form of rice while BLSM is given in the form of cash. Previously in the 2000s the Indonesian government has issued a similar policy with BLSM namely Direct Cash Assistance (BLT). Many opinions say that this program only replace the cover only. Meanwhile, the mechanism of program giving remains the same that is emergency income support (World Bank, 2012).

Every year ~~Pemeritah~~ the Indonesian Government ~~relative~~ increases budget for social protection of society (figure 2). However, the sharp increase occurred in 2013 ahead of elections in Indonesia and throughout 2005 to 2015, the government's budget for social protection in 2013 was the highest at around 17 trillion rupiah. The community is increasingly curious whether the program is right on target~~. or not?~~ Opposing politicians even attack ~~each other~~the government on this kind of program because there are~~is a~~ lots of news saying that a program like Unconditional Cash Transfer (UCT) in Indonesia is only used as a political tool. A recent review suggests that BLT programs can create opportunities for corruption (Smeru, 2008).

Figure 2. Data APBN Menurut Fungsi Perlindungan Sosial
Tahun 2005-2015



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
APBN	2103,8	2303,3	2650,4	2986,4	3102,3	3341,6	3906,4	5081,5	17107,5	8063,9	8306,8

Source: Data Pokok APBN, Kementrian Keuangan Republik Indonesia~~Penelitian ini berusaha untuk menganalisis dampak dari program BLSM sebagai jaring pengaman sosial terhadap respon rumah tangga pada perubahan kekayaan. Kami mencoba melakukan estimasi pada pengeluaran rumah tangga sebagai indikator krsejahteraan dari sisi ekonomi dan tingkat kebahagiaan dari sisi kondisi psikologi rumah tangga.~~

This study seeks to analyze the impact of the BLSM program as a social safety net on household responses to wealth change. We try to estimate household expenditure as an indicator of economic prosperity and the level of happiness in terms of household psychological conditions.

BANTUAN LANGSUNG SEMENTARA MASYARAKAT (BLSM)

~~Bantuan Langsung Sementara Masyarakat bersifat Unconditional Cash Transfer (UCT). Karena waktu pemberian program ini relatif sangat singkat, yaitu hanya berkisar empat bulan. Seperti pada tahun 2013 terjadi kenaikan harga BBM dan pemerintah secara bertahap menyalurkan BLSM pada keluarga miskin di 33 provinsi Indonesia. Pemerintah memberikan bantuan berupa uang tunai sebesar Rp 150.000 setiap bulan. Transfer dana yang dilakukan oleh pemerintah ini akan berdampak terhadap pendapatan rumah tangga keluarga sehingga diharapkan mampu menjaga daya beli masyarakat terutama untuk barang kebutuhan pokok seperti makanan dan kebutuhan lainnya.~~

~~*Unconditional Cash Transfers* (UCT) akhir-akhir ini mendapat perhatian baru sebagai alat untuk mengentaskan kemiskinan di negara-negara berkembang (Baird et al. 2013). Dibandingkan dengan transfer dalam bentuk barang, UCT menarik karena uang tunai yang diterima tidak dikenai biaya tambahan dan distorsi. Rumah tangga dengan kebutuhan heterogen mungkin lebih mampu mengubah uang menjadi perbaikan kesejahteraan jangka panjang daripada transfer ternak atau keterampilan. UCT mungkin juga memiliki keuntungan psikologis dengan membiarkan penerima memilih cara menghabiskan uang. Selain itu, UCT biasanya memiliki biaya pengiriman lebih rendah dan lebih murah daripada transfer tunai bersyarat karena tidak ada kondisi yang perlu dipantau.~~

Bantuan Langsung Sementara (Direct Community Assistance) is a form of Unconditional Cash Transfer (UCT)~~,~~ because the timing of this program is relatively short, which is only about four months. As in the year 2013 there was an increase in fuel prices and the government gradually channeled BLSM to

poor families in 33 provinces of Indonesia. The government provides cash assistance of Rp 150,000 per month. Fund transfers made by the government will affect the household income of the family so it is expected to maintain the purchasing power of people, especially for ~~basic necessities~~necessities such as food and other necessities.

~~Unconditional Cash Transfers (~~UCT~~)~~ have recently received new attention as a tool to alleviate poverty in developing countries (Baird et al., 2013). Compared with the transfer of goods, UCT is more attractive because the cash received is not subject~~ed~~ to additional fees and ~~distortions~~comditions. Households with heterogeneous needs may be better able to convert money into longer-term welfare improvements than cattle transfers or skills. UCT may also have a psychological advantage by letting the recipient choose how to spend money. In addition, UCT usually has lower shipping costs and is cheaper than conditional cash transfers because there are no conditions that need to be monitored.~~Di sisi lain, Program Unconditional Cash Transfer seperti BLSM masih menimbulkan kritik dan perdebatan di kalangan masyarakat (Molyneux, Jones, and Samuels 2016; Cesarini et al. 2016; Bobonis, González-Brenes, and Castro 2013; Hidrobo, Peterman, and Heise 2016). Mereka yang menerima BLSM mungkin dihabiskan untuk barang-barang godaan atau yang kurang bermanfaat dalam jangka panjang. Kami menduga transfer BLSM ini digunakan untuk pengeluaran konsumsi rokok, karena banyak studi yang menjelaskan bahwa perokok terbanyak berada di negara berkembang dengan tingkat pendapatan yang rendah. Di Indonesia konsumsi rokok semakin meningkat, Setidaknya ada satu perokok di 57% rumah tangga. Rata-rata konsumsi rokok bulanan rumah tangga adalah 18 bungkus dari 16 batang rokok. Konsumsi rokok per kapita lebih tinggi untuk rumah tangga berpenghasilan tinggi: 7,83 bungkus per bulan, dibandingkan dengan 4 bungkus untuk rumah tangga rendah. Konsumsi rokok meningkat seiring kenaikan pendapatan: peningkatan pendapatan rumah tangga sebesar 10% akan meningkatkan konsumsi sebesar 6,5%, dengan dampak yang sangat kuat di kalangan rumah tangga berpendapatan rendah (kenaikan mencapai 9%). Namun sedikit perubahan di antara rumah tangga berpendapatan tinggi (kenaikan kurang dari 1%) (Adioetomo, Djutaharta, and Hendratno 2005).~~

~~Beberapa pendapat justru mengatakan bahwa Program BLSM cukup efektif dilaksanakan di Indonesia dibandingkan dengan Raskin (Fernandes 2015). Walaupun banyak orang yang beranggapan bahwa transfer tunai yang diberikan digunakan untuk tujuan lain dan bukan makanan, beberapa LSM mengevaluasi bahwa transfer tunai yang diberikan oleh pemerintah untuk rumah tangga miskin sebesar 50 sampai 60 persen digunakan untuk pengeluaran makanan dan sisanya untuk kebutuhan pokok lainnya.~~

On the other hand, Unconditional Cash Transfer Programs such as BLSM still generate criticism and debate among the public (Molyneux, Jones, and Samuels 2016; Cesarini et al., 2016; Bobonis, González-Brenes, and Castro 2013; Hidrobo, Peterman, and Heise 2016). Those who receive BLSM may be spent on temptation or less useful items in the long run. We suspect the BLSM transfers are used for cigarette consumption expenditures, as many studies suggest that most smokers are in developing countries with low income levels. In Indonesia cigarette consumption is increasing, There is at least one smoker in 57% of households. The average monthly cigarette consumption of households is 18 packs of 16 cigarettes. Higher per capita consumption of cigarettes for high income households: 7.83 packs per month, compared with 4 packs for low households. Cigarette consumption rises as income increases: a 10% increase in household income will increase consumption by 6.5%, with a very strong impact on low-income households (9% increase). However, there was little change among high income households (increase of less than 1%) (Adioetomo, Djutaharta, and Hendratno 2005).

Some argue that the BLSM program is quite effective in Indonesia compared to Raskin (Fernandes 2015). Although many people assume that cash transfers provided for other purposes and not food, some

NGOs evaluate that government-provided cash transfers for poor households of 50 to 60 percent are used for food expenditure and the rest for other basic needs.

DATA AND METHODOLOGY

Data

~~Sumber data yang digunakan dalam penelitian ini adalah Indonesian Family Life Survey (IFLS). Untuk mengevaluasi dampak program BLSM, berdasarkan data dari satu gelombang IFLS tersebut kemudian disusun data cross saction di tingkat rumah tangga HH. Alasan digunakannya data cross saction dengan satu periode (2014) adalah karena umumnya Program BLSM bersifat sementara dan mulai dilaksanakan pada tahun 2013.~~

~~Source of~~The data used in this research is Indonesian Family Life Survey (IFLS). To evaluate the impact of the BLSM program, based on data from one IFLS wave it is then compiled cross-sectional data at household HH level. The reason for using cross saction data with one period (2014) is that most of the BLSM programs are temporary and start to be implemented in 2013.

Tabel 3 ~~Identifikasi Variabel~~Variable Identification

No	Variable	IFLS Data	Data Level	Section
1	BLSM Transfer	The total amount of aid that has been received in the last year by households from the BLSM Program~~Jumlah total bantuan yang telah diterima dalam setahun terakhir oleh rumah tangga dari Program BLSM~~.	HH	KSR
2	Household food expenditure	Total expenditure for staple food consumption for a month.~~Jumlah pengeluaran untuk konsumsi makanan pokok selama sebulan.~~	HH	KS
3	Household cigarettes expenditure	Total expenditure for cigarette consumption for a month.~~Jumlah pengeluaran untuk konsumsi rokok selama sebulan.~~	HH	KS
4	Household characteristics	Including total household income for a month, type of house floor used, house floor size used, type of house wall, family water source, electricity, head of family.~~Termasuk total pendapatan keluaraga selama sebulan, jenis lantai rumah yang digunkan, ukuran lantai rumah yang~~	HH	AR

		~~digunakan, jenis tembok rumah, sumber air keluarga, keberadaan listrik, jenis pekerjaan kepala keluarga, pendidikan terakhir kepala keluarga, umur kepala keluarga dan jumlah anak yang masih sekolah.~~		

Source : Indonesia Family Life Survey (IFLS)

~~Data dari variabel di tingkat rumah tangga yang digunakan: Penerima Transfer BLSM, Pengeluaran Konsumsi Makanan Rumah Tangga, Nilai Aset Bukan Tanah, Pengeluaran Kesehatan untuk anak dan dewasa, pengeluaran untuk pendidikan, Kesejahteraan Psikologis dan Karakteristik Rumah Tangga (Household income, jenis lantai, ukuran lantai, jenis tembok, sumber air, keberadaan listrik, jenis kelamin kepala keluarga (laki-laki atau perempuan), jenis pekerjaan kepala keluarga, umur kepala keluarga, pendidikan kepala keluarga dan jumlah anak yang masih sekolah).~~

Data from variables at household level used are: BLSM Transfer Receiver, Household Food Consumption Expenditure, Non-Land Assets Value, Health Expenditures for Children and Adults, Education Expenditures, Psychological Welfare and Householder Characteristics (Household income, floor type, size floor, type of wall, water source, electrical presence, sex of head of household (male or female), type of work of head of household, age of head of household, education of head of household and number of child still in school).

Method~~Evaluasi kebijakan publik sangat peting dilakukan untuk menilai seberapa efektif suatu program tersebut dalam mencapai sasaran yang diinginkan. Untuk melakukan evaluasi dampak dari suatu program harus dilakukan dengan membandingkan hasil aktual dan counterfactual (Rubin 1977). Tantangannya adalah menciptakan kelompok perbandingan yang meyakinkan dan masuk akal atau counterfactual yang sulit untuk diamati. Menemukan counterfactual yang tepat merupakan tantangan utama dari evaluasi dampak (Khandker et al, 2010).~~

~~Untuk menyelesaikan masalah selection bias dalam penentuan pemberian Program BLSM kami menggunakan metode Propensity Score Matching (PSM). Metode PSM dengan tidak adanya percobaan, membandingkan efek perlakuan di antara sampel dan unit non partisipasi yang cocok, dengan pencocokan yang dilakukan pada berbagai karakteristik yang diamati. Metode PSM mengasumsikan bahwa seleksi bias hanya didasarkan pada karakteristik yang diamati dan tidak dapat menjelaskan faktor yang tidak teramati yang mempengaruhi partisipasi. PSM digunakan dalam mengevaluasi dampak program BLSM pada penelitian ini, karena mampu mereduksi selection bias melalui proses matching (Rosenbaum and Rubin, 1983: Daniel, 2017). Dengan melakukan propensity score masalah counterfactual akan dapat dipecahkan tanpa melakukan experiment dengan biaya yang tinggi (Lalonde 1986). Pendekatan ini sangat baik digunakan ketika melakukan kajian quasi-experiment yang meggunakan data observasi. Dengan demikian akan diperoleh nilai average treatment effects dari program tersebut (Dahejia and Wahaba 1999; Abadie and Imbens 2006).~~

Evaluation of public policy is very important to assess how effective a program is in achieving the desired goals. To evaluate the impact of a program, it is better to ~~should be done by comparing~~compare actual and counterfactual results (Rubin 1977). The challenge is to create a compelling and reasonable or

counterfactual comparison group that is difficult to observe. Finding the right counterfactual is a major challenge of impact evaluation (Khandker et al, 2010).

To solve the selection problem bias in determining the grant of ~~our~~ BLSM Program we use~~ing~~ Propensity Score Matching (PSM) method. The PSM method in the absence of an experiment, compared the effect of treatment among the samples and the non-participation unit is appropriate, with matching performed on various observed characteristics. The PSM method assumes that bias selection is based solely on the observed characteristics and can not account for the unobservable factors that affect participation. PSM was used in evaluating the impact of the BLSM program on this study, as it was able to reduce the selection of bias by matching process (Rosenbaum and Rubin, 1983: Daniel, 2017). By doing the propensity score the counterfactual problem will be solved without experimenting at high cost (Lalonde 1986). This approach is very well used when conducting quasi-experiment studies that use observation data. Thus, the average treatment effects of the program will be obtained (Dahejia and Wahaba 1999; Abadie and Imbens 2006).

~~Kami menggunakan PSM untuk menghilangkan rumah tangga yang berada di luar common support (Yilma et al. 2015). Dalam pendekatan ini, tidak perlu lagi mencocokkan masing-masing unit yang mendapat perlakuan (Heckman et al, 1997) ke unit yang tidak mendapat perlakuan dimana memiliki nilai yang sama persis untuk semua karakteristik pengendalian yang diamati. Sebagai gantinya, untuk setiap unit di kelompok perlakuan dan di kelompok non partisipasi akan dihitung probabilitas bahwa unit yang terdaftar dalam program adalah berdasarkan nilai karakteristik yang diobservasi, yang disebut propensity score.~~

~~Skor ini adalah angka tunggal mulai dari 0 sampai 1 yang merangkum semua karakteristik unit yang diamati karena mereka memengaruhi kemungkinan terdaftar dalam program (Gertler dkk, 2011). Angrist and Pischke (2014) menunjukkan persamaan PSM sebagai berikut :~~

We use PSM to remove households that are ~~outside~~ not included as the common support (Yilma et al., 2015). In this approach, there is no need to match each treated unit (Heckman et al, 1997) to the untreated unit which has the exact same value for all observed control characteristics. Instead, for each unit in the treatment group and in the non-participation group will be calculated the probability that the units listed in the program are based on the observed characteristic value, called the propensity score.

This score is a single number ranging from 0 to 1 which summarizes all observed unit characteristics as they affect the possibilities listed in the program (Gertler et al., 2011). Angrist and Pischke (2014) shows the following PSM

$$\boldsymbol{Y = \alpha + \beta T_i + \gamma A_i + \mu_i}$$

~~Disini Y adalah hasil dari pemberian program BLSM. α adalah intersep, β T, adalah causal effect dari pemberian program BLSM, γ A_i adalah effect dari variabel control.~~

~~Here~~ Y is the result of the grant of the BLSM program. α is the intercept, β Ti is the causal effect of the BLSM giving program, γ Ai is the effect of the control variable.

Tabel 4 Samples of Beneficiary and Non-beneficiary of BLSM Program~~Sampel Penerima dan Non Penerima Program BLSM~~

Beneficiary	Non Beneficiary
1.516	14.405

Source : Indonesia Family Life Survey (IFLS) Database

~~Pada tabel 5 ada sebanyak 1.516 rumah tangga yang menerima program satu tahun terakhir dan 14.405 rumah tangga tidak menerima. Untuk menentukan rumah tangga treatment dan control, kami~~

~~melakukan proses matching dengan memasukkan semua variabel karakteristik rumah tangga yang telah ditentukan oleh TNP2K sebagai syarat penerima program ke dalam rumus. Dari sekian banyak variable karakteristik rumah tangga yang dimasukkan, kami menemukan property penyeimbang untuk sampel penerima program dan control yaitu pada variabel pendapatan rumah tangga, pendidikan kepala keluarga, sumber air dan ukuran lantai. Setelah proses tersebut, ditemukanlah jumlah sampel untuk treatment sebesar 1.243 rumah tangga dan control sebesar 1.068 rumah tangga. Namun, khusus untuk variabel kesejahteraan psikologi jumlah sampel control yaitu 1039. Setelah menentukan daerah common support kami mencari Average Treatment Effect (ATE) dengan menggunakan metode Nearest Neighbor (NN) Matching. Selain itu kami juga melakukan estimasi perbandingan dengan menggunakan Fixed Effect Regression.~~

~~In~~ As presented in table 5 there were as many as 1,516 households receiving the program for the past year and 14,405 non-receiving households. To determine the household treatment and control, we conducted a matching process by including all household characteristics variable that has been determined by TNP2K as the condition of the program recipient into the formula. Of the many household characteristic variables included, we found a balancing property for the sample of beneficiaries and controls on household income, head of household, water source and floor size variables. After the process, found the number of samples for treatment of 1,243 households and control of 1,068 households. However, specifically for the variable of psychological well-being the number of control samples is 1039. After determining the common support ~~area~~area, we are looking for Average Treatment Effect (ATE) using Nearest Neighbor (NN) Matching method. In ~~addition~~addition, we also do estimation of comparison by using Fixed Effect Regression.

IMPACT OF BLSM ON HOUSEHOLD'S WELFARE

Table 5 ~~The Effect of Overall Cash Transfer Assistance (Treatment)Efek Pemberian Bantuan Transfer Tunai (*Treatment*) Secara Keseluruhan~~

Variables	*Matching*	*OLS*	*OLS*
	Treat. Effect	*Restricted*	*Unrestricted*
Food Consumption Expenditure	0.081*	0.034	-0.104
	(0.048)	(0.037)	(0.032)
Cigarettes Consumption Expenditure	0.201***	0.300***	0.204***
	(0.088)	(0.063)	(0.063)
Controls (1)		Yes	Yes
Controls (2)		No	Yes

Source : Indonesia Family Life Survey (IFLS) Database
Note : *** p<0.01, ** p<0.05, * p<0.1. Controls (1) :

~~Untuk menganalisis seberapa jauh dampak yang ditimbulkan dari program BLSM ini kami telah melakukan estimasi. Tabel 5 memperlihatkan hasil dari Average Treatment Effects (ATE) dari pemberian program BLSM secara keseluruhan. Dari hasil estimasi dengan menggunakan NN Matching kami menemukan bahwa program BLSM mampu meningkatkan pengeluaran konsumsi makanan sebesar 8,1 % lebih tinggi dari keluarga yang tidak menerima program pada taraf signifikansi 10%. Program transfer tunai mampu memberikan efek smoothing pada konsumsi (Aguila, Kapteyn, and Perez-arce 2017). Seperti di negara berkembang lainnya, transfer tunai seperti BLSM ini memang mampu menurunkan persentase keluarga kelaparan (Fenton et al. 2016). Nampaknya, efek yang timbulkan dari pemberian program BLSM ini tidak sekuat yang kita duga dalam mengentaskan kemiskinan.~~

~~Perdebatan mengenai program BLSM tidak hanya terjadi di kalangan elite tetapi juga dikalangan masyarakat. Beberapa dari mereka yang seharusnya berhak menerima BLSM justru tidak menerimanya. Bahkan, Kepala Desa Bangunrejo, Kecamatan Patebon, Kendal, Jawa Tengah, mengembalikan Kartu Perlindungan Sosial (KPS) untuk pengambilan uang BLSM ke kantor pos setempat. Dikembalikannya KPS itu untuk menghindari kericuhan warga sebab BLSM dianggap tidak tepat sasaran. Kepala Desa Nursalim mengatakan "Kami tidak berani bagi karena 50 persen lebih, tidak tepat sasaran. Saya tidak tahu, nantinya tetap dibagi oleh kantor pos atau tidak. Sebab, hingga kini, pihak kantor pos juga belum menemui saya" (Kompas, 2013).~~

To analyze how far the impact of this BLSM program we have made estimates. Table 5 shows the results of Average Treatment Effects (ATE) from the overall BLSM program. From the estimation results using NN Matching we found that the BLSM program could increase the food consumption expenditure by 8.1% higher than the families who did not receive the program at the level of 10% significance. Cash transfer programs are capable of smoothing effects on consumption (Aguila, Kapteyn, and Perez-arce 2017). As in other developing countries, cash transfers such as BLSM are indeed capable of decreasing the percentage of starving families (Fenton et al., 2016). It seems that the effects of the BLSM program are not as strong as we might expect in alleviating poverty.

The debate over the BLSM program is not only happening among the elite but also among the community. Some of those who should be entitled to receive BLSM just do not receive it. In fact, the Head of Bangunrejo Village, Patebon Subdistrict, Kendal, Central Java, returns the Social Protection Card (KPS) to take BLSM money to the local post office. The return of the KPS was to avoid residual riots because BLSM was deemed inadequate. The village head of Nursalim said "We are not daring for 50 percent more, not on target. I do not know, will still be shared by the post office or not. Because, until now, the post office has also not met me "(Kompas, 2013).

BLSM INCREASE CIGARETTE CONSUMPTION EXPENDITURE?

~~Dari hasil temuan kami, yang paling mengejutkan adalah program BLSM memberikan dampak signifikan pada pengeluaran konsumsi rokok. Program transfer tunai ini mampu meningkatkan pengeluaran konsumsi rokok rumah tangga lebih besar 20,1% (dengan taraf signifikansi 1%) daripada keluarga bukan penerima program. Sesutau yang seharusnya tidak diharapkan dari pemberian program ini justru menunjukkan dampak yang cukup tinggi. Di Negara berkembang seperti Indonesia kemiskinan erat kaitannya dengan jumlah perokok yang tinggi. Hal ini wajar saja karena menurut data WHO sebesar 82 persen dari 1,1 miliar perokok di Dunia tinggal di negara-negara dengan pendapatan rendah dan menengah (Ciapponi 2011). Dengan demikian, transfer tunai BLSM ini justru akan semakin meningkatkan pengeluaran konsumsi rokok.~~

~~From o~~Our findings show, most surprisingly, the BLSM program has had a significant impact on cigarette consumption expenditure. The cash transfer program is able to increase household consumption expenditure by 20.1% larger (with a significance level of 1%) than non-beneficiary families. Anything that should not be expected from the provision of this program ~~actually shows~~shows a fairly high impact. In a developing country like Indonesia poverty is closely related to the high number of smokers. This is only natural because according to WHO data of 82 percent of the 1.1 billion smokers in the world live in countries with low and middle income (Ciapponi 2011). Thus, BLSM cash transfers will actually increase the consumption of cigarettes.

Table 6 ~~Rumah Tangga dari Sampel yang Merokok~~Household of Smokers

Penerima Program BLSM	Smokers	Non-Smokers
Beneficiary	1,037	479

Non Beneficiary	8,765	5,640
Total	9,802	6,119

Source : Indonesia Family Life Survey (IFLS) Database

~~Tabel 7 menunjukkan dari 15.921 sampel rumah tangga yang terdapat pada data IFLS, terdapat 9.802 rumah tangga yang merokok dari jumlah tersebut, sebanyak 1.037 rumah tangga penerima program yang merokok dan sebanyak 479 rumah tangga bukan penerima program yang tidak merokok. Seluruh rumah tangga sampel yang menerima program sebagian besar terdapat pengeluaran konsumsi rokok setiap bulannya.~~

~~Merokok merupakan kebiasaan yang buruk dapat berdampak negatif terhadap pendapatan dengan beberapa cara melalui hilangnya produktivitas akibat penyakit terkait rokok dan kematian (Efroymson et al. 2001; Kiiskinen et al. 2002; Tsai 2005), menurunkan hari kerja, dan pengeluaran langsung untuk produk tembakau (You Long et al. 1995). Selain itu, perokok memiliki peningkatan risiko terkena penyakit yang dapat menyebabkan peningkatan pengeluaran kesehatan (Centers for Disease Control and Prevention and Prevention 2003). Selain konsekuensi terkait kesehatan ini, merokok dapat memberlakukan biaya ekonomi langsung lainnya. Misalnya, pengeluaran tembakau merupakan beban keuangan yang signifikan bagi keluarga berpenghasilan rendah (Hu and Mao 2002).~~

Table 7 shows that of the 15,921 household samples contained in the IFLS data, there were 9,802 households who smoked from that number, 1,037 beneficiaries of smoking programs and 479 non-beneficiary households. All sample households receiving the program are mostly expenditure of cigarette consumption every month.

Smoking is a bad habit that can have a negative impact on income in some way through loss of productivity due to cigarette related diseases and death (Efroymson et al. 2001; Kiiskinen et al. 2002; Tsai 2005), reducing working days, and direct expenses for tobacco products (–You Long et al. 1995). In addition, smokers have an increased risk of disease that can lead to increased health spending (Centers for Disease Control and Prevention and Prevention 2003). In addition to these health-related consequences, smoking may impose other direct economic costs. For example, tobacco spending is a significant financial burden for low-income families (Hu and Mao 2002).

~~Di Indonesia, di mana merokok meningkat paling cepat di antara kelompok yang lebih miskin, kelompok berpenghasilan terendah menghabiskan 15% dari total pengeluaran untuk produk tembakau (Adioetomo, Djutaharta, and Hendratno 2005). Perekok dengan kondisi ekonomi miskin memiliki risiko penyakit lebih tinggi, apalagi di negara berkembang perawatan kesehatan relatif sangat mahal (WHO, 2008) karena itu berisiko lebih besar untuk tidak dirawat atau jatuh ke dalam kemiskinan yang lebih besar jika mereka berobat.~~

~~Merokok lebih sering terjadi pada orang miskin (bervariasi menurut pendapatan, pendidikan, pekerjaan, atau kelas sosial) daripada orang kaya di hampir semua negara (Bobak et al 2000). Di beberapa negara berpendapatan rendah dan berpendapatan menengah, kebiasaan merokok lebih umum di kalangan orang yang lebih makmur (Gunther et al 1988; Strebel et al 1989; Taylor et al 1996); Ini kontras dengan gradien yang terlihat di negara-negara berpenghasilan tinggi. Di sisi lain, banyak penelitian di negara-negara berpenghasilan rendah, terutama di tahun-tahun terakhir, menemukan gradien sosial yang serupa dengan negara-negara Barat (Siegrist et al 1990. Chung et al 1993. Duncan et al, 1993; Gupta et 1994). Penggunaan tembakau sekarang lebih banyak ditemukan di kalangan masyarakat miskin.~~

In Indonesia, where smoking rises most rapidly among the poorer, the lowest income group spends 15% of total expenditure on tobacco products (Adioetomo, Djutaharta, and Hendratno 2005).

Emergencies with poorer economic conditions have a higher risk of illness, especially in developing countries where health care is relatively expensive (WHO, 2008) because it is at greater risk for not being treated or falling into greater poverty if they seek treatment.

Smoking is more common in poor people (varies by income, education, occupation, or social class) than in wealthy people in almost all countries (Bobak et al 2000). In some low-income and middle-income countries, smoking habits are more common among more affluent people (Gunther et al 1988; Strebel et al. 1989; Taylor et al 1996); This contrasts with the gradient seen in high-income countries. On the other hand, many studies in low-income countries, especially in recent years, have found similar social gradients to Western countries (Siegrist et al 1990. Chung et al 1993. Duncan et al, 1993; Gupta et 1994). Tobacco use is now more prevalent among the poor.

CONCLUSION AND FURTHER DISCUSSIONS

Based on our estimation, the provision of a cash transfer program such as BLSM needs to be reconsidered. This program does not have a significant impact on household consumption expenditure, especially steples good and family psychology welfare. In addition, the BLSM program has no impact on education expenditures, health spending and assets in the short term. This BLSM program has a significant impact on cigarette consumption expenditure. These results certainly do not become our hope and we can say that this program is not too positive impact.

Higher cigarette consumption expenditure than food consumption is not a good thing. High cigarette consumption will bring the poorer Indonesians. Smoking behavior is very disturbing health conditions. As a result, they lose work productivity and if they do health care will require a high cost. Of course it makes people who are already in the poverty line will become increasingly poor.

Our advice, it would be better this BLN program that is unconditional is replaced with a conditional program. Where, this conditional program requires monitoring from the government so that the results achieved easy to monitor and will be more in line with the expected.

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Performances of Farmers Across Provinces in Indonesia

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ABSTRACT

The agricultural sector plays an important role in economic development in Indonesia. Based on data released by the BPS-Statistics Indonesia, agricultural sector distribution amounted to 14 percent of quarterly Gross Domestic Product in 2017. However, Farmer's Terms of Trade which shows the ability of farmers to exchange agricultural products with the goods and services needed for household consumption and for cost of production could be different from one province to another province. It indicates that changes of price received by farmers and price paid by farmers could move in different level across provinces in Indonesia. In other words, the Indonesian farmers might experience different terms of trade across provinces.

This study examines the characteristics of agricultural sector performance across provinces in Indonesia over the period 2013-2017. The clustering analysis of K-means is utilized in this study. The clustering analysis is intended to classify and facilitate the supervision of agricultural performances in Indonesia. By doing so, the Indonesian Government can focus and pay more attention to the particular provinces especially when implementing specific targets of economic development. Clustering provinces is done based on common characteristics namely Price Received Index, Rural Price Inflation, and Cost of Production. Therefore, the provinces with similar characteristics will be categorized in one group. Meanwhile, the inter-group provinces will have different characteristics.

The statistical results show that there are 3 clusters from all of provinces. The first cluster shows the provinces with low Price Received Index, Rural Price Inflation and Cost of Production, the second cluster shows the provinces with moderate Price Received Index, Rural Price Inflation and Cost of Production. As for the third cluster, theprovinces tend to have higher Price Received Index, Rural Price Inflation and Cost of Production in comparison to other provinces. This information is important for the Indonesian Government to asses and develop agricultural sector across provinces in Indonesia.
Keywords: Cluster Analysis, Price Received Index, Rural Price Inflation, Cost of Production.

INTRODUCTION

The agricultural sector plays an important role in economic development in Indonesia. Based on data released by the BPS-Statistics Indonesia, agricultural sector distribution amounted 13.92 percent of third quarter Indonesian Gross Domestic Product (GDP) 2017. Nevertheless, the number of farmers in Indonesia is decreasing from time to time. The number of agricultural households fell by 16.32 percent during the period 2003-2013 (BPS, 2014). Agricultural land also continues to decline since the changing function of agricultural land into industrial areas, housing, and others. Futhermore, the situation of farmers in each province is also different which can be seen from Farmer's Terms of Trade (FTT) value. The FTT shows the ability of farmers to exchange agricultural products with the goods and services needed for household consumption and for cost of production from its agricultural production. In terms of value, some provinces have higher FTT in which Price Received Index is greater than Price Paid Index. On the other side, some provinces have lower FTT in which Price Received Index is less than Price Paid Index. In some case, the Price Received Index can be equal to Price Paid Index. These evidence show that the Price Received Index and Price Paid Index

could move in different level in each province. In other words, the Indonesian farmers might experience different terms of trade across provinces.

This study examines the characteristics of agricultural sector performance across provinces in Indonesia over the period 2013-2017. The clustering analysis of K-means is utilized in this study. The clustering analysis is intended to classify and facilitate the supervision of agricultural performances in Indonesia. By doing so, the Indonesian Government can focus and pay more attention to the particular provinces especially when implementing specific targets of economic development. Clustering provinces is done based on common characteristics namely Price Received Index, Rural Price Inflation, and Cost of Production. Therefore, the provinces with similar characteristics will be categorized in one group. Meanwhile, the inter-group provinces will have different characteristics.

METHODOLOGY

1. Type, Source, and Coverage of Data

Data used for in this study is secondary data, namely monthly data of FTT and its components from 2013-2017 which is derived from BPS-Statistics Indonesia. The components of FTT consist of s Price Received Index (It), Rural Household Consumption Index (Rural Inflation), and Cost of Production and Capital Additions Index (BPPBM) or sshortly named Cost Productions Index. For pratical purpose, It and BPPBM will be calculated annually by using arithmatic mean while the Rural Inflation data is calculated by using the percentage of change from year to year. These kinds of calculations are applied in every province in Indonesia. It should be noted, however, that the data of Kalimantan Utara Province is still included with data of Kalimantan Timur Province. In 2013, the calculation of FTT consists of 32 provinces excluding DKI Jakarta. In 2014-2017, the calculation of FTT consists of 33 provinces including DKI Jakarta Province.

2. Descriptive Analysis

Descriptive analysis is used to get a systematic, factual, and accurate overview by simply reading tables and pictures. Descriptive analysis in this study is characteristics of FTT component in relation to performance of province based on formed clustering.

3. K-Means Clustering Analysis

Clustering method consist of two types, Hierarchical Clustering dan Non-Hierarchical Clustering. This study focus on the using of Non-Hierarchical Clustering that is K-means Clustering. By utilizing K-Means Clustering, we determine the number of clusters where observation members of each cluster has the nearest centroid mean. There are several steps which are done to obtain the nearest optimized mean centroid with minimum error. The K-means Clustering steps are as follows:

1. Determine number of cluster (in this study there are three clusters).
2. Divide the number of observations (the number of province) which has the nearest centroid mean in several cluster that determined before. Distance calculated with Euclidean distance with standarized observations. Re-calculating nearest centroid mean for cluster that receive a new observation or cluster that lost an observation.
3. Repeat step 2 to allocate next observation until obtained the cluster with minimum centroid mean.

Euclidean Distance in this paper using formula:

$$d_{(i,k)} = \sum_{j=1}^{p} (x_{ij} - x_{kj})^2 \quad \text{.....(1.1)}$$

where:

$d_{(i,k)}$ = distance between i[th] province to k[th] province

x_{ij} = i-province, j-variable

x_{kj} = k-province, j-variable

j = variable (j=1,2,…,p)
p = numbers of cluster

4. Analysis Procedure

Analysis procedure is done with Clustering Non-Hierarchical Method of K-Means Cluster Analysis. By utilizing K-Means Cluster Method, there will determined 3 clusters, i.e High, Moderate, and Low clusters. In the early process, there is no specific value to determine High, Moderate, and Low clusters. It is resulted from the automatic process by using Statistical Package for the Social Science (SPSS) program. The variables used in this study are Price Received Indices (It), Rural Household Consumption Index (Rural Inflation), and Cost Production and Capital Addition Index (BPPBM).

VARIABLE DEFINITION

Farmer´s Terms of Trade (FTT) is the ratio of price received by farmers indices (It) and price paid by farmers indices (Ib). It is an index that shows the prices fluctuation of agricultural commodities produced by farmers. Ib is an index that shows the price fluctuation of some goods/services for household consumption and production cost. Formula to calculate FTT:

$$FTT = \frac{It}{Ib} \times 100 \quad \text{.....(1.2)}$$

where:

FTT	= The Farmers' Terms of Trade
It	= Price received by farmers index
Ib	= Price paid by farmers index

Price Received Index (It) is price index that shows the farm gate price which is the average of producer prices of agricultural products by excluding the transportation and packaging costs into the selling prices. The multiplication of average price and volume of sale will show total income received by farmer.

Price Paid Index (Ib) is price index that shows the average of retail prices of some goods/services needed by farmers, either for household consumption or production process.

It and Ib are calculated using modified Laspeyres formula, i.e :

$$I_t = \frac{\sum_{i=1}^{m} \frac{P_{ti}}{P_{(t-1)i}} P_{(t-1)i} Q_{oi}}{\sum_{i=1}^{m} P_{oi} Q_{oi}} \times 100 \quad \text{.....(1.3)}$$

where:

I_t	= Price index in the t^{th} month (for It or Ib)
P_{ti}	= Price in the t^{th} month for the i^{th} commodity
$P_{(t-1)i}$	= Price in the $(t-1)^{th}$ month for the i^{th} commodity
$P_{ti}/P_{(t-1)i}$	= Relative price the t^{th} month for the i^{th} commodity
P_{oi}	= Price in the base year for the i^{th} commodity
Q_{oi}	= Quantity in the base year for the i^{th} commodity
m	= Quantity of items included in the basket commodity

Production Costs and Capital Addition Index (BPPBM) is price index that shows goods and services cost production price development to produce agricultural products.

Rural Inflation is price index that shows goods and services price development which paid by farmers household consumptions needs.

Inflation is when the prices of most goods and services continue to creep upward (Amadeo, 2016)

RESULTS

In terms of It variable, almost all provinces in Indonesia are on the same cluster during 2013-2017. Initially, there are 17 provinces classified in the the moderate cluster but they are changing periodically. They becomes 12 provinces in 2017 while the number of provinces in low cluster become bigger and bigger (see Table 1). It indicates that the characteristics of provinces are changing from 2013 to 2017. The provinces that have changed from low cluster in 2013 to high or moderate cluster are Riau, Jambi, and Nusa Tenggara Timur, and the provinces that have changed from high or moderate cluster to low cluster in 2017 are Sumatera Barat, Sumatera Selatan, Bengkulu, Kepulauan Riau, Kalimantan Tengah, Kalimantan Timur, Sulawesi Utara, and Sulawesi Tengah.

Table 1. Number of Provinces in Each Cluster -Price Received Index (It)

It		Number of Provinces				
		2013	2014	2015	2016	2017
Cluster	Low	8	8	12	12	15
	Moderate	17	19	11	11	12
	High	7	6	10	10	6
Valid		32	33	33	33	33

Meanwhile, each province also experienced a cluster shift in the variable of rural inflation during 2013-2017. Table 2 shows that generally, there is a few of provinces categorized in high cluster of rural inflation. Many provinces dominate the moderate cluster in terms of rural inflation.

Table 2. Number of Provinces in Each Cluster -
Percentage Change of Rural Household Consumption Index (Rural Price Inflation)

Inflation		Number of Provinces			
		2013-2014	2014-20115	2015-2016	2016-2017
Cluster	Low	13	11	15	15
	Moderate	13	14	11	16
	High	6	8	7	2
Valid		32	33	33	33

Cost of production is important factor to increase production. When the cost of production is higher than previous period, then it will lead to the higher price. As seen on Tabel 3, in terms of BPPBM variable, many provinces dominate the moderate cluster. In 2013 more than 50 percent of all provinces are categoized in moderate cluster, and amounted 78.78 percent in 2017.

Table 3. Number of Provinces in Each Cluster -
Production Costs and Capital Addition Index (BPPBM)

It		Number of Provinces				
		2013	2014	2015	2016	2017
Cluster	Low	11	3	3	5	6
	Moderate	17	19	22	21	26
	High	4	11	8	7	7
Valid		32	33	33	33	33

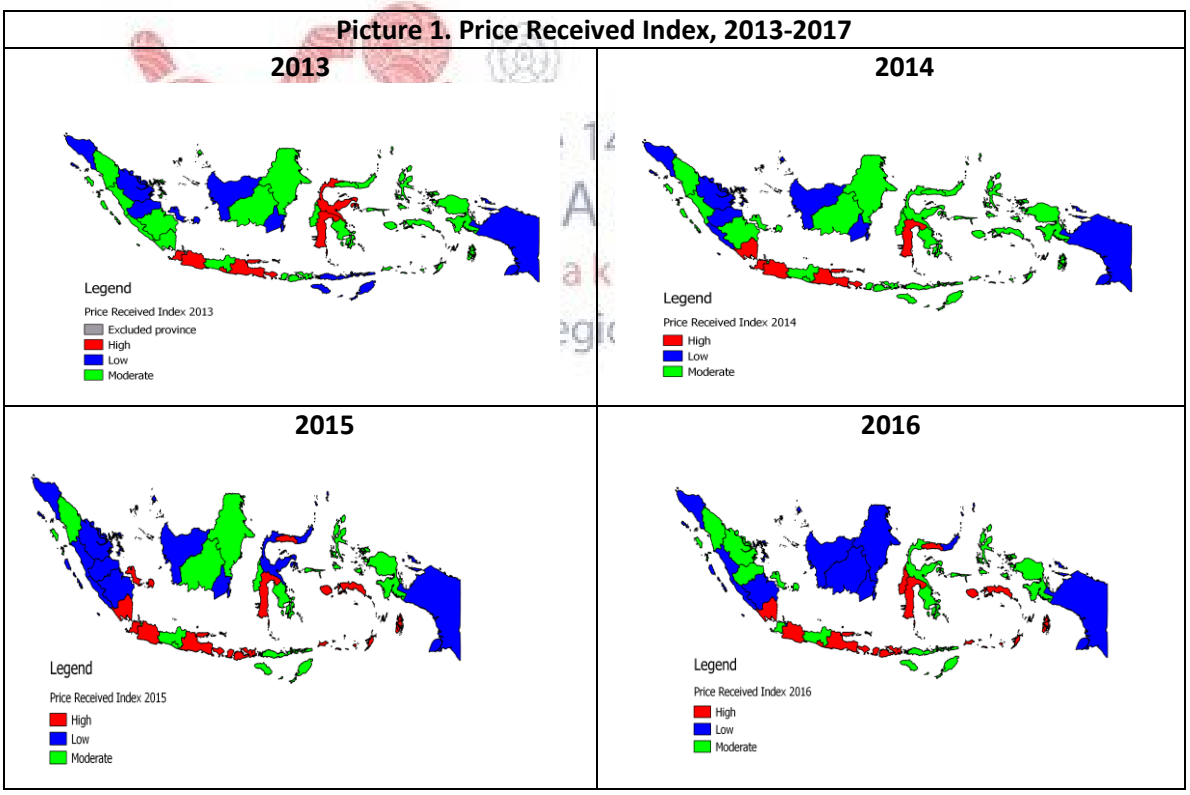
Aceh, Kalimantan Barat, Kalimantan Selatan, and Papua are provinces with It variables that remain in the low cluster compared to other provinces during 2013-2017. Meanwhile, Riau, Nusa Tenggara

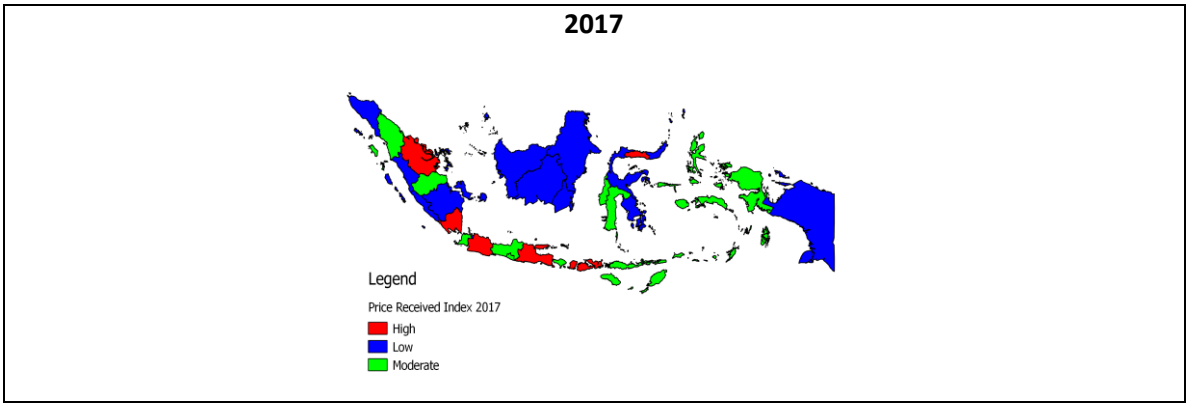
Barat, and Nusa Tenggara Timur change position from low cluster to moderate cluster or high cluster. There is special case, Riau Province is in low cluster in 2013-2015, but then it shifts to the moderate cluster in 2016, and is in the high cluster in 2017. Nusa Tenggara Barat Province is in the moderate cluster in 2013-2014, but it shift to high cluster in 2015-2017. Nusa Tenggara Timur Province is in the low cluster in 2013, but it shift to the moderate cluster in 2014-2017. Jawa Barat and Jawa Timur Province are classified in high cluster compared to other provinces during 2013-2017.

In terms of rural inflation, there are provinces that remain in low cluster compared to other provinces during 2013-2017 namely Kepulauan Bangka Belitung. Vice versa, Gorontalo Province is in the high cluster during the period 2013-2015, but it was in the low cluster during the period 2015-2017. For Papua Barat is categorized in low cluster in periode 2013-2014, then shift to moderate cluster in rural inflation during the periode 2014-2017. Meanwhile, Jawa Barat and Jawa Timur Province are experiencing rural inflation in high cluster during the period 2013-2016, and Papua are experiencing rural inflation in high cluster for 2014-2017.

Province with BPPBM variable that remain in low cluster compared to other provinces during 2013-2017 are Sulawesi Barat, Maluku, and Papua. Nusa Tenggara Barat and Papua Barat Provinces in 2013-2014 are in high cluster, but in 2015-2017 can shift to the moderate cluster. Meanwhile, province with BPPBM variable that remain in high cluster compared to other provinces during 2013-2017 are Sumatera Utara and Jambi.

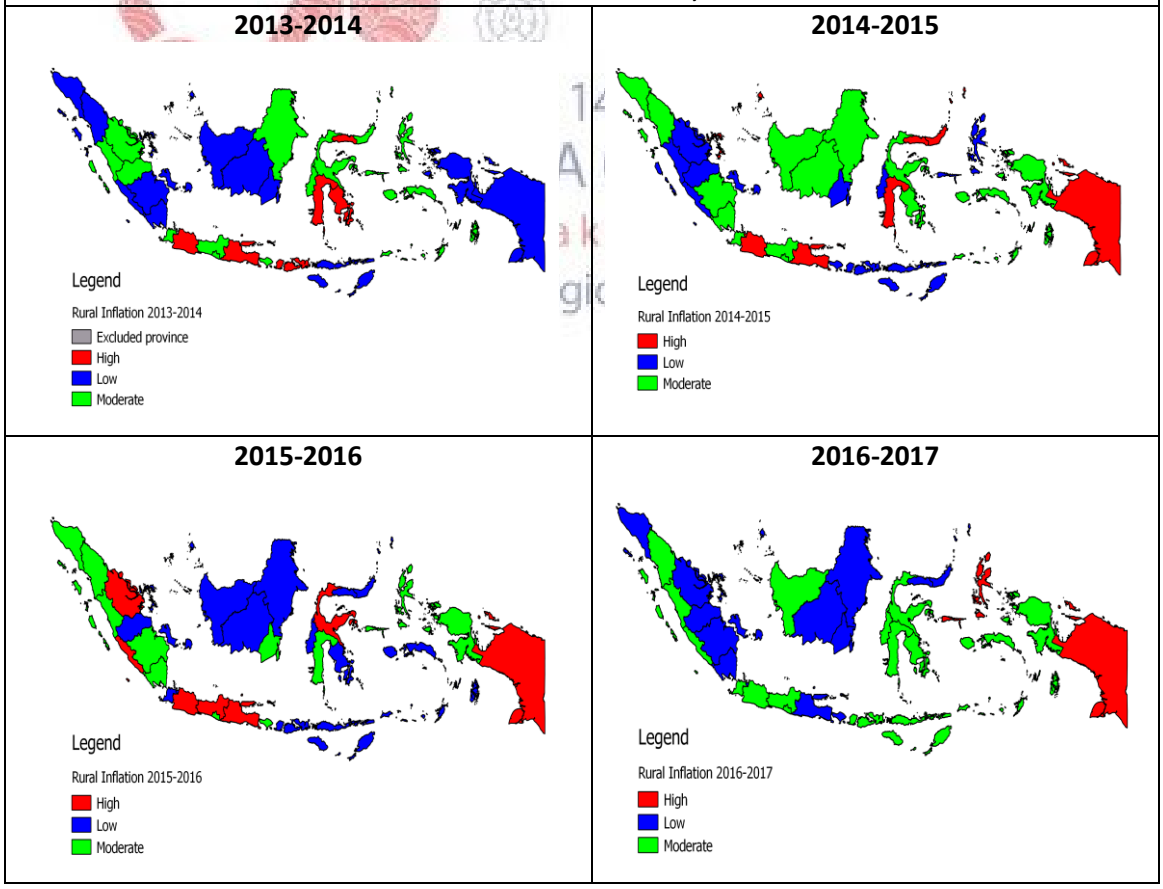
Picture 1. Price Received Index, 2013-2017



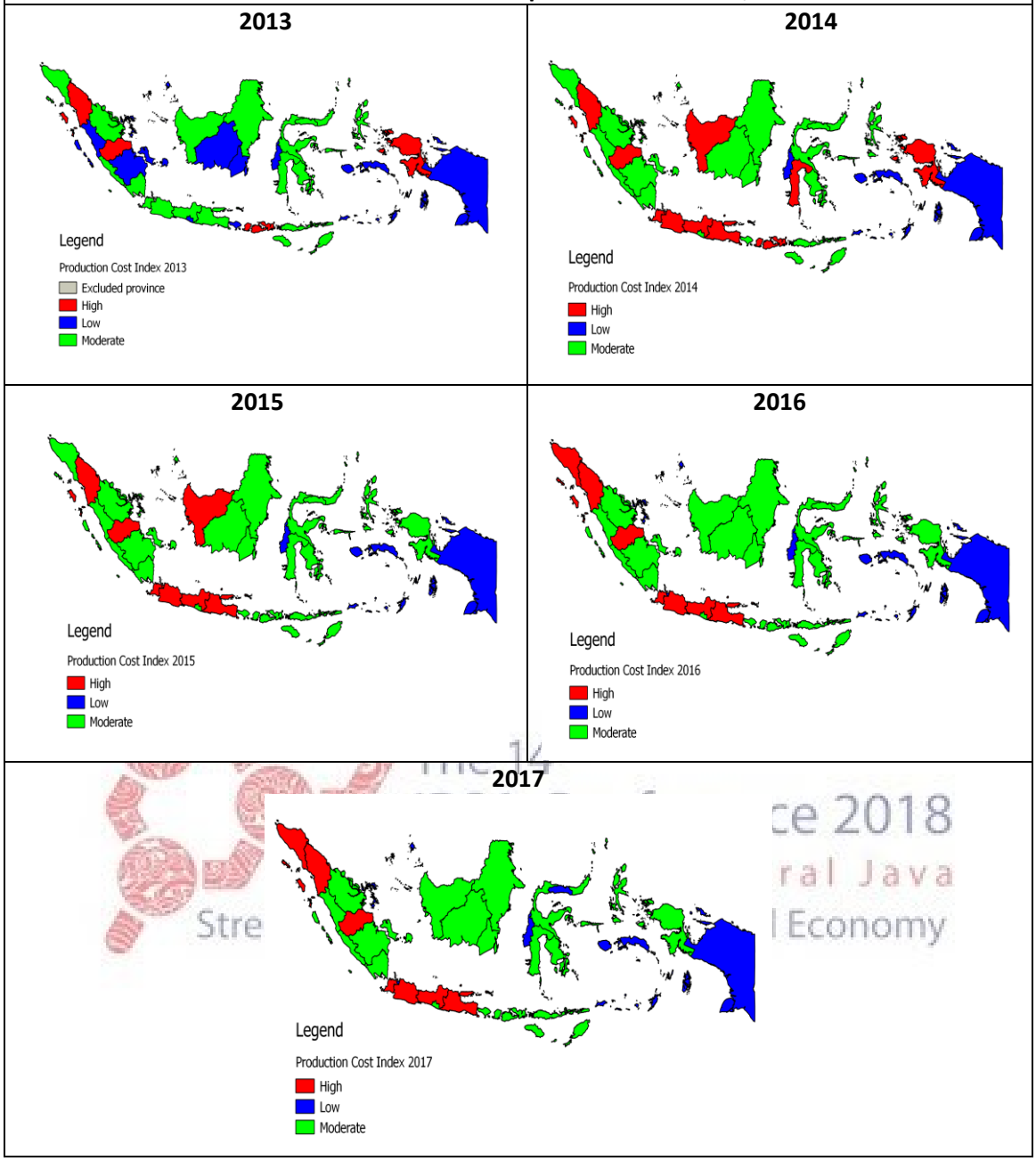


The provinces in Sumatra Island, Kalimantan Island, Maluku Province and Maluku Utara Province in It, rural inflation, and BPPBM variables are almost entirely in moderate and low clusters during 2013-2017. The provinces in Jawa Island experiencing moderate and high cluster for It variable during 2013-2017. By variable of rural inflation, the provinces in Jawa Island are high and moderate clusters during 2013-2014. And almost all provinces in Jawa Island are in high cluster for periode 2015-2016. Sulawesi Island wich contain of six provinces, mostly experiencing the moderate cluster for BPPBM variable during 2013-2017.

Picture 2. Rural Price Inflation, 2013-2017



Picture 3. Production Cost and Capital Addition Index, 2013-2017



Based on It, rural inflation, and BPPBM variables, during 2013-2017 obtained some performances of Indonesians farmers:

- Farmers where the high prices of agricultural commodity producers are able to fulfill their household consumption and fulfill their agricultural production needs. Where during 2013-2017 It variables are in high cluster, rural inflation variable in low or moderate cluster, and BPPBM variable in low or moderate cluster. Namely farmers in the Bali Province.
- Farmers where the development of agricultural commodity prices is high, able to fulfill household consumption due to low rural inflation, but must be able to fulfill their agricultural production needs despite the high price of agricultural production needs. Where during 2013-2017 It variables are in high cluster, rural inflation variable in low or moderate cluster, and BPPBM variable on high cluster. Namely farmers in Banten Province.

- Farmers where the development of high producer prices of agricultural commodities, able to fulfill their agricultural production but must be able to fulfill household consumption due to high rural inflation. Where during 2013-2017 It variables are in high cluster, BPPBM variable in low or moderate cluster, and rural inflation variable on high cluster. Among others are farmers in Gorontalo Province.
- Farmers where the development of low producer prices of agricultural commodities is able to fulfill household consumption due to low inflation, but must be able to fulfill the needs of agricultural production although the price of agricultural production needs is quite high. Where during 2013-2017 It variables are in low or moderate clusters, rural inflation variable in low or moderate cluster, and variable BPPBM on high cluster. Among others are farmers in the provinces of Sumatra Utara, Jambi, and Jawa Tengah.
- Farmers where the development of producer prices of agricultural commodities produced low, able to fulfill their agricultural production, but must be able to fulfill household consumption due to high inflation. Where during 2013-2017 It variables are in low or moderate cluster, BPPBM variable in low or moderate cluster, and rural inflation variable in high cluster. Namely farmers in Papua Province.

CONCLUSIONS

Provinces with Price Received Index in high clusters such as Jawa Barat and Jawa Timur need to control the prices of their agricultural commodities, as well as stability in the supply of agricultural commodities to avoid price spikes. For provinces with Price Received Index located in low and moderate clusters, the provinces in Sumatra, Kalimantan, Sulawesi, Nusa Tenggara and Papua Barat need to improve agricultural commodities quality so as to increase the price of agricultural commodities. Provinces with rural inflation in high clusters such as Java and Papua need to have policies regulating the availability of goods and services for household needs, market operations, and trimming the trade distribution chain that allows trigger inflation. Provinces with Production Costs Index that reside in high clusters such as in Kalimantan and Sumatra need to control prices for goods and services required in producing agricultural products, as well as stability in the supply of goods and services necessary to produce agricultural produce to avoid price spikes.

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The Determinants of Earnings: Analyzing the role of Abilities on Labour Market Outcome in Indonesia

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ABSTRACT

This study aims to examine the contribution of schooling to earnings by incorporating the potential endogeneity issue in the basic Mincer model. Considering the development in the methodology aspect of the earnings model, this study employs both approaches suggesting by Humprey (2012) and Lall and Sakallarious (2010). The two Stage Least Squares (2 SLS) is employed to manage the endogeneity issue by using the direct measure of cognitive ability as instrument of schooling. In addition, this study adds some control variables covering the individual ability to improve the quality of basic Mincer model as suggested by Humprey (2012). This study exploits the benefit provided by the Indonesia Family Life Survey dataset (IFLS) which provides direct measures of ability comprised both cognitive and non-cognitive skills. The modified Mincer equation was estimated to examine the role of schooling, working experience, tenure, demographic factors and personality traits and cognitive capacities on monthly wages. The results show that schooling, cognitive and non-cognitive of personality traits determine the labour market outcomes. The level of education has positive and statistically significant influence on monthly wages on both estimations.

Keywords: wages, labour market, cognitive & non-cognitive skill, big five personality traits, Mincer equation

INTRODUCTION

In the labour economics literature, the basic Mincer model is frequently employed to understand the determinants of earnings. The model stipulates that wages are determined by schooling measured by years of education and experience. Humphreys (2012) criticizes the basic model since it suffers some methodological issues. First, the model has the problem of endogeneity and the omitted variable bias. Second, there is non-linearity of the relationship between wages and education unlikely the basic mincer model that assumes the linearity of the relationship between wage and education (Maluccio, 1998). Finally, there may be a condition where there are different experience premiums for people with different levels of education.

In addition, Dickson (2009) argues that the return on education estimated using the basic Mincer model is valid if there is no relationship between individual characteristics such as ability and

residuals. In addition, the relationship is valid if the relationship between schooling and residuals is non-zero. Meanwhile, some studies reveal that education measured by schooling is endogenous variable since there is possibility that unobserved characteristics influence the schooling choice that may correlate with earnings.

Harmon et al., (2003) also concerns the potential endogeneity problem of the basic Mincer model due to "ability bias". The bias can be explained by the contribution of hidden ability in earnings. The paper describes that students with greater abilities which is hidden and unobservable are likely to have higher education so that receives higher earnings. Thus, the causal relation between schooling and earnings could not be explained using the simple relation. Further, Harmon et al., (2003) and Maluccio (1998) suggest to include more variables capturing the natural ability such as IQ test score and school grade.

Alternatively, Lall and Sakallariou (2010) suggests to solve the endogeneity issue by using the instrumental variable (IV) approach. The model should select the instruments which are closely correlated with schooling but it is not correlated with the ability (as unobserved characteristics) and earnings. Their study employs the distance of schooling and the spouse's education as instruments in the earnings model. This approach is without critique as Humprey (2012) argues that the IV model generates higher coefficient for education compared to Ordinary Least Squares (OLS) approach while the previous literature suggests that the coefficient should be lower.

Therefore, this study aims to examine the contribution of schooling to earnings by incorporating the potential endogeneity issue in the basic Mincer model. Considering the development in the methodology aspect of the earnings model, this study employs both approaches suggesting by Humprey (2012) and Lall and Sakallarious (2010). The two Stage Least Squares (2 SLS) is employed to manage the endogeneity issue by using the direct measure of cognitive ability as instrument of schooling. In addition, this study adds some control variables covering the ability to improve the quality of basic Mincer model as suggested by Humprey (2012). This study exploits the benefit provided by the Indonesia Family Life Survey dataset (IFLS) which provides direct measures of ability comprised both cognitive and non-cognitive skills.

LITERATURE REVIEW

Canonical model stipulates that human capital determines the level of earnings (Bowles, Gintis, & Osborne, 2001). Human capital can be defined as the skills consisted of capacities that contribute to production. Some literatures proxy human capital by the schooling variable of the years of education. In addition to schooling, literature acknowledges the role of other demographic characteristics such as individuals' age, working experience and occupation on earnings. However,

Bowles et al. (2001) argued that the capability of demographic factors to explain earnings variation in the US was merely two-thirds until four-fifths and left one-third until one-fifth earnings variation unexplained. In addition to demographic characteristics, some studies found that parents' success passes on to their children in terms of advantage in the labour market. This advantage includes superior education, an heritance of wealth, or genetic inheritance of cognitive ability (Bowles et al., 2001).

In terms of skills, in general literature on labour market confirmed that both observed skills and unobserved skills contributes to labour productivity. The observed skills are measured by the schooling, works experience and positive influence from parents and peers. Further, unobserved skills are consisted of cognitive and non cognitive skills. Bowles et al. (2001) reported two studies examining the role of unobserved skills into labour market outcomes in the US and the UK. The first study was conducted for 3,000 employers assessing the importance of skills in the hiring for production workers. The survey found that the unobserved skills both cognitive and non cognitive are important in determining the hiring results. Using the five-scale where 1 is unimportant and 5 is very important, the survey reported that employers perceived attitude as highly important skills with means score of 4.6 and followed by communication skills of 4.2 means score. Further, cognitive skills measured by score of employer giving tests was scored 2.5. The second study explored the skill shortage in the UK and found that workers have an issue in terms of lacking of technical skills by 43 per cent and lacking of personality straits such as poor attitude, motivation and personality of 62 percent.

Plenty empirical studies have confirmed the positive effect of cognitive ability on wages (Becker, 1993) and economic growth (Hanushek 2013). Early studies discussing the importance of cognitive capacities in determining economic status was examined in the psychology and sociology literatures. A prominent literature by Herrnstein & Murray (1994) known as the "g" theory of human behaviour emphasized the importance of cognitive capacities measured by Intelligence Quotient (IQ). They argued that cognitive ability is the best predictor of workers' productivity. This proposition was supported by Jensen (1998) that cognitive capacities is the main elements of socioeconomic outcomes.

Moreover, current empirical studies argued that both cognitive and non-cognitive skills are capable to predict the outcome of the labour market Heckman & Urzua (2006). Their study found that both capacities are capable in explaining labour market outcomes and social behaviour. In addition, a study by Heckman & Kautz (2012) focused on the role of non-cognitive skills on wages in the labour market. A study by Bowles et al. (2001) convey that the standard set of factors determining earnings such as age, years of schooling, years of labour market experience, parents' level of schooling, and

occupation in the standard earnings equation contribute less in explaining the earnings of workers. The US data reveals that for about 65 percent to 80 percent of natural logarithm of earnings of hourly wages of annual earnings could not explained by the canonical model of earnings.

DATA AND METHODOLOGY

This study utilizes the advantage of cognitive skills and personality traits data collected by the Indonesia Family Life Survey (IFLS). In addition, a whole set of data of demographic background, education, working experience, tenure, cognitive capacities and personality traits is generated from IFLS dataset. Particularly, this study employed the IFLS wave five collected between 2014 and 2015. The personality traits information is only available for the wave 5 IFLS data. There are 8,810 sample representing 86 per cent of all population of Indonesia. The samples resided at the 13 provinces in Indonesia which are all provinces in Java island, Bali, Nusa Tenggara Barat, South Sulawesi, South Kalimantan, South Sumatera, Lampung, West Sumatera and North Sumatera.

This study employs some empirical models to understand the role of cognitive and non-cognitive capacities on wages. The cognitive factor is measured by the education level and non-cognitive capacity is proxied by using the personality traits response. The empirical models also include demographic variables such as gender, age and marital status.

The first empirical model is Mincerian equation estimating the contribution of schooling measured by years of education on labour market outcomes proxied by monthly wages. The empirical model was adopted from Purnastuti et al., (2013) is as follow:

$$Log(wage) = \beta_0 + \beta_1 education_i + \beta_2 expr_i + \beta_3 expr_i^2 + \beta_4\, tenure_i + \beta_5 tenure_i^2 + \beta_6 male_i + \beta_7 married_i + \beta_8\, urban_i + \mu_i \quad (1)$$

Finally, in order to captures schooling and the non-cognitive capacities of individuals on wages, this study includes the personality traits in the Mincerian equation. Below is the empirical model:

$$Log(wage) = \beta_0 + \beta_1 education_i + \beta_2 expr_i + \beta_3 expr_i^2 + \beta_4\, tenure_i + \beta_5 tenure_i^2 + \beta_6 male_i + \beta_7 married_i + \beta_8\, urban_i + \beta_9\, openess_i + \beta_{10}\, conscientiousness_i + \beta_{11}\, extraversion_i + \beta_{12}\, agreeableness_i + \beta_{13}\, neuroticism + \mu_i \quad (2)$$

The ordinary least squares are employed to estimate all empirical models. By construction, the model ignores the underlying accumulation process for education; education is assumed to be exogenous. One of the alternatives to avoid OLS inconsistency, proposed initially in the context of cross section data, is the use of instrumental variables (IV) procedures, where education is treated as an endogenous regressor, in the econometric sense of being correlated with the residual (Ruiz, Gómez, & Narváez, 2010). Another common approach is to use an instrumental variable (IV) that

correlates closely with schooling but is not correlated with ability or wages. Possible confounding instrumental variables include ability, health, and family background characteristics. Any resultant correlation between education and the wage, then, can no longer be reliably interpreted as a causal effect (that is, an economic return).

Dickson (2009) explains that instruments must be correlated with the endogenous variables but not with the random error (rank condition), legitimately excluded from the wage equation (exclusion restriction) and be more numerous than the endogenous regressors (order condition). Suppose that Z_1 and Z_2 are two possible instruments for a variable X. The empirical model was adopted from Dickson (2009) is as follow:

$$\text{Cov}(Z_1, \mu) = 0 = \text{Cov}(Z_2, \mu)$$

$$\text{Cov}(Z_1, X) \neq 0 \text{ and } \text{Cov}(Z_2, X) \neq 0$$

The instruments variable used in this study are cognitive abilities based on Witoelar (2016). Cognitive abilities consist of episodic memory: Immediate and delayed word recall, Raven's Progressive Matrix (EK Test), and Woodcock-Johnson Battery Cognitive Test (WJ Test).

Over many years, economists have attempted solve the problem of the endogeneity of education in a number of ways. Firstly, a number of studies attempt to control for the effect of ability bias directly by including measures of ability such as IQ and other test scores in the model (Dickson, 2009). An alternative strategy which has been the focus of much of the literature, is to identify a variable (or ideally a set of variables) which affect education but do not independently enter into the earnings equation and are uncorrelated with the error term in the wage equation. If such variable(s) can be found, then they can be used to construct instrumental variables estimates of the return to education by 2SLS model. Recalling the model from the start of this section, the moment conditions that we want to impose:

$$Education = \alpha_0 + \alpha_1 \text{episodic memory test} + \alpha_2 \text{EK Test} + \alpha_3 \text{WJ Test} + \nu \quad (3)$$

In equation (3), added some exogenous variable as instrument variable for education. We assume Cov (episodic memory test, ν) = 0; Cov (Raven's Progressive Matrix Test, ν) = 0; and Cov (Woodcock-Johnson Battery Cognitive Test, ν) =0, which implies that all instrument variable it is not correlated with the error term.

Episodic memory test is memory test proposes to assess conjointly semantic and episodic knowledge across multiple tasks: semantic matching, naming, free recall, and recognition (Tulving, 1993). The Woodcock-Johnson sets a new standard for evaluation of individual strengths and weaknesses among contemporary, theory-based measures of academic achievement, oral language,

and cognitive abilities (Schrank, 2014). The Raven's Progressive Matrices (RPM) test is a standardized intelligence test that consists of visually presented, geometric-analogy-like problems in which a matrix of geometric figures is presented with one entry missing, and the correct missing entry must be selected from a set of answer choices (Kunda, Mcgreggor, & Goel, 2009).

TABLE 1. Operational Definition of Variables

Log Wage	Natural logarithm of monthly earnings/ wages
Education	Number of years of schooling
Experience	Number of working experience
Experience^2	Quadratic of working experience
Tenure	Number of years of tenure
Tenure^2	Quadratic of number of years of tenure
Dummy Male	Dummy for male workers; 1= male, 0 = female
Dummy Married	Dummy for marital status; 1= married, 0 = single/ divorce/ widow/ others
Dummy Urban	Dummy for location; 1= urban, 0 = rural
Openness	Dummy for openness personality; 1 = openness, 0 = others
Conscientiousness	Dummy for conscientiousness; 1 = conscientiousness, 0 = others
Extraversion	Dummy for extraversion; 1= extraversion, 0 = others d
Agreeableness	Dummy for agreeableness; 1= agreeableness, 0 = others
Neuroticism	Dummy for neuroticism; 1= neuroticism, 0 = others
Instrumental variable	
Woodcock-Johnson Test	Taken from the Woodcock-Johnson Battery Cognitive test scores using W-score and standard errors are computed and attached to each individuals
Raven's Progressive Matrices (RPM) Test	Standardized intelligence test that consists of visually presented, geometric-analogy-like problems in which a matrix of geometric figures is presented with one entry missing, and the correct missing entry must be selected from a set of answer choices
Episodic memory: Immediate word recall	Immediate word recall memory
Episodic memory: Delayed word recall	Delayed word recall memory

DISCUSSION

The total number of observation is 1,941 individuals between 15 to 32 years old. The sample is consisted of workers worked in the past one month and worked as full-time employee in public and private sectors. Among the sample, an average age was 22 years old and most workers studied for 11 years. Regarding to monthly earnings, average wages was 1,683,000 IDR (Indonesian Rupiah). Further, on average the workers had 11 years of experience and 2 years of tenure. Table 2 provides information on descriptive statistics of numeric.

Regarding to the personality traits, this study analyzes the responds of respondents on the big-five personality questions. The data shows that Indonesian workers were mainly characterized as individuals with conscientiousness, agreeableness and extraversion personality. Meanwhile, the proportion of individuals with characteristics of openness and neuroticism are much lower. Table 3 provides information on descriptive statistics of personality.

TABLE 2. Descriptive Statistics

Variable	Obs.	Means	Std.dev	Min.	Max.
Independen Variable					
Age	1,941	22.61	3.361	15	32
Wage (IDR)*	1,941	1,683,000	1,806,000	2,500	4,500,000
Education	1,941	11.57	2.992	0	16
Experience	1,941	11.04	3.799	2	29
Tenure	1,941	2.056	2.126	0	15
Instrumental variables					
Woodcock-Johnson Test	1,941	538.3	53.69	299	635
Raven's Progressive Matrices (RPM) Test	1,941	12.52	3.177	0	17
Episodic memory: Immediate word recall	1,941	5.939	1.461	1	10
Episodic memory: Delayed word recall	1,941	5.048	1.638	1	10

Source: research data

TABLE 3. The Type of Personality of Indonesian Workers 2014-2015*

Type of Personality	Freq.		Proportion (%)	
	Personality match	Not Match Personality	Personality match	Not Match Personality
Openness	26	1,918	1.34	98.66
Conscientiousness	805	1,139	41.41	58.59
Extraversion	526	1,418	27.06	72.94
Agreeableness	860	1,084	44.24	55.76
Neuroticism	49	1,895	2.52	97.48

Source : research data

*Note: *the total proportion of all types of personality is larger than 100 per cent because one individual may classify into two types of personality depending on the individuals' characteristic.*

The results of the estimation of Mincerian equation in table 4 shows that most of all variables are strong predictors of labour market outcome. The ordinary least squares is employed to estimate empirical models. As previously discussed, the model ignores the underlying accumulation process for education; education is assumed to be exogenous. The result OLS in table 4 captures the effect of human capital investment in the form of education. The second estimation result is a 2SLS model used to address the endogeneity issue in order to estimate to be unbiased.

We can compare the results of both estimate. The level of education has positive and statistically significant influence on monthly wages on both estimation. The level of education increase at 2SLS model. In addition, the years of experience have positive and significant contribution on monthly wages on both estimation. Tenure only positive and statistically significant at model OLS. These findings support the human capital theory that investment on education contributes to increase labour market outcome.

TABLE 4. Result

	OLS	2 SLS
Independent variable		
Education	0.0749***	0.237***
	(8.11)	(6.04)
Experience	0.137***	0.140***
	(4.90)	(4.83)
Experience^2	-0.00309**	-0.000140
	(-2.95)	(-0.10)
Tenure	0.120***	0.0420
	(4.89)	(1.26)
Tenure^2	-0.0140***	-0.00893**
	(-5.05)	(-2.88)
Dummy Male	0.243***	0.298***
	(5.71)	(6.11)
Dummy Married	-0.117*	-0.307***
	(-2.37)	(-4.17)
Dummy Urban	0.346***	0.295***
	(7.21)	(5.45)
Openness	-0.148	-0.126
	(-0.70)	(-0.56)
Conscientiousness	0.0434	0.00479
	(1.07)	(0.11)
Extraversion	0.113*	0.120*
	(2.53)	(2.47)
Agreeableness	-0.00397	-0.0467
	(-0.10)	(-1.05)
Neuroticism	-0.0159	0.0535
	(-0.13)	(0.38)
Instrumental variables		
Woodcock-Johnson Test	0.00157***	
	(3.95)	
Raven's Progressive Matrices (RPM) Test	0.00934	
	(1.42)	
Episodic memory: Immediate word recall	0.000890	
	(0.05)	
Episodic memory: Delayed word recall	0.0184	
	(1.03)	
Constant	10.43***	9.389***
	(35.95)	(17.07)
Observations	1,941	1,941
R^2	0.157	0.005
Instruments Test		
F-Test of the first stage regression	31.53	
Prob. > F (4,1924)	0.000	

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

CONCLUSION

This study aims to examine the determinants of earnings of workers in Indonesia by incorporation the direct measures of abilities of cognitive and non-cognitive capacities. The current literature in economics have acknowledge the role of non-cognitive capacities in determining workers' performance. The modified Mincer equation was estimated to examine the role of schooling, working experience, tenure, demographic factors and personality traits and cognitive capacities on monthly wages. The results show that schooling, cognitive and non-cognitive of personality traits determine the labour market outcomes. The level of education has positive and statistically significant influence on monthly wages on both estimations.

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POLITICAL ECONOMIC PERSPECTIVE OF KARL POLANYI FOR MAPPING ZONATION OF FLOOD IN SURAKARTA CENTRAL JAVA PROVINCE

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ABSTRACT

This study aims to determine the zoning prone to flood disaster, appropriate and efficient flood adaptation strategies for the city of Surakarta. This research applies the principle of political economy "contradiction" from Karl Polanyi. Contradictions in this context occur between economic development of socioeconomic conditions and the environment. The research is conducted using Descriptive Method. Spatial analysis modeling Geographic Information System (GIS) produces flood-prone zonation maps and analysis of Strength, Weakness, Opportunities and Threats (SWOT) resulting in disaster adaptation strategies. Data collection techniques includes observation, documentation and document review. Data analysis technique used is scoring all parameters, ie topography, lithology, climatology, land use then overlay. Efficient flood adaptation strategy is generated from SWOT matrix analysis. Underlying on the results of the study, it can be concluded that: (1) zoning prone to flood of Surakarta City is divided into four classes namely; very low classes include northern Jebres Subdistrict, low vulnerable classes covering the eastern Laweyan Subdistrict and northern Banjarsari Subdistrict, moderately prone classes covering all Serengan and Kliwon Subdistricts and Banjarsari Subdistrict, middle class, high grade only in Kecamatan Pasar Kliwon in the south and there is no potentially very high area to flood in Surakarta City; (2) the efficient strategies obtained are the improvement of coordination between disaster agencies such as Basarnas, BPBD and PMI assisted by Bappeda in cooperation with the community to prevent flooding or early anticipation of floods.

Keywords: Flood, Topography, Litology, Land Use, GIS, SWOT

INTRODUCTION

Central Java Province is one of the provinces categorized as a province prone to natural disasters in Indonesia. Various disaster threats include volcanic eruptions, earthquakes, tsunamis, floods, droughts, landslides, high waves, land fires, epidemics, epidemics, technological failures and social conflicts. One of the most devastating disasters is the flood disaster. Floods according to (Kristianto, 2010) are water that exceeds the capacity to accommodate the soil, waterways, rivers, lakes or oceans because of the excess water capacity in the soil, waterways, rivers, lakes and oceans will overflow and drain quite swiftly inland or a lower area around it.

Geographically the area of Surakarta City is between 110º45'15 "- 110º45'35" BT and 7º36'00 "- 7º56'00" LS. Has an area of 44.04 Km2, is a lowland and is located between the confluence of the rivers Pepe, Jenes with Bengawan Solo. Surakarta City area is located in the basin between the three mounts so it has a relatively flat toporafi between 0 - 15% with a height of 80 - 130 dpl.

The city of Surakarta is a large city with a population that continues to increase every year. Impacts arise are the increasing demand for land and demand for the fulfillment of urban infrastructure services, which ultimately leads to reduced recharge areas, degradation of quality and environmental degradation. Almost every year floods occur in every coming rainy season. The flood is either a Bangawan Solo river flood or a local flood from the destruction of the city's drainage system. A total of 3 districts, including District Serengan, District Market Kliwon and District Jebres become flood subscriptions during the rainy season.

The total area affected by flood disaster in three districts reaches 5.33 Ha and causes physical, social and economic losses. The flood disaster is very influential to other sectors that are able to hamper urban development activities. One of them is in infrastructure, namely damage to the structure of roads, bridges, and causing congestion that disrupt the wheels of the economy. Significant large floods in Surakarta City in the past until now occurred in March 1966, March 1968, March 1973, January 1982, December 2007, February 2009, May 2010, December 2010, May 2011, January 2012, December 2014, April 2015, November 2016 and last February 2017.

So far, information on flood location data mapped by Bappeda is still very common and has not provided a detailed description of its spatial distribution. Researchers will process the data into the form of detailed flood-prone maps to the use of land that will be easier for readers to read and understand the results of research that has been done. Presentation of data about the flood-prone zone into the map will be helpful in planning and decision-making or further action on flood problems both in the present and in the future. The map user can easily read and capture the idea of the data and information presented.

Underlying introduction, the research aims is to map the flood-prone zonation in Surakarta City to obtain information on flood vulnerability and its spreading in the form of maps by utilizing Geographic Information System and efficient strategy for disaster adaptation.

LITERATURE REVIEW

In the development of political economy theories, contradiction as a term is related to the concept of a disembedded economy. Karl Polanyi (1944) argues that capitalism is a system with innovation and productivity strengths, but the process has an impact on the social relation patterns between human beings and the environment. In the course of experiencing dynamic development, capitalism forges “creative destruction” by expanding the market and changing regulations, thereby creating productivity and profit. On the other hand, capitalism also continuously destroys social institutions and natural resources in its attempt to generate profit and productivity in the global system. Global institutions can evidently experience changes to support the development of capitalism in the long term. However, the contradictions resulting from such institutional changes can result in the decrease of growth.

Contradiction is related to the pattern of socioeconomic transformation as a result of dominant institutional changes (Foster 2005; O'Hara 2008). The changes of the global institution from Fordism to globalization and neo-liberalism lead to various contradictions, such as those between individual and society, between industrial and financial sectors, and between economic development and environmental considerations. Global and neoliberal institutions stimulate innovations and develop new industries, markets and individual skills. Innovations and capital accumulation flourish in many different continents, regions, and countries. On the one hand, this process encourages everyone to achieve higher productivity and profit levels, economic rents, and business monopoly. On the other hand, social relations are weakened as a result of the individual pursuit for material gains and personal interest.

RESEARCH METHOD

This study uses Descriptive Method which consists of data collection, data analysis and data presentation. Identification of flood-prone zoning uses Scoring Method. The parameters observed were topography, lithology, climatology and land use. The analysis consists of: Spatial Analysis of Flood-prone Zoning, spatial data and attribute data treated are Topographic Map, Litology Map, Climatology Map and Land Use Map. Data is presented in spatial and vector formats. Data entry process and map overlay is done through ArcGIS 9.3 software. Geoprocessing integrated software in the ArcGIS Software plays a role in this process. In this extension there are some overlay facilities and other facilities such as; union, merge, clip, intersect, etc. This overlay process is done gradually with the starting sequence of overlay of Soil Type theme with land use then overlay result is re-overlaid with slope overlay and slope of rainfall. The overlay stages are as follows:

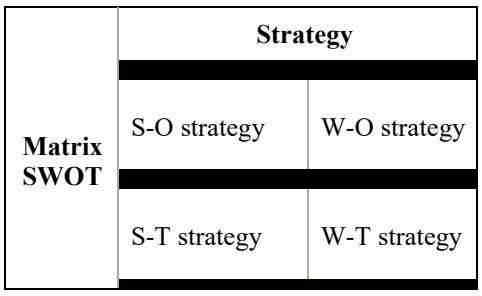
1. Open ArcMap Program.
2. Display the maps that become flood-prone parameters by searching data from the directory by click the Add Data icon.
3. Enabling Geoprocessing> Topography, Litology, Climatology, Land Use. Overlay everything.

Surakarta disaster flood adaptation strategy is obtained by multiplication of all SWOT variables. Here are four SWOT variables:

1. Strength
2. Weakness
3. Opportunities
4. Threats

The overall internal and external factors that have been identified are grouped in the SWOT matrix which is then qualitatively combined to produce a strategy classification that includes four sets of possible alternative strategies for flood disaster adaptation:

1.Strategy S-O (Strengths - Opportunities).
2. W-O Strategy (Weaknesses - Opportunities)
3.Strategies S-T (Strengths -Threats)
4.Strategy W-T (Weaknesses -Threats)



Source: Rangkuti (2001)

Figure 1.SWOT matrix

ANALYSIS

1. Topography

Geographically Surakarta City is located between three volcanoes namely Mount Lawu, Mount Merapi, and Mount Merbabu, and the eastern part of the area traversed by the Bengawan Solo River. Based on Topographic Map, Surakarta City is located in lowland basin so it has relatively flat topography between 0-15% with altitude between 80-130 dpl. The relatively flat area has a percentage of 96.42% of the total Surakarta area. Details on topographic analysis in Surakarta are presented in the topographic classification table as follows:

Table 1. Topographic Classification in Surakarta 2017

No.	Districts	Class	Score	Weighted	Total Score
1.	Banjarsari	0 - 2%	5	5	25
2.	Jebres	2 - 15 %	3		15
3.	Laweyan	0 - 2%	5		25
4.	Pasar Kliwon	0 - 2%	5		25
5.	Serengan	0 - 2%	5		25

Source: Data analysis, 2017

2. Litology

The soil type in Surakarta City is generally a sandy clay / clay, including Alluvial and Rock Volcanoes. This type of soil is formed as a result of sediment. Classified as flood-prone because of sandy clay tends to expand and store water causing puddles during high rainfall whereas if the dry season will shrink so that there is drought. Based on the Geological Map of Geohydrology Map Surakarta seen that the rocks in the city of Surakarta consist of:

a) Alluvial

This rock unit is located in the central city of Surakarta to the south of the whole District Serengan and Pasar Kliwon and a small part of District Laweyan and Banjarsari. The total area of this rock is 2,033.63 Ha. Its thickness ranges from several centimeters to several meters. Consists of clay, mud, silt, sand, gravel, crack and deny.

b) Alluvial Chocolate Old

This rock unit is older than Alluvial rocks, located in Surakarta City in the north and west of precisely in Laweyan, Banjarsari and Jebres Subdistricts.

c) Rock Volcano / Young Volcanic Rock

This rock unit is located in the north and east of Surakarta, precisely in the District of Banjarsari and a small part of Jebres Subdistrict along the Solo River. The area of this rock is 778.84 ha. These rocks are generally the lava sediment of Vulkan Merapi. Rocks generally consist of andesite lava, breccia, lava, tuff, to basalt.

Table. 2 Litology Classifications in Surakarta 2017

No.	Districts	Class	Score	Weighted	Total Score
1.	Banjarsari	Alluvial, Alluvial Tua	5	2	10
2.	Jebres	Alluvial	4		8
3.	Laweyan	Alluvial Tua	3		6
4.	Pasar Kliwon	Batuan Gunung Api Merapi	2		4
5.	Serengan	Batuan Gunung Api Merapi	2		4

Source: Data analysis, 2017

3. Land Use

The total area of Surakarta City reaches 44.06 Km2 which is divided into five districts of Laweyan, Serengan, Pasar Kliwon, Jebres and Banjarsari. Subdistrict that has the widest area is Banjarsari District which is 1.481,10 Ha, while the district that has the least land is the District of Serengan is the area of 319,40 Ha. Land use in Surakarta City in 2016 is mostly used for settlement area that is 2,841,36 Ha, land use with allotment of service area 365,46 Ha, while land use for rice field is only 101,95 Ha. The use of rice field is only found in three districts only Laweyan District of 22.45 Ha, Jebres District of 17.10 Ha and Banjarsari

District of 62.40 Ha. Land use in Surakarta is at least 12.59 hectares in Laweyan District, Jebres Sub-District with 8.85 Ha and 3.49 Ha of Banjarsari District.

Table 3 Land Use Classifications in Surakarta 2017

No.	Districts	Class	Score	Weighted
1.	Lahan Terbuka, Sungai, Waduk, Rawa	5	2	10
2.	Permukiman, Kebun Campuran, Tanaman Pekarangan	4		8
3.	Pertanian, Sawah, Tegalan	3		6
4.	Perkebunan, Semak	2		4
5.	Hutan	1		2

Source: Data analysis, 2017

The results of the analysis of the Map of Flood Hazard Zoning in Surakarta City obtained vulnerability / flood prone among others are very low, low, medium and high. The following is a discussion on the condition and spread of flood potential in Surakarta:

1. Very low / not vulnerable

The very low flood potential of Surakarta City is located in North Jebres subdistrict in Mojosongo Village, which is adjacent to Karanganyar regency. This is because Mojosongo urban village has contours that tend to be steep and topography 15% so it does not have the potential to flood.

2. Low

Potential class of low-flood vulnerability of Surakarta City is located in District Jebres in South Tegal Harjo, Jebres, Kepatihan Wetan, Purwodiningratan, Sudiroprajan, Jagalan, Gandekan, Sewu and Pucangsawit. In addition, in the northern and western districts of Banjarsari cover most of Kadipiro and Banyuanyar villages. The northern Laweyan sub-district covers Karangasem, Jajar and Kerten Sub-districts also have low flood potential.

3. Medium

Potential class of medium-to-moderate floods is the most dominant class in the flood-prone zonation level in Surakarta City covering all Pasar Kliwon Sub-district except Semanggi Village with details of Kampung Baru Village, Kauman, Kedunglumbu, Buluwarti, Gajahan, Pasar Kliwon, Sangkrah and Joyosuran. The whole of Serengan sub district are Kemlayan, Jayengan, Keratonan, Tipes, Serengan, Danukusuman and Joyotakan. The majority of Laweyan sub-districts include Sriwedari, Panularan, Penumping, Bumi,

Purwosari, Laweyan, Sondakan, and Pajang villages. The next sub-district is Banjarsari sub-district covering Keprabon, Timuran, Kepatihan Kulon, Ketelan, Punggawan, Mangkubumen, Setabelan, Kestalan, Gilingan, Manahan, Sumber and a few villages of Banyuanyar, Sumber and Kadipiro. This is because the central city of Surakarta has flat topography, Alluvial soil type is exacerbated by high rainfall and poor drainage system so that floods often occur.

4. High

The potential for high flood-prone areas is found in Pasar Kliwon 8 sub-district in Semanggi Village. The village of Semanggi is located in the Bengawan Solo River Basin and the flood is flooding from other areas. Oxidation of the Bengawan Solo River becomes the trigger of overflowing river water discharge due to high rainfall.

4. Surakarta Disaster Flood Adaptation Strategy Based on Political Economy Perspective

Here are the results obtained from multiplication of all SWOT variables:

1. S-O Strategy

a) Coordination of social institutions of Surakarta City with the people of Surakarta in creating a disaster response environment;

b) Adequate infrastructure in Surakarta City is very useful for the quick response of Basarnas, PMI and TNI-POLRI Kota Surakarta;

c) To minimize losses due to flood disaster in Surakarta City, disaster adaptation studies can be undertaken by the government in collaboration with State / Private Universities in Surakarta City in identifying, assessing and monitoring disaster risks and applying early warning system,

d) .This can also be done between the Company / Industry with the city government in the context of participation in disaster management.

2. W-O Strategy

The development of Community Social Institution in Surakarta City can be utilized by Indonesian Red Cross, National SAR Agency or TNI-POLRI as a means to deliver socialization of disaster response or disaster adaptation in order to minimize losses due to flood disaster. Socialization is very important because of the low awareness and understanding of preparedness and risk reduction efforts in the face of disaster in the city of Surakarta.

3. S-T Strategy

a) Placing disaster risk reduction as a priority in Kota Surakarta and its implementation must be implemented by a responsible institution (Basarnas).

b) Disaster response flood socialization to the people of Surakarta due to low awareness and understanding of the community towards preparedness and risk reduction efforts in the face of disaster;

c) Improve the capacity of communities to influence decisions, policies and programs related to disasters.

4. W-T Strategy

a) It takes the role of NGOs, Basarnas, PMI and TNI-POLRI in disaster adaptation efforts of Surakarta City, starting with socialization for the community about flood disaster response;

b) The existence of disaster simulation conducted by Basarnas in cooperation with the community so that the public is more aware with flood bancana.

c) Formulating systems, procedures and activities of Community Based Disaster Management in the form of channeling physical, mental and emotional aspects of the members of the community involved. The process of formulating means ensuring the proper management of resources (funds, time, equipment, information and technology). For that there needs to be programs and services to the social assistants who help the community.

d) Flood disaster impacts local communities, local institutions and organizations at provincial, district / city, sub-district, hamlet / village level, to RW / RT, which can carry out disaster-related activities on an ongoing basis. The National Development Planning Agency (Bappenas) should be encouraged to pay more attention to the problems of local / local communities in order to gain greater attention and resources for the needs of affected communities;

e) Need to create a culture of disaster awareness on the community, government, NGOs / Social Organizations and other agencies that can mobilize various sectors to prioritize prevention and sustainable disaster management strategies.

CONCLUSIONS

1. The creation of the flood vulnerability zonation map uses four parameters: topography, lithology, climatology and usage by using scoring method and overlay (intersect) to classify vulnerability / flood prone.
2. The dominant factor causing flood vulnerability in Surakarta City is the slope of 0-15% fall into the flat category. Seeing the condition of Surakarta City which is mostly lowland area, land use is dominated by settlement, industry, trade / service, Alluvial soil type with infiltration value which is quite low so it is possible to cause water puddle causing flood.
3. The results of the analysis of the Map of Flood Hazard Zoning in Surakarta City obtained vulnerability / flood prone among others are very low, low, medium and high.
4. Flood Adaptation Adaptation Strategy in 2017 in Surakarta City according to the results of the processing using SWOT analysis is the Government of Surakarta City is expected to put flood adaptation effort as priority. Several things to do is to study the adaptation of flood disaster in cooperation with PTN / PTN in Surakarta City. Next is to formulate disaster management systems, procedures and activities one of them by conducting socialization and disaster simulation for the community by involving NGOs.

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THE ANALYSIS ABOUT MARRIED WOMEN DECISION ON WORK IN INDONESIA

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ABSTRACT

This study aims to determine the duration of time of exit and return of women to work and factors that affecting it in Indonesia in 2007-2014. The data used in this study is secondary data derived from Indonesia Family Life Survey (IFLS) especially the fourth and fifth batch. The number of samples used is 474 people who work and have not married, based on their marital status in 2007. It is consisted of 264 samples who exit from work and 119 samples returning to work with 91 censored samples. Survival analysis (analysis of endurance test) is conducted with parametric model of weibull regression. The results shows that the average duration of time for women to exit from their jobs was 3 years and 3 months with significant variables affecting are the status of marriage, age of woman, education level, spouse's job sector, and transfer from spouse. We found out that the shortest duration to exit is one year, while the longest is 7 years. Hazard ratio shows that married woman has larger probability to exit. It is also found that whether or not the women receive transfer from her spouse, women's education level, and her age, has positive relation towards exit probability. Mean duration of time for the return of women to work is 2 years 4 months, with significant variables affecting are the age of women and the age of her third child. Younger age range of women has longer survival time, which indicates lower probability to return to work.

Keywords: Survival analysis, weibull regression, duration of time

Keywords: Survival analysis, weibull regression, duration of time, IFLS, working women

PREFACE

Indonesia has a very large population, which is ranked fourth in the world's most populous category. Based on data from The World Bank, the population of Indonesia in 2016 has reached 261,115,456 people. With a high population, indeed Indonesia has the potential human resources to be able to improve the economy and development. Population is one important component of all economic activities and development. Population is the one important

component of all economic activities and development, in terms on the availability of labor, expert labor, and leaders to create economic activity (Arsyad, 2004).

Table 1. Population and Labor Force Participation Rate by Sex in Indonesia Period 2007-2014 (percent)

Year	Population		LFPR	
	Male	Female	Male	Female
2007	50,30	49,70	84,69	50,72
2008	50,34	49,66	84,26	51,14
2009	50,38	49,62	84,66	51,21
2010	50,40	49,60	84,32	51,93
2011	50,41	49,59	84,30	51,60
2012	50,40	49,60	84,27	51,25
2013	50,39	49,61	84,22	50,88
2014	50,37	49,63	83,94	50,83

Source: The World Bank, 2017.

Based on Table 1, it can be seen that female LFPR it has a better rate of improvement compared by male LFPR although on a percentage of male LFPR is much higher than female LFPR. Female LFPR influenced by economic, demographic, and social factors such as age, marital status, income level, household expenditure, number of family dependents, wage rate and education (Setyowati, 2009). Supply of married women workers based on hourly working hours is influenced by wage factors, partner income, age, education, number of toddler, and household expenditure (Putri dan Purwanti, 2012). Women who have a family generally have a dual role of being housewives in terms of doing housework, caring for and raising children; and help increase household income.

The research conducted by Setyonaluri (2016) about the determinants of exit and return of women work in Indonesia found that the average age at the time of leaving the job was equal to the average age of the first marriage which meant that the woman exit from work more or less at the first marriage. It was also found that Indonesian women have a period not to work longer than women in developed countries, which is about 3 years. The life cycle, marriage, childbirth, marital status and education have an important and significant influence on women's decisions to exit and return the labor market. This research was conducted by using secondary data from Indonesia Family Life Survey (IFLS) 4th and 5th to answer research question as follows:

1. What is the duration of time to exit from work and the duration of return to work for women working in Indonesia?

2. How impact of variables marital status, age of woman, education level, occupation of spouses, transfer from spouses and age of toddler for the duration of time for women exit and return to work in Indonesia?

LITERATURE REVIEW

Population is an important element in economic development, because its increasing the production and development of economic activity, also an important role in the availability of labor (Sadono Sukirno, 2000). According to Dewi (2006), states several factors that encourage women to work outside the house are financial needs, relational needs and self-actualization needs. Productive age is the age of a person while still able to work and produce something. The increasing age of a person cause the greater supply of labor due to the greater responsibility are covered, although at some point the supply will decrease along the age (Putri Purwanti, 2012).

Based to the theory of human capital, education is a part of human life investment which means it's can increase their income through education improvement because with the higher level of education then the knowledge and skill will also be higher (BPS, 2016). Number of family dependents is the number of family members who become dependent in a household, whether siblings or not siblings who live in one house but have not worked or help the family income (BPS, 2004:4).

The characteristics of the formal sector are some related work and are part of structural processes, officially used in law and workplace requirements that are protected by law. While the informal sector is characterized as the pattern of irregular work activities, not bound by the rules made by the government, in daily calculations of capital and income can be classified as small, workplace is not fixed and associated with other businesses, in general this work serves low-income communities, requires no special skills, uses a small amount of workforce, and high levels of tendency on work mobility and shelter (Nilakusumawati dan Susilawati, 2012).

The existence of a person in the labor market depends on how much their willingness to allocate his time for work. The research by Setyonaluri (2016), found that the average age of women leaving the job was equal to the average age of first marriage which meant that women quit more jobs during their first marriage. The return of women to work is before their children

enter school age and also the average time period of not working on women in Indonesia longer than women in developed countries is about 3 years.

RESEARCH METHODS

The survival analysis in this study was conducted within the period of 2007 to 2014, using a sample of women who are not married and working in 2007. There are three possible models used are women who keep working from 2007 to 2014, women who worked in 2007 but in a given year out of work until 2014 the status is still not working, and women who worked in 2007 but within a certain year out and back to work so that in 2014 the status is work. This research used a survival analysis using secondary data derived from the Indonesian Family Life Survey (IFLS) 4^{th} and 5^{th} in the period 2007 to 2014.

The dependent variable in this study is the duration of the woman's exit from the job (Y1) and the duration of the woman's return to work (Y2). The independent variable in this research is marital status (X1), age of women (X2), level of education (X3), the spouse's job sector (X4), transfer from spouse (X5), age of first child (X6), the age of the second child (X7), the age of the third child (X8).

The sample used in this research were not married women who work in 2007 as many as 474 people consisting of 264 respondents out of work and 119 respondents who returned to the job with 91 censored data.

Table 2. Variable-Variable Used in IFLS

No.	Variable	IFLS Data	Section
1.	Marital Status	Book 4	BR & KW
2.	Education Level and Spouse's Working Sector	Book 3A	DL & TK
3.	Age of Women and Child Age	Book 4	BA
4.	Transfer from Spouse	Book 3B	TF

Source: *Indonesia Family Life Survey* (IFLS).

DATA ANALYSIS TECHNIQUE

This survival analysis is a collection of statistical procedures used to analyze data with response variables expressed in the duration of time until the occurrence of a desired event. The survival analysis aims to analyze the data to find out the results of the variables that influence the initial event (time origin) to the end of the event (Kleinbaum&Klein, 2012).

The survival analysis is done first with the log-rank test, which is a test to evaluate the differences on the Kaplan-Meier curve between two or more categories. Hazard ratio is defined as the ratio between the (risk) of an individual against another individual. The value of the hazard ratio is used to determine the extent of risk in working women to exit and return in work with the independent variables that influence the parametric analysis model that corresponds to the data used is weibull regression.

RESEARCH RESULT

Women Exit From Work

In this research it can be seen that from 474 samples, 264 female samples are exit from work since 2007. The average duration of time a woman needs toexit from her job is 3,3 years or equivalent to 3 years 3 months. The married factor is denoted into the variable dummy given 0 if the sample that exit from work is not married and 1 if the sample exit from work was married. Survival time for not married women is longer than married women. Not married women have a duration about 4 years to exit from work. However, working women with marital status only survive for about 2 years on their job before deciding to exit from job.

Working women at age 18 exit from work in the 6th year since 2007. While the age between 19 to 31 years have a shorter survival time than the age of 14-18 years that only 4 years, then the shortest survival time to be on work is 32-39 years of age.

The level of education has a unique pattern, at a low level of education (level 0-1) that completed actually survive longer on working is 4 years. At the level of education 2 to 4 can only last about 2 years in the work. Then, it's increase in endurance time on work at 5th to 7th of education level.

The spouse's working sector causes women to stay work for about 4 years, the work sector with the longest survival time is the social services sector. While, the spouse's working sector that causes low participation of working women are transportation storage and communication sector.

The transfer from spouse is denoted into the dummy variable which given 0 if the working woman does not get transfer by spouse and 1 if working women receive transfer by spouse. Duration of survival time in both groups showed no significant difference is average for

4 years, as we know that the sample does not receive transfer from the couple as much 222 women while those who receive transfer by spouse only 42 women.

Akaike Information Criterion (AIC) is one of the criteria that can be used to choose the best model on survival analysis. The smaller value, the higher match rate for model. The smallest AIC value is Weibull distribution, so the Weibull distribution is selected for research. With the selected variable in the best model are all the independent variable.

Table 3. Weibull Test on Working Women for Exit

		LR Chi2(5) = 104.05 prob > chi2 = 0.0000	
Variable	*β*	*Hazard Ratio*	p-value
Married	-0.96596	0.3806176	0.000
Women Age	-0.06394	0.9380658	0.000
Education Level	-0.00745	0.9925822	0.245
Spouse's Working Sector	-0.0546	0.9468621	0.026
Transfer from Spouse	0.099092	1.104168	0.480
Constants	-0.80230	0.4482952	0.017
/ln_y	-0.64547	0.5244148	0.000
y	0.524415	1.68947	

Source: Data processed, 2017.

Next we do Wald test (partial test) to determine the effect of each independent variable on the duration time of women to exit. All of the variables that used, married, age, and the spouse's job sector are the most affected variables on duration of women to exit from work.

Based on hazard ratio, it is known that women who work with not married status have bigger possibility to exit about 0,381 times compared to the time duration of married women. On female age variable, the increasing 1 year in the age of working women has a risk 0,938 times lower to exit from work. At 1 higher level of education has a risk of 0.992 times lower for women working to exit their work. While, the transfer from spouse has a positive impact for woman's exit from work, woman who receive transfer from her spouse at least 1,104 times more higher to exit from work.

Women Return to Work

The average time to takes woman to return to her job is 2,4 years or equal 2 years and 4 months. The average time for return is shorter than the average time to exit. The return time of the woman to the job at least 1 year with the longest time is 6 years.

The range age of 15 to 19 years has the longest time to return for work is 6 years, it's indicating that at this age the possibility to return to work is smaller than other ages. Next, at the age of 20 to 35 years in general time, the survival time is shorter about 2 to 4 years, because the age of 20-35 years woman still have good productivity at work, so women can still work.

At lower levels of education, the duration time of women to return for work tends to be lower, which means women with low levels of education return to work more quickly. At a higher level of education surprisingly the time return to work is longer.

In terms of spouse's working sector, the time duration of woman's to return for work is about 4 years, but in some sector has a shorter duration of time to return such as mining and quarrying; transportation, storage and communications; and social services.

The length of time that woman takes to return work if influenced by the spouse transfer is for 4 years, there is no significant difference in the woman's duration time return to work because most samples do not receive transfer from her partner.

The duration of the women's return to work by age of the first child can be seen that at the age of 0-1 years old children is the longest duration for women to return to their work. There is a pattern whereby the greater age of first child, the possibility to return becomes shorter. On second child only seen longer duration to return for work only age of children 0 years, at the age of the next child time to return becomes shorter. Time to return due the age of third child is almost similar to second child, women tend to return for work at the first age of third child. However, the age of the third child in this study only reaches of 3 years, because the range of 2007-2014 for third child has reached the final observation time, so the age in the third child is only able to reach at 3 years.

Table 4. Weibull Test on Women Return for Working

		LR Chi2(2) = 34.94 prob > chi2 = 0.0000	
Variable	β	Hazard Ratio	p-value
Women Age	-0.158414	0.8534957	0.098
Child Age	-1.573362	0.2073468	0.000
Constants	1.450564	4.265522	0.299
/ln_y	0.367758	1.444493	0.000
y	1.444493	4.239701	

Source: Data processed, 2017.

Based on the Wald test, the variable of women age and the age of third child are the affecting factor for woman to return on work again. The hazard ratio in the woman age means that the increasing of 1 year on non-working women is 0.853 times less to return to work. While increasing 1 year at the age of third child, causing possibility for woman who not work to return become smaller that equal to 0,207 times.

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Infrastructure Development and Provincial Economy in Indonesia: Using a Multi-province CGE Model

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ABSTRACT

Indonesia is a vast island country and comprises 17,500 islands accessible only by air and sea. It is the world's fourth largest country and Southeast Asia's largest, with a population of more than 200 million. The country is rich in natural resources such as oil, gas, minerals, forests, and fish; however, these resources are unevenly distributed nationally. In addition, traffic and trade among its provinces can be expensive. The Indonesian economy has recorded a growth rate of around 5% in recent years. There are various factors that the economy is relatively good. Among them, the government-led infrastructure development project is a factor of domestic demand. Therefore, it is regarded as sustainable for a while.

This study focuses on infrastructure development in Indonesia, especially transportation infrastructure, and analyzes the economic effects and the impact on development on the provincial economy using the CGE (Computable General Equilibrium) model. The model employs the inter-regional input-output table of Indonesia, which contains 30 provinces. However, since this table shows the economic situation in 2005, we first update the data up to 2016, using the economic growth rate of each province. Next, in order to concentrate on the analysis of the provincial economy, we will consolidate the number of industries into four (agriculture, industry, transportation and service). Since Indonesia is an island country, expansion of the transportation infrastructure in Indonesia is essential for economic development nationwide and reduction of regional disparities. Therefore, in this study, we will focus on the activities of transportation sector in Indonesia. Firstly, we analyze the effect of expanding investment in transportation sector on regional economy. Secondly, it is suggested that the development of the transportation sector will reduce regional disparity in Indonesia by activating regional movement of products and production factors.

Keywords: Multi-province CGE model, Indonesia, Provincial Economy, Regional disparity, Transportation sector

1. INTRODUCTION

Indonesia is a populous country of 17,500 islands accessible only by air and sea. Regional resources and economic development differ dramatically (Sakamoto, 2007; Sakamoto, 2014; Sakamoto, 2017b; Sakamoto, 2017c), and resolving regional disparities is the key to Indonesia's economic growth. Therefore, policymakers need a tool for assessing the effects of economic policies on regional economies; especially the internal and external transportation of islands is unique feature as an island country.

Sakamoto (2012b) developed such a tool by analyzing Indonesia's income inequality with a computable general equilibrium model (CGE) using data from a social accounting matrix (SAM) in 2005. Moreover, Sakamoto (2013a) developed a multi-region CGE model incorporating SAM 2005 data by Resosudarmo et al. (2009). Especially in these models, the problem of income disparity was analyzed, and although a governmental income-transfers policy is important, it has pointed out that the policy effect is not so large.

For the above two CGE models using SAM, Sakamoto (2013b) introduces the CGE model of 30 provinces using the Input-Output table. The study analyzes the importance of the development of transportation sector on the regional disparity. Although the number of the regions is expanded to 30 from five, since it is not SAM but IO table, income distribution structure is ambiguous. Therefore, it becomes the model which simplified income transfers and it is not useful to analyze government transfers.

This study is a CGE model of 30 provinces using the input-output table similar to Sakamoto (2013b). However, in this case we use the 2005 database. Therefore, in this study, we update the data to the nearest one and analyze the model under the updated database.

Applications of the CGE model to the Indonesian economy have already appeared. Ezaki (1990) compared the Indonesian economy between 1980 and 1985, when structural adjustment policies were implemented to reverse the decline in oil prices. Tokunaga et al. (2003) used a multiregional model to analyze the influence on Indonesia of decentralized tariff reductions and finances in regional economies. Clements et al. (2007) analyzed the economic influence of liberalizing the oil price. Although these studies corresponded to the country's current circumstances, they do not directly focus on Indonesia's income disparity. Moreover, the latter two studies use 1995 data, now considerably dated. Resosumardo has applied CGE models extensively to Indonesia (Resosudarmo, 2002, 2008; Resosudarmo et al., 1999; Yusuf and Resosudarmo, 2008), whose main topic is environmental issues. Especially, his collaboration with Arief Anshory Yusuf (Yusuf and Resosudarmo, 2008) extended the model to disaggregate household activity from SAM data. One exception to the CGE approach is the financial model employed by Azis (2000). On the other hand, there are several multi-region models in international literature (for example, Böhringer and Welsch, 2004; Bröcker et al., 2010; Das et al., 2005; Horridge and Wittwer, 2008; Ishiguro and Inamura, 2005; Kim and Kim, 2002; Latorre et al., 2009; Li et al., 2009; Miyagi, 1996; Ueda et al., 2005 and so on). Donaghy (2009) is carrying out the surveys of the literature of this direction. Moreover, Sakamoto also has developed several multi-region models (Sakamoto, 2011; Sakamoto, 2012a; Sakamoto, 2017a; Sakamoto and Fan, 2012; Sakamoto and Yan, 2012).

Using a multi-region CGE model incorporating the inter-regional Input-Output table of Indonesia, this study examines Indonesia's regional disparities and analyzes policies to address them. Since Indonesia is an island country, expansion of the traffic infrastructure of Indonesia is indispensable to reduction of the economic development of the whole country, and regional disparity. Then, activity of transportation sector is thought as important and the effect which transportation sector gives to regional economy is analyzed. Section 2 introduces the model and assumptions. This section also describes how to update data. Section 3 presents results of the model simulation. Section 4 concludes.

2. MODEL AND ASSUMPTIONS

Constructing a multi-regional CGE model for Indonesia is challenging because Indonesia's statistical authority publishes SAM data irregularly. In addition, it is necessary to estimate multi-region SAM or Input-Output tables; this work is difficult for statistical authorities, and it is rarely released.[1] Therefore, researchers routinely estimate these tables themselves.

We constructed the CGE model using the 2005 Indonesia inter-regional Input-Output tables, which contains 30 provinces as a database. Table 1 shows information of province of Indonesia. Among those, Riau (sm004), Kalimantan Timur (ka019), Sulawesi Selatan (sw023), and Papua (ei030) are separate into two prefectures (Riau and Kepulauan Riau; Kalimantan Timur and Kalimantan Utara; Sulawesi Selatan and Sulawesi Barat; Papua and Papua Barat) now, respectively.

[1] We could able to get this Badan Pusat Statistik (BPS) data from Professor Nakamura (Nagasaki Prefectural University). We would like to show gratitude.

Next, we will introduce the data update method. The method is simple. First, we will collect GDP data of each province until the latest 2016.[2] Then compare with the base year of the database, that is, GDP of each province in 2005. Table 2 shows the growth rate of GDP from 2005 to 2016. Update the 2005 IO table by multiplying the growth rate in Table 2. The characteristic of the IO table is that the production in the column of the table (supply side) and the production in the row (demand side) coincide. Because the growth rate of each province is different, simply multiplying the growth rate does not match the production of the column and the row. Therefore, adjust so that the sum of the columns and the sum of the rows match.[3]

Since many zero data are included in the IO table, we have aggregated 35 production sectors into four (agriculture, industry, service and transportation, see Table 3). The standard CGE model furnishes a prototype for effective model-making,[4] and an attractive feature of the CGE model is that it embodies the nested production function across periods. Therefore, the model is generally standard practice. The Appendix offers an explicit mathematical description. The model is used to make a final determination of demand in each institute that maximizes their utility (A-18–A-24).

Moreover, in this model, in order to make the solution by a computer calculate efficiently, the quantity variable is also setting the initial value to 1 as well as the price variable. In addition, the data published in IO table is an amount-of-money display and has usually multiplied price and quantity. If a price is assumed to be 1, quantity will serve as a data value, but it is assuming a quantity variable to be 1, and quantity serves as a number of which multiplies 1 and data value was done. Since the data value is treated as exogenous variables, change of a quantity variable serves as a change of quantity as it is. For example, a data value decomposed *PY*, *Y* and *y* which *PY* is price variable assumed to be 1, *Y* is quantity variable assumed to be 1 and *y* is exogenous data value, respectively.

We now explain the structure that produced this final determination.

First, the production functions of labor and capital are set by the constant elasticity of substitution (CES) function (A-1, A-2, and A-3, respectively). Since the supplies of labor and capital are assumed to be fixed (A-4 and A-5), the prices of labor and capital are decided endogenously by A-1 and A-2.[5]

Intermediate goods are comprised of three stages. The first is a composite production function of regional (provincial) intermediate goods. The CES function is adopted in this stage (A-6 and A-7, respectively). The second is a composite production function among intermediate goods and value-added products by using the Leontief function (A-8, A-9 and A-10, respectively). The last is a composite production function between domestic and foreign intermediate goods. Armington's (1969) CES function is adopted in this stage (A-11, A-12 and A-13, respectively). We assume an import price makes 1 an initial value and import goods demand is affected in this model. Moreover, in order to avoid change of the goods price by a simulation, the prices of goods are set to numeraire as A-14. Regional government's taxes and subsidies and are added to production costs as A-15. Market equilibrium between production and demand is specified by A-16. Exports ($e_{r,i}$) are treated as an exogenous variable.[6] In addition, errors that occurred during RAS adjustment are added to the model ($adjt_{r,i}$).

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[2] GDP of each province was obtained from the website of BPS (https://www.bps.go.id/). Since it is not an objective to conduct comparative analysis of time series, nominal value of current market price was used for GDP.

[3] This is the so-called RAS method. However, in order for the total to be perfectly matched, it is necessary to continue the adjustment, so that the adjustment is limited to several times, and the portions that do not match are treated as adjustment items (errors).

[4] Some small prototype CGE models were introduced by Hosoe et al. (2010).

[5] Although not introduced in this research, when introducing a dynamic model such as Sakamoto (2013b), labor stock ($l_{r,j}$) and capital stock ($k_{r,j}$) fluctuate.

[6] It is possible to transform exports into an endogenous variable using the constant elasticity of transformation function (CET), which refers to goods other than domestic and exported goods.

Each provincial income is shown in A-17, which includes value added income of labor and capital and government income. This income can be regarded as GDP from the value-added side of each province. Domestic demand is then optimized based on income from each province.[7]

After setting the initial equilibrium solution of various price and quantity variables to 1, we calibrate several parameters to correspond to the database. Because elasticity of substitution cannot be estimated from the database, results of previous research were used (Table 4).

3. SIMULATION AND RESULTS

3.1. Simulation design

For understanding the economic effects of transportation sector's improvement, we conduct several simulations. Table 5 shows the simulation design in this study. Simulated changes in five economic variables are considered. The first variable is increase in productivity of value-added production, which corresponds to γ^V of A-1, A-2 and A-3 in the model. If this productivity goes up, it will be expected that production of the value-added goods of transportation sector increases, but the price of labor or capital may decrease. We investigate the influence of productivity increases on provincial income by posting a 5% increase in transportation sector's value-added productivity. To investigate the influence on regional income, we analyze the situation in which productivity increases in all regions and the situation in which the productivity of each five region (Sumatra, Java and Bali, Kalimantan, Sulawesi, and Eastern Indonesia) increases.

The second variable is also 5% increase in productivity, but we choose gross production parameter of γ^Y in A-12 and A-13. If this productivity goes up, not only in value-added goods but production of intermediate materials will increase. Moreover, it seems that the decrease of the price of labor and capital become loose a little.

The third simulation examines increased capital in transportation sector. The case where capital stock increases is assumed as a result of the investment to transportation sector. The simulation considers the situation in which k of A-2 increases 5%.

The fourth, we estimate the result of investment demand by central government rising 5% in response to central government's investment policies. It does not mean investing in transportation sector by the central government but increasing to use of transportation sector in the central government's investment. This is reflected in α^{CINV} of A-22 by a 5% increase in the model.

Finally, we investigate the effect of tax policy for transportation sector. We consider the case in which the regional government decrease tax rate of transportation sector (*gtax*) in A-15 by 50%.[8]

3.2. Simulation results

Tables 6 to Table 10 summarize changes of regional income for each simulation. We present the results of a macroeconomic shock affecting all provinces and region-specific shocks for each region. The economic effect of each table is shown as a percentage. Slightly variant results are expected for shocks to each individual region's provinces. The rises in value-added productivity of transportation sector decrease regional income in many provinces but increase in some provinces (Table 6). This result is very different from the result of the model before updating (Sakamoto, 2013b). As a result of increased value-added productivity, it is thought that the price of capital and labor has fallen and has had a bad influence on local income. However, the economy of Indonesia as a whole has been

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However, quantity exported need not be an endogenous variable if all foreign demand can be exported regardless of international price.

[7] This is a static model; therefore, total savings and total investment balance. Moreover, by considering "the purchase of investment goods," investment can use the same setup as household consumption. It adopts savings-driven closure.

[8] These simulation designs arise from computability of the model, not from policies now in force in Indonesia. Therefore, a policy proposal is based on results of the simulation.

rising, indicating that it has an economic effect. And, as a factor, there is an economic effect seen in Java and Bali. It is interesting that the value-added productivity of a specific region rises, except for Java and Bali, the economic growth of regions where productivity has increased is negative. Economic growth in this region is also the lowest in improving value-added productivity of Java and Bali. However, it gives economic effects to other regions. As a result, the overall economic effect was observed except in the case of Kalimantan and East Indonesia.

The rises in gross productivity of transportation sector increase regional income significantly in Table 7. In the rise of value-added productivity, use or price of labor and capital may be decreased, however, in the rise of gross productivity, since the prices of goods are fixed, the demand of intermediate goods are expanded, and it is led to increase the regional income.

The result of the rises in capital stock of transportation sector is similar in the case of rising value-added productivity in Table 8. A possibility that reduction of the capital price accompanying the increase in capital will turn into reduction of provincial income is shown.

The result of the rises in central government investment demand for transportation sector is similar in the case of rising gross productivity in Table 9, however, the economic effect is very small, and the spillover effect to other areas is also very small.

It seems that a tax cut policy is not desirable. The tax cut policy to transportation sector is decreasing the regional income (Table 10). It is because production is not increasing to depression of tax revenues reduced taxes so that it is compensated.

As for productivity, as long as these are seen, it is desirable to go up in a form not only including a factor of production but intermediate materials. Obviously, since it is necessary to improve productivity over all the production of goods, this is not easy. In addition, such productivity improvement is largely due to corporate efforts, not government policies. Obviously, there are policies that encourage corporate efforts. Moreover, it is important that development of the transportation industry of a specific region has not provided a bad influence on other regions. This indicates that in any simulation there is a spillover effect in other areas. However, if the region has a negative economic effect, it will be difficult for the region to accept policies.

4. CONCLUSION

This study conducted a CGE analysis of the influence of transportation policy on regional disparities in Indonesia using IO table for 30 provinces. In this study, we update the data to the nearest one and analyze the model under the updated database. The simulation produced several results. First, when value-added productivity in the transportation sector rises, regional income decreases in many provinces, but it increases in some provinces. When gross productivity in the transportation sector rises, regional income increases in all provinces. Increase in capital stock is similar effect to value-added productivity rising. Increase in central government's investment demand is similar but fewer effect to gross productivity rising. The tax cut policy is not desirable. In this model, it is important to improve general productivity or increase investment demand of central government. Conversely, it turned out that economic effects are less likely to arise if assumptions are made that price fluctuates (falls) by simulation. On the other hand, it is interesting that spillover effect to other regions was seen in any simulation. Since various situations can be considered by assumption and a setup of the model, further analysis is required.

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Table 1 Information of Indonesian Prefectures

Model	IO classification	Model	IO classification
sm001	1. NANGGROE ACEH DARUSSALAM	ka016	16. KALIMANTAN BARAT
sm002	2. SUMATRA UTARA	ka017	17. KALIMANTAN TENGAH
sm003	3. SUMATRA BARAT	ka018	18. KALIMANTAN SELATAN
sm004	4. RIAU	ka019	19. KALIMANTAN TIMUR
sm005	5. JAMBI	sw020	20. SULAWESI UTARA
sm006	6. SUMATRA SELATAN	sw021	21. GORONTALO
sm007	7. BANGKA BELITUNG	sw022	22. SULAWESI TENGAH
sm008	8. BENGKULU	sw023	23. SULAWESI SELATAN
sm009	9. LAMPUNG	sw024	24. SULAWESI TENGGARA
jb010	10. DKI JAKARTA	jb025	25. BALI
jb011	11. JAWA BARAT	jb026	26. NUSA TENGGARA BARAT
jb012	12. BANTEN	jb027	27. NUSA TENGGARA TIMUR
jb013	13. JAWA TENGAH	ei028	28. MALUKU
jb014	14. DI YOGYAKARTA	ei029	29. MALUKU UTARA
jb015	15. JAWA TIMUR	ei030	30. PAPUA

Note: *sm*: Sumatra, *jb*: Java and Bali, *ka*: Kalimantan, *sw*: Sulawesi, *ei*: Eastern Indonesia.
Source: Author's arrangement from BPS data

Table 2 Growth Rate for Update (2005 to 2016)

	%		%		%
sm001	2.6916	jb011	4.1273	sw021	9.0750
sm002	4.6028	jb012	6.0819	sw022	6.2557
sm003	4.0445	jb013	4.7667	sw023	7.3182
sm004	4.9998	jb014	4.2888	sw024	3.0806
sm005	7.2429	jb015	4.6209	jb025	5.5238
sm006	4.3040	ka016	4.5827	jb026	4.1376
sm007	5.1106	ka017	4.9793	jb027	5.3637
sm008	4.9021	ka018	4.7741	ei028	7.3268
sm009	7.0883	ka019	3.2806	ei029	10.7562
jb010	5.0521	sw020	5.7970	ei030	4.6856

Source: BPS and author's calculation

Table 3 Information of Classification of Industries

IO classification	Model	IO classification	Model
Paddy	Agriculture	The cement industry	Industry
Other crops	Agriculture	Basic iron and steel industries and non-ferrous base metals	Industry
Plantation	Agriculture	Manufacture of metal goods	Industry
Livestock and results	Agriculture	Industrial electrical machinery and electrical equipment	Industry
Forestry	Agriculture	Transportation equipment industry and repair	Industry
Fishery	Agriculture	Other industries	Industry
Mining the oil, gas and geothermal	Industry	Electricity, gas and water supply	Industry
Coal mining, metal ore and other excavation	Industry	Building	Industry
Petroleum refining	Industry	Trade	Service
The palm oil industry	Industry	Hotels and Restaurants	Service
Seafood processing industry	Industry	Land transport	Transportation
Industrial food and beverage	Industry	Air transport	Transportation
Manufacture of textiles and textile products	Industry	Air Transport	Transportation
Footwear industry	Industry	Communication	Service
Industrial wood items, rattan and bamboo	Industry	Financial institutions	Service
Pulp and paper industry	Industry	Public administration and defense	Service
Manufacture of rubber and rubber goods	Industry	Other services	Service
Petrochemical industry	Industry		

Source: Author's arrangement from BPS data

Table 4 Elasticity Parameters

	σ^{VA}_j	σ^{XM}_j	σ^{IM}_j
Agriculture	-0.6	-4.4	-2.2
Industry	-1.1	-5.6	-2.8
Service	-0.6	-3.8	-1.9
Transportation	-0.6	-3.8	-1.9

Source: Author's assumption

Table 5 Simulation Designs

S1	5% increase in productivity of transportation value added production	$\gamma^{V}_{r,tran} = \gamma^{V}_{r,tran} * 1.05$
S2	5% increase in productivity of transportation gross production	$\gamma^{Y}_{r,tran} = \gamma^{Y}_{r,tran} * 1.05$
S3	5% increase in capital stock in transportation sector	$k_{r,tran} = k_{r,tran} * 1.05$
S4	5% increase in central government investment for transportation sector	$\alpha^{CINV}_{s,tran} = \alpha^{CINV}_{s,tran} * 1.05$
S5	50% decrease in central government tax for transportation sector	$gtax_{r,tran} = gtax_{r,tran} * 0.50$

Note: Although it is possible to change these various values, there is no essential difference in the result.

Source: Author's calculation

Table 6 Change of Regional Income in Simulation 1 (Shock to All and Specific Five Regions)

Shock region	All	Sumatra	Java and Bali	Kalimantan	Sulawesi	Eastern Indonesia
sm001	-0.0641	-0.0707	0.0058	0.0003	0.0004	0.0001
sm002	-0.1627	-0.2188	0.0381	0.0052	0.0094	0.0031
sm003	0.0499	0.0353	0.0109	0.0016	0.0015	0.0005
sm004	-0.0331	-0.0587	0.0171	0.0050	0.0029	0.0005
sm005	-0.2823	-0.3016	0.0096	0.0017	0.0060	0.0020
sm006	0.1370	0.0052	0.0773	0.0236	0.0269	0.0041
sm007	-0.0353	-0.0460	0.0090	0.0012	0.0004	0.0001
sm008	-0.0485	-0.0582	0.0082	0.0002	0.0009	0.0002
sm009	-0.0841	-0.1139	0.0249	0.0028	0.0017	0.0003
jb010	0.1555	0.0545	0.0596	0.0156	0.0215	0.0044
jb011	0.1471	0.0422	0.0778	0.0123	0.0102	0.0048
jb012	-0.2078	0.0088	-0.2248	0.0027	0.0044	0.0011
jb013	0.2100	0.0715	0.0695	0.0354	0.0332	0.0006
jb014	-0.1242	0.0044	-0.1314	0.0009	0.0016	0.0003
jb015	-0.0523	0.0084	-0.0693	0.0029	0.0029	0.0028
ka016	-0.1501	0.0026	0.0139	-0.1773	0.0078	0.0028
ka017	-0.5890	0.0051	0.0170	-0.6146	0.0022	0.0012
ka018	-0.3266	0.0045	0.0232	-0.3567	0.0018	0.0004
ka019	0.0654	0.0326	0.0385	-0.0232	0.0164	0.0011
sw020	-0.1546	0.0031	0.0087	0.0019	-0.1698	0.0015
sw021	-0.3643	0.0019	0.0027	0.0008	-0.3704	0.0007
sw022	-0.1056	0.0028	0.0087	0.0009	-0.1184	0.0004
sw023	-0.3056	0.0036	0.0157	0.0044	-0.3299	0.0006
sw024	0.4093	0.0024	0.0071	0.0020	0.3961	0.0015
jb025	-0.2321	0.0252	-0.2689	0.0059	0.0036	0.0022
jb026	-0.1314	0.0070	-0.1415	0.0011	0.0014	0.0006
jb027	-0.1615	0.0044	-0.1706	0.0011	0.0021	0.0014
ei028	-0.4392	0.0057	0.0644	0.0022	0.0025	-0.5142
ei029	-0.2780	0.0034	0.0160	0.0018	-0.0052	-0.2939
ei030	-0.0357	0.0004	0.0032	0.0002	0.0001	-0.0395
Sumatra	-0.0531	-0.0970	0.0286	0.0065	0.0073	0.0016
Java and Bali	0.0710	0.0382	0.0022	0.0133	0.0142	0.0032
Kalimantan	-0.0798	0.0221	0.0309	-0.1460	0.0119	0.0013
Sulawesi	-0.1454	0.0031	0.0119	0.0030	-0.1643	0.0008
Eastern Indonesia	-0.0955	0.0011	0.0105	0.0005	-0.0001	-0.1076
Indonesia	0.0123	0.0031	0.0115	-0.0034	0.0015	-0.0004

Source: Author's calculation

Table 7 Change of Regional Income in Simulation 2 (Shock to All and Specific Five Regions)

Shock region	All	Sumatra	Java and Bali	Kalimantan	Sulawesi	Eastern Indonesia
sm001	0.5095	0.5032	0.0061	0.0001	0.0001	0.0000
sm002	1.0123	0.9876	0.0211	0.0013	0.0018	0.0003
sm003	1.0735	1.0471	0.0234	0.0008	0.0021	0.0002
sm004	0.2129	0.1971	0.0140	0.0008	0.0008	0.0002
sm005	0.9133	0.8989	0.0118	0.0013	0.0011	0.0002
sm006	0.2714	0.2546	0.0136	0.0011	0.0018	0.0003
sm007	0.2998	0.2901	0.0089	0.0007	0.0001	0.0000
sm008	1.1109	1.0911	0.0180	0.0015	0.0003	0.0000
sm009	0.6141	0.5776	0.0335	0.0022	0.0006	0.0001
jb010	0.4102	0.0168	0.3821	0.0053	0.0053	0.0007
jb011	0.4155	0.0156	0.3909	0.0036	0.0042	0.0012
jb012	1.1332	0.0170	1.1057	0.0045	0.0055	0.0005
jb013	0.4030	0.0127	0.3849	0.0024	0.0026	0.0005
jb014	1.0822	0.0063	1.0737	0.0016	0.0004	0.0001
jb015	0.4768	0.0138	0.4564	0.0021	0.0033	0.0011
ka016	0.6899	0.0123	0.0160	0.6597	0.0016	0.0004
ka017	1.0488	0.0026	0.0324	1.0123	0.0010	0.0005
ka018	1.0216	0.0035	0.0282	0.9888	0.0008	0.0001
ka019	0.1809	0.0038	0.0050	0.1706	0.0013	0.0002
sw020	1.7955	0.0012	0.0091	0.0004	1.7847	0.0002
sw021	1.4150	0.0005	0.0038	0.0004	1.4102	0.0001
sw022	0.7402	0.0010	0.0189	0.0004	0.7197	0.0001
sw023	0.9415	0.0022	0.0215	0.0015	0.9159	0.0003
sw024	0.8531	0.0012	0.0076	0.0016	0.8424	0.0003
jb025	1.9424	0.0066	1.9302	0.0035	0.0019	0.0003
jb026	0.6183	0.0021	0.6139	0.0016	0.0006	0.0002
jb027	0.6686	0.0026	0.6596	0.0046	0.0012	0.0006
ei028	1.6941	0.0026	0.0400	0.0012	0.0012	1.6492
ei029	1.0279	0.0020	0.0130	0.0018	0.0237	0.9875
ei030	0.2083	0.0002	0.0023	0.0002	0.0005	0.2051
Sumatra	0.5709	0.5510	0.0174	0.0011	0.0012	0.0002
Java and Bali	0.5196	0.0145	0.4969	0.0035	0.0040	0.0008
Kalimantan	0.4462	0.0048	0.0122	0.4276	0.0012	0.0002
Sulawesi	1.0235	0.0016	0.0167	0.0012	1.0037	0.0003
Eastern Indonesia	0.4234	0.0006	0.0070	0.0004	0.0023	0.4131
Indonesia	0.5519	0.1341	0.3039	0.0406	0.0620	0.0114

Source: Author's calculation

Table 8 Change of Regional Income in Simulation 3 (Shock to All and Specific Five Regions)

Shock region	All	Sumatra	Java and Bali	Kalimantan	Sulawesi	Eastern Indonesia
sm001	-0.0516	-0.0562	0.0040	0.0002	0.0003	0.0001
sm002	-0.1158	-0.1551	0.0264	0.0037	0.0069	0.0022
sm003	0.0390	0.0287	0.0078	0.0011	0.0011	0.0004
sm004	-0.0176	-0.0356	0.0120	0.0035	0.0021	0.0003
sm005	-0.2276	-0.2414	0.0068	0.0012	0.0044	0.0014
sm006	0.0989	0.0046	0.0555	0.0166	0.0195	0.0028
sm007	-0.0232	-0.0307	0.0064	0.0008	0.0003	0.0001
sm008	-0.0303	-0.0371	0.0058	0.0002	0.0007	0.0001
sm009	-0.0553	-0.0762	0.0174	0.0021	0.0012	0.0002
jb010	0.1121	0.0390	0.0442	0.0110	0.0151	0.0029
jb011	0.1049	0.0309	0.0551	0.0088	0.0070	0.0032
jb012	-0.1447	0.0064	-0.1569	0.0020	0.0030	0.0007
jb013	0.1489	0.0492	0.0505	0.0249	0.0241	0.0004
jb014	-0.1301	0.0031	-0.1353	0.0006	0.0011	0.0002
jb015	-0.0335	0.0060	-0.0454	0.0021	0.0020	0.0018
ka016	-0.1091	0.0019	0.0099	-0.1286	0.0057	0.0019
ka017	-0.3760	0.0037	0.0123	-0.3944	0.0015	0.0008
ka018	-0.2519	0.0033	0.0159	-0.2727	0.0013	0.0003
ka019	0.0479	0.0224	0.0277	-0.0148	0.0118	0.0008
sw020	-0.1049	0.0022	0.0059	0.0013	-0.1154	0.0011
sw021	-0.2194	0.0013	0.0020	0.0006	-0.2237	0.0005
sw022	-0.0694	0.0020	0.0062	0.0006	-0.0784	0.0002
sw023	-0.2261	0.0025	0.0111	0.0031	-0.2431	0.0004
sw024	0.2008	0.0017	0.0050	0.0015	0.1917	0.0009
jb025	-0.1566	0.0179	-0.1827	0.0043	0.0025	0.0015
jb026	-0.1055	0.0050	-0.1128	0.0008	0.0010	0.0004
jb027	-0.1089	0.0031	-0.1153	0.0008	0.0015	0.0010
ei028	-0.2501	0.0041	0.0436	0.0016	0.0018	-0.3012
ei029	-0.1858	0.0024	0.0118	0.0013	-0.0040	-0.1973
ei030	-0.0248	0.0003	0.0023	0.0001	0.0001	-0.0275
Sumatra	-0.0367	-0.0678	0.0202	0.0045	0.0053	0.0011
Java and Bali	0.0514	0.0272	0.0027	0.0094	0.0100	0.0021
Kalimantan	-0.0545	0.0152	0.0221	-0.1013	0.0086	0.0009
Sulawesi	-0.1191	0.0022	0.0084	0.0021	-0.1323	0.0005
Eastern Indonesia	-0.0601	0.0008	0.0073	0.0004	-0.0001	-0.0685
Indonesia	0.0090	0.0024	0.0089	-0.0022	0.0002	-0.0002

Source: Author's calculation

Table 9 Change of Regional Income in Simulation 4 (Shock to All and Specific Five Regions)

Shock region	All	Sumatra	Java and Bali	Kalimantan	Sulawesi	Eastern Indonesia
sm001	0.0066	0.0066	0.0000	0.0000	0.0000	0.0000
sm002	0.0007	0.0007	0.0000	0.0000	0.0000	0.0000
sm003	0.0041	0.0040	0.0000	0.0000	0.0000	0.0000
sm004	0.0010	0.0009	0.0000	0.0000	0.0000	0.0000
sm005	0.0107	0.0107	0.0000	0.0000	0.0000	0.0000
sm006	0.0027	0.0026	0.0000	0.0000	0.0000	0.0000
sm007	0.0003	0.0003	0.0000	0.0000	0.0000	0.0000
sm008	0.0133	0.0133	0.0000	0.0000	0.0000	0.0000
sm009	0.0044	0.0043	0.0001	0.0000	0.0000	0.0000
jb010	0.0011	0.0001	0.0010	0.0000	0.0000	0.0000
jb011	0.0003	0.0001	0.0002	0.0000	0.0000	0.0000
jb012	0.0039	0.0001	0.0038	0.0000	0.0000	0.0000
jb013	0.0002	0.0001	0.0002	0.0000	0.0000	0.0000
jb014	0.0007	0.0000	0.0006	0.0000	0.0000	0.0000
jb015	0.0002	0.0001	0.0001	0.0000	0.0000	0.0000
ka016	0.0004	0.0000	0.0000	0.0004	0.0000	0.0000
ka017	0.0002	0.0000	0.0000	0.0001	0.0000	0.0000
ka018	0.0003	0.0000	0.0000	0.0002	0.0000	0.0000
ka019	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
sw020	0.0002	0.0000	0.0000	0.0000	0.0002	0.0000
sw021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
sw022	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000
sw023	0.0007	0.0000	0.0000	0.0000	0.0007	0.0000
sw024	0.0002	0.0000	0.0000	0.0000	0.0002	0.0000
jb025	0.0002	0.0000	0.0001	0.0000	0.0000	0.0000
jb026	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000
jb027	0.0189	0.0000	0.0188	0.0000	0.0000	0.0000
ei028	0.0758	0.0000	0.0001	0.0000	0.0000	0.0757
ei029	0.0074	0.0000	0.0000	0.0000	0.0000	0.0074
ei030	0.0006	0.0000	0.0000	0.0000	0.0000	0.0006
Sumatra	0.0028	0.0028	0.0000	0.0000	0.0000	0.0000
Java and Bali	0.0009	0.0001	0.0008	0.0000	0.0000	0.0000
Kalimantan	0.0002	0.0000	0.0000	0.0001	0.0000	0.0000
Sulawesi	0.0005	0.0000	0.0000	0.0000	0.0004	0.0000
Eastern Indonesia	0.0090	0.0000	0.0000	0.0000	0.0000	0.0089
Indonesia	0.0015	0.0007	0.0005	0.0000	0.0000	0.0002

Source: Author's calculation

Table 10 Change of Regional Income in Simulation 5 (Shock to All and Specific Five Regions)

Shock region	All	Sumatra	Java and Bali	Kalimantan	Sulawesi	Eastern Indonesia
sm001	-0.0057	-0.0097	0.0021	0.0004	0.0012	0.0003
sm002	-0.0320	-0.0156	-0.0135	-0.0029	0.0005	-0.0005
sm003	-0.0008	-0.0035	0.0024	-0.0007	0.0009	0.0001
sm004	0.0144	0.0068	0.0063	0.0001	0.0010	0.0002
sm005	-0.0051	-0.0056	0.0005	-0.0006	0.0007	-0.0002
sm006	0.0136	0.0077	0.0043	0.0002	0.0011	0.0003
sm007	0.0043	-0.0059	0.0081	0.0006	0.0012	0.0003
sm008	-0.0050	-0.0106	0.0038	0.0004	0.0011	0.0003
sm009	0.0024	0.0162	-0.0149	0.0000	0.0010	0.0002
jb010	0.0021	0.0000	0.0019	-0.0004	0.0006	-0.0001
jb011	0.0025	0.0010	0.0004	0.0001	0.0009	0.0001
jb012	-0.0056	-0.0054	-0.0003	-0.0006	0.0008	0.0000
jb013	0.0049	0.0006	0.0033	-0.0001	0.0009	0.0001
jb014	-0.0531	-0.0008	-0.0534	0.0000	0.0008	0.0002
jb015	-0.0172	0.0002	-0.0183	-0.0001	0.0008	0.0001
ka016	0.0024	-0.0022	-0.0086	0.0131	-0.0001	0.0002
ka017	0.0012	-0.0020	-0.0049	0.0077	0.0004	0.0000
ka018	-0.0054	-0.0031	-0.0076	0.0051	0.0002	0.0000
ka019	0.0064	0.0000	0.0033	0.0021	0.0009	0.0002
sw020	-0.0275	-0.0019	-0.0086	-0.0022	-0.0147	-0.0001
sw021	-0.0240	0.0012	-0.0008	0.0005	-0.0254	0.0003
sw022	0.0070	0.0024	0.0070	0.0003	-0.0028	0.0002
sw023	-0.0050	0.0020	0.0062	0.0001	-0.0135	0.0002
sw024	-0.0386	0.0016	0.0039	-0.0002	-0.0437	0.0000
jb025	-0.0313	-0.0032	-0.0259	-0.0019	0.0002	-0.0005
jb026	0.0071	0.0027	-0.0024	0.0005	0.0012	0.0003
jb027	-0.0042	-0.0002	-0.0030	-0.0012	0.0005	-0.0003
ei028	-0.0186	-0.0038	-0.0123	-0.0021	0.0000	-0.0004
ei029	0.0014	0.0008	-0.0021	-0.0001	0.0006	0.0021
ei030	0.0119	0.0026	-0.0078	0.0005	0.0011	-0.0002
Sumatra	-0.0009	-0.0001	-0.0011	-0.0006	0.0009	0.0000
Java and Bali	-0.0039	0.0000	-0.0045	-0.0002	0.0008	0.0000
Kalimantan	0.0038	-0.0009	-0.0006	0.0046	0.0006	0.0001
Sulawesi	-0.0120	0.0015	0.0038	-0.0002	-0.0172	0.0001
Eastern Indonesia	0.0079	0.0018	0.0050	0.0002	0.0010	-0.0001
Indonesia	-0.0027	0.0000	-0.0027	0.0001	-0.0003	0.0000

Source: Author's calculation

APPENDIX: MODEL DESCRIPTION

A-1 Set

r (s, rs)	region (30 provinces)
i (j, ij)	production sector (agriculture, industry, service, transportation)

A-2 Parameters

$gtax_{r,j}$	Regional government tax rate on domestic goods
$subs_{r,j}$	Regional government subsidy rate on domestic sectors
$\alpha^{HCON}_{r,s,i}$	Share parameter for household consumption
$\alpha^{CCON}_{r,s,i}$	Share parameter for central government consumption
$\alpha^{RCON}_{r,s,i}$	Share parameter for regional government consumption
$\alpha^{HINV}_{r,s,i}$	Share parameter for household investment
$\alpha^{CINV}_{r,s,i}$	Share parameter for central government investment
$\alpha^{RINV}_{r,s,i}$	Share parameter for regional government investment
$\alpha^{INVN}_{r,s,i}$	Share parameter for inventory
$\alpha^{L}_{r,j}$	Share parameter of labor in the production function
$\alpha^{K}_{r,j}$	Share parameter of capital in the production function
$\gamma^{V}_{r,j}$	Productivity parameter of the value added in the production function
$\alpha^{XM}_{r,i,s,j}$	Share parameter of regional intermediate goods in the composite production function
$\gamma^{ZM}_{r,i,j}$	Productivity parameter of regional intermediate goods in the composite production function
$\delta^{V}_{r,j}$	Share parameter of value added for the Leontief function
$\delta^{ZM}_{r,i,j}$	Share parameter of intermediate goods for the Leontief function
$\alpha^{Z}_{r,j}$	Share parameter of domestic goods in the composite production function
$\alpha^{M}_{r,j}$	Share parameter of import goods in the composite production function
$\gamma^{Y}_{r,j}$	Productivity parameter of goods in the composite production
σ^{VA}_{j}	Elasticity of substitution between labor and capital
σ^{XM}_{j}	Elasticity of substitution between regional intermediate goods
σ^{IM}_{j}	Elasticity of substitution between domestic and foreign intermediate goods

A-3 Endogenous variables

$L_{r,j}$	Labor stock index
$K_{r,j}$	Capital stock index
$V_{r,j}$	Value added index
$XM_{r,i,s,j}$	Intermediate goods index
$ZM_{r,i,j}$	Composite intermediate goods index
$Z_{r,j}$	Composite domestic goods index
$M_{r,j}$	Import goods index
$Y_{r,j}$	Goods (output) index
$PL_{r,j}$	Price of labor
$PK_{r,j}$	Price of capital
$PV_{r,j}$	Price of composite value added factor
$PZM_{r,i,j}$	Price of composite intermediate goods
$PZ_{r,j}$	Price of composite domestic goods
$PM_{r,j}$	Price of import goods
$PY_{r,j}$	Price of goods

$P_{r,j}$	Sales price of goods
$INCO_r$	Reginal income index
$HCON_{r,s,i}$	Household consumption index
$CCON_{r,s,i}$	Central government consumption index
$RCON_{r,s,i}$	Regional government consumption index
$HINV_{r,s,i}$	Household investment index
$CINV_{r,s,i}$	Central government investment index
$RINV_{r,s,i}$	Regional government investment index
$INVN_{r,s,i}$	Inventory index

A-4 Exogenous variables

$l_{r,j}$	Labor in database value
$k_{r,j}$	Capital in database value
$v_{r,j}$	Value added in database value
$xm_{r,i,s,j}$	Intermediate goods in database value
$zm_{r,i,j}$	Composite intermediate goods in database value (aggregated in region)
$z_{r,j}$	Composite domestic goods for production in database value
$m_{r,j}$	Import goods for production in database value
$y_{r,j}$	Goods in database value
$inco_r$	Regional income in database value
$hcon_{r,s,i}$	Household consumption in database value
$ccon_{r,s,i}$	Central government consumption in database value
$rcon_{r,s,i}$	Regional government consumption in database value
$hinv_{r,s,i}$	Household investment in database value
$cinv_{r,s,i}$	Central government investment in database value
$rinv_{r,s,i}$	Regional government investment in database value
$invn_{r,s,i}$	Inventory in database value
$e_{r.i}$	Export in database value
$adjt_{r.i}$	Error (adjustment) in database value

A-5 Equations

1. Value added labor and capital (CES)

$$L_{r,j} \cdot l_{r,j} = \left(\alpha^{L}_{r,j} \cdot {PV_{r,j}}/{PL_{r,j}}\right)^{-\sigma^{VA}_j} \left(\gamma^{V}_{r,j}\right)^{-\sigma^{VA}_j - 1} V_{r,j} \cdot v_{r,j} \quad \text{(A-1)}$$

$$K_{r,j} \cdot k_{r,j} = \left(\alpha^{K}_{r,j} \cdot {PV_{r,j}}/{PK_{r,j}}\right)^{-\sigma^{VA}_j} \left(\gamma^{V}_{r,j}\right)^{-\sigma^{VA}_j - 1} V_{r,j} \cdot v_{r,j} \quad \text{(A-2)}$$

$$PV_{r,j} = \left(\left(\alpha^{L}_{r,j}\right)^{-\sigma^{VA}_j} \left(\frac{PL_{r,j}}{\gamma^{V}_{r,j}}\right)^{1+\sigma^{VA}_j} + \left(\alpha^{K}_{r,j}\right)^{-\sigma^{VA}_j} \left(\frac{PK_{r,j}}{\gamma^{V}_{r,j}}\right)^{1+\sigma^{VA}_j} \right)^{1/1+\sigma^{VA}_j} \quad \text{(A-3)}$$

$$L_{r,j} = 1 \quad \text{(A-4)}$$

$$K_{r,j} = 1 \quad \text{(A-5)}$$

2. Composite domestic regional intermediate goods (CES)

$$XM_{r,i,s,j} \cdot xm_{r,i,sj} = \left(\alpha^{XM}_{r,i,s,j} \cdot {PZM_{s,i,j}}/{P_{r,i}}\right)^{-\sigma^{XM}_j} \left(\gamma^{ZM}_{s,i,j}\right)^{-\sigma^{XM}_j - 1} ZM_{s,i,j} \cdot zm_{s,i,j} \quad \text{(A-6)}$$

$$PZM_{r,i,j} = \left(\sum(\alpha_{s,i,r,j}^{XM})^{-\sigma_j^{XM}} \left(\frac{P_{s,j}}{\gamma_{r,i,j}^{ZM}}\right)^{1+\sigma_j^{XM}}\right)^{1/1+\sigma_j^{XM}} \quad \text{(A-7)}$$

3. Composite value added and domestic intermediate goods (Leontief)

$$V_{r,j} \cdot v_{r,j} = \delta_{r,j}^{V} \cdot Z_{r,j} \cdot z_{r,j} \quad \text{(A-8)}$$

$$ZM_{r,i,j} \cdot zm_{r,i,j} = \delta_{r,i,j}^{ZM} \cdot Z_{r,j} \cdot z_{r,j} \quad \text{(A-9)}$$

$$PZ_{r,j} \cdot Z_{r,j} \cdot z_{r,j} = PV_{r,j} \cdot V_{r,j} \cdot v_{r,j} + \sum(PZM_{r,i,j} \cdot ZM_{r,i,j} \cdot zm_{r,i,j}) \quad \text{(A-10)}$$

4. Composite domestic and import intermediate goods (CES)

$$PM_{r,j} = 1 \quad \text{(A-11)}$$

$$Z_{r,j} \cdot z_{r,j} = \left(\alpha_{r,j}^{Z} \cdot {PY_{r,j}}/{PZ_{r,j}}\right)^{-\sigma_j^{IM}} (\gamma_{r,j}^{Y})^{-\sigma_j^{IM}-1} Y_{r,j} \cdot y_{r,j} \quad \text{(A-12)}$$

$$M_{r,j} \cdot m_{r,j} = \left(\alpha_{r,j}^{M} \cdot {PY_{r,j}}/{PM_{r,j}}\right)^{-\sigma_j^{IM}} (\gamma_{r,j}^{Y})^{-\sigma_j^{IM}-1} Y_{r,j} \cdot y_{r,j} \quad \text{(A-13)}$$

5. Market equilibrium

$$PY_{r,j} = 1 \quad \text{(A-14)}$$

$$P_{r,i} = PY_{r,i}(1 + gtax_{r,i} + subs_{r,i}) \quad \text{(A-15)}$$

$$Y_{r,i} \cdot y_{r,i} = \sum(HCON_{s,r,i} \cdot hcon_{s,r,i} + CCON_{s,r,i} \cdot ccon_{s,r,i} + RCON_{s,r,i} \cdot rcon_{s,r,i} + HINV_{s,r,i} \cdot hinv_{s,r,i} + CINV_{s,r,t} \cdot cinv_{s,r,t} + RINV_{s,r,i} \cdot rinv_{s,r,i} + INVN_{s,r,i} \cdot invn_{s,r,i}) + \sum\sum(XM_{r,i,s,j} \cdot xm_{r,i,s,j}) + e_{r,i} + adjt_{r,i} \quad \text{(A-16)}$$

6. Income of each region

$$INCO_r \cdot inco_r = \sum(PL_{r,j} \cdot L_{r,j} \cdot l_{r,j}) + \sum(PK_{r,j} \cdot K_{r,j} \cdot k_{r,j}) + \sum\left(PY_{r,j} \cdot Y_{r,j} \cdot y_{r,j} \cdot (gtax_{r,j} + subs_{r,j})\right) \quad \text{(A-17)}$$

7. Domestic goods demand (Cobb-Douglas)

$$HCON_{r,s,i} \cdot hcon_{r,s,i} = \alpha_{r,s,i}^{HCON} \cdot INCO_r \cdot inco_r / P_{s,i} \quad \text{(A-18)}$$

$$CCON_{r,s,i} \cdot ccon_{r,s,i} = \alpha_{r,s,i}^{CCON} \cdot INCO_r \cdot inco_r / P_{s,i} \quad \text{(A-19)}$$

$$RCON_{r,s,i} \cdot rcon_{r,s,i} = \alpha_{r,s,i}^{RCON} \cdot INCO_r \cdot inco_r / P_{s,i} \quad \text{(A-20)}$$

$$HINV_{r,s,i} \cdot hinv_{r,s,i} = \alpha_{r,s,i}^{HINV} \cdot INCO_r \cdot inco_r / P_{s,i} \quad \text{(A-21)}$$

$$CINV_{r,s,t} \cdot cinv_{r,s,t} = \alpha_{r,s,i}^{CINV} \cdot INCO_r \cdot inco_r / P_{s,t} \quad \text{(A-22)}$$

$$RINV_{r,s,i} \cdot rinv_{r,s,i} = \alpha_{r,s,i}^{RINV} \cdot INCO_r \cdot inco_r / P_{s,i} \quad \text{(A-23)}$$

$$INVN_{r,s,i} \cdot invn_{r,s,i} = \alpha_{r,s,i}^{INVN} \cdot INCO_r \cdot inco_r / P_{s,i} \quad \text{(A-24)}$$

THE ROLE OF SOCIAL CAPITAL ON PUBLIC HEALTH: A Case of Maternal Mortality in the Bulakamba Subdistrict of Brebes, Central Java, Indonesia in 2017

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ABSTRACT

Results of the 2012 Indonesia Demographic and Health Survey (IDHS) showed that the Maternal Mortality Rate (MMR) of the country was not only make Indonesia to be considered as unsuccessful in its fifth target of Millennium Development Goals (MDGs) *but also stood as a country with the worst MMR among the poorest countries in Asia. Theoretically and empirically, Social capital has influenced a wide range of social outcomes, such as health, economic development, and social justice. Therefore, investing in social capital should have become a necessary program in Developing Countries like Indonesia. This study aimed at analyzing in depth the role of social capital in explaining the phenomenon of maternal mortality in the Bulakamba Subdistrict of Brebes as a representative area of the highest number of maternal death in the past five years.*

This study used mixed methods (quantitative and qualitative). Quantitative data were collected through a structured interview to 214 households with Social Capital Assessment Tool (SoCAT) instruments from the World Bank. While qualitative data were gathered from in-depth interview to informants representing various parties (stakeholders) related maternal death consisting of doctors, midwives, village officials, and parties related to mothers who gave birth died.

The findings of this study indicated that [1] poor structural social capital caused the flow of resources / information from the government tended not to reach the community. However, the structural social capital actually worked effectively as the enforcement of social control, health promotion, and education in public health (maternal health). [2] The high cognitive social capital did not always have a positive effect on public health (maternal health), depending on the norms, culture of the community and the form of social capital typology. Understanding in the socio-cultural context of society should be an important consideration to reduce maternal mortality.

***Keywords**: Maternal Mortality, Social Capital.*

INTRODUCTION

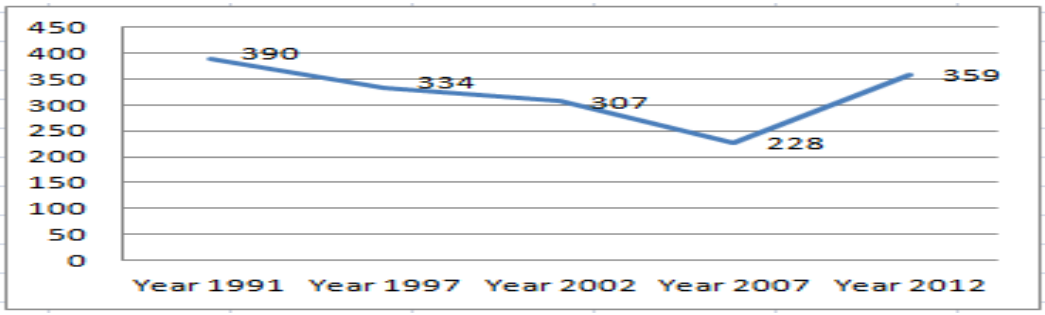
Results of the 2012 Indonesia Demographic and Health Survey (IDHS) showed that the Maternal Mortality Rate (MMR) in Indonesia was considered to be, not only, a failure of its 5th target of Millenium Developpment Goals (MDGs) but also the worst MMR among poor countries in Asia (Cambodia, Myanmar, Nepal, India, Bhutan, Bangladesh, Timor Leste) (Prakarsa, 2013). As shown in Figure 1, in 2012 MMR Indonesia amounted to 359 per 100,000 live births, whereas MDGs target was 102 per 100,000 live births.

Central Java was one of nine biggest provinces that contributed to MMR in Indonesia (Sukmasari, 2014). 52.6% of maternal deaths in Indonesia came from six provinces (North Sumatra, Banten, West Java, **Central Java**, East Java, and South Sulawesi) (Kemenkes RI, 2014). Based on health service data, in 2007 until 2016, MMR in this province could not achieve the fifth target of MDGs development of 109 to 126 MMR per 100,000 live births. From 35 Districts / Cities in Central Java, Brebes District was the largest contributor in Central Java during 2012 - 2016, there were about 291 cases of maternal deaths.

This becomes irony, if viewed from health supply side, Central Java Province rank the 8th out of 34 provinces in Indonesia within Districts / Cities Percentage that meet the requirement of at least 4

Puskesmas BONES (Basic Obstetric and Neonatal Emergency Services) with 88.57% of percentage (Kemenkes RI, 2014). Central Java Province is also included within 19 provinces that achieve 100% in term of puskesmas conducting pregnant mothers' class in 2016 (Kemenkes RI, 2016).

Figure 1
Maternal Mortality Rate (MMR) Indonesia 1991-2012



In addition, if viewed from the goverments' effort of health service for maternal, in fact Central Java Provice is not a lagging province. In 2014, Central Java have achievements in term of maternal health service effort from all province in Indonesia are as follows: (a) Maternal health services (rank 5th, K4 coverage with 93.11% score) [1]; (b) Maternity health services (2nd place of delivery coverage by health personnel with 99.17% value; 4th rank of delivery assisted by health personnel in health care facility with value 95.02%); (c) Postpartum maternal health services (Fifth Ranking The coverage of nepot visits (KF3) [2] with a value of 92.37%); (d) Services / treatment of obstetric[3] complications (1st rank Coverage of obstetric complications with 101.05% value) (Kemenkes RI, 2014).

The data indicates that the problem of maternal death in this province is not caused by the health supply side, but on the behavior of society itself. The phenomenon of maternal death seemed to be dificult to lower. Mortality and morbidity of pregnant and maternity women is a major problem in developing countries. Developing countries contribute 99% of total maternal mortality (Romero-Gutiérrez et al., 2007). Among the impacts of maternal mortality is a decreased quality of life of infants and children, causing impaired child growth (Correa JC, 2010). For childhood from birth to early adolescence, a child who loses his mother is far more destructive than loss his father (Hurlock, 2002). Mother is the determinant of the quantity and quality of the population in the future, and the determinant of the future of the nation in the future (Wiyono et al., 2017).

The determinant factors of public health are complex (Setyawati and Alam, 2010). The socioeconomic characteristics of society are the determinant of mortality rates (Curtiss and Grahn, 1980; Rogers et al., 2000). Investing in social capital studies becomes very important for developing countries as a protective tool for the poor because developing countries are deficient in both economic and human resources (Story, 2013).

In the last decade, social capital concept has become a concerned in health literature (Schoenbach et al., 1986; Kawachi et al., 1997; Kawachi et al., 1999; McKenzie and Whitley, 2002).

[1] K4 coverage is the number of pregnant women who have received antenatal care according to the standard at least four times according to the recommended schedule compared to the number of pregnant women target in one work area within one year. The indicator shows access to health services to pregnant women and the level of compliance of pregnant women in checking their pregnancy to health personnel.

[2] Postpartum care at standard, performed at least three times according to the recommended schedule, at six hours to three days postpartum, on the fourth day until the 28th postpartum day, and on the 29th day up to the 42nd day postpartum. The success of postpartum health efforts is measured through an indicator of coverage of postpartum maternal health services (Coverage KF3). This indicator assesses the country's ability to provide quality maternal health services according to standards.

[3] Indicators used to measure the success of prevention and treatment of obstetric complications. This indicator measures the country's ability to provide health services professionally to the mother (pregnant, childbirth, childbirth) with complications.

Social capital helps societies to access health information, design health care system, take collective action, support preventive effort, and adjust cultural norms that opposing health (World Bank 2009 in Murthi 2010). Utilizing womens' social capital can be a source to improve maternal health among low-income countries (McTavish and Moore, 2015). Social capital has a positive relationship with health care (Story, 2014), encourages healthy behavior (Yang et al., 2009), reduces child health disparities in Indonesia (Sujarwoto and Tampubolon, 2013), has a strong negative relationship with some psychology health variables (Miller et al., 2006), increasing public participation in order to find tuberculosis sufferers (Reviono et al., 2013).

This study was conducted to complement a study by Wiyono dkk (2017) on The Role of Social Capital in Explaining Maternal Mortality. They relied their study on qualitative data suggested by Marshall and Rosman (1989). This study uses qualitative and quantitative data. Qualitative data consist of in-depth interview data, Focus Group Discussion data, and partisipant observations' data. Quantitative data consist of structured interview data based on the World Bank's SoCAT (Social Capital Assessment Tool) instrument to 214 households. Quantitative data from the study have not been analysed by Wiyono dkk. Therefore, in order to gain a better understanding it is necessary to apply qualitative and quantitative methods as a combination (mixed methods) as in this study.

LITERATURE REVIEW

Social capital broadly effect on various social outcomes, such as health, economic development, and social justice (McKenzie and Whitley, 2002; Woolcock and Narayan, 2000). Literature on social capital strongly emphasizes its positive consequences. But it is posible that social capital also has a negative consequences (Portes, 1998; Wiyono, 2013). Social capital is like a double edges knife, whose effect on health is not always positive (Villalonga-Olives and Kawachi, 2017). More concern on negative effect of social capital is important in order to understand publics' health peoblems.

In order to understand the relationship between social capital and public health, it is better to explain with the conceptualization of social capital into "structural" and "cognitive" forms (Uphoff, 1996; Bain and Hicks, 1998; Colletta and Cullen, 2000). Structural social capital more reflects on Bourdieus'(1986) conceptualization, that social capital as a resource is available through social networks. Social capital is verified by measuring individual actions and behaviors with objectively objective forms. Structural social capital leads to social inclusion and integrates different groups in society (McKenzie and Whitley, 2002). Cognitive social capital places more emphasis on the concepts of social trust, tradeoff, and norms that effectively promote cooperation. The form of social capital tends to be subjectively verified by measuring individual attitudes and perceptions. This concept is close to understand Coleman (1988) and Putnam (1993). Both forms of social capital are not mutually exclusive, but complementary because they judge different aspects of social capital.

The first transmission mechanism of the effect of social capital on health is through social support (Cohen and Lemay, 2007; Kim et al., 2015). Social support is a form of social capital when a person experiences problems (Dominguez and Watkins, 2003). Social support can be either material or otherwise. For example, psychosocial support to the mother will improve maternal and infant health (Yang et al., 2009).

Second, network through dissemination of information (Durlauf and Fafchamps, 2004; Portes, 1998) social norms in the network (Brown et al., 2006; Subramanian, et al., 2002). People who are socially isolated tend to exhibit more unhealthy behaviors, such as heavy smoking and excessive alcohol consumption (Berkman 1985; Kaplan et al., 1977; Kawachi et al., 1999). Establishing and expanding diverse networks would be great benefit to households with few assets and little access to health care as this would reduce inequality in health (Carroll, 2001; Wakefield and Poland, 2005). But social networks also can be a negative effect on public health through the spread of social behavior (Villalonga-Olives & Kawachi, 2017).

Third, social participation or membership in a group. Encouraging the participation of community members is principal to health promotion (Wallerstein, 1992). One can influence local health policy and encourage society to obey with existing policies through its participation in politics that connects itself with influential people (Poortinga, 2012). Membership allows the group to uphold

and maintain social norms or social controls, thus helping to control deviant behavior (Poortinga, 2006). Groups make information available to members (Scheffler & Brown, 2008). By building social networks between individuals at different levels of government and formal institutions, it will affect public health behavior and create mutual trust and mutual environments (Campbell and Gillies, 2001). But some types of group memberships can result in negative outcomes with strong group ties or bonding social capital, thus by reason of obeying to traditional norms, their freedom in making appropriate health care decisions is limited (Portes 1998, Islam et al. 2006). The public response to diversity and openness to others affected by strong bonding ties, thus affect their ability to innovate and adapt (Newman and Dale, 2007). Like a religious or caste organization in India that limits the use of preventive health care (Vikram et al., 2012).

Another component of social capital is social trust, which is a cognitive component of social capital. Any health information acquired is transformed into action if there is trust in the source of information. Health information is important in guiding health decision-making, which in turn also affects attitude change, behavior, and knowledge enhancement (Kim, et al., 2015). Social cohesion, the cognitive component of social capital, promotes mutual trust and solidarity among the people. This can lead to group ability to uphold and maintain social norms (social control) that can have both positive and negative impacts on public health. People with high levels of trust do not necessarily result in similar health care for all members of the community (Villalonga-Olives & Kawachi, 2017). A person with a low trust level living in a community with high trust level would be excluded (Campos-Matos et al., 2016).

Generally, mechanism as revealed by Kawachi (2010), that the main mechanisms that link between social capital and health outcomes include (1) through the group's ability to take the desired action collectively; (2) through informal social control, which refers to the group's ability to uphold and maintain social norms; (3) mutual exchange norms; (4) Innovation Diffusion through an information pathway that depends on the affordability of networks related to Bonding, Bridging and Linking Social capital that can link individuals with information and health resources in the community.

Then to understand the phenomenon of maternal death, in addition to using social capital theory, researchers also use Albert Bandura Behavioral theory. A person learns by observing what others do. Through observation (also called modeling or imitation learning), one cognitively perceives the behavior of others and then may take that behavior. (Bandura 1991 in Santrock, 2003). In the context of Maternal Death, villagers tend to ignore regular pregnancy checkups. In the process of choosing labor also tend to choose traditional ways that they inherit inheritance. If community members tend to have such behavior then the perpetrator is also believed to have the same behavior.

RESEARCH METHOD

This research used a combination method. According Sugiyono (2014), combination method is a research method that combines quantitative and qualitative methods to be used jointly in a research activity, resulting in more comprehensive, valid, reliable and objective data. Concurrent Triangulation Strategy design was chosen in this study. The research conducted at one stage but by using both quantitative and qualitative methods altogether. The weights used from both methods are balanced. Merging data is done on the presentation, interpretation and discussion.

Brebes district is chosen as the research location because according to data from the health office during 2012 - 2016 is the biggest contributor of maternal death in Central Java with total of 291 cases of maternal deaths. Then, Subdistrict of Bulakamba was selected because during the year 2012 - 2015 the number of cases of maternal deaths as many as 14 cases, the number entered the top four of the existing 38 districts. In the subdistrict, two villages of Bulakamba and Dukuhlo was selected according to their similar education and economic status, but had a number of contrasting maternal deaths. From both villages, a quota systematic random sampling was adopted to select a number of households to be interviewed structurally. The village of Bulakamba was represented by 100 households and Dukuhlo 120 households, repspectively.

The types of data in this study consisted of structured interview data with SoCAT instruments from the World Bank to 214 households and in-depth interview data with stakeholder informants related to maternal deaths, consist of doctors, midwives, village heads, and maternity died-related

parties. Structured interviews to 214 households are conducted by survey officers, while in-depth interviews are conducted by researchers. So that each source of information becomes a validator for information obtained from other parties.

Researchers describe social capital operationally referring to the writings of "Social Capital Assessment Tool" by Anirudh Krishna and Elizabeth Shrader (1999). They make the measurement of social capital by binding social capital into two dimensions, namely structural social capital and cognitive social capital.

Qualitative data that have been collected are analyzed qualitatively, and quantitative data are analyzed by statistics. Both groups of data result of qualitative and quantitative analysis then analyzed with meta-analysis (data analysis of qualitative and quantitative research results or vice versa) to be grouped, differentiated, and sought the relationship of one data with other data, so whether the two data mutually reinforce, weaken or contradict .

Quantitative data analysis are performed by statistical descriptive analysis by transforming household survey data into eligible statistical measures, such as number, scale, average, percentage or proportion. The results of descriptive analysis are presented in tables, graphs and diagrams.

In addition to analyzing with descriptive statistics, researcher also calculated the social capital index score. However, not all aspects or components of social capital from structured questions can be included in the index calculation because the condition of some data is empty on some aspects of the question. The next step is to conduct independent t-test on the socio-capital index number to find out whether there is a difference between structural and cognitive social capital between Bulakamba Village and Dukuhlo Village.

RESULTS AND DISCUSSION

The Condition of Structural Social Capital and Cognitive Social Capital of Society

The structural social capital in both villages is relatively low, the value is 61.82% for Bulakamba Village and 59.03% for Dukuhlo Village. The low structural social capital in both villages is characterized by inactive RT / RW organizations, low community membership in organizational participation, relatively high exclusion rates on access to public services and the difficulty of coordinating communities in collective activities.

While cognitive social capital is relatively high, the value is 77.93% for Bulakamba Village and 76.10% for Dukuhlo Village. The relatively high cognitive social capital in both villages is characterized by high trust, cooperation and solidarity in social relations. However, the public has a typology that tends to bonding social capital.

According to the Independent-t test, H1 is rejected (it means there is no structural social capital difference between Bulakamba village and Dukuhlo village) and H2 is also rejected (it means there is no difference in cognitive social capital between Bulakamba Village and Dukuhlo Village).

The Role of Structural Social Capital In Explaining Maternal Mortality Phenomena

A. Density and Organizational Characteristics

The value of the Density and organizational characteristic level in Bulakamba village is 42.95% and Dukuhlo is 48.00%. The dominant type of organization is the Jamiahan (religious / prayer group) that is homogeneous based on the same religion and gender. RT / RW organization are exists, either selected or appointed but no routine activities. As a result, the resources or information movement tends not to reach the public.

In order to overcome maternal mortality, midwives in Dukuhlo village utilize jamiahan organizations as a forum for socialization related to Jampersal Program and all matters related to pregnancy. Village midwives also collaborate with village heads, religious leaders, health cadres and baby medicaster to enforce social control. There is a mandatory childbirth regulations in health facilities and a ban for baby medicaster helps the delivery process. Baby medicasters are also gathered in a special organization for coaching. While Paramedic Bulakamba has not done this.

B. Community Network and Support

Researchers need to emphasize in advance that between quantitative and qualitative data on aspects of networking and community support are contradictory. This is because households provide normative responses to structured interviews in this aspect. According to quantitative data, the role of communities in Bulakamba in charge of pregnant women is better than Dukuhlo, it value 84.80% in Bulakamba Village and 64.84% in Dukuhlo Village. Whereas according to qualitative analysis, the condition is on the contrary.

Based on the principle of triangulation, researchers see the answers from paramedics can be justified. Therefore, it can be concluded that society's concern to maternal health in Dukuhlo village seems to be relatively better than Bulakamba village. According to qualitative data, the paramedics of Bulakamba have not made efforts to approach the community in suppressing maternal mortality. They are having trouble with this. In the contrary, paramedic Dukuhlo actively make efforts to approach the community in suppressing maternal mortality.

C. Exclusion

The group of people based on certain differences (education level, wealth, sex, age, length of stay, political party, religion, and ethnicity) produces potency of bonding social capital society. This condition is more worrying in Bulakamba with value of 20.75% and in Dukuhlo only 7.95%. To strengthen the understanding related to the group in Bulakamba village that tend to be bonding, it is needed a cognitive social capital. So the researcher will explain the continuance of this in the cognitive social capital section.

The level of inaccessible public services in Bulakamba Village is 41.88% and in Dukuhlo is 47.59%. It is caused by RT / RW organizations tend to be less active, so resources tend not to reach the community.

D. Previous Collective Activities

The previous level of collective activity in Bulakamba Village is 50.85% and in Dukuhlo Village is 51.05%. According to qualitative data, this aspect is relatively better in Dukuhlo Village than in Bulakamba Village. The people of Bulakamba are more apathetic toward development activities in their village than in the Dukuhlo community. This is the impact of inactivity of RT / RW institutions. Household awareness level in following collective activities is still low including in extension activity. Communities are relatively difficult to coordinate in collective activities. In the context of maternal health, the Dukuhlo Paramedic manages it with the ANC system, a program that allows them to reach community in countryside.

Cognitive Social Capital In Explaining Maternal Mortality Phenomena

A. Solidarity

In general, the level of household solidarity in Bulakamba Village is higher than in Dukuhlo Village. The value of solidarity in Bulakamba village is 92.17% and in Dukuhlo village is 83.04%. High social solidarity can provide positive and negative externality for the sustainability of development. The strength of Bonding Social Capital in the two villages is clearly visible from many families and neighbors elected by the household asking for assistance.

The impact of high solidarity in Bulakamba Village is harmful to the economy of some individuals with equal distribution of raskin. While the impact on Dukuhlo Village is to make easier a economic exchange between villagers and hinder access for outsiders. Dukuhlo village development is monopolized on the basis of social bonds, not economic considerations. High solidarity can hamper individual initiatives to innovate using modern health services because of the strong traditional norms (traditional values) of bonding communities that opposing with health.

B. Trust and Cooperation

The value of trust and cooperation level in Bulakamba village is 72.63% and in Dukuhlo village is 69.67%. Range of trust in Bulakamba village is more closed than Dukuhlo village with the most trusted party is "Family". According to Putnam (2000 in Wiyono 2013) and by Nan Lin (2001 in Wiyono 2013), Bulakamba's household trust condition leads to particularized trusts that result in

bonding social capital called as strong ties. This scope of trust distinguishes between in groups and out groups, making them vulnerable to racism, ethnocentrism, intolerance, exclusion (Wiyono, 2013).

High trust and cooperation will become a lubricant of social relations. Resulted externalities are highly dependent on the norms and types of social capital (the type of trust and mutuality) that runs from that community. People with high levels of solidarity and trust will easily accept cultural conceptions carried by their ancestors and delivered by members of the bonding group. They will transform information regarding values of the tradition into action because of the high particularized trust, even though the value of the tradition is not scientifically proven. This happened to the people of Buakamba and Dukuhlo.

Some of these concepts include the belief that pregnant woman should be unrevealed the pregnancy to keep her son not stolen by spirits. This is bad for maternal health because pregnant woman cannot be covered by medical personnel. Pregnant women should not consume squid because later on the child's fingers will resemble squid. Though squid has a very high nutrient content and it is very good for pregnant women.

Elders or parents advise their pregnant children to consume certain traditional herbal medicine in some phases of pregnancy. There is also growth a mindset that medical services are a terrible thing; and getting pregnant is something natural. This resulted in the demand for modern health facilities to decline. They prefer to use traditional ways of dealing with pregnancy and prefer to go to a baby medicaster at labor. If they use modern health care, they tend to have a routine behavior in checking their pregnancy. This will certainly risk maternal health.

The act or contagion of the community's behavior is caused by typology of social capital that tend to bonding, it is also influenced by low level education of major society. They believe in the concepts of culture even though they cannot be proven scientifically.

C. Conflict Resolution

Level of conflict resolution in Bulakamba village is 69% and in Dukuhlo village is 75.6%. Dukuhlo village is relatively more peaceful than Bulakamba village. The cause of the conflict in Bulakamba village is the difference in votes of village head elections. While in Dukuhlo village, the village head is a single candidate.

The conflict in Bulakamba village led to the splitting of community organization such as RT, RW. This certainly hampers the development process including in the handling of maternal mortality. In addition, it takes enormous energy to unite the divided society.

CONCLUSION

Structural social capital in both villages is relatively poor with inactivity of RT-level organizations and low participation rates in membership of organization, so that the resources movement from the government tends not to reach the community. Structural social capital has an effective role to decrease MMR with formal social control (written regulations), ease of administration in health assistance, health promotion and education related to maternal health.

The high cognitive social capital does not always have a positive effect on public health, it depends on the value or culture of the local community and the form of social capital typology. Community with high social cohesion with bonding social capital have poor health because group norms do not promote health services and do not prioritize the value of modern health. Bonded societies eagerly accept cultural concepts although the truth of the concept cannot be scientifically proven, it is also influenced by their low level of education. Bonding Social Capital also has a negative impact on community's economic development. Bonding social capital launches an economic exchange among members of bonding and prevents access to outsiders, economic exchange occurs on the basis of social ties. Bonding and underprivileged societies are also vulnerable to conflicts, thus undermine their social capital and delay development.

POLICY IMPLICATION

1. The government needs to conduct a more in-depth study to find out the background of the causes of maternal mortality in an area. The socio-cultural approach should be chosen by the government in efforts to reduce maternal mortality.

2. The government should enhance the role of RT / RW organizations based on social capital.
3. The need for coordination between village officials, health cadres, and community leaders in reducing maternal mortality by establishing written regulations, making organizational vessels for village baby medicaster and the ease administration of health assistance from village officesbantuan kesehatan dari kantor desa.
4. Health / Paramedical Apparatus need to understand socio-cultural society in area of puskesmas.
5. Paramedics should be more active to approach the community with programs that make it easier for community in accessing information and health resources.
6. Improvement of community's mindset related traditions that endanger health through social and religious approach. This can be realized by enabling organizations that already exist in the community.

METHODOLOGY IMPLICATION

(1) Select the enumerator or survey officer with caution;
(2) Always check the implementation of the interview to test the validity of the data.
(3) Reconsider the construction of indexes related to the weight of the components of social capital.
(4) Score on objective criteria (such as low, sufficient, high category) to assert the level of social capital value.

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Wife's Education and Husband's Happiness in Indonesia

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ABSTRACT

Research discussing the relationship between an individual's education and his/her happiness is extensive. However, study investigating the association between one's education and another person's happiness is still limited. With the presence of altruism in the family, education of a family member should also affect happiness of other individual, especially his/her spouse. Using an Ordered Probit Model and IFLS data, we test whether wife's education affect husband's happiness in Indonesia. We find that the probability of husband's being "happy" increases when wife's education is higher than to husband's education. This is also true for husband being "very happy".

Keywords: Education, Women, Happiness

Background

The discussion on the association between education and happiness has been very extensive with mixed results. Castriota (2006) provides a sufficiently literature survey capturing the inconclusiveness of the relationship. In a more recent study, using the data from Spain, Cunado and de Gracia (2012) find that education has a positive effect on happiness. In addition, using the Indonesian Family Life Survey (IFLS) data, Sohn (2013) discusses factors affecting happiness for the same individual, and find that education is positively influence happiness. On the other hand, Nikolaev and Rusakov (2015) argue that recent studies find a negative association between the two variables. Those studies, nevertheless, focus on the relationship of education and happiness of *the same* individual.

In family or household economics, assuming the presence of altruism, researchers are also interested to analyze the relationship between education of a family member and happiness of another member. More specifically, they are interested to see the causal relationship between wife's education and husband's happiness. The topic is not only interesting, but also important, as women – especially after they get married – are generally reluctant to continue their studies. Glenn & Weaver (1978) summarize previous research and conclude that education has a direct connection with happiness of husband and wife. In addition, Tynes (1990) argues that the higher the education of the wife, the happier her husband. One possible justification for the positive relationship is that more education may lead to more family income.

In the context of developing economies especially Indonesia, research in this particular topic is very limited, despite that happiness has been used as an indicator for the successfulness of development and governance in Indonesia. The Indonesian Statistics Office (BPS) have published reports with respect to happiness index in 2014 and 2017.

According to the 2010 Population Census, the proportion of female who never attend school, not finish elementary school, and graduated from elementary school exceeds that of male. In contrast, the proportion is the other way around for higher level of schooling. To enrich the literature, this paper investigates whether men feel unhappy if their spouse attain a higher level of schooling. This paper also identifies factors influencing husband's happiness in Indonesia.

Data Source and Methodology

We use the Indonesian Family Life Survey (IFLS) dataset to investigate the causal relationship between wife's education and husband's happiness. IFLS covers information on personal and household characteristics, including education, subjective well-being, income, number of children, marital status, types of occupation, etc.[1] In addition, IFLS also provide information related to community where the household lives. IFLS has been collected several times in 1993, 1997, 2000, 2007, and 2014. The structure of IFLS data is individual panel, but for this paper we only use the information from the most recent year.

To measure happiness, we utilize individual's response to the question related to subjective well-being: "Taken all things together, how would you say things are these days? would you say you were very happy, happy, unhappy or very unhappy?". The respondent answers are scaled from 1 to 4, where 1 means very happy and 4 being very unhappy. However, in our analysis we change the value of the responses scaling from 0 to 2, where 0 means "unhappy", 1 for "happy", and 2 for "very happy".

For the education variable, we classify years of schooling into 3 dummy variables: whether wife's years of schooling is equal to husband's (as reference group); whether wife's years of schooling is lower than husband's; and whether wife's years of schooling is higher than husband's.

The econometric specification that we use for analysis is as follows (Winkelmann and Boes, 2006):

$$\Pr(Happiness_j = i) = \Phi(\alpha_i - x_i'\beta) - \Phi(\alpha_{i-1} - x_i'\beta) \qquad (1)$$

Where:
j indicates husband
i indicates happiness category
Φ is Normal Cumulative Distribution Function
x is vector of independent variables, which includes wife's education, husband's education, wife's (relative) income, wife's type of occupation, and number of children

[1] For a more detailed explanation, please read Strauss, J., Firman Witoelar, and Sikoki Bondan. (2016). "The Fifth Wave of the Indonesia Family Life Survey: Overview and Field Report" 1 (March)

Due to the nature of the dependent variable, we estimate equation (1) using Ordered Probit Regression. Because of the non-linearity nature if the equation, the estimated coefficient cannot be interpretted directly, hence we need to calculate the marginal effects (Winkelmann and Boes, 2006).

Estimation Result

The result from the Ordered Probit Model can be seen on Table 2 in the appendix below. First of all, it can be seen that our independent variable of interest: wife education (which is measured using wife's years of schooling relatively to husband's), is significantly affecting husband's happiness.

To interpret the numbers, let us assume that we have 3 different couples: couple 1 (consists of husband #1 and wife #1) of which wife's years of schooling lower than her husband's; couple 2 (consists of husband #2 and wife #2) of which wife's years of schooling is equal to her husband's; and couple 3 (consists of husband #3 and wife #3) of which wife's years of schooling is higher than her husband's. Let us put couple 2 (husband #2) as the base category for the interpretation.

Then, by looking at table 2, we can say that the probability that husband #1 feels "unhappy" is 1.34 percentage points higher compared to husband #2. Meanwhile, the probability that husband #3 feels "unhappy" is 1.41 percentage points lower than husband #2. Using similar comparison, we find that the probability that husband #1 feels "happy" is 0.99 percentage points higher compared to husband #2. Then, the probability that husband #3 feels "happy" is 1.04 percentage points lower than husband #2. Moreover, the estimation shows that the probability that husband #1 feels "very happy" is 2.33 percentage points lower compared to husband #2. Lastly, he probability that husband #3 feels "very happy" is 2.45 percentage points higher than husband #2. From the explanation above, it can be concluded that husband's happiness increases when he has a wife with higher education level.

We can use similar method to interpret wife's relative income variable. The sign for this variable shows that husband's happiness has a negative relationship with wife's relative income. The higher the wife's income, the unhappier the husbands are.

We have also included other variables which potentially influence husband's happiness. Husband's own education is found to have a positive effect with his happiness, confirming previous study (Sohn, 2013). Moreover, number of children tend to positively influence husband's happiness.

Conclusion

Different to previous studies which relates one's education with his or her own happiness, this paper has analyzed the relationship for different people in a family. The assumption used in this paper is that with the presence of altruism in the family, an action of a family member will affect other member's well-being. Using Ordered Probit Model, we found that husband's happiness is positively related to wife's education, but negatively associated with wife's income.

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Appendix

Table 1. Summary Statistics

Variables	Observation	Mean	Std. Deviasi	Min	Max
Happiness	10681	1.056924	0.4601529	0	2
Wife's years of schooling	11428	9.077704	4.384841	0	19
Husband's years of schooling	11433	9.141783	4.39942	0	19
Wife's Income	22125	3,682,036	13,800,000	0	440,000,000
Husband's Income	22125	10,700,000	33,300,000	0	1,000,000,000
Types of Occupation	11997	4.013753	2.008791	1	6
Number of Children	22125	2.580565	1.726636	0	11

Table 2. Regression Result

VARIABLES	Coeficient	Marginal Effects		
	Ordered Probit	Unhappy	Happy	Very Happy
Relative years of schooling (yos)				
Wife's years of schooling =husband's	Reference Group			
Wife's years of schooling < husband's	-0.108***	0.0134***	0.00991***	-0.0233***
	(0.0324)	(0.00403)	(0.00303)	(0.00699)
Wife's years of schooling > husband's	0.114***	-0.0141***	-0.0104***	0.0245***
	(0.0353)	(0.00438)	(0.00330)	(0.00761)
Relative income				
Wife's income = husband's	Reference Group			
Wife's income < husband's	0.175***	-0.0216***	-0.0160***	0.0376***
	(0.0370)	(0.00460)	(0.00351)	(0.00796)
Wife's income > husband's	-0.00645	0.000799	0.000592	-0.00139
	(0.0505)	(0.00626)	(0.00464)	(0.0109)
Type's of Work Wife				
Not Working	Reference Group			
Self-employed	-0.0712*	0.00882*	0.00653*	-0.0154*
	(0.0368)	(0.00455)	(0.00340)	(0.00793)
Government Worker	0.0549	-0.00680	-0.00504	0.0118
	(0.0659)	(0.00817)	(0.00605)	(0.0142)
Private Worker	-0.0375	0.00465	0.00345	-0.00810
	(0.0430)	(0.00533)	(0.00395)	(0.00928)

Unpaid Worker	-0.00800	0.000991	0.000734	-0.00173
	(0.0440)	(0.00545)	(0.00404)	(0.00948)
Casual Worker	-0.161**	0.0199**	0.0148**	-0.0347**
	(0.0720)	(0.00892)	(0.00667)	(0.0155)
Husband's years of schooling	0.0512***	-0.00634***	-0.00470***	0.0110***
	(0.00379)	(0.000498)	(0.000431)	(0.000806)
Number of children	-0.0229**	0.00284**	0.00210**	-0.00494**
	(0.00960)	(0.00119)	(0.000889)	(0.00207)
Constant cut1	-1.030***			
	(0.0594)			
Constant cut2	1.609***			
	(0.0610)			
Observations	9,424	9,424	9,424	9,424

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Organic Intellectual in Social Movement of Farmers Fighting for Social Justice in Makroman of East Borneo

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ABSTRACT

This research aimed to explain the effect of social movement of farmers fighting for social justice. This study was an evaluative qualitative research, using Antonio Gramsci's theoretical reference (organic intellectual). The informants of research were farmers living in Makroman, East Borneo. The informants consisted of 10 farmers taken using purposive sampling technique based on education level. Techniques of collecting data used were observation, in-depth interview, and documentation. Data validation was carried out using triangulation, and data analysis was conducted using an interactive model. The result of research showed that the spirit of Samarinda farmers and people in fighting for social justice, healthy and safe environment was manifested into establishing "Gerakan Samarinda Menggugat" (GSM) (English: Movement of Samarinda Sue") declared on January 21, 2012. It became a new spirit for farmers and urban people bored with political promise deception released once in five years. GSM is an alternative movement of Samarinda farmers and people encouraging the enforcement of environmental law. The spirit of demanding for the change of policy will protect the citizen from environmental damage.

Keywords: *Social Movement[1], Citizen Law Suit[2], Social Justice[3], Environment Justice[4]*

1. Introduction

One area becoming mining lands, out of 76 Mining Business Licenses issued by Samarinda City Government, is Kelurahan Makroman. Makroman is a transmigration area in Samarinda City, East Borneo opened since 1957.

In 1982, transmigrants successfully developed farm despite one planting season. During 1999-2006, Makroman became the successful sample farming region.

However, a coal mining company, CV. Arjuna, entered into it in 2007, with concession width of 1,589 hectares, deconstructing hills around Makroman. And in the end of 2008, the company's coal waste processing reservoir broke down and contaminated water source and entered into fish pond and farm. Since then, the people's income shrank. Baby fish did not want to grow, while rice seed was covered with mud and even water entered into the people's houses. And until today, mud flood still occurs repeatedly, affecting Kelurahan Makroman, puddling entirely the 383.87 hectare-wide farming area, supporting the life of 1,905 families in Kelurahan Makroman.

Even, the company keeps extending its excavation to the people farmland in Kelurahan Makroman. Kelurahan Makroman encircled with coal mining area is not surely a guarantee of people's social economic welfare. For that reason, this research wants to see the effect of farmers' social movement fighting for social justice with the following research problem: What is the effect of farmers' social movement in fighting for social and environment justice in Kelurahan Makroman Samarinda, East Borneo? The objective of research is to see the real condition of farmers; demanding for the equal right to healthy land and environment according to the mandate of 1945 Constitution. Data of research will be used to analyze the effect of farmers' social movement in fighting for social justice.

2. Literature Review

a. Organic Intellectual Ideology

Antonio Gramsci assumes that ideology should be a collective consciousness and a goo ideology is when a group can accommodate other groups' interest and can attract other groups into ours. Gramsci sees that ideology is arbitrary along with the development of thinking.

Indirectly, consciously or unconsciously, Gramsci has entrapped himself into biased (organic) intellectual group interest. From this intellectual group, progressiveness will grow very rapidly, recalling that they have a mass-organizing ability.

Therefore, it can also be said that the concept of ideology viewed from what is this conception of arbitrary ideology is system paradigm perspective. Thus, we can also find how what Habermas has called cultural solidarity and community is created.

Intellectual group, according to Gramsci, consists of two areas: theory (traditional intellectual) and the one connecting it to social reality (organic intellectual. Such the organic intellectual is the one consciously capable of connecting theory and social reality existing, and it can join revolutionary groups to support and to counter hegemony in the planned transformation.

b. Social Movement

Social movement, according to Sociology Big Dictionary (2010) is a form of collective action to make social reorganization, organized either tidily or loosely and informally. Giddens (1999: 147) defines social movement as an attempt of pursuing an interest to achieve it collectively through collective action.

The factor leading to the emergence of social movement, as suggested by Giddens, Kornblum, Light, Keller and Calhoun (2004: 93), emphasizes on the development of deprivation, loss, disadvantage and misery, for example, in economic field the lost opportunity of fulfilling the needs for clothes, food, and shelter.

Social movements emerging as a community, association, or NGO in Indonesia constitute not only opposition movement, but also the movements aiming to make change, such as women movement, environmental movement, and etc. Those movements, by Alaine Tourine and Alberto Melucci, are called New Social Movement developed in New Social Theory as well (Fadaee, 2011:80).

c. Citizen Law Suit

Citizen Law Suit is essentially a mechanism for citizens to sue the government for its negligence in fulfilling the Citizen's right. Such the negligence is postulated as an unlawful deed, so that CLS is filed in general court, in this case Civil case.

Article 28D clause (1) of the 1945 Constitution mentions that Every person shall have the right of recognition, guarantees, protection and certainty before a just law, and of equal treatment before the law. Article 2 of Law 39/99 mentions that "Indonesia upholds human rights". Laws Number 11/2005 and Number 12/2005 confirm the recognition of citizens' basic, politic, economic, social and cultural rights.

Several definitions of citizen law suit or action Popularis are explained below:

1. *Actio popularis* is a procedure of filing law suit involving the public interest representatively. Law suit can be accomplished by referring to the law mentioning that every citizen has the right to defend public interest, without exception.

2. Citizen law suit is individual citizens' access to public interest including environmental interest to file law suit to the court to require the government to enforce the law obliging it to recover the public loss occurring. Basically, Citizen Law suit is the citizen's suing right intended to protect the citizen from potential loss due to by State or State Authority's action or omission.
3. Gokkel suggests that *actio popularis* is a suit that can be filed by every citizen under the state's regulation.
4. Michael D Axline says that Citizen Law Suit gives the citizen the power to sue certain party (Private) that infringes the Law in addition to the power to sue the state and the (federal) institutions for infringing the law or their failure of undertaking their obligation in the implementation of law.

Thus, every citizen, on behalf of public interest, can sue the state or the government or anyone doing unlawful deed actually harming the public interest and welfare. In action popularis, the right to file citizen law suit on behalf of public interest is unconditional in nature, so that the individual taking initiative to file law suit should not the one who experience the loss directly and it does not need particular power of attorney from the community members he/she represents.

3. Method

a. Setting

This research was taken place in Kelurahan Makroman of Samarinda City constituting one of area belonging to a mining business area, according to Energy, Mineral and Resource Ministry's stipulation, so that Samarinda City Government issues a policy of coal mining management corresponding to the authority it has. One of areas made mining land, out of 76 Mining Business Licenses issued by Samarinda City Government, is Kelurahan Makroman.

b. Research Approach

This study employed case study method. Case study was chosen because generally it can give the author an access to or an opportunity of studying in-depth, detail, intensively and comprehensively the unit studied by Burhan Bungin (2003:23).

Yin (2009: 21) argues that, "case study can be used in the research aiming to answer questions "how" and "why" against something studied". Case study is a model emphasizing on the exploration of a "limited system" in on or some cases in detail, along

with in-depth data exploration by seeing a variety of information sources replete with Creswill's context (Herdiansyah, 2010:13).

Furthermore, Miles and Huberman (2007: 15) state: "Case Study is a detailed study on certain setting, object, and event". Considering the explanation aforementioned, it can be seen that the author limits this current case study to: (1) human, event, setting, and document as the target of research; (2) the targets are studied in-depth as a totality according to respective context, aiming to understand a variety of correlations existing between its variables.

One typical characteristic of case study research as a method lies on its objective. The questions "what" and "why" contain basic substance of case studied. Therefore, it is appropriate for this research to use explanatory research, the one exploring the causality explanation contained in the object studied. Another typical characteristic of case study lies on the characteristics of object studied.

Yin (2009: 26) says that the case in case study is contemporary in nature, still related to the present, either is occurring or has occurred, but its effect is still felt during the research. Therefore, case study research cannot be used in historical research or the research on phenomenon occurring a long time ago, including the life that has been tradition or culture.

Such the characteristic of case is also confirmed by Creswell (Afriani, 2009:8) stating that some of case studies use grounded theory and phenomenology tending to study classical or definitive theories contained in the object studied.

c. Data Collection

This research needed the data constituting condition/situation of social phenomena to be processed. Qualitative research needs technique of collecting data constituting human's words or action in order to interpret and define them according to its essence. Therefore, a technique of collecting the data is required in order to be hierarchic with each other and sustainable, so that the data collected would be valid and appropriate to the research conducted. The procedure of collecting data could be conducted through several techniques, as explained below.

1. Observation

   Observation is a technique of collecting data requiring the author to go to the field to observe anything related to space, place, performer (actor), activity, object, time,

event, objective and feeling. In this case, the author does not participate actively and interact directly, but only observe the social interaction the object of research creates (Almanshur, 2012:164).

2. Interview

   Interview is a conversation aiming to and preceded by some informal questions; in this case, the author and informant meet the informants face to face to obtain and to find data of research the informant has concerning the problem studied (Gunawan, 2016:148).

   There are three methods used to conduct interview:

   a. Listening to and recording the informants' question in daily life
   b. During interview, the author asks the informant directly about which question is appropriate to use.
   c. Interview is conducted using descriptive question to ask the informants to express their perspective or special situation.

3. Documentation

   For case study, the most important use of document is that it supports and increases evidence from other sources. Firstly, document helps verify correct spelling and title or name of organizations mentioned in interview. Secondly, document can increase other specific detail in order to support information from other sources. Thirdly, inference can be made of documents (Yin, 1999: 104).

d. Data Analysis

Technique of analyzing data used to organize and to analyze the data in structured manner is the one that can facilitate the author analyzes the data and draws a conclusion in the research. The technique of analyzing data used in this research was typology technique, the one requiring verbal analysis used by the author to break the complexity of reality in an analysis result. In other words, data from informants was identified and analyzed to be re-identified later by data sorting. Thus, the data analyzed can be inferred in detail to get important description (Patton, 2009:103).

4. Result and Discussion

a. Farmers' Social Movement in Makroman Fighting For Environment Justice

Komari has cultivated his 3-ha wide farmland for many years. Unfortunately, in 2009 a coal mining company owned by CV. Arjuna mined mountains that provide water for farm and settlement below.

Komari and Norbaeti along with other citizens had reported their problem that became their misery. Unfortunately, their voice has never been heard. And finally they decide to move together in "*Gerakan Samarinda Menggugat*" (GSM) (English: Movement of Samarinda Sue") to sue the City Government, Local Legislative Assembly (DPRD) and Minister.

This peevishness of farmers and fish pond owners in upstream and downstream areas ended up with the citizens' peevishness in Samarinda downtown area becoming the victim of periodical flood occurring almost yearly and taking life toll in coal mining hole. This led to a discussion to look for an alternative law enforcement that can force the government and the company to comply with law. They want to sue the Government that is considered as dealing with its area and citizens negligently.

The spirit of fighting for healthy and safe life is manifested into establishing an environmental struggle movement, *Gerakan Samarinda Menggugat*, declared on January 21, 2012 exactly on the 344th anniversary of Samarinda City.

b. Citizen Law Suit

Citizen Law Suit becomes a new spirit for farmers and urban people bored with political promise deception released once in five years. GSM is an alternative movement of Samarinda farmers and people encouraging the enforcement of environmental law. The spirit of demanding for the change of policy will protect the citizen from environmental damage.

Citizen Law Suit summarizes all interests or wishes to change the policy harming Samarinda people. In the law justice, the citizens unite to use their constitutional right to reprimand the Government as the sign of non pro-people policy maker.

Samarinda Mayor sued represents Government as the State Administrator including Samarinda Mayor, RI's Energy and Mineral Resource Ministry, Governor of East Borneo Province, Living Environment Ministry, and the 2nd-Level Local Legislative Assembly of Samarinda City. Those who undertake Republic of Indonesia's government are bond to

the provision of 1945 Constitution (UUD 1945), RI's Law Number 32 of 2004 about Local Government, and other Laws and Ordinances prevailing in Indonesia.

The plaintiffs come from varying background with the same anxiety. They unite their anger into some power. "*Gerakan Samarinda Menggugat*" (GSM), finally decided to file law suit, represented by 14 men and 5 women: (1) Komari (farmer, Kelurahan Makroman), (2) Nurbaeti (female farmer, kelurahan Makroman),(3) Parjiman (farmer, Kelurahan Makroman), (4) Suwito (farmer, Kelurahan Makroman),(5) Aji Noviantara Hakim (Farmer, Samarinda), (6) M. Syoim (Dosen, Samarinda),(7) Adi Supriadi (Lecturer, Samarinda), (8) Carolus Borromeus Beatrix Tuah (Activist, Samarinda), (9) Sarah Agustiorini (College Student, Kelurahan Samarinda), (10) Linda Setianingsih (College Student, Kelurahan Sambutan), (11) Nalendro Priambodo (College Student, Kelurahan Sidodadi), (12) Saniah (farmer, Kelurahan Tanah Merah), (13) Soekamto, (entrepreneur, Kelurahan Sambutan), (14) Yohanes Kopong Tuan (Pastor, Samarinda), (15) Ir. Kismanto (entrepreneur, Samarinda), (16) Muhammad Fadli (Lecturer, Samarinda), (17) Akhmad Wijaya (entrepreneur, Kelurahan Sempaja), (18) Azman Aziz (Activist, Samarinda),(19) Margareta Seting Tekwan (Customary Community, Samarinda).

5. Conclusion

Fighting for environmental justice is the peevishness for farmers and fish pond owners in upstream and downstream areas. This ended up with the citizens' peevishness in Samarinda downtown area becoming the victim of periodical flood occurring almost yearly and taking life toll in coal mining hole. Twenty eight (28) children and two (2) adults died due to sinking in the ex-coal mining hole, and one (1) child died because of being burned with the residual coal pile.

This led to a discussion to look for an alternative law enforcement that can force the government and the company to comply with law. They want to sue the Government that is considered as dealing with its area and citizens negligently. The spirit of fighting for healthy and safe life is manifested into establishing an environmental struggle movement, *Gerakan Samarinda Menggugat*, (GSM).

The absence of good will to save environment from coal mining hazard, moreover to the future of Samarinda children, is considered as the main reason why this case is repeated continuously for 6 years. The situation the people encounter is due to injustice and arbitrariness against the people, so that a movement entitled "*Gerakan Samarinda*

Menggugat" (GSM) is born. "*Gerakan Samarinda Mengugat*" (GSM) fights for environment justice using Citizen Law Suit.

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DOES RECEIVING SOCIAL ASSISTANCE AFFECT CREDIT ACCESS AMONG POOR HOUSEHOLDS?

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ABSTRACT

One of the objectives of the Sustainable Development Goals (SDGs) is to solve the problem of poverty. In Indonesia, the poverty alleviation program consists of the provision of social assistance programs, health insurance, and improving economic capacity and income (including giving credit access). The type of social assistance programs received by beneficiaries depend on their welfare status.

Most of the recipients of the social assistance programs are financially constrained, therefore access to credit seems problematic. Nevertheless, one may think that the social assistance programs – especially cash transfers – may be seen as additional income for the poor households. On the other hand, receiving in-kind social assistance program can relax budget constraint face by them.

In this paper, we use different years of the Susenas data and employ the Pooled Probit model to estimate the relationship between receiving social assistance and credit access among poor households in Indonesia. The estimation result shows that in general there is a positive relationship between receiving social assistance and credit access, indicating that social assistance may be a way to induce financial inclusion. The probability of obtaining credit for BSM recipients is 3.38 percentage point higher than non BSM recipients. The probability of obtaining credit for PKH recipients is 1.58 percentage point higher than non-PKH recipients. The probability of obtaining credit for Rastra recipients is 0.37 percentage point higher than non-Rastra recipients. The probability of obtaining credit for Jamkesmas recipients is 0.95 percentage point higher than non-Jamkesmas recipients.

Keywords: Poverty, Credit Access, Social Assistance

[1]The findings, interpretations, and conclusions expressed in this paper are entirely those of the author(s). They do not necessarily represent the views of the TNP2K Secretariat.

I. INTRODUCTION

The world's development agenda until 2030 has been drafted by the United Nations and is known as the Sustainable Development Goals (SDGs). One of SDGs goals is poverty alleviation or in the exact words: "*to end poverty in all its forms everywhere*". Even though the international poverty rate has significantly been lower since 2000, more work are still required to "*boost income, to alleviate the suffering, and to build the resilience of those individuals still living in extreme poverty*" (United Nations, 2017).

Poverty alleviation programs has been designed and implemented by govenments as an attempt to reduce poverty rates in their country. In Indonesia, the poverty alleviation strategy is basically twofold : (1) providing social assistance and (2) increasing economic capacity and income (e.g credit access) (TNP2K, 2017). Social assistance can be an effective way to immediately relief the poor from the burden of paying basic services. It may be in the form of cash, in-kind, non-cash vouchers, or subsidised education or health (DFID and UK AID, 2011). The main social assistance programs in Indonesia are the rice for the poor program (Raskin/Rastra), Public Health Insurance (Jamkesmas), Program Keluarga Harapan (PKH), and Poor Student Assistance (BSM) (Bah, et al, 2015). Moreover, cash assistance may be a way to obtain access to credit (DFID and UK AID, 2011). Barrientos (2012) argues that the provision of credit access can improve the productivity of the poor and in turn will assist the poor to get out of poverty quickly.

While studies investigating the association between social assistance and credit access has been available in other countries, at the moment there is a limited research on the influence of receiving social assistance on credit access in Indonesia. This study attempts to fill the gap.

II. LITERATURE REVIEW

There are several studies investigating the effect of cash transfers, both Conditional Cash transfer (CCT) and Unconditional Cash Transfer (UCT), on access to credit. In their report, DFID and UK AID (2011) evaluate the impact of cash transfer programs in developing countries; Brazil, Ecuador, Jamaica, Mexico, Cambodia, Turkey, Nicaragua, and Bangladesh. They find that cash transfers can assist poor households in improving the quality of human, setting aside productive assets, as well as getting access to better credit.

Another research conducted by The Cash Consortium (2013) in Somalia, concludes that UCT has a positive effect on borrowing patterns, and increases the opportunity in accessing credit. Those who have access to UCT, tend to pay on time for the loans they have, and then increases their chances of getting another credit.

Hernandez, et. al (2009) analyzes the impact of CCT and remittance on the credit market in Nicaragua by using Randomized Control Trial. They find that there is no difference in loan demand between CCT program recipient and non-recipient.

Other studies, such as Nguyen (2007) finds that the age of household head, household size, agricultural sector, assets (house ownership and land size) are significantly determines credit access. Meanwhile, Gitaharie et al., (2014) conducts similar study and finds that

demographic characteristics (age, gender, location, dan education), socio-economic characteristics (working status, and education background), affect credit access. Lastly, Okten & Osili (2004) finds that network and community characteristics affect credit access.

III. DATA AND METHODS

This study uses Survei Sosial Ekonomi Nasional (Susenas) data year 2013, 2014, and 2017. Susenas is a representative data up to the district / city level in all provinces of Indonesia collected by the Indonesian Statistics Office (BPS) since 1963. Susenas is frequently used in the calculation of various socio-economic status; poverty, health, education, fertility, family planning, employment, housing, and other socio-economic variables.

Only poor household data were extracted from Susenas in this study. The measurement of poverty is based on the average poverty line of BPS publications on March and September on the provincial (rural and urban) levels. Individual variables such as working status and working sectors are taken from the highest income household members.

This study uses Pooled Probit model to estimate the probability of a household member to obtain credit (productive credit). The econometric specification used in this study follows Gitaharie et al.(2014); Hernandez et al (2009) ; Nguyen(2007); and Okten & Osili (2004), as follows:

$$Credit_{it} = \beta_0 + \delta_0 year_t + \beta_1 BSM_{it} + \beta_2 Rastra_{it} + \beta_3 PKH_{it} + \beta_4 Jamkesmas_{it} + \sum_{k=1}^{K} \beta_k X_{kit} + a_i + u_{it}$$

$Credit_{it}$ is an outcome for credit participation, which is = 1 when the household member gets a credit, and = 0 otherwise. We also include $year$ which indicate years dummy. Then, four main social assistance are included as independent variables, namely BSM , Rastra, PKH, and Jamkesmas. We also add another independent variable, incorporated in X_{it}. As usual in panel data model, a_i is the unobserved time invariant heterogeneity, and u_{it} is idiosyncratic error.

The calculation of the marginal effect is done by using the Average Adjusted Predictions (AAP) approach. This is completed by calculating the probability of each category, and then takes the value of the difference, to obtain the results of marginal effect (Williams, 2017). This approach is better than Adjusted Predictions at Means (APM) because APM calculates the marginal effect when all independent variables are on average.

IV. RESULTS

In general, Graph 1 in the appendix shows the percentage of social assistance recipients increase from 2013 to 2017. As can be seen, more poor households are getting the social assistances program. Only on the Rastra program experienced a sharp decline in 2017. This may be due to the transition from Raskin/Rastra to Bantuan Pangan Non-Tunai (BPNT). We also find in Graph 2 above that credit access is higher than previous years

The estimation result is given on Table 1 in the appendix. We can see that the probability of obtaining credit access for poor households receiving BSM is significantly higher by 3.38 percentage point than poor non-BSM recipients, ceteris paribus. Then, the probability of getting credit access for for poor households receiving PKH is significantly higher by 1.58 percentage point than poor non-PKH recipients, ceteris paribus. Also, the probability for poor households receiving Rastra is significantly higher by 0.37 percentage point than poor non-Rastra recipients, ceteris paribus. Lastly, the probability of obtaining credit access for poor households receiving Jamkesmas is significantly higher by 0.955 percentage point than poor non-Jamkesmas recipients, ceteris paribus.

The estimation also show estimation for each year. In general, we can see that the probability of getting credit access for poor households receiving social assistance are higher from 2013 until 2017 except for Rastra recipients. One may think that the social assistance programs – especially cash transfers – may be seen as additional income for the poor households. On the other hand, receiving in-kind social assistance program can relax budget constraint face by them.

The estimation also suggest that the probability of receiving credit for an entrepreneur is higher by 0.93 percentage point than an employee, ceteris paribus. Access to credit is also affected by the working sector. It appears that the financial and insurance sector has the greatest probability of getting credit access. The marginal effect is 0.0799, meaning that the probability of financial and insurance sector is higher by 7.99 percentage point than agricultural sector, ceteris paribus. The agricultural sector, in contrast, has the lowest probability on credit access. This may be due to the sector's higher risk.

The number of household members working significantly affects access to credit. The probability of obtaining credit access decreases by 1.09 percentage point for every one person change in number of household members working, ceteris paribus. Then the probability of obtaining credit access for poor households living in the urban is higher by 1.13 percentage point than rural poor households, ceteris paribus. It means that there is ineuqality problems in credit access between urban and rural poor households.

House ownership has no effect on credit access. This relates to collateral in which credit providers will tend to provide credit access to households with assets compared to those without assets. Because of the observations are only the poor household which have low assets, so this variable may not a reasoning for provider to give credit to the poor. This related to lnkapita (percapita expenditure) both are household welfare measurements. But we found that lnkapita (percapita expenditure) has a negative effect on credit access. The marginal effect is -0.014, meaning that the probability of obtaining credit access decreases by 1.4 percentage point for every one percent change in percapita expenditure. It suggests that the poorest may have more potential in credit access among the poor household.

V. CONCLUSION

This study analyzes whether receiving social assistance have an effect on credit access among poor households. We estimate social assistance such as BSM, Rastra, PKH, and

Jamkesmas on credit access among poor households observation. In addition, control variables that influence credit access, such as household characteristics (employment status and working sector), and household characteristics (number of household members working, location, house ownership, and per capita expenditure) is included in the econometric model.

We find that in general there is a positive relationship between receiving social assistance and credit access, indicating that social assistance may be a way to induce financial inclusion. The probability of obtaining credit for BSM recipients is 3.38 percentage point higher than non BSM recipients. The probability of obtaining credit for PKH recipients is 1.58 percentage point higher than non-PKH recipients. The probability of obtaining credit for Rastra recipients is 0.37 percentage point higher than non-Rastra recipients. The probability of obtaining credit for Jamkesmas recipients is 0.95 percentage point higher than non-Jamkesmas recipients. One may think that the social assistance programs – especially cash transfers – may be seen as additional income for the poor households. On the other hand, receiving in-kind social assistance program can relax budget constraint face by them.

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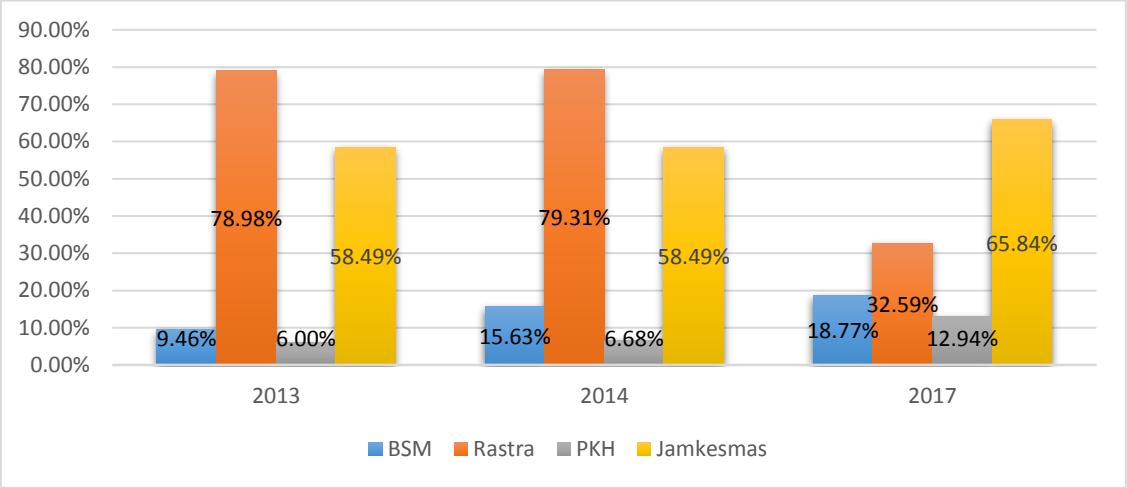
APPENDIX

Graph 1 **Percentage of Social Assistances Recipients**



Graph 2 **Percentage of Credit Recipients**

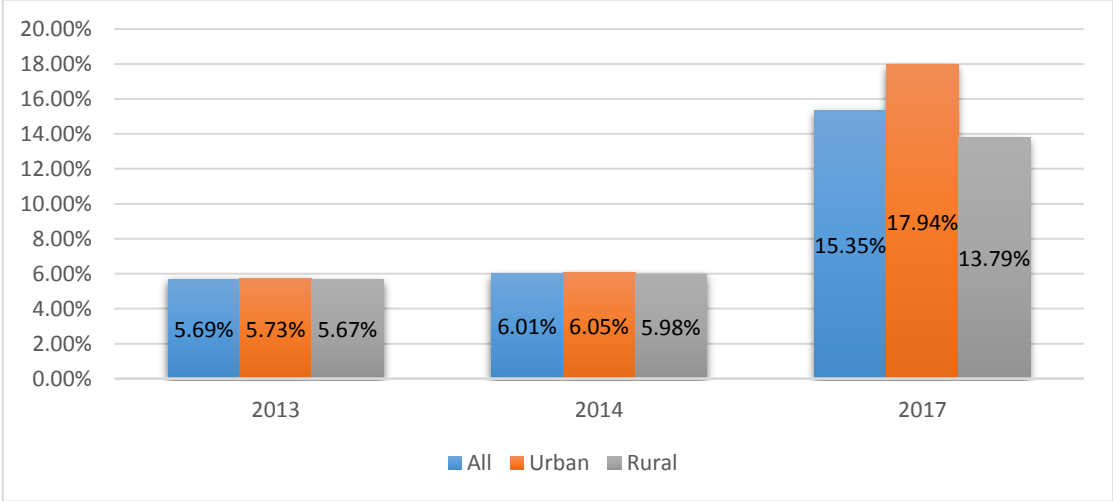


Table 1 Model Probit Estimation

VARIABLES	ALL Credit	ALL Margins	2013 Credit	2014 Credit	2017 Credit	2013 Margins	2014 Margins	2017 Margins
BSM	0.229***	0.0338***	0.285***	0.247***	0.205***	0.0307***	0.0271***	0.0438***
PKH	0.107***	0.0158***	0.0279	0.00144	0.168***	0.003	0.000158	0.0358***
RASTRA	0.0252*	0.00373*	0.162***	0.140***	-0.0627***	0.0174***	0.0153***	-0.0134***
JAMKESMAS	0.0645***	0.00955***	0.0942***	0.0358	0.0564***	0.0101***	0.00393	0.0120***
Working Status								
1. Casual Worker	0.0600**	0.00888**	1.638*	-2.861***	0.0813***	0.176*	-0.314***	0.0174***
2. Entrepreneur	**REF**	**REF**	**REF**	**REF**	**REF**	**REF**	**REF**	**REF**
3. Employee	-0.0632***	-0.00935***	-0.145***	-0.113***	0.0223	-0.0157***	-0.0124***	0.00477
Working Sector								
1. Agriculture	**REF**	**REF**	**REF**	**REF**	**REF**	**REF**	**REF**	**REF**
2. Mining and Quarrying	0.225***	0.0332***	0.197*	0.125	0.289***	0.0212*	0.0137	0.0618***
3. Manufacture	0.347***	0.0513***	0.308***	0.279***	0.387***	0.0332***	0.0306***	0.0827***
4. Electricity and Gas	0.0545	0.00806	0.610*	0.208	-0.122	0.0657*	0.0229	-0.0261
5. Construction	0.226***	0.0335***	0.265***	0.225***	0.209***	0.0286***	0.0247***	0.0446***
6. Trade, Hotel, and Restaurant	0.506***	0.0750***	0.529***	0.474***	0.503***	0.0570***	0.0521***	0.107***
7. Transportation, Information , and communication	0.238***	0.0353***	0.0429	0.159**	0.344***	0.00462	0.0174**	0.0734***

8. Finance and Insurance	0.540***	0.0799***	0.758**	0.461*	0.505**	0.0817**	0.0506*	0.108**
9. Services	0.255***	0.0378***	0.176***	0.237***	0.283***	0.0189***	0.0260***	0.0605***
10. Others	0.0393	0.00581	-0.144	0.15	0.025	-0.0155	0.0164	0.00534
11. Not work	-0.171***	-0.0253***	-1.914**	2.741***	-0.152***	-0.206**	0.301***	-0.0325***
nart_working	0.0739***	0.0109***	0.0808***	0.0620***	0.0789***	0.00870***	0.00681***	0.0168***
Urban	0.0764***	0.0113***	-0.0403	-0.0455	0.185***	-0.00435	-0.005	0.0396***
House_ownership	0.019	0.00281	0.0279	0.0466	0.01	0.00301	0.00512	0.00214
lnkapita	-0.0946***	-0.0140***	0.131**	-0.0146	-0.184***	0.0141**	-0.00161	-0.0393***
d_year2014	-0.00867	-0.00128						
d_year2017	0.514***	0.0761***						
Constant	-0.820**		-3.667***	-1.815**	0.784			
McFadden R^2	77,857	77,857	22,532	26,848	28,477	22,532	26,848	28,477

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Spatial Perspective for Regional Convergence in Central Java

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We employ original queen based spatial weight matrix to examine the spatial effect on economic aspect in Central Java. Local Indicator of Spatial Autocorrelation (LISA) displays clusters and outliers. Regional income is spatially autocorrelated significant at p=0.05. Distribution of regional income is by nature clustered rather than dispersed or random. Districts with high value economic indicators tend to be located near other relatively high value ones. Districts with relatively low value economic indicators tend to be located near other relatively low value ones. Regional economic convergence which is reconsidered from a spatial econometric perspective subject to substantial spatial effects. All beta coefficients are significantly negative. Thus, the poor districts tend to grow more rapidly than the rich districts. Spatial lag model is the most appropriate model for convergence analysis on first half period. Random shock of spatial error model on last half period introduced into a specific district will not only affect the growth rate of the district itself but also the other districts as well.

Keywords: spatial weight matrix, spatial data analysis, economic convergence

INTRODUCTION

Economic development is carried out to achieve the goal of development which is the extention of fair and prosperous society. To achieve these objectives, economic development is carried out through efforts to manage the existing resources by the government and the public, especially the private sector. The management of these resources is expected to encourage the development of economic activities in each region.

Central Java consists of 35 regencies/cities which are rich and diverse with many different cultures and peoples. These inter-regional differences are the consequence of considerable variation in geophysical and economic circumstances, distribution of natural resources, and social attributes of various the communities of people. Therefore, how to successfully unify culturally disparate and geographically separate people was the important factors in the regional building. In pursuing policies to promote interregional economic equality, a massive economic development program had to be implemented whereby wealth would be redistributed from rich to poor regions.

ECONOMIC CONVERGENCE PROCESS

Economic growth is a topic that has for a long time attracted the attention of economist, more so in recent decades. The basic question still needs to be clarified, will economic or income per

capita growth rates really converge between regencies, province, or even countries? This may be a simple question, yet arriving at an answer is a no simple matter, even though comprehensive attempts have been made to solve it. Offering an explanation on empirical evidence of the large differentials in the rate of economic (income) growth in various geographical areas within the same country is surely one of the most challenging efforts for contemporary economists.

The neoclassical growth theory has greatly affected the way in which economists conceptualize the long-run interrelationships between macro economies. In comparing the different economies, thus, it means that the differences in output per capita for economies with identical technologies and preferences will be temporary (Barro and Sala-i-Martin 1992). Recently, the convergence hypothesis has been the subject of growing research interest both across countries and regencies. Unfortunately, most of this research has been conducted according to different theoretical perspectives with different empirical strategies. However, the empirical techniques fall into two main categories: the sigma convergence and the beta convergence.

The first category is sigma convergence that considers cross-sectional dispersion in per capita income. Sigma convergence occurs if cross-sectional dispersion in per capita income, which is typically measured by standard deviation or coefficient of variation, declines throughout time.

Otherwise, the first approach of the second convergence category is referred to as absolute or unconditional beta convergence. Here, time series of observation or cross section of regions are used to examine the relationship between the current growth rate and their initial level of income per capita. Economic convergence occurs if beta coefficient in the regression model (the current level income per capita against the initial level income per capita) has negative sign. Furthermore, economic convergence occurs when poor regions tend to grow faster than rich regions, such as when poor regions catch up to rich ones in terms of levels of income per capita throughout time (Barro and Sala-i-Martin 1992, Rey and Montouri 1999, Fingleton 2001).

The Empirical Specification Test for Economic Convergence

Sigma convergence was declared as a cross sectional dispersion, which is typically measured by coefficient of variation, of income per capita that declines through time. Thus, sigma convergence can be assessed with the following formula:

$$CV = \frac{\sigma}{\mu}$$

CV is coefficient of variation, σ is standard deviation and μ is average income per capita. Beta convergence that takes place when poor regions tend to grow faster than rich regions throughout time can be examined with the following general model:

$$g_T = \alpha + \beta y_0 + \gamma X + \varepsilon$$

g_T is the average growth rates of income per capita between year 0 and T, $y_0$is income per capita at initial year, X (respectively γ) is a vector (1xn) of variables (respectively parameters) constantly maintaining the steady state of each economy, n is number of variables, ε is error term which follows the normal distribution, and α, β, and γ are parameters to be estimated in this model. If the vector X consist of zero and, of course, the parameter γ will also consist zero and β parameter is significantly negative, then it means the convergence holds. Otherwise, for the conditional beta convergence that the steady-state equilibrium is weak, however, the vector Xconsist of variables, which are considered in the endogeneous growth model, such as human capital, infrastructure, spatial interdependence, and so on. When β parameter is also expected to be significantly negative, it means convergence holds.

The β parameter estimation makes it possible to compute the convergence rate with the following equation:

$$\theta = \frac{-\ln(1 + T\beta)}{T}$$

Therefore, the half life, which is the time needed by the regions to fill half of the variation, can be computed as:

$$\tau = \frac{-\ln(2)}{\ln(1 + \beta)}$$

Spatial Perspective in Economic Convergence Analysis

One interesting characteristic of the conventional specifications for economic convergence is that regions have previously been considered as closed and isolated economies. Thus, parameters and other characteristics of the model are estimated at an aggregate and isolated level. However, behavioral and socio-economic relations are actually across border of non-isolated economies.

On regional scale, however, spatial effects and particularly spatial autocorrelation cannot be neglected in the analysis of economic convergence. Indeed several factors such as trade between regions, technology and knowledge diffusion and more generally the regional spillover may lead to geographically dependent regions.

The phenomena that economic growth tends to be faster in the areas which possess relatively large stocks of capital, highly educated populations and economic environments favorable to the accumulation of knowledge can easily be examined from a spatial analysis perspective, because it is known that the spatial interdependences of a group of regions are usually matters. Thus, a comprehensive study of spatial analysis is strongly needed to provide a better insight regarding the issues of regional economic growth and economic convergence.

Spatial Data and Spatial Effects in Social Science

Location has two classes of spatial effects: spatial dependence and spatial heterogeneity (Anselin and 1988). Spatial dependence is often referred to as spatial autocorrelation or spatial association. Conversely, spatial heterogeneity is usually related to the spatial differentiation which stems from the essential uniqueness of each location.

Spatial Weight Matrix

An important aspect of observation in spatial data analysis is their relative positioning or spatial arrangement. For each location-based data, a relevant neighborhood is defined as those location surrounding it that are considered interacting with it. Thus, the values at those locations are expected to influence the observed values of the data. In this research, we constructed a spatial weight matrix based on the queen contiguity while considering the actual topographical situation in Central Java.

Exploratory Spatial Data Analysis

Exploratory Spatial Data Analysis (ESDA) is the method that provides the measures of global and local spatial autocorrelation. Formally. Global Moran's I statistic for n observations on a variable x, with observation x_i at location I, is expressed as:

$$I = \frac{n}{\sum_i \sum_j w_{ij}} \frac{\sum_i^n \sum_j^n w_{ij}(x_i - \mu)(x_j - \mu)}{\sum_i^n (x_i - \mu)^2}$$

Where μ is the mean of x variable, w_{ij} are the elements of the spatial weight matrix, n represent the number of regions, and I corresponds to Global Moran's I statistic.

Anselin (1995) defines a local indicator of spatial association (LISA) as the statistics satisfying the two criteria. First, the LISA for each observation gives the indication of significant spatial clustering of the similar values around that observation. Second, the sum of LISA for all observations is proportional to the global indicator of spatial association. The local version of Moran's I statistic for each region I, moreover can be explained using the following formula:

$$I_i = \frac{(x_i - \mu_i)}{[\sum_i^n (x_i - \mu)^2 / n]} \sum_j W_{ij}(x_j - \mu_j)$$

Where the summation over j includes only the neighboringvalues of j. Additionally, the sum of Local Moran's I statistics can be written:

$$\sum_i I_i = \frac{\sum (x_i - \mu_i)}{\left[\sum_i^n \frac{(x_i - \mu)^2}{n}\right]} \sum_j W_{ij}(x_j - \mu_j) = \frac{\sum_i \sum_j W_{ij}(x_i - \mu_i)(x_j - \mu_j)}{[\sum_i^n (x_i - \mu)^2 / n]}$$

In its simplest form, with only one order of the contiguity used for the spatal lag terms, it is expressed in the matrix notation as:

$$y = \alpha + \rho W y + X\beta + \varepsilon$$

Where X is the matrix (n x k) with n observations on the k exogeneous explanatory variables that is matched with vector coefficient β (k x 1), Wy is the spatial lag with the matrix W, ρ is a spatial autoregressive parameter, and ε is a vector (n x 1).

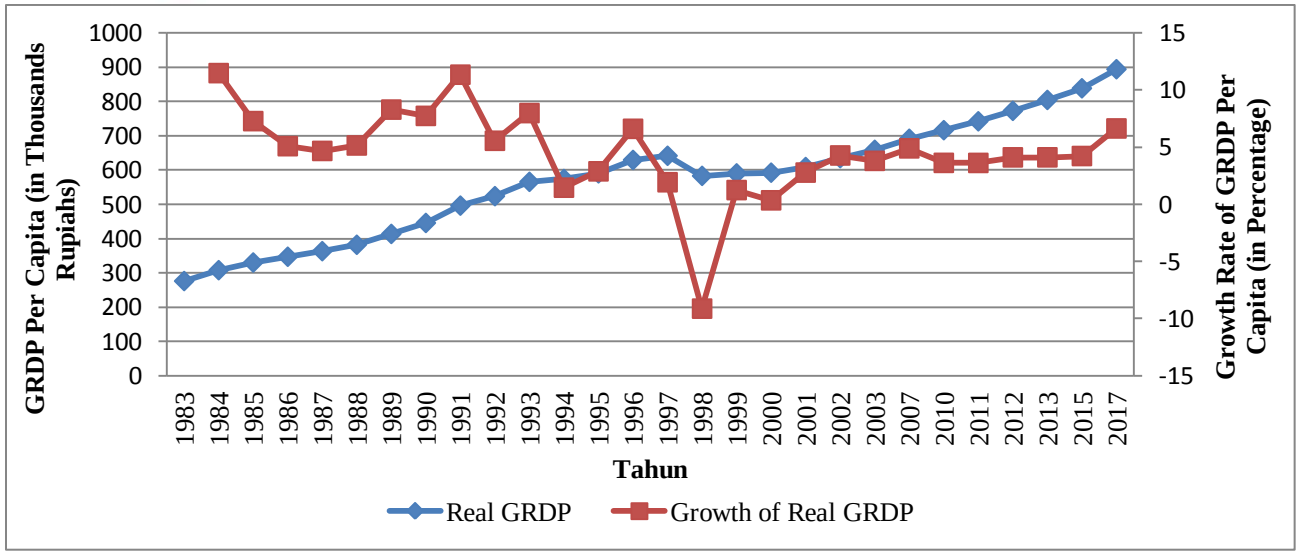
While the simplest form of spatial error terms can be showed by following expression:

$$y = \alpha + \lambda W \varepsilon + X\beta + \varepsilon$$

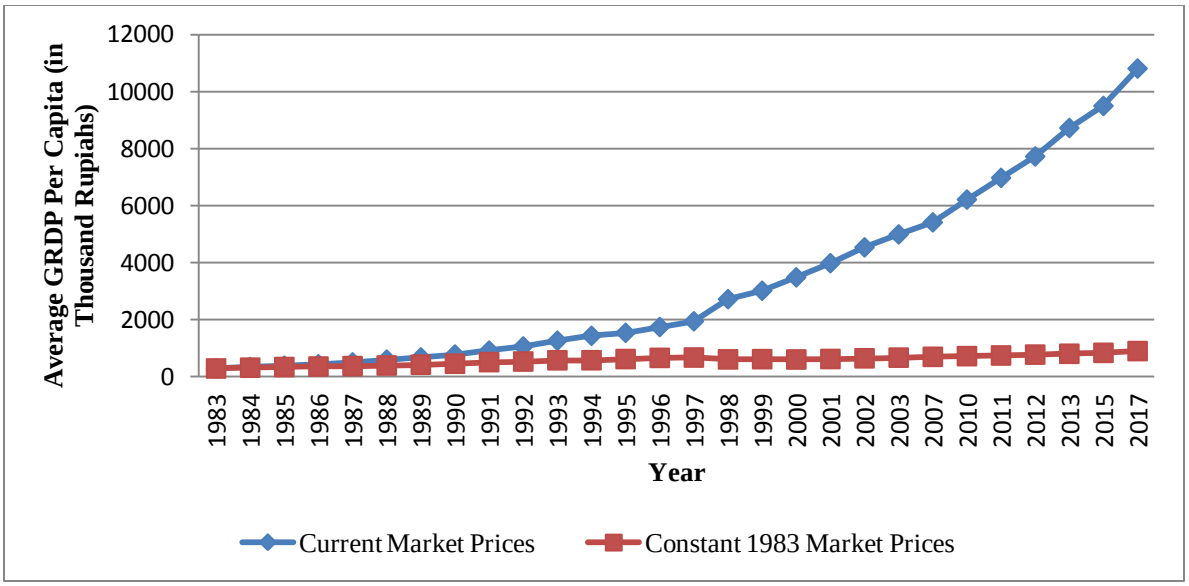
Where λ is spatial error parameter, $W\varepsilon$ is the spatial error with the matrix W and the othe notations are similar as before.

Distribution of Regional Income in Central Java

Using growth of income per capita, which is commonly substituted by GRDP per capita constant prices as an indicator of economic growth, it shows that the Central Java economy continually increased. The highest increase of GRDP per capita at 1983 market prices happened in the early of 1980s, while the lowest one happened in 2000. The economy sunk into unpredicted financial crisis in 1998. The decrease that happened in Central Java was triggered by national economic crisis that hit the Indonesian economy in 1998. At the same time, the growth of real GRDP per capita of Central Java minus 9.13 percent, while real GRDP per capita minus 15.14 percent. This fact shows that Central Java has its own dependence on national economic stability.



Source: BPS, processed
Figure 1. Real GRDP per capita at 1983 market place in Central Java, 1983-2017.



Source: BPS, processed

Figure 2. Average GRDP per capita at current and 1983 market prices in Central Java, 1983-2017

From a nominal number viewpoint, it is clear that average GRDP per capita 1983 and 2003. More interestingly, even though Central Java experienced economic instability in 1997-1998, the average nominal GRDP per capita has not decelerated, it has in fact increased significantly. However, this phenomenon was clearly due to the enormous increase in the prices of goods and services in the domestic market rather than an increase in the capacity of domestic production.

Global Spatial Autocorrelation

Table 1 exhibits the evolution of Global Moran's I statistic of natural logs of the real regional GDP per capita over the 1983-2017 period for Central Java regencies. A queen-based contiguity matrix is used to calculate both the global and local spatial autocorrelation.

Table 1. Global Moran's I Statistic for Natural Log Real GRDP Per Capita 1983-2017

Tahun	*Global Moran's I*	*Pseudo p-Value*	*E(I)*	*Mean*	*Std Dev*	*Standardized Value*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1983	-0.1919	0.0550	-0.0294	-0.0275	0.1138	-1.4446
1984	-0.1806	0.0695	-0.0294	-0.0288	0.1135	-1.3374
1985	-0.1776	0.0757	-0.0294	-0.0299	0.1120	-1.3188
1996	-0.0383	0.4898	-0.0294	-0.0271	0.1154	-0.0971
1997	-0.0262	0.5377	-0.0294	-0.0297	0.1135	0.0308
1998	-0.0490	0.4569	-0.0294	-0.0280	0.1143	-0.1837

1999	-0.0526	0.4515	-0.0294	-0.0308	0.1145	-0.1904
2000	0.0976	0.1341	-0.0294	-0.0292	0.1152	1.1007
2001	0.0937	0.1455	-0.0294	-0.0297	0.1148	1.0749
2010	0.0974	0.1354	-0.0294	-0.0296	0.1148	1.1063
2011	0.0885	0.1538	-0.0294	-0.0287	0.1149	1.0200
2015	0.0643	0.2060	-0.0294	-0.0285	0.1164	0.7973
2016	0.0603	0.2071	-0.0294	-0.0291	0.1134	0.7884
2017	0.0579	0.2197	-0.0294	-0.0295	0.1159	0.7541

This table shows that at the beginning of the study period up to 1999 it was indicated that outliers exist in Central Java area. It can be determined from the negative Global Moran's I value. From 2000 to the end of study period, Global Moran's I Statistics were positive. A positive Global Moran's I Statistics indicates a clustering in the study area. The cluster area is defied as a region with high real GRDP per capita surrounded by other areas that also has a high real GRDP per capita, and vice versa. However, the statistical significance shown by pseudo p-value in all years during the study period is worth more than p=0.05 significance level. Thus, the clustering indications seen from the positive Global Moran's I statistics are only a trend. The tendency to form a cluster can be used as an indication of the initial assessment of spatial dependence between regions in Central Java.

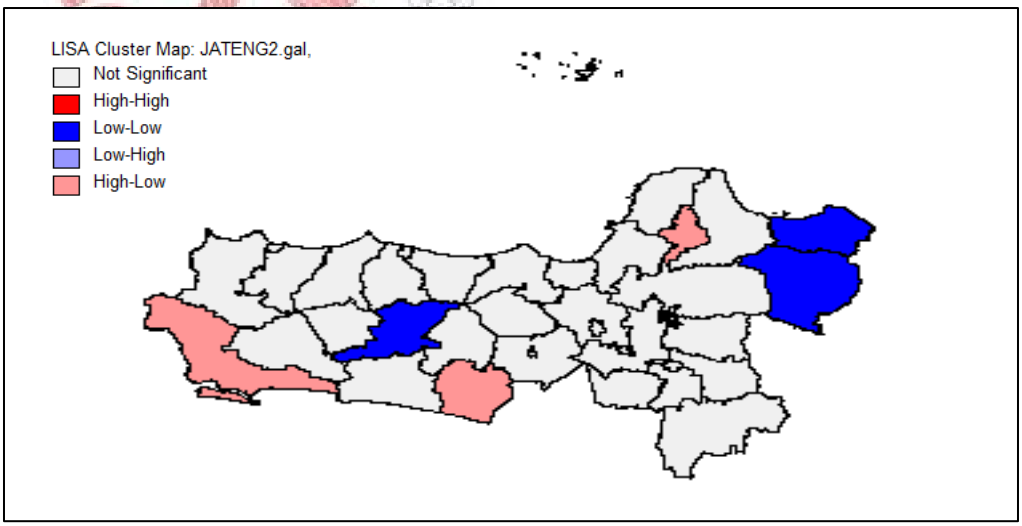


Figure 3. Location of Regional Clusters and Outliers in Central Java, 2010

Considering the data for 2010 in Figure 2, we can see that only destitute cluster and outlier formed in Central Java. The destitute regencies are Banjarnegara, Blora and Rembang. Meanwhile the high-low outlier regencies are Cilacap, Kudus, and Purworejo.

REGIONAL ECONOMIC CONVERGENCE in CENTRAL JAVA

Empirical analysis on the research will be conducted in the study period 1983-2017. Investigation on the regional economic convergence will be started with the analysis of sigma convergence and proceed with beta convergence analysis. Spatial econometric analysis will be

performed after the linkage between sigma convergence and the spatial aspect exist in these study. Therefore we can also find the determinants influencing regional convergence in Central Java.

Table 2. Result of Specification Search in Spatial Process Models

Year	Sigma Convergence	Unconditional Beta Convergence			Conditional Beta Convergence		
		Beta Coeff.	*Half-Life*	The Most Appropriate Model	Beta Coeff.	*Half-Life*	The Most Appropriate Model
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1984	0.0343	0.037	na	OLS-Based Model	0.042	na	OLS-Based Model
1985	0.0348	0.025	na	OLS-Based Model	0.028	na	OLS-Based Model
1996	0.0416	0.015	na	Spatial Lag Model	-0.052	13	OLS-Based Model
1997	0.0415	0.014	na	Spatial Lag Model	-0.047	15	OLS-Based Model
1998	0.0414	0.012	na	OLS-Based Model	-0.044	15	OLS-Based Model
1999	0.0415	0.012	na	OLS-Based Model	-0.040	17	OLS-Based Model
2000	0.0380	-0.009	79	Spatial Error Model	-0.052	13	Spatial Error Model
2001	0.0379	-0.008	87	Spatial Error Model	-0.052	13	Spatial Error Model
2010	0.0375	-0.004	179	Spatial Error Model	-0.033	21	Spatial Error Model
2011	0.0376	-0.004	172	Spatial Error Model	-0.034	20	Spatial Error Model
2015	0.0370	-0.005	136	Spatial Error Model	-0.031	22	Spatial Error Model
2016	0.0372	-0.005	126	Spatial Error Model	-0.030	23	Spatial Error Model
2017	0.0369	-0.005	126	Spatial Error Model	-0.030	24	Spatial Error Model

Through the specification spatial model that has been performed, conditional beta convergence analysis has better performance than the unconditional beta convergence analysis. We should consider various variables besides initial income level. The other variables can affect the speed and the half life to achieve the economic convergence.

Table 3. Result of Specification Search in Spatial Process Models of the Unconditional Beta Convergence in Central Java

Tahun	*Moran's I Sig*	*Lagrange Multiplier*		*Robust Lagrange Multiplier*		The Most Appropriate Model
		LM-Lag Sig.	*LM-Error Sig.*	*ML-Lag Sig.*	*ML-Error Sig.*	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1984	0.865	0.7727	0.7201	0.48	0.46	OLS-Based Model
1985	0.681	0.6091	0.5579	0.49	0.45	OLS-Based Model
1996	0.026	0.0344	0.0559	0.11	0.18	Spatial Lag Model
1997	0.010	0.0144	0.0250	0.09	0.17	Spatial Lag Model
1998	0.121	0.1448	0.2043	0.14	0.15	OLS-Based Model
1999	0.155	0.1781	0.2509	0.10	0.14	OLS-Based Model
2000	0.004	0.0136	0.0119	0.41	0.34	Spatial Error Model
2001	0.005	0.0148	0.0131	0.42	0.35	Spatial Error Model
2010	0.006	0.0162	0.0156	0.80	0.73	Spatial Error Model
2011	0.004	0.0136	0.0119	0.41	0.34	Spatial Error Model
2015	0.004	0.0129	0.0120	0.61	0.53	Spatial Error Model
2016	0.005	0.0141	0.0132	0.64	0.56	Spatial Error Model
2017	0.005	0.0155	0.0146	0.67	0.59	Spatial Error Model

Table 4. Result of Specification Search in Spatial Process Models of the Conditional Beta Convergence in Central Java

Tahun	*Moran's I Sig*	*Lagrange Multiplier*		*Robust Lagrange Multiplier*		The Most Appropriate Model
		LM-Lag Sig.	*LM-Error Sig.*	*ML-Lag Sig.*	*ML-Error Sig.*	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1984	0.998	0.711	0.757	0.764	0.826	OLS Based Model
1985	0.691	0.516	0.493	0.914	0.808	OLS Based Model
1996	0.335	0.510	0.550	0.712	0.805	OLS Based Model
1997	0.794	0.656	0.952	0.538	0.667	OLS Based Model
1998	0.728	0.771	0.961	0.742	0.873	OLS Based Model
1999	0.713	0.710	0.953	0.573	0.669	OLS Based Model

2000	0.000	0.004	0.000	0.071	0.000	Spatial Error Model
2001	0.000	0.004	0.000	0.085	0.000	Spatial Error Model
2010	0.000	0.008	0.002	0.074	0.020	Spatial Error Model
2011	0.000	0.004	0.000	0.071	0.000	Spatial Error Model
2015	0.000	0.004	0.002	0.061	0.002	Spatial Error Model
2016	0.000	0.007	0.004	0.072	0.003	Spatial Error Model
2017	0.000	0.005	0.000	0.071	0.001	Spatial Error Model

Cofimatory Analysis of the Conditional Beta Convergence

It is also necessary to examine determinants of regional economic convergence in Central Java. The estimation using spatial analysis of conditional beta convergence classifies the characteristics of Moran's I significance into two categories. The first category occurred from the beginning of the study period until 1999. The Moran's I significance value indicates we should employ OLS-Based Model to analyse the regional economic convergence. After going through the stages in the spatial model specification, the most suitable model used in the analysis of regional economic convergence in Central Java from 2000 to the end of study period is spatial error model.

Slightly different from the result obtained from unconditional beta convergence, negative beta coefficient values were shown from 1996 to the end of study period. It shows that the process of beta convergence in Central Java may occur in those year. However, it has been proven by convergence process, the closer to the end of study period, the bigger beta coefficient value generated. This indicates that regional economy in Central Java more likely to return to diverge rather than converge.

Spatial effect that occur in the research can be seen from the value of lambda. This value indicates an increase in economic growth due to random shock or error interaction between the neighborhood area. Random shock referred to in this research are the other variables that actually affect the economic growth but not included in the model.the possible variables should be taken into account in model are government policy, political factor, geographical area, and so on. Interaction between errors from adjacent regencies is significant to economic growthwith 99 percent confidence level. At the beginning of the identification of spatial influence in 2000, regional economic growth was influenced by error correlation between regencies as 0,607 percent, while at the end of study period the error correlation influence the economic growth as 0.521 percent.

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THE HAPPINESS-COMMUNICATION TECHNOLOGY RELATIONSHIP IN INDONESIA

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ABSTRACT

The research aims to analyze relationship between communication technology proxied by cellular phone, internet access and happiness in Indonesia. This study employs data from Indonesia Family Life Survey (IFLS) wave 5, 2014 and ordered probit model. Some empirical results are as follows. First, regression with full sample gives positive association between cellular phone, internet access and happiness. Moreover marginal effect of cellular phone and internet access are statistically significant. Second, regression with split of sample by age-groups give different result with full sample. Generally there are positive significant relationship between cellular phone, internet access and happiness except for group 15-24 years old. Furthermore marginal effect of cellular phone are statistically significant for all age-groups. But internet access only significant for people within productive age. For elderly (55 years old and up) internet access does not have significant effect on happiness. Third, multi usage of cellular phone give positive association with happiness but single usage spesifically for social media or browsing tends to lower happiness. Fourth, young people use cellular phone for many usage but they will convert to single usage if people getting older. For elderly cellular phone usually used as private conversation only.

Keywords: Cellular phone, Internet access, Happiness, Oprobit

1. Background

According Aristoteles happiness is the ultimate goal of life. There are many factors determine happiness. One of them are the circumstances which individu live in. Recently the technology grows such an advance development. The impact of technological advance could make the easier life for human. The technological advance on communication technology has positive impact on human life as well.

Nowadays cellular phone used as a medium of communication. This is a very important thing in modern human life and becomes a necessity goods. Cellular phone used by people mostly are smart phone. Those smart phone usually connected with internet access. The smart phone could be used either as a means of communication or another usage such as grabbing information, entertainment, work, and means of sosialization.

Indonesia is one of the sixth biggest cellular phone user in the world after China, India, USA, Brazil and Russia in early 2018.[1] Most of cellular phone are smart phone with internet connection. Cellular phone is the most device in accessing internet. The data shows that there is 93% of user using cellular phone as a medium of internet access.[2] One of using internet connection is for social media accessing. And Facebook is one of social media platform most accessed. There is about 89% user access Facebook from cellular phone.

Internet user in Indonesia per 2017 is 143.26 milion people or approximately 54.68 percent of total population. According to the age-group, there is 49.52% internet users which are 19-34 years old. And approximately 58 percents are living in Java. The point of this research is to answer how technology that proxied by cellular phone and internet access affects individual happiness.

Up to my knowledge, research about happiness in Indonesia is still very few including the correlation study between technology and happiness. Therefore, this research contributes to Indonesian study of happiness particularly connected with technological advance and happiness.

This study aims to answer some questions i.e. whether the possession of cellular phone and internet access have correlation with individual happiness and how do the effect of possession of cellular phone and internet access on individual happiness. Some control variables used in the research are education level, age-group, marital status, and some characteristics demography.

2. Literature Review

2.1 Happiness Definition

Economist does not too much detail in defining happiness like Sociologist and Psychologist. In economics happiness is something hard to define but measurable. So that happiness does not have a specific definition. Ng (1997) defines happiness as welfare. Clark and Oswald (1994) define happiness as pleasure or satisfaction. Easterlin (1995) does not separate

[1] https://tech.idntimes.com
[2] https://www.youthmanual.com

happiness definition as subjective well-being, satisfaction, utility, well-being and welfare. Frey and Stutzer (2002) define happiness as subjective well-being that can be used as a proxy for utility.

Happiness definition in Indonesia could be seen in Kamus Besar Bahasa Indonesia as an official dictionary. Happy is a situation or feeling happy and peacefull (free from all troubles). Happiness is a pleasure and the tranquility of life body and soul, and a good luck. Those definition comes from philosophy and Javanese ethics. Suryomentaraman philosophy defines happiness as a circumstances which are peacefull, comfort, no conflict, free from any negative wants and not tied with anything.

2.2 Happiness Theory

Veenhoven (2006) devide happiness theory into three parts i.e. set-point theory, cognotove theory and affective theory. Firstly, set-point theory defines happiness is something programmed by someone and unconnected with his or her life. Happiness influenced by personal traits, genetics and culture. And someone have to try to rataine happiness which comfort for him or her (comfortable level). Secondly, cognitive theory which define happiness as a product of thinking and human reflection on the difference between life perception in reality and what is should be. According this theory, happiness is uncountable but can be known. Thirdly, affective theory, happiness is a human reflection about how good is life generally. If someone feel that everything is fine so that he or she is should be happy.

Diener et al. (2004) state three sources of individual happiness i.e. personal traits, adaptation and social relation. Firstly, personal traits or character.There are two different character may lead different happiness. Neuroticism is a character which tend to angry easily, feeling guilty and depression. But an extroversion tends to feel happy easily, enthusiastic. This character seems more easy to be happy than a neuroticism. Secondly, adaptation is an ability to adapt in every conditions. The better adaptation the bigger chance to be happier. Thirdly, social relation gives social and family support and trust could enhance probability to live happier.

2.3 Previews Studies

Some earlier studies showed either positive or negative effect of having cellular phone or internet access to happiness. Graham and Nikolova (2014) found that access on technology have positive effect on happiness but have diminishing characteristic if the access is easy to do. Kavetsos and Koutroumpis (2011) give the same findings which showed that having a cellular phone or internet connection at home is associated with higher of well being. Pierewan and Tampubolon (2014) also give the same result during the economic crises. For 2008-2010 internet access has positive and significant association with well-being but it has not for before crises during 2004-2006 because it facilitates a search of work.

However access on technology also have negative association with happiness. Nie et al. (2017) use panel study in China and show an empirical evidence that intensive internet use is significantly associated with lower level of subjective wellbeing. Negative effect of internet use could be seen on mental illness. Howard-Jones (2016) access on technology using social media could increase friendship but for gaming it could affect physic and psychological problems. Kraut et al. (2002) shows that internet access may have detrimental effect on wellbeing. It mau reduce face to face social interaction and trigger loneliness.

3. Data, Variables and Methods

The study utilizes data from Indonesia Family Life Survey (IFLS) wave 5, 2014. The data is part of longitudinal survey which conducted since 2000. However it has just conducted on technology survey in 2014. So that this study employs cros section data.

Operational definition of variables are as follows. As dependent variables, Happiness is individual's perception about his/her overall life with four categories i.e. very happy, happy, unhappy and very unhappy. The main predictors are cellphone and internet. Cellphone is possession of cellular phone. Internet is availability of internet access. Some control variables are as follows. School is highest level of education someone ever attended. Marstat is marital status either never married, married, separated, divorced or widow/widower. Age-group which consist of group 15-24, 25-34, 35-44, 45-54, 55-64 , and minimum 65 years old. As demographic

characteristics are female, urban, Java, and age. Gender is either female or male. Urban is individual's residence either in urban or rural. Java is residential island by individu either in Java and or outside of Java.

This research employs ordered probit model. This is because dependent variable is happiness which is an ordinal or categorical data. Probit model assumes that error has normal distribution.

4. Results

Estimation process on empirical model conducted with full sample and split of sample based on age-group.

4.1 Full Sample

Table 4.1
Marginal Effect on Each Outcome with Full Sample

Predictors	Outcome	Marginal Effect	P-value
Cellphone	Very Unhappy	-0.0036*** (-6.29)	0.000
	Unhappy	-0.0190*** (-6.99)	0.000
	Happy	-0.0083*** (-9.50)	0.000
	Very Happy	0.03097*** (7.79)	0.000
Internet	Very Unhappy	-0.0020*** (-4.62)	0.000
	Unhappy	-0.0113*** (-4.71)	0.000
	Happy	-0.0076*** (-4.30)	0.000
	Very Happy	0.0209*** (4.59)	0.000

Z statistics in parentheses, *)p<0.1 ; **)p<0.05 ; ***)p<0.01

4.2 Split of Sample by Age-group

Table 4.2
Estimation Result with Split of Sample

Predictors	Regression Coefficient					
	15-24 years	**25-34**	**35-44**	**45-54**	**55-64**	**>=65**
Cellphone	0.1099	0.1381***	0.1965***	0.1461***	0.01387**	0.2626***
	(1.81)	(2.85)	(4.63)	(3.15)	(2.56)	(2.84)
Internet	0.0628	0.1161***	0.1397***	0.2164***	0.0579	-0.0182
	(1.28)	(3.20)	(3.14)	(3.22)	(0.46)	(-0.07)
Education						
Junior High School	-0.0432	0.0207	0.0138	0.1149*	-0.0201	0.2802**
	(-0.64)	(0.45)	(0.31)	(2.01)	(-0.28)	(2.17)
Senior High School	0.0950	0.0584	0.0991*	0.1589**	0.7136**	0.1424
	(1.42)	(1.29)	(2.31)	(2.96)	(2.29)	(1.39)
Under Graduate	0.2346**	0.3174***	0.1700*	0.2124*	0.2455**	0.4096***
	(2.27)	(4.20)	(2.01)	(1.70)	(2.10)	(2.76)
Bachelor	0.3023***	0.2423***	0.3142***	0.3010***	0.2680***	0.5190**
	(3.75)	(3.98)	(4.69)	(3.72)	(3.13)	(2.55)
Post Graduate	0.3503	0.7147***	0.6533***	0.5365***	0.8050***	1.4190
	(0.76)	(3.99)	(3.65)	(3.33)	(2.61)	(1.62)
Marital Status						
Married	0.3759***	0.555***	0.5368***	0.4071***	-0.1257	0.8189*
	(7.74)	(11.21)	(6.02)	(2.72)	(-0.56)	(1.68)
Separated	-0.9389***	-0.7936***	-0.3676	0.0073	-0.2550	2.2079**
	(-3.67)	(-3.75)	(-1.28)	(0.03)	(-0.55)	(2.16)
Divorced	-0.2561	-0.2734	-0.1017	-0.0608	-0.6061**	0.5860
	(-1.07)	(-1.90)	(-0.77)	(-0.32)	(-2.24)	(1.10)
Widow/Widower		-0.2109	-0.1694	0.0269	-0.3479	0.7038
		(-0.76)	(-1.02)	(0.16)	(-1.51)	(1.44)
Demographic Characteristics						
Female	0.013	0.0094	0.0844***	0.1340***	0.1012*	0.1799**
	(0.41)	(0.31)	(2.62)	(3.33)	(1.93)	(2.06)
Urban	-0.0027	0.0197	0.1206***	0.0399	0.1095**	0.0761
	(-0.08)	(0.64)	(3.50)	(0.95)	(2.07)	(0.91)
Java	-0.0834**	-0.0534	-0.0963***	-0.0621	-0.0163	0.0585
	(-2.62)	(-1.83)	(-3.03)	(-1.57)	(-0.32)	(0.73)
Age	-0.1148	0.0010	-0.3974**	0.0284	0.1256	-1.3979
	(-1.40)	(0.01)	(-2.39)	(1.12)	(0.32)	(-1.89)
Age2	0.0023	-0.0002	0.0048*	-0.0029	-0.0010	0.0100*
	(1.09)	(-0.09)	(2.29)	(-1.13)	(-0.32)	(1.85)

Source: Estimation

Z statistics in parentheses, *)p<0.1 ; **)p<0.05 ; ***)p<0.01

Table 4.3
Marginal Effect on Each Outcome with Split of Sample

Predictors	Outcome	Marginal Effect					
		15-24 years	25-34	35-44	45-54	55-64	>=65
Cellphone	Very Unhappy	-0.0022** (-2.41)	-0.0021** (-2.40)	-0.0048*** (-3.67)	-0.0048*** (-2.81)	-0.0065** (-2.48)	-0.0064** (-2.56)
	Unhappy	-0.0106*** (-2.62)	-0.0114*** (-3.02)	-0.0240*** (-4.31)	-0.0233*** (-3.10)	-0.0244** (-2.54)	-0.0536*** (-2.93)
	Happy	-0.0119*** (-3.39)	-0.0176*** (-3.39)	-0.0083*** (-5.46)	0.0043 (1.99)	0.0099** (2.37)	0.0211*** (2.92)
	Very Happy	0.0247*** (3.02)	0.0311*** (3.02)	0.0371*** (4.96)	0.0238*** (3.22)	0.0210** (2.55)	0.0389*** (2.64)
Internet	Very Unhappy	-0.0011*** (-3.02)	-0.0015*** (-3.02)	-0.0028*** (-3.27)	-0.0057*** (-3.51)	-0.0026 (-0.48)	0.0005 (0.07)
	Unhappy	-0.0059*** (-3.19)	-0.0088*** (-3.19)	-0.0152*** (-3.27)	-0.0311*** (-3.57)	-0.0100 (-0.47)	0.0039 (0.07)
	Happy	-0.0075*** (-3.14)	-0.0174*** (-3.14)	-0.0113** (-2.57)	-0.0032 (-0.81)	0.0036 (0.56)	-0.0019 (-0.07)
	Very Happy	0.0145*** (3.18)	0.0278*** (3.18)	0.0293*** (3.01)	0.0400*** (2.91)	0.0090 (0.44)	-0.0025 (-0.07)

Source: Estimation
Z statistics in parentheses, *)p<0.1 ; **)p<0.05 ; ***)p<0.01

4.3 Discussion

The research give some results. First, using full sample it was found that cellular phone and internet access have positive relationship with happiness. Second, marginal effect of possessing cellular phone and internet access indicate the same result with regression coefficient. It means that having cellular phone and also availability internet access can decrease probability for being unhappy or increase probability for being happy. Having cellular phone make people which is very unhappy or unhappy could decrease probability for very unhappy or unhappy than who have not cellular phone.

Third, using split of sample based on age-group, the research give some different results. Such as for group of 25-34, 35-44 and 45-54 years old which are only groups give the same result with full sample estimation for both of regression coefficient and marginal effect. These empirical

findings in line with Kavetsos and Koutroumpis (2011) which support the positive association between internet access and happiness. This is because internet access could maintain social network and increase social ties.

Fourth, for group 55-64 and 65 years old and more indicate that marginal effect of cellular phone is significant but for internet access. It can be presumed that elderly use cellular phone only for calling activity and not for other activities that need internet access. This result backed up by data which show approximately 50% elderly use cellular phone as private conversation.

Fifth, this research can not estimate marginal effect of usage cellular phone on happiness but their association only. Generally association between usage of cellular phone and happiness are either negatif or insignificant. However there is approximately 10% of cellular phone usage have positive relation with happiness which are multi usage. Whilst single usage give negative association with happiness. Some scholars try to explain this negative association. Marino et al. (2017) calls it as problematic internet use (PIU). This means inability to control internet use the degree that it begins to cause harm to daily life. This PIU has some variabilities such as pathological internet use, internet dependence, and compulsive internet use.

Table 4.4
Usage of Cellular Phone Based on Age-group

No	Usage					
	15-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65 years and more
1	ACEHI, 16.70%	AC, 13.74%	ABC, 25.95%	ABC, 28.70%	A, 26.79%	A, 49.72%
2	ABCEHI, 8.56%	ABC, 13.23%	AC, 15.94%	AC, 13.54%	ABC, 19.63%	AC, 18.44%
3	ACH, 8.22%	ABCH, 12%	ABCH, 13.32%	ABCH, 12.04%	AC, 15.37%	ABC, 8.94%
4	AC, 8.09%	ACH, 9.45%	ACH, 6.92%	A, 11.08%	AB, 12.71%	AB, 8.10%
5	ABCDEHI, 5.40%	ABCEHI, 7.45%	ABCHI, 3.76%	ACH, 4.62%	ABCH, 7.56%	ACH, 3.63%

Source : data, IFLS

According to table 4.4 there are three types of cellular phone usage. For young people cellular phone usually used for private conversation, text mesaage, social media, entertainment and browsing. The usage of cellular phone converts to narrow usage if users are getting older. For people within productive age the usage are for private conversation, business conversation and text message. Eventually the usage is only private conversation for elderly or users enter retirement.

Sixth, internet can be accessed from many sources. Generally internet accessed from cellular phone is approximately 42%. Internet accessed from computer in public spot is approximately 11.07% and 11.35% accessed from computer at home. Seventh, control variables such as education and marital status have different conclusion. Education have positive relationship with happiness. But if sample split, there is high level education only have positive relationship with happiness for all age-groups. Marital status has significant association with happiness. Married people tends to be happier than other status. The result can be found either in full sample or split of sample model. Eighth, characteristic demographic show that female, urban people and live in outside of Java island tend to be happier. It was also known that age and happiness have U-shaped relationship.

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Market Structure and Bank-Lending Channel during the Consolidation Period

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ABSTRACT

A prominent study by Bernanke and Gertler (1995) revealed that monetary policy influences both the borrowers' balance sheets and income statement as well as banks' lending capacity. The first influence is known as balance sheets channel and the second is identified as lending channel. The bank-lending channel is noticeable in a banks-dependent economy such as Indonesia where banks retained 86 percent of assets in the financial industry. According to Bernanke and Gertler (1995), the monetary policy of open market sales affects the supply of banks loans. The policy induces banks to lower their reserves that further reduces the deposits in the banking system and banks' lending capacity.

Some studies attempt to investigate the existence of lending channel in the banking industry. Agung (1998) examined empirically the lending channel in the Indonesian banking following the deregulation policies between 1983 and 1992. The study found that monetary policy transmitted to the real sector through the bank-lending channel. Nevertheless, the impact was merely significant among the small banks. Agung (1998) argued that large banks had larger access on the external source of funds such as foreign funds and bank loan commitment so the monetary policy was not effective in lowering their lending capacity. Further, Adams and Amel (2005) was keen to examine the lending channel particularly on small business loans in the US. Their study concluded that the monetary policy transmission is weakened in the more concentrated banking industry. Specifically, the study found that market imperfection of market power resulted from market concentration contributed to lower the sensitivity of bank lending to the federal funds rate. Meanwhile, more recent paper by Amidu and Wolfe (2013) using dataset of 978 banks from 55 countries found a contrasting evidence. They argued that a more competitive banking contributes to weaken the monetary policy effectiveness on banks' lending.

This study aims to extend the literature on lending channel by examining the role of market structure on lending capacity constraint in the Indonesian banking industry. It is critical to explore the lending channel as Indonesia monetary policy transmission in increasing access to banking credit is not effective. The reference interest rate of the central bank has been lowered but borrowers still complaint about the lack of access to banking lending. Meanwhile, the degree of market competition in the Indonesian banking industry is low signaling the existence of market power of large banks. A study by Mulyaningsih (2014) indicated that the competition in the Indonesian banking during the consolidation period after 1997/1998 economic crisis was worse compared to the deregulation period in the 1990s.

In order to investigate the possible role of market concentration in explaining the bank-lending channel in Indonesian banking, this paper will employ the general method of moment approach. This approach is preferred because it is capable to manage the endogeneity issue due to the reverse

causality and omitted variable bias. Particularly, this study focuses on the Indonesian banking industry consisted of 101 banks of the observation period between 2005 and 2014.
Keywords: banking, market structure, lending channel

INTRODUCTION

The economic policies are applied the governement to regulate economic activities and to achieve economic stability. One of the policies is monetary policy. Monetary policy aims to control monetary system in a country. In Indonesia, there are two monetary operation instruments in order to implement monetary policy, that are open market operation operation and standing facilities.

To attain the goal of monetary policy, it is important to understand the channels through which policy are transmitted to the economy. In Indonesia, there are six channels that are money channel,lending channel, interest rate channel, exchange rate channel, asset price channel, and expectation channel (Central Bank of Indonesia, 2004). According to Bacchetta and Ballabriga (2000), there are three channels on how monetary policy has been transmitted. They are

Since Indonesian economic system is a bank based economy where banks retained 86 percent of assets in the financial industry, banks have significant role to transmit the policies through lending channel. Mishkin (1995) explained, in lending channel, a monetary contraction when central bank increase interest rates the banks' reserves and deposit get reduced. It means the

A The economic policies have imp

In Indonesia, there are two monetary policy istrument that are open market operation operation and standing facilities. According to Bernanke and Gertler (1995), the monetary policy of open market sales affects the supply of banks loans. The policy induces banks to lower their reserves that further reduces the deposits in the banking system and banks' lending capacity.

This study examines monetary transmission through lending channels mechanism and it's relation to market concentration.

LITERATURE REVIEW

The empirical studies on bank lending channel is varied widely among other nations. In US

Monetary policy transmission has been a prominent issue to understand. There are some studies discussed

Kashyap and Stein (1995) stated that large banks have access to non-deposit funds and small banks are easily constrained due to monetary contraction.

A study by Kashyap and Stein (1995) revealed that a contraction in monetary policy has a quite similar effect on core deposits accross size classes.

Agung (1998) found that bank lending channel transmission only affect to small bank. The transmission do not affect large bank. It is because large bank had access the external source of by issuing non-deposit funds or borrowing abroad.

METHODOLOGY

This study treats lending supply as exogenous variable and money supply, investment, and credit interest as endogenous variable.

This paper employ Vector Auto Regression (VAR) to examine the monetary transmission mechanisms.

One of the advantages of VAR is only requires a small number of variables (

There are two market concentration index that commonly used, they are CR_k and Herfindahl-Index (HHI). CR_k explains the given firms' market size to the whole market size in their industry. HHI uses market shares as weights, thus larger banks are assigned larger weights in order to take into account the different sizes of banks in the market.

The formula of HHI is as follows :

$$HHI = \sum_{i=1}^{n} s_i^2$$

Where, s_i refers to the market share of bank i in the market and n is the number of banks. The Herfindahl Index (H) ranges from 1/N to one, where N is the number of banks in the market. The value of HHI implies the level of concentration in the industry where the larger the value of the index demonstrates a more concentrated market. For an industry that consists of a single monopoly, HHI=1 because a monopolist has a market share of $_{s1}$ =1 thus μ□S = 1. On the other hand, an industry with N banks with equal market shares will have HHI=1/N (Lipezynski, Wilson & Goddard 2005).

RESULT AND DISCUSSION

- The unit root test reveals all variables are stationary at difference using Phillip-Pheron assumption.
- Credit, credit interest, money supply, and investment are stationary at difference
-

SUMMARY AND CONCLUSIONS

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APPENDIX

A. UNIT ROOT TEST

1. Credit Interest

Null Hypothesis: D(CREDITINTEREST) has a unit root
Exogenous: Constant
Bandwidth: 28 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.856181	0.0000
Test critical values:	1% level	-3.581152	
	5% level	-2.926622	
	10% level	-2.601424	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.233417
HAC corrected variance (Bartlett kernel)	0.037746

Phillips-Perron Test Equation
Dependent Variable: D(CREDITINTEREST,2)
Method: Least Squares
Date: 06/29/18 Time: 23:59
Sample (adjusted): 2005Q3 2016Q4
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CREDITINTEREST(-1))	-0.898641	0.150054	-5.988772	0.0000
C	-0.044984	0.073202	-0.614528	0.5420

R-squared	0.449073	Mean dependent var	-0.001159
Adjusted R-squared	0.436552	S.D. dependent var	0.658100
S.E. of regression	0.493991	Akaike info criterion	1.469905
Sum squared resid	10.73718	Schwarz criterion	1.549411
Log likelihood	-31.80780	Hannan-Quinn criter.	1.499688
F-statistic	35.86539	Durbin-Watson stat	1.865997
Prob(F-statistic)	0.000000		

2. Lninvestasi

Null Hypothesis: D(LNINVESTASI) has a unit root

Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.570253	0.0000
Test critical values:	1% level	-3.581152	
	5% level	-2.926622	
	10% level	-2.601424	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.150589
HAC corrected variance (Bartlett kernel)	0.150545

Phillips-Perron Test Equation
Dependent Variable: D(LNINVESTASI,2)
Method: Least Squares
Date: 06/30/18 Time: 00:01
Sample (adjusted): 2005Q3 2016Q4
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNINVESTASI(-1))	-0.990518	0.150757	-6.570284	0.0000
C	-0.004317	0.058506	-0.073789	0.9415

R-squared	0.495231	Mean dependent var	0.000188
Adjusted R-squared	0.483759	S.D. dependent var	0.552234
S.E. of regression	0.396780	Akaike info criterion	1.031633
Sum squared resid	6.927099	Schwarz criterion	1.111139
Log likelihood	-21.72757	Hannan-Quinn criter.	1.061417
F-statistic	43.16864	Durbin-Watson stat	2.000197
Prob(F-statistic)	0.000000		

3. Lnjub

Null Hypothesis: D(LNJUB) has a unit root
Exogenous: Constant
Bandwidth: 12 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-10.98187	0.0000
Test critical values:	1% level	-3.581152	
	5% level	-2.926622	
	10% level	-2.601424	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.000615
HAC corrected variance (Bartlett kernel)	0.000580

Phillips-Perron Test Equation
Dependent Variable: D(LNJUB,2)
Method: Least Squares
Date: 06/30/18 Time: 00:03
Sample (adjusted): 2005Q3 2016Q4
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNJUB(-1))	-1.457208	0.134466	-10.83702	0.0000
C	0.048720	0.005840	8.343007	0.0000

R-squared	0.727455	Mean dependent var	9.18E-05
Adjusted R-squared	0.721261	S.D. dependent var	0.048008
S.E. of regression	0.025346	Akaike info criterion	-4.469864
Sum squared resid	0.028267	Schwarz criterion	-4.390358
Log likelihood	104.8069	Hannan-Quinn criter.	-4.440080
F-statistic	117.4411	Durbin-Watson stat	2.004227
Prob(F-statistic)	0.000000		

4. lnkredit

Null Hypothesis: D(LNKREDIT) has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.115987	0.0000
Test critical values:	1% level	-3.581152	
	5% level	-2.926622	
	10% level	-2.601424	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.000741
HAC corrected variance (Bartlett kernel)	0.000701

Phillips-Perron Test Equation
Dependent Variable: D(LNKREDIT,2)
Method: Least Squares
Date: 06/30/18 Time: 00:18
Sample (adjusted): 2005Q3 2016Q4
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNKREDIT(-1))	-0.904411	0.147593	-6.127757	0.0000
C	0.038225	0.007579	5.043701	0.0000

R-squared	0.460450	Mean dependent var	-0.000819
Adjusted R-squared	0.448187	S.D. dependent var	0.037466
S.E. of regression	0.027831	Akaike info criterion	-4.282817
Sum squared resid	0.034081	Schwarz criterion	-4.203311
Log likelihood	100.5048	Hannan-Quinn criter.	-4.253034
F-statistic	37.54940	Durbin-Watson stat	2.076245
Prob(F-statistic)	0.000000		

B. UJI KOINTEGRASI

Date: 06/30/18 Time: 00:20
Sample (adjusted): 2005Q3 2016Q4
Included observations: 46 after adjustments
Trend assumption: Linear deterministic trend
Series: LNKREDIT LNJUB LNINVESTASI CREDITINTEREST
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.515288	65.01028	47.85613	0.0006
At most 1 *	0.370895	31.69709	29.79707	0.0298
At most 2	0.156104	10.37809	15.49471	0.2528
At most 3	0.054352	2.570696	3.841466	0.1089

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.515288	33.31319	27.58434	0.0082
At most 1 *	0.370895	21.31900	21.13162	0.0471
At most 2	0.156104	7.807392	14.26460	0.3986
At most 3	0.054352	2.570696	3.841466	0.1089

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

LNKREDIT	LNJUB	LNINVESTASI	CREDITINTEREST
12.53177	-10.63897	0.983975	2.714930
20.92475	-29.63118	0.690804	0.264452
-26.89455	35.91603	0.860332	0.715940
17.67505	-21.98932	-1.056558	0.850610

Unrestricted Adjustment Coefficients (alpha):

D(LNKREDIT)	-0.011179	0.001796	-5.12E-05	0.002135
D(LNJUB)	-0.002745	0.008023	-0.002415	0.004011
D(LNINVESTASI)	-0.013415	-0.188429	-0.022510	0.036730
D(CREDITINTEREST)	-0.067014	0.088002	-0.154994	-0.016637

1 Cointegrating Equation(s): Log likelihood 216.2725

Normalized cointegrating coefficients (standard error in parentheses)

LNKREDIT	LNJUB	LNINVESTASI	CREDITINTEREST
1.000000	-0.848960	0.078518	0.216644
	(0.07705)	(0.02176)	(0.03442)

Adjustment coefficients (standard error in parentheses)

D(LNKREDIT)	-0.140091
	(0.02872)
D(LNJUB)	-0.034400
	(0.04492)
D(LNINVESTASI)	-0.168109
	(0.69765)
D(CREDITINTEREST)	-0.839806
	(0.85015)

2 Cointegrating Equation(s): Log likelihood 226.9320

Normalized cointegrating coefficients (standard error in parentheses)

LNKREDIT	LNJUB	LNINVESTASI	CREDITINTEREST
1.000000	0.000000	0.146637	0.522032
		(0.05681)	(0.04125)
0.000000	1.000000	0.080238	0.359720
		(0.04638)	(0.03367)

Adjustment coefficients (standard error in parentheses)

D(LNKREDIT)	-0.102502	0.065703
	(0.05547)	(0.07160)
D(LNJUB)	0.133469	-0.208512
	(0.08178)	(0.10556)
D(LNINVESTASI)	-4.110941	5.726094
	(1.14700)	(1.48056)
D(CREDITINTEREST)	1.001617	-1.894646
	(1.61946)	(2.09041)

3 Cointegrating Equation(s): Log likelihood 230.8357

Normalized cointegrating coefficients (standard error in parentheses)

LNKREDIT	LNJUB	LNINVESTASI	CREDITINTEREST
1.000000	0.000000	0.000000	0.381972
			(0.04512)
0.000000	1.000000	0.000000	0.283081
			(0.03276)
0.000000	0.000000	1.000000	0.955146
			(0.20233)

Adjustment coefficients (standard error in parentheses)

D(LNKREDIT)	-0.101125	0.063863	-0.009803
	(0.08257)	(0.10862)	(0.00336)
D(LNJUB)	0.198416	-0.295245	0.000763
	(0.12094)	(0.15909)	(0.00492)
D(LNINVESTASI)	-3.505542	4.917620	-0.162733
	(1.70251)	(2.23963)	(0.06932)
D(CREDITINTEREST)	5.170120	-7.461427	-0.138494
	(2.24049)	(2.94733)	(0.09123)

C. LAG LENGTH

VAR Lag Order Selection Criteria
Endogenous variables: D(LNKREDIT) D(CREDITINTEREST) D(LNINVESTASI) D(LNJUB)
Exogenous variables: C
Date: 06/30/18 Time: 00:45
Sample: 2005Q1 2016Q4
Included observations: 46

Lag	LogL	LR	FPE	AIC	SC	HQ
0	166.9307	NA	9.85e-09	-7.083945	-6.924933	-7.024378
1	199.6159	58.26494*	4.79e-09*	-7.809389*	-7.014327*	-7.511554*

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

D. VAR ESTIMATION

Vector Autoregression Estimates
Date: 06/30/18 Time: 00:44
Sample (adjusted): 2005Q3 2016Q4

Included observations: 46 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	D(LNKREDIT)	D(CREDITINTEREST)	D(LNINVESTASI)	D(LNJUB)
D(LNKREDIT(-1))	0.811991	10.10794	3.219258	0.509300
	(0.15206)	(3.60744)	(2.92697)	(0.18971)
	[5.33989]	[2.80197]	[1.09986]	[2.68457]
D(CREDITINTEREST(-1))	-0.016649	0.094914	0.278725	-0.002102
	(0.00632)	(0.14992)	(0.12164)	(0.00788)
	[-2.63456]	[0.63310]	[2.29139]	[-0.26665]
D(LNINVESTASI(-1))	-0.002810	-0.315558	0.026733	-0.003330
	(0.00753)	(0.17865)	(0.14495)	(0.00940)
	[-0.37310]	[-1.76637]	[0.18443]	[-0.35440]
D(LNJUB(-1))	-0.882768	-7.634482	-1.065855	-0.822463
	(0.15920)	(3.77689)	(3.06445)	(0.19862)
	[-5.54490]	[-2.02137]	[-0.34781]	[-4.14079]
C	0.035931	-0.228336	-0.094056	0.038804
	(0.00552)	(0.13091)	(0.10622)	(0.00688)
	[6.51141]	[-1.74421]	[-0.88551]	[5.63641]
R-squared	0.552022	0.200379	0.175668	0.327872
Adj. R-squared	0.508317	0.122367	0.095246	0.262298
Sum sq. resids	0.015413	8.674706	5.710741	0.023991
S.E. equation	0.019389	0.459976	0.373211	0.024190
F-statistic	12.63059	2.568572	2.184314	5.000069
Log likelihood	118.7558	-26.90188	-17.28644	108.5791
Akaike AIC	-4.945906	1.387038	0.968976	-4.503439
Schwarz SC	-4.747141	1.585804	1.167741	-4.304673
Mean dependent	0.042352	-0.049928	-0.004360	0.033463
S.D. dependent	0.027651	0.490997	0.392364	0.028164

Determinant resid covariance (dof adj.)	3.17E-09
Determinant resid covariance	2.00E-09
Log likelihood	199.6159
Akaike information criterion	-7.809389
Schwarz criterion	-7.014327

The Effect of Granting Pocket Money to Underprivileged Children Opportunities to Goes to School

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ABSTRACT

This study attempts to evaluate critically effect of pocket money fund to the underprivileged children opportunities to goes to school. We try to offer an innovative solutions tailored to local contexts, which is granting pocket money. Provision of allowance for children is expected to increase children chance to school. Kakak Asuh Bali is a local community established in 2016 plunge in effort to support education of underprivileged children in Bali by giving pocket money for selected students. Student who have been cared are about 200 children. These children are recommended by the head of village (or Kepala Lingkungan) according to criteria specified.

We use primary data by interview and questionnaires to get descriptions from the respondents. Correlation analysis is used in order to evaluate pocket money correlation to children chance to stay in the school. Preliminary result suggests a positive and medium correlation between these two variables. We dedicate this study to show that all children have right an access to a quality education, from early learning opportunities that lay the groundwork for success in school. Educated children is an investment, not only for their future but also government in an attempt to realize peaceful and prosperous societies.

Keywords: *pocket money, education, children, poverty*

1. INTRODUCTION

The Millennium Development Goals (MDG) have provided countries including Indonesia with a development framework that guides achievement on human rights, global peace and welfare targets. Ensuring the rights of every child to life, education, development and protection is vital to a nation's growth and success. It is the duty of everybody, including parents and communities, civil society and private sector, media and academia, and particularly every government to respect, protect and fulfill children's rights (UNICEF,2011).

Indonesia is one of the development country that believe improvement of the population education attainment is an important requirement to foster country development. Investment in children education is a key factor in poverty reduction and economic growth. Hence it is

imperative to understand the factors that affect education attainment, in particular in the context of developing countries where poverty is a major impediment in access to education.

Data from Education Ministry in 2016/2017 showed that 39.231 children drop out in Elementary, and 38.702 children drop out in junior high school. Education in elementary and junior high school is mandatory basic education should be followed by all children of Indonesia. The problem and polemic in household is the cost of education, which is important and directing our focus on the effect of poverty on education attainment. One of comprehensive study in this issue is Ghozali (2006). He was estimate that the total actual annual cost per pupil is around IDR 8.5 million for the primary level, IDR 10.4 million for the junior secondary level, and IDR 13.5 million for the senior secondary level. He also breaks down the spending according to out of pocket household expenditure and public expenditure. At the primary level, a household bears 81 percent of the annual cost. Similarly, at the junior and senior secondary levels, the share of the cost borne by households is around 78 - 80 percent respectively.

Bali is a province that has power to pull tourist in the world to visit the island. However, Bali cannot escapes from the dynamic problem such as poverty and children care. Becker and Tomes (1986) assumes that poverty negatively affects schooling decisions directly through the budget constraint and indirectly through the fact that poor households often lack access to a credit market, where they could borrow to pay for the children's schooling costs. Empirically, however, it is possible for a poor child to continue his or her schooling if they receives some forms of financial aid. In fact, if the financial aid is specifically targeted at poor households, children coming from poor households may even have a higher chance to stay in school than children who coming from near-poor households.

2. INDONESIA : OVERVIEW

Indonesia is one of developing country and one of the biggest economy in Southeast Asia. A country diverse archipelago nation of 300 ethnic groups. Indonesia has a planning to develop its country by 20 years to development spanning from 2005 until 2025. It is segmented into 5-year medium-term plans, called the RPJMN (Rencana Pembangunan Jangka Menengah Nasional), with different development priorities in each. The current medium-term development plan, the third phase of the long-term plan, and runs from 2015 to 2020. It focuses on, among others, infrastructure development and social assistance programs related to education and health-care. Such shifts in public spending has been enabled by the reform of

long-standing energy subsidies, allowing for more investments in programs that directly impact the poor and near-poor (World Bank,2018).

UNICEF's study of out-of-school children found that family wealth has the most significant impact on access to school for primary and lower secondary school age children. The distribution of the out-of-school population by household per capita expenditure (PCE) quintiles illustrates the wide variation in attendance rates according to family wealth Children from the lowest PCE quintile are almost five times more likely to be out of school than those from the highest PCE. Besides the work that interferes with the children's school attendance, another manifestation of poverty can be seen in the lack of necessary clothing, footwear, student books, notebooks and other educational materials, as well as the lack of financial resources in the family to cover all school-related expenses, including the pocket money for the day.

Indonesian government has a solution to improvement the problem. In 2005 Indonesian Government launched a massive school operations grant program, called *Bantuan Operasional Sekolah* (BOS), as a way of injecting funds directly into schools in order to keep children in school and give schools some flexibility in managing their own funds. Further assistance is provided by two other conditional cash transfer programs. BOS fits into the broad structure of education funding in Indonesia, which consists of the following elements: 1) personnel funding to pay for salaries of teachers and school/madrasah support staff, 2) minor investment funds for items such as school books, teaching aids and some equipment such as computers or generators, 3) funds for major repairs of facilities and equipment, 4) major capital investment, and 5) operational non-personnel funds for goods and services needed by schools/madrasahs to deliver the educational program, including maintenance of facilities and equipment. Therefor the government issued BSM program as a complement of the BOS program. *Bantuan Siswa Miskin* (BSM) is poor students' support program. The program is BSM Program evaluation results conducted by the Secretariat TNP2K uses information from Susenas in March 2014 indicates that the targeting of the Program's beneficiaries is determined BSM directly (to household through use KPS) has improved BSM targeting performance (especially for students who are at the welfare level socio-economic lows. BSM programs can be more effective in Eliminate the financial terms chosen by the student marginalized, support of poor students and rent and free access to education services which is feasible, preventing and reducing the risk of drop-outs schools, and help with educational needs of at-risk children. Based on data from BPS

year 2013, primary school enrollment rate (98.36 percent) and at the junior secondary level (90.68 percent) is already high, including children from family / households (Larasati and Howell,2014). One more program is *Program Keluarga Harapan* (PKH) which are directed intended to education. The program is household CCT (conditional cash transfer) program. Although programs created to address health and education investments issues, the programs differ in terms of design, implementation and executing agency. The results of the World Bank's impact evaluation of the pilot program is They show a significantly positive impact of the program on household welfare measured in terms of increase in household expenditures. CCT beneficiaries had significantly higher levels of food, non-food and health expenditures compared to non-CCT households (Irhamni,2015).

The New programs have been released is *Kartu Indonesia Pintar* (KIP), smart card which allows recipients to access the funds directly. Supporting this and the decentralization effort in general, the government has moved to anchor the principles of school-based management, where considerable decision-making authority is transferred to individual schools, in the national education system and also to provide a framework of National Standards for Education (ADB,2015).

International research suggests that the OECD's work on the social outcomes of learning shows that high-quality early childhood education and care brings about a range of social benefits to individuals. These include better health, reduced likelihood of individuals engaging in risky behaviors and stronger "civic and social engagement" (OECD, 2011). Cares and education programs in the early years sustain growth and development and can mitigate some of the effects of poverty and deprivation. This includes not only pre-school education but very early intervention in family and community services to provide early childhood development and support to young children and their families. Having largely succeeded in achieving universal basic education, policy makers in Indonesia are now looking to expand the opportunities for children to access learning and care in the early years, covering the physical, social and intellectual development of children.

3. KAKAK ASUH BALI: AN INTRODUCTION

Bali is not being well. More than 1000 Balinese children drop out every year. It need more synergy and community power to help solve the problem. The best solution currently conducted by the community and young people in Bali about this phenomenon is to form a

movement as a form of concern for the education of children in Bali. In National Education Day which falls on May 2, 2016, has been launched Kakak Asuh Bali at Danes Art Veranda. Kakak Asuh Bali is a small movement created as a form of Balinese young people concern for children education in Bali. Because we are aware that the portrait of education in the area of Bali at this time has not been separated from the dropout rate. This movement targets children from poor families in remote areas who have high spirits to go to school but are constrained by the cost or school supplies that have been heavily burdening the underprivileged families.

Many factors affect the dropout rate in Bali. For example from the parents factor, not all parents want to send their children to go to school. Majority of them are from underprivileged families who do not have sufficient funds to finance their children's education in formal schools. Another factor is educational institutions that provide educational facilities and infrastructure. By providing adequate facilities will certainly leads to the cost. This is what the parents pay for. Of course it is not easy for parents who are middle to lower economies to pay the fee.

Education is a very fundamental right for children. Right that must be met with the cooperation of parents, educational institutions and government. It only will be able to be realized if all components willing to support the course of education. This is a public movement, a small step to help the pocket money of eligible elementary and junior high school children who are scattered throughout Bali. The government has launched a 12-year education program with adequate facilities. However, apart from that based on a survey conducted by Kakak Asuh Bali volunteers, one of the reasons causing the dropout rate increased due to the inability of parents to provide school supplies. Their school supplies are the kind of things they rarely get. Based on that, this movement was raised and took the general public together to succeed the movement.

The mechanism is simple, one of *Kakak Asuh* (or we called donator) will donate a sum of IDR 200.000/month for at least one year. One of *Adik Asuh* (student who will be helped) will be cared by a group consisting of five people. Based on the survey, average school supplies of elementary school children is around IDR 3000/day and IDR 5000/day for junior high school. If one *Kakak Asuh* want to take care of one Adik Asuh (not limited only one *adik asuh*, two are very welcome), then they should give cash to their *adik asuh* regularly through *Kakak Asuh Foundation*. The donation can be donated directly to foster children related in every month, every 2 – 3 months or in accordance with the agreement. It is hoped that this movement can become a sustainable movement, because the true small movement that is done together

and sustainable in nature will have a positive impact, especially in this case. This program goals to minimize drop-out rate in Bali.

It has also been revealed (Cheng and Westwood, 2007), while investigating the achievement of primary school students, that majority of children are least worried about their pocket money situation; nevertheless, pocket money can teach children the money management skills and help them to understand how the economic system works. Research by (Ashfaque et all ,2012) found that the above discussion the researchers come to know that Family Income is the only variable in the presence of which the effect of Pocket Money is suppressed; conversely, Pocket Money becomes a significant regressor in the absence of Family Income. This is probably because of their collinearity. It is evident that Pocket Money, as a social phenomenon especially in the life of adolescents, depends on family income.

3. METHODOLOGY

This research used primary data by interview and questionnaires to get descriptions from the respondents. Our respondents are 200 children who already get pocket money program, at least for one month and included in Kakak Asuh Bali database. Parents also asked about family characteristics. Because our goals is to know pocket money program to children chance to stay to school, then we focus on two variables, which are the program and children education. Program used variable interaction between program period and amount of money they are received. Education variable itself used years of schooling. Correlation method was applied. In terms of the strength of relationship, the value of the correlation coefficient varies between +1 and -1. A value of ± 1 indicates a perfect degree of association between the two variables. As the correlation coefficient value goes towards 0, the relationship between the two variables will be weaker. The direction of the relationship is indicated by the sign of the coefficient; a + sign indicates a positive relationship and a – sign indicates a negative relationship. In this study we apply *Pearson-r* correlation. *Pearson-r* correlation is the most widely used correlation statistic to measure the degree of the relationship between linearly related variables.

Pearson-r correlation use following equation (Hall, 2015):

$$r = \frac{C_{xy}}{\sqrt{C_{xx}C_{yy}}} \qquad 1)$$

where: $C_{xy} = \frac{1}{N-1}\sum_i (x_i - \bar{x})(y_i - \bar{y})$ 2)

$$C_{xx} = \frac{1}{N-1}\sum_i (x_i - \bar{x})^2 \quad 3)$$

$$C_{yy} = \frac{1}{N-1}\sum_i (y_i - \bar{y})^2 \quad 4)$$

In other words, if y and x are exactly linearly related, r = _1, depending on whether the slope is positive or negative (correlation or anticorrelation). More likely, with real data of any kind, there will be a spread in the values of x and y, in which case the correlation will be less than maximal (Hall, 2015).

4. RESEARCH RESULT

We start from description of our society and overview about poverty and their education. The average head of household last education is primary school. Their income in average is IDR 1 million per month. They usually work as farm labor who live in rural areas. The distance of their home to school is around 1 km and these children have to walk to school. But unfortunately, they often have to go to school without having breakfast first.

Children living in rural areas have great expectations for school. Limitations such as distance and economic factors are common. But, they need the motivation to keep their dream in school. In this phenomenon, we create a program that we named it with Kakak Asuh Bali. Since 2016, we already have 200 more children in elementary and junior high school. We help with their allowance during their schooling.

From the data we have been analysis that correlation between grant pocket money and underprivileged children years of school. Correlation between these two variable shows positive and moderate correlation relationship (0,45). From these result, we can say that pocket money program is really increase children chance to stay in school. The larger the pocket money given and the longer the program given, the longer the child will go to school. Study by Baker (2012) explicitly say that pocket money does matter. On average, aggregate measures of per pupil spending are positively associated with improved or higher student outcomes. In some studies, the size of this effect is larger than in others and, in some cases, additional funding appears to matter more for some students than others. Clearly, there are other factors that may moderate the influence of funding on student outcomes, such as how that money is spent – in other words, money must be spent wisely to yield benefits.

5. CONCLUSION

To solve current condition of Indonesian education we needs to synergize between government, NGOs and the community in achieving the educational goals of this country. We believe that the future of a nation can be seen from the education received by the children of this country. And now, the answer has been found. The form of education that we need for our life is an education that combining mind and heart. We are not going to be a smart one, but we're also going to be a humble one. Therefore, education is not just about studying the subjects, but it is all about learning the values.

Giving pocket money directly to individual student proven help them to stay in school. This study research gives a verification that a program should be done as needed. It can be an alternative way to solve drop-out problem in Bali, or nationally.

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EMPOWERING THE LOCAL TOURISM SECTOR IN SURAKARTA FOR STRENGTHENING THE REGIONAL ECONOMY IN LEISURE ECONOMY ERA

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ABSTRACT

For the past three decades, an extreme time-crunch economy that has affected jobs, portfolios, businesses and lives has been steadily created. But the time-crunch economy is turning into the leisure economy and it will mean wrenching adjustments for our lives and institutions. Everyone from consumers, investors, businesses, and policy-makers will need to understand the changes afoot. Leisure economy is shifting the consumer behaviors from goods to leisure aspects such as tourism, transportations, travel agent services, hotels, money changers, banks, etc. This paper discusses the contribution of local tourism sector to the Regional Economy in Surakarta, Central Java Indonesia. The data that used for this research is secondary data from literature, books, journals and the data used is based on the period of 2010 – 2016. It was found that leisure economy can increase the social empowerment, increase the income of local communities, improve diversification and intensification of economic activity, increase job opportunities, and also reduce poverty in Surakarta.

Keywords : Leisure Economy, Local tourism sector, Regional Economy, Empowering, Surakarta,

1. INTRODUCTION

For the past three decades, tourism has rapidly grown and it is an important sector for many regions and countries all over the world. It is also said that tourism is the world's fourth largest export industry after fuels, chemicals and food (Tugcu,2014; Balli Curry & Balli,2015) and a lot of people are involved in this industry. Indonesia has hundreds of ethnic communities inhabiting particular region with their distinctive characteristics that enrich the diversity of Indonesian culture (Cahyaningrum, 2017). The tourism sector will be one of the important economic activities. Cultural diversity can be a source of regional revenue (PAD) through the tourism sector.

Surakarta is one of the big cities in Java, especially in Central Java. Surakarta is well known by its Javanese traditional culture. This condition can attract the domestic and foreign tourists to visit and have a holiday in Surakarta. Thus, it cannot be neglected by the Surakarta government since the tourism sector can help the escalation of regional economy. When it is empowered and developed with an integrated way, then the role of local tourism sector to strengthen the regional economy, especially regional revenue will be achieved and maintained. Recently, there is leisure economy phenomenon in the society. Leisure economy is shifting the consumer behaviors from goods to leisure aspects such as tourism, transportations, travel agent services, hotels, money changers, banks, etc. In this case, leisure economy is connected to tourism sector. Moreover, this leisure economy phenomenon is expected to give positive impacts to tourism sectors in Surakarta. Hence, the regional economic, especially regional revenue will be stimulated to be increased.

Based on the data from pariwisatasolo.surakarta.go.id, government has tried to contribute in empowering the tourism sector in Surakarta. Their contribution in tourism sector are fixing Taman Pelangi Jurug (Park And Zoo); building Galabo (culinary stalls); hoilding a festival to attract tourist such as: Solo Batik Carnival, Umbrella Festival, Solo Dancing Festival (Solo 24 Jam Menari), Porridge Festival (Festival Jenang), and culinary festival; and also providing a bus and a train to travel around Surakarta such as Werkudara Bus and Jaladara dan Bathara Kresna Train.

Based on the background that has been explained, then this research wants to find out about how does government empower local tourism sector in Surakarta? And how is the relationship between leisure economy and the increasing of regional economy in Surakarta? From the background mentioned previously, this research aims to examine and analyze the efforts done by government in empowering the local tourism sector in Surakarta for strengthening the regional economy in leisure economy era.

The paper is organized as follows. In the next section some literatures related to tourism, leisure economy. In section 3 the method used in the analysis is presented. Section 4 elaborates the results, the section 5 contains the conclusion, and the last section is recommendations.

2. LITERATURE REVIEW

2.1 Leisure Economy

Leisure can be simply described as free time that we can spend as we want to. There is no obligation or compulsion. It should be fun, enjoyable and pleasurable. Aristotle viewed leisure as the state of being free from necessity to labour - freedom is generally considered the key element of leisure (Pigram and Jenkins 2006). Furthermore, Broadhurst (2008) explains that leisure is the available time that we can spend as we choose. According to Williams (2003), the definitions of leisure have tended to move away from traditional associations with non-work time and associated activities, and towards a construction that acknowledges the importance of personal attitudes and state of mind.

For some people, leisure is considered as important as work and discrete periods of time are given to leisure each and every day. For others, leisure time is hard to find amidst work (including the journey to work) and the pressures of day-to-day life. The relaxation people experience during leisure may be central to reducing stress in daily life. Thus, leisure plays an important role in our everyday life especially during times when unemployment is high and we need to keep our jobs but all this is very stressful. Torkildsen (1999) also claims that leisure is important in the rhythm of our lives. It deals with many activities which usually chosen for their own sake to get freedom and satisfactions.

Meanwhile, the definition of leisure economy based on Kuntadi (2018) at watyutink.com is doing the job by enjoying the life. He furthermore adds that leisure economy deals with enjoying the life by doing productive economy. The technology development and millennial in this case support this leisure economy phenomena. Thus, it can be concluded that leisure economy is the phenomena of shifting the goods expenditure behavior towards entertainment/experience expenditure behavior by utilize the millennial's potential and technology development.

2.2 Tourism

According to UNWTO at , tourism is the social, culture, and economy phenomena which needs the movements of people from or to another country or place outside their environment to reach personal or business professional goals (2007). Tourism involves almost all aspects of the human society. It is difficult to have

one definition that covers all aspects of tourism. Yet various parties tried to define tourism from different perspectives.

Economic Definition Australian Department of Tourism & Recreation (1975) in Jiyanto (2009) defines tourism as an identifiable nationally important industry, which involves a wide cross section of component activities including the provision of transportation, accommodation, recreation, food, and related services.

Meanwhile, the United Nations in 1963 in Jiyanto (2009), explained that a visitor/tourist is a person who visited a country other than his/her usual place of residence, for any reason other than taking up a remunerated job from within the country visited. Moreover, according to Hunziker and Kraph (in Burkart and Medik 1974) in Jiyanto (2009), tourism is the sum of the phenomena and relationships arising from the travel and stay of non-residents.

Therefore, it can be said that tourism is the social, culture, and economy phenomena which needs the movements of people who visit a country other than his/her usual place of residence and has component activities including the provision of transportation, accommodation, recreation, food, and related services.

2.2 Leisure and Tourism

A little overview about the relationship between leisure and tourism is given here. Leisure and tourism as definitions are separate but when studying the meaning more closely they are involved and there is hard to feel the edge.

According to Veal (2003) tourism can be seen as a form of leisure that takes place away from home. However, travel for non-leisure purposes is also often included in tourism, for example business and conference travel but even these travellers generally make use of leisure facilities at their destination, often mixing business and pleasure. Leisure facilities are generally planned primarily to meet the needs of the residents of the local community in which they are located, many cater both for tourists and for locals.

3. METHODOLOGY

In Accordance with its objectives, this study uses explorative qualitative methods through library research, which is done by searching, understanding, analyzing, and interpreting all available data sources. The data used for this research are secondary data from literature, books, journals and the data used is based on the period of 2010 – 2016

4. RESULT AND DISCUSSION

a. How does government empower local tourism sector in Surakarta?

The tourism sector will be one of the important economic activities. Cultural diversity can be a source of regional revenue (PAD) through the tourism sector. This condition can attract the domestic and foreign tourists to visit and have a holiday in Surakarta. Thus, it cannot be neglected by the Surakarta government since the tourism sector can help the escalation of regional economy.

Based on the data from pariwisatasolo.surakarta.go.id, government has tried to contribute in empowering the tourism sector in Surakarta. Their contributions in tourism sector are:

a. Fixing Pelangi Jurug Park and Zoo

Pelangi Jurug Park and Zoo is one of the tourism in Surakarta which is very famous in the society. It becomes the top three of tourism in Surakarta by seeing the amount of its visitors. The government has fixed the facilities and added new one, the rainbow lanterns; in addition, the government also added the new animals as its collection. Then they rename the place from Satwa Taru Jurug Park to Pelangi Jurug Park to attract local and foreigner tourists.

b. Building Galabo (culinary stalls)

Surakarta is also well known by its culinary such as: tengkleng, gudeng ceker, timlo solo, and selat solo. In this case, to promote its culinary, the government has built a food center in the downtown to attract the tourists. In this place, there is also a traditional music which was played.

c. Solo Batik Carnival

Solo Batik Carnival is an annual event which is held by the government by using batik (traditional pattern) as Surakarta's pride as the material to make the costume of the carnival. The participants in this event make a carnival costume with the theme which has been decided. They wear their costume and have a catwalk along in the main street of Solo, Slamet Riyadi Street.

d. Umbrella Festival

Umbrella Festival is the festival which shows many kinds umbrella. There are many colorful umbrellas which are shown in the sky so that the visitor may take a picture of them.

e. Solo Dancing Festival (Solo 24 Jam Menari)

This event is a performance of traditional dances which is held for 24 hours for 2 days. Thousands dancers are participated in this performance. The main thing from this event is the three main dancers who are dancing 24 hours non stop.

f. Traditional Porridge Festival (Festival Jenang)

Traditional Porridge Festival is the event which is held to commemorate the Surakarta Anniversary. Many kinds of traditional porridge such as jenang sum-sum, jenang saloka, jenang abang putih, jenang lima warna, and other porridges from other places packed by banana leaf are given freely to the visitors.

g. Culinary festival

Culinary festival is the festival which provides many kinds of traditional food from many places especially in Surakarta. In this event, the visitors may taste the food and beverages freely.

h. Providing a bus and a train to travel around Surakarta

Werkudara Bus and Jaladara dan Batharakresna Train which are provided by the government to travel around in Surakarta.

All the things above are the efforts done by the government to empower the tourism sector in Surakarta. By empowering the tourism, based on data from BPS/Statistic Indonesia, the amount of tourism which stay in the Hotel in Surakarta in 2010 to 2014 shows an increasing trend. Therefore, it can be concluded that the government's effort in the tourism sector can increase the local and foreign tourist.

b. How is the relationship between leisure economy and the increasing of regional economy in Surakarta?

Based on the table 2.1 from BPS Statistic Indonesia, it can be said that the regional revenue of Surakarta from the year of 2010 to 2016 are increasing.

Table 2.1 Regional Revenue of Surakarta 2010-2016

Year	Regional Revenue
2010	113.946.007.541,85
2011	181.096.816.152,00
2012	231.672.100.429,00
2013	298.400.846.632,00
2014	335.660.206.640,82
2015	372.798.426.790,07
2016	425.502.779.064,00

Table 2.2 GRDP on the basis of Constant Price by Industrial Original Year 2010

Leisure Sector	**GRDP on the basis of Constant Price by Industrial Original Year 2010**						
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Transportation and warehousing	566181.32	591897.31	630022.97	695071.27	750350.60	811007.78	853855.02
Accommodation, food and beverages	1044929.32	1130160.17	1218509.72	1288357.53	1377875.81	1463048.48	1537527.02

Based on the table of GRDP on the basis of constant price by industrial original year 2010 - 2016 in Surakarta we can say that the leisure sector that is transportation and warehousing sector and accommodation, food and beverages sector increased. In this case, it can be concluded that there is a positive correlation between leisure economy and the increasing of regional economy in Surakarta.

5. CONCLUSIONS

The leisure economy phenomenon can give many advantages for the country or region. The government should give their full contribution to the local tourism sector so that they can get the maximum advantages. One of the advantages in this case, is the strengthening the regional economy, especially regional revenue for the prosperity of the society.

Leisure economy can help tourism sector to grow. Although the growth effects of leisure tourism are relatively weak for developed countries, especially in region it does not mean that leisure economy is not important. Leisure economy can still contribute to the wealth of the countries or region both directly and indirectly. By attracting foreign tourists, leisure economy can create and improve the value of the region's brand, leading to an increase in exports and earned

foreign currencies. Domestically, unlike business tourism, leisure economy supports employment and income more in rural areas than in urban areas; this may lead to a valuable contribution to improving regional development and regional economic revitalization within a region. It was found that leisure economy can increase the social empowerment, increase the income of local communities, improve diversification and intensification of economic activity, increase job opportunities, and also reduce poverty in Surakarta.

6. RECOMMENDATION

Our empirical findings have policy implications. From the analysis result and conclusion above, there are some recommendations suitable to strengthen the regional economy by empowering the local tourism sector in leisure economy era. The researcher recommends the Surakarta government should apply the sustainable tourism development program so that the local communities can be participated in this economic sector so that it can improve their standard of living in the economic field as an additional source of their income.

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THE IMPACT OF ASEAN ECONOMIC COMMUNITY ON INDONESIAN FOOD SECURITY: RICE CASE

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ABSTRACT

Rice is a major food staple and a mainstay for household food security, particularly in Southeast Asia. It is mainly cultivated by small farmers and also plays as "wage" commodity for workers in the cash crop or non-agricultural sectors. This duality has given to rise conflicting policy objective, with policy makers intervening to protect of farmers when prices fell too low or defense of consumer's purchasing power when sudden prices hikes. And consider the 2007–2008 price shock, so many ASEAN countries have chosen retreat to autarky, included Indonesia. It is counterproductive with rice trade liberalization agenda via ASEAN Economic Community. Therefore, the purposes of this research is to analyze of impact ASEAN Economic Community on Indonesian food security, especially rice. The approach used combination method, namely multi-country computable general equilibrium model (Global Trade Analysis Project), single country computable general equilibrium model, and micro simulation with Quadratic Almost Ideal Demand System model (QUAIDS). Secondary data is used to adjust, construct, and run those models, which is, i.e. GTAP data version 9.0; I-O table; Social Accounting Matrix; and National Socioeconomic Survey. The result shows that rice trade liberalization in ASEAN have positive impact on food security. While impose ATIGA and NTM, however will have negative impact on food security. Based on policy evaluation through income distribution, both of them have trade-off. At micro level, rice trade liberalization in ASEAN area will increase rice net producer's and net consumer's demand, where rice net producers have higher percentage change than rice net consumers. Those indicate the rice trade liberalization become a potential option to support national food security. The government is still needed as pivotal rule to maintain income stable of net producers and consumers.

Keywords*: rice, trade liberalization, food security, net producers, net consumers*
JEL Classification: C68, D12, F14, Q17, Q18,

BACKGROUND

Food security is an essential and complex issue related with international trade context. International trade is seen as an opportunity to realize and/or maintain national food security. Its existence stimulates resource re-allocation efficiently, transferring food from surplus to deficit area, stabilizing food price, and increasing access to food (Hebebrand and Wedding, 2010: 2-3). According to Bezuneh and Yiheyis (2014: 64), for three decades many developing countries have tried to liberalize their food trade but still have low food security level. FAO predicted in 2030, malnutrition reached 637 million people, in which 97.5 percent of them are in developing country (FAO, 2017: 77).

To treat food as exception in international trade agreement has created debate long until now. It is reflected in vary research result that there is no clear consensus whether international trade has positive or negative effect on food security. The complexity of that issue is also driven by intimately ideology and politics each country. A number of studies which referred to positive impact, i.e. Rutten, Shutes, and Meijerink (2013); Worldbank (2012); Pyakuryal, *et al* (2010); Oyejide, *et al* (2006); van Meijl and van Tongeren (2006); Chang (2005); Chang and Sumner (2004); Karim and Kirschke (2003); and Dorosh (2001). And studies confirmed the negative impact, i.e. Abdullateef and Ijaiya (2010); Chen and Duncan (2008); UNEP (2005); and Frohberg, Fischer, and Parikh (1990).

The global food crisis in 2007/2008 has given discrepancy between ASEAN integration purpose as regional food solidarity and national food security interest, particularly rice. Most ASEAN countries, include Indonesia, have responded by retreat to autarchy (Slayton, 2009: 29) even there is regional trade liberalization agenda in ASEAN Economy Community (MEA). Rice is still a major food staple and a mainstay for household food security in Southeast Asia. It is mainly cultivated by small farmers and also plays as "wage" commodity for workers in the cash crop or non-agricultural sectors. This duality has given to rise conflicting policy objective, with policy makers intervening to protect of farmers when prices fell too low or defense of consumer's purchasing power when sudden prices hikes.

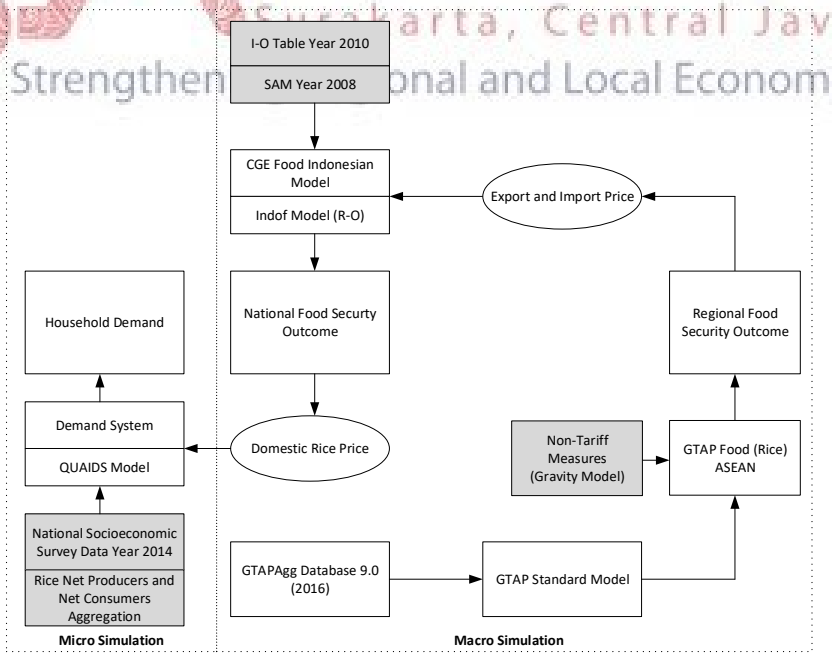
Similar happen in Indonesia, based on Food Act No. 18/2012, huge domestic rice demand is fulfilled by self-sufficiency as necessary condition and by import as sufficiency condition. That legal position is supposed to absorb price volatile and to make rice affordable. Government intervenes national food security through rice self-sufficiency program with producer incentive bias (Simatupang and Timmer, 2008: 65). But until now, domestic rice price is still more expensive than other ASEAN countries and rice import always makes "rowdy" year to year. So why, this study tries to analyze the impact of ASEAN Economy Community, particularly rice trade liberalization, on Indonesian food security.

METHOD

The approach used combination method, namely multi-country computable general equilibrium model (Global Trade Analysis Project/GTAP), single country computable general equilibrium model, and micro simulation with Quadratic Almost Ideal Demand System model (QUAIDS). CGE models have also been widely utilized in the analysis of rice trade

liberalization. Although they allow the effects of the non-agricultural sectors and of the macro-economic condition to be captured, their specification of rice policies is usually very simple, ignoring the multifaceted, and non-homogenous nature of the commodity and the complexity and variety of rice policy instruments. GTAP model represented regional trade level with its instrument. All specification is standard GTAP model with 19 sectors and 16 regions. Whereas national CGE model represented national economy and adopted Indof model with 38 sectors, 3 production factors, and 6 institutions. Indof model has extend and developed in agricultural sector and it is in line with the food security topic. Detail specification feature doesn't convey here but requested by readers. Next step, to analyze food security in micro level (micro simulation), it used QUAIDS model. This model is considered more realistic than previous demand model.

Secondary data is used to adjust, construct, and run those models. Data for run GTAP model come from GTAPAgg 9.0 (release year 2016). Result running data from GTAP model is injected to national CGE model. Set of I-O table year 2010 and Social Accounting Matrix year 2008 are applied to updating Indof model data. Next round, National Socioeconomic Survey year 2014 is a data source for QUIADS model. It's dealing with rice net consumers and rice net producer's statue that survey question did not continue in the next year.



Source: Author, 2018.

Figure 1. Link Between Macro Simulation and Micro Simulation

The relationship between outcome from CGE model, include GTAP model and national CGE model, with QUIADS model is illustrated in Figure 1. And to ensure that outcome from

GTAP model compatible with national CGE model, it is needed aggregation mapping of sectors. Those detail aggregation mapping is available by requested.

In undertaking analysis, simulations are performed over the removal or modification of a set of policy variables and the results compared to a base model simulation (Table 1). To evaluate overall impacts of rice trade liberalization, we consider (1) full liberalization with zero tariff, (2) impose ATIGA and NTM as trade barriers, and (3) rice productivity as control.

Table 1. Simulation Scenarios

Simulation	Scenario	Trade Liberalization			Rice Productivity
		Rice Zero Tariff	ATIGA	Rice NTM	
01	All country in the world	x			
02	ASEAN countries	x			
03	ASEAN countries		x		
04	ASEAN countries			x	
05	ASEAN countries	x			x
06	ASEAN countries		x		x
07	ASEAN countries			x	x
08	Indonesia	x			x

Note: ATIGA: ASEAN Trade in Goods Agreement.
NTM: Non-Tariff Measures. NTM is estimated from Poisson Pseudo Maximum Likelihood approach and using Gravity Model. Detailed by request.

RESULT AND DISCUSSION

Impact of Rice Trade Liberalization on Food Security Indicators

Food (rice) cooperation in AEC corridor was manifested in ASEAN Summit 2008, in form of ASEAN Integrated Food Security (AIFS) framework and Strategic Plan of Action on Food Security (SPA-FS) for 2009-2013 period and revised up for 2015-2020 period. The generally purpose is to ensure food security in the long run and enhancing farmer's welfare. This momentum was reinforced through ASEAN Summit 14th in 2009, in which "*food security as permanent and high policy priority*" (Minh, 2015: 11-12). But that regional commitment on food security is getting a challenge as one of the AEC pillars of regional trade liberalization (single market and production base).

Among ASEAN countries, Indonesia has a big interest because of rice dominant in daily menu. Table 2 presents the impacts of rice trade liberalization in ASEAN on Indonesian food security. When we look at rice trade liberalization in ASEAN alone (Sim 01), it has positive impact on rice availability, utility (consumption), and accessibility (price). Its percentage change is relatively greater than impact of world trade liberalization. This is happening

because the Southeast Asia is the world epicenter of rice. People who skeptical on economy openness perspective would have criticized. The positive impact of rice trade liberalization in ASEAN is supported by import (In line with Lubis and Arianti (2011: 163); Hardono, *et al* (2004: 86); and Hadi and Wiryono (2005: 173)).

Table 2. Impact of Rice Trade Liberalization on (Rice) Food Security

(Δ%)

Dimension	Subset	Sim 01	Sim 02	Sim 03	Sim 04	Sim 05	Sim 06	Sim 07	Sim 08
Availability	Export	-1.0424	-1.5324	3.3917	3.9911	-44.1004	-40.6554	-40.3548	-42.4532
	Import	6.9059	10.3703	-30.9586	-38.7314	25.8735	-12.5083	-18.2048	11.2076
	Production	-0.0667	-0.0975	0.2984	0.3750	-0.2370	0.1324	0.1888	-0.0979
Utility	1 rural1	3.3925	5.0962	-15.2094	-19.0268	12.7132	-6.1435	-8.9411	5.5066
	2 rural2	3.4071	5.1181	-15.2757	-19.1102	12.7748	-6.1638	-8.9739	5.5371
	3 rural3	3.4254	5.1462	-15.3595	-19.2150	12.8512	-6.1910	-9.0165	5.5736
	4 rural4	3.4495	5.1825	-15.4700	-19.3535	12.9480	-6.2306	-9.0766	5.6182
	5 rural5	3.4152	5.1304	-15.3113	-19.1544	12.8075	-6.1753	-8.9916	5.5522
	6 urban1	3.4033	5.1123	-15.2565	-19.0858	12.7585	-6.1567	-8.9630	5.5295
	7 urban2	3.4227	5.1420	-15.3466	-19.1987	12.8392	-6.1872	-9.0101	5.5673
	8 urban3	3.4630	5.2035	-15.5315	-19.4304	13.0081	-6.2466	-9.1038	5.6489
Accessibility	Price	-0.0981	-0.1620	0.4811	0.6028	-0.4429	0.1534	0.2426	-0.2206

Source: data processed with GEMPACK, 2018.

But we can view it as an adjustment of rice resources re-allocation as well. Dawe (2008: 130) suggested that Indonesia should believe in world rice price because it is more stable than retreat to autarchy. In addition, it is also estimated that Indonesia would continue to be as rice net importers in the future due to its poor geographical condition.

In general, when the impact of ASEAN trade liberalization coupled with increasing rice productivity (10 percent), so outcome of rice availability, utility, and accessibility is better. But increasing rice productivity is not able to shift the role of rice imports. Explanation from Azahari and Hadiutomo (2014: 68) underlines that basically Indonesian rice did not have any comparative advantages. Therefore, so many have to do to improve the competitiveness of rice, including distribution channeling.

Both imposing trade barrier with tariff and NTM, it will decrease rice availability utility, and accessibility. While rice production stimulates increase along with prices increase. It becomes positive signal for producers to producing rice in upcoming year.

Impact of Rice Trade Liberalization on Household Income Distribution

Then, what if the analysis is deepened by seeing income distribution as policy evaluation (Table 3). Contrast with food security outcome, rice trade liberalization in world

and ASEAN level give negative impact on household income distribution. The finding is relatively the same with research result by Oktaviani, *et al* (2010: 203). The declining household income is the greatest value at middle income households group in rural areas (rural 4). And the declining household income is the smallest value at low income household group in urban area (urban 1) for ASEAN trade liberalization case and in rural area (rural 3) for world trade liberalization. This shows that rice trade liberalization is "more beneficial" for low income households in urban area and medium income household in rural area.

Table 3. Impact of Rice Trade Liberalization on Household Income Distribution

(Δ%)

No.	Type of Household	Sim 01	Sim 02	Sim 03	Sim 04	Sim 05	Sim 06	Sim 07	Sim 08
1.	Rural 1	-0.0025	-0.0146	0.0391	0.0485	-0.0287	0.0212	0.0281	-0.0157
2.	Rural 2	-0.0013	-0.0128	0.0356	0.0443	-0.0228	0.0225	0.0289	-0.0117
3.	Rural 3	-0.0005	-0.0116	0.0329	0.0408	-0.0187	0.0229	0.0288	-0.0091
4.	Rural 4	-0.0027	-0.0151	0.0413	0.0512	-0.0306	0.0218	0.0291	-0.0167
5.	Rural 5	-0.0021	-0.0145	0.0418	0.0519	-0.0241	0.0285	0.0360	-0.0106
6.	Urban 1	0.0008	-0.0099	0.0298	0.0371	-0.0131	0.0243	0.0297	-0.0051
7.	Urban 2	-0.0016	-0.0137	0.0394	0.0490	-0.0237	0.0258	0.0329	-0.0112
8.	Urban 3	-0.0007	-0.0130	0.0395	0.0493	-0.0256	0.0235	0.0308	-0.0128

Source: data processed with GEMPACK, 2018.

In general, the impact of rice trade the liberalization in ASEAN contrast with food security. Rice trade liberalization will reduce household real income compared with trade barrier policy. Addition of increased productivity 10 percent also have not been able to offset that negative impact. For it, when the government want to maintain the household real income, the trade barrier policy can impose for a while considering comparative disadvantage of Indonesian rice in the international market. It is supported by sectoral economy impact from running data, there are escalating in agricultural production when rice market liberalized.

Micro Simulation: Impact of Rice Trade Liberalization on Rice Net Producer's and Net Consumer's Demand

At micro level, we can elaborate the rice net producer and consumer behavior related with food security and trade liberalization (Table 4 and 5). This group predicted heavily influenced by rice trade liberalization. And no wonder if policy makers often intervene and protect them as politically consideration.

Rice trade liberalization trade at ASEAN (Sim 02) increases rice consumption for rice net producers and also rice net consumers. Regional trade liberalization has greater benefit

in consumption for rice net producers than rice net consumers. Indonesian rice farmers have small agribusiness scale characteristic; its price tends to be higher than rice price in ASEAN. Even though they produced rice by own self but they purchased rice to fulfill their consumption daily. Contrary, when rice trade liberalization at world level, it has larger benefit in demand for rice net consumers than rice net producers (Sim 01). Rice net consumers will have much more option to consume rice with affordable price.

Besides both of them have rice demand increasing, rice trade liberalization in ASEAN will increase other foodstuff group demand. For net rice producers, rice trade liberalization in ASEAN will increase their foodstuff group demand (top 3), such as other cereal grains (maize and wheat); prepared food and beverages; and tubers. While net rice consumers, rice trade liberalization in ASEAN will stimulate their foodstuff group demand (top 3), namely other cereal grains (maize and wheat); tubers; and tobacco and betel (include cigarette). Moreover, the three of them have greater positive percentage change than rice demand.

Table 4. Impact of Rice Trade Liberalization on Rice Net Producer's Demand

(Δ%)

Foodstuff Group	Sim 01	Sim 02	Sim 03	Sim 04	Sim 05	Sim 06	Sim 07	Sim 08
Rice	0.0557	0.0841	-0.2310	-0.2900	0.2182	-0.0742	-0.1174	0.1102
Other Cereal	0.0827	0.1765	-0.4378	-0.5302	0.9868	0.4565	0.3942	0.7511
Tuber	0.0546	0.1169	-0.3447	-0.4319	0.4486	0.0261	-0.0372	0.2942
Fish, Meat, and Egg	0.0475	0.0996	-0.2776	-0.3464	0.2670	-0.0814	-0.1317	0.1479
Nuts	-0.0800	0.0320	-0.1259	-0.1580	0.1862	0.0392	0.0157	0.1144
Vegetables and Fruits	0.0179	0.1075	-0.3014	-0.3771	0.4001	0.0248	-0.0304	0.2551
Oil and Fats	-0.0529	-0.0136	0.0674	0.0904	0.0251	0.1057	0.1223	0.0482
Prepared Food and Beverage	0.0546	0.1304	-0.3199	-0.4007	0.3862	-0.0291	-0.0884	0.2280
Tobacco and Betel	0.0860	0.1038	-0.0559	-0.0784	0.1881	0.0379	0.0220	0.1315

Source: data processed with Stata, 2018.

While the simulation of rice trade liberalization in ASEAN plus increasing rice productivity (Sim 05), rice net producers will receive larger benefit in demand than rice net consumers. This simulation is recommended by many researchers and experts how to increase domestic production capacity and producer incentive. The same pattern is shown if rice trade liberalization in ASEAN only plus increasing rice productivity in Indonesia.

As for barrier trade, i.e. tariff or non-tariff, does not give any advantage for rice net producers and rice net consumers. It showed that protecting rice net producers and rice net

consumers are able to be carried out through more open economy, in which we are most concerned about they will suffer was not proven.

Table 5. Impact of Rice Trade Liberalization on Rice Net Consumer's Demand

(Δ%)

Foodstuff Group	Sim 01	Sim 02	Sim 03	Sim 04	Sim 05	Sim 06	Sim 07	Sim 08
Rice	0.0324	0.0215	-0.1124	-0.1427	-0.0373	-0.1680	-0.1911	-0.0785
Other Cereal	0.0803	0.1756	-0.4319	-0.5222	0.9914	0.4682	0.4074	0.7576
Tuber	0.0559	0.1071	-0.3136	-0.3929	0.4058	0.0208	-0.0369	0.2661
Fish, Meat, and Egg	0.0234	0.0362	-0.1146	-0.1428	0.0666	-0.0738	-0.0945	0.0256
Nuts	-0.0832	0.0028	-0.0476	-0.0605	0.0787	0.0299	0.0205	0.0456
Vegetables and Fruits	0.0224	0.0883	-0.2597	-0.3258	0.3124	-0.0084	-0.0566	0.1890
Oil and Fats	0.0016	0.0547	-0.1208	-0.1454	0.2173	0.0614	0.0435	0.1515
Prepared Food and Beverage	0.0230	0.0741	-0.1478	-0.1849	0.2350	0.0320	0.0046	0.1555
Tobacco and Betel	0.0836	0.0978	-0.0323	-0.0488	0.1686	0.0460	0.0344	0.1218

Source: data processed with Stata, 2018.

CONCLUSSION

Rice trade liberalization in ASEAN area will give beneficial on food security through availability, utility, and accessibility. And increasing rice productivity will enlarge those benefit. In the composition of rice availability, tend to increase of rice import is an adjustment form to resources re-allocation. While impose ATIGA and NTM, however will have a negative impact on food security and it also only minor stimulate on increasing domestic rice production.

The impact of rice trade liberalization in ASEAN on food security and income distribution has trade-off. Rice trade liberalization in ASEAN will decrease household real income compared with rice trade barrier policy. Rice trade liberalization is "more beneficial" for low income households in urban area and medium income household in rural area. The trade barrier to maintain income real can be imposed temporary since rice trade liberalization also actually make other sector production is better off.

At micro level, rice trade liberalization in ASEAN area will increase rice net producer's and net consumer's demand, where rice net producers have higher percentage change than rice net consumers. Although the impact of ATIGA and NTM will reduce rice demand. Simultaneously, there are shifting other foodstuff group demand and most of them (major foodstuff group) have greater positive percentage change than rice demand.

Those indicate the rice trade liberalization has a potential option to support national food security. And the government is still needed as pivotal rule to maintain income stable of net producers and consumers.

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THE ECONOMIC CONTRIBUTION OF BONDED ZONE IN INDONESIA[1]

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ABSTRACT

The Bonded zone is initiated in early 70's to promote the export of manufacturing industry in Indonesia. To promote the export, the government gives tax incentives for the firms to be located in the bonded zone. The incentives are provided through tax expenditure mechanism; the government exempts and defer various taxes that should be paid by the firms such as Value Added Tax (VAT), excise, and import tax. These incentives reach IDR 67.1 trillion totally In 2016 alone. This equal to 0.5 % of the national GDP in the same year. Despite the large amount of incentives given to firms located in the zone, no one knows exactly their contribution to the economy.

This is the first study to measure the economic contribution of the bonded zone using firm-level data. We undertake a census of economic contribution to 1361 firms in the bonded zone located all over Indonesia to measure firm-level value added. The study shows that The bonded zone contributed relatively large to the GDP, exports, and also employment. Firms located in the bonded zone contribute to 1.62 % of national GDP in 2016. In the manufacturing Industry, they contribute 8.89% of the sectorial GDP. In the export side, they contribute to USD 38.2 billion, or equal with 26.32 % of national export of goods. They also employ 1.5 Million workers, equivalent to 1.3 % of national employment or 9.89 % of employment in manufacturing Industry.
Keywords: Bonded Zone, Census, Indonesia

1. INTRODUCTION

Indonesia's economic development has been shaped by it's economic and trade policy, and also it's natural resources and labor force. The bonded zone (Kawasan Berikat) is developed to response with this dynamic in the economic development and also international trade in the country. Graph 1. shows the dynamics of the national export composition based on commodity type.

Pangestu and Rahardja (2015) noted that there are phases transformation in the trade and development policies in Indonesia. The period of 1970 to 1985 is a period of oil boom. The

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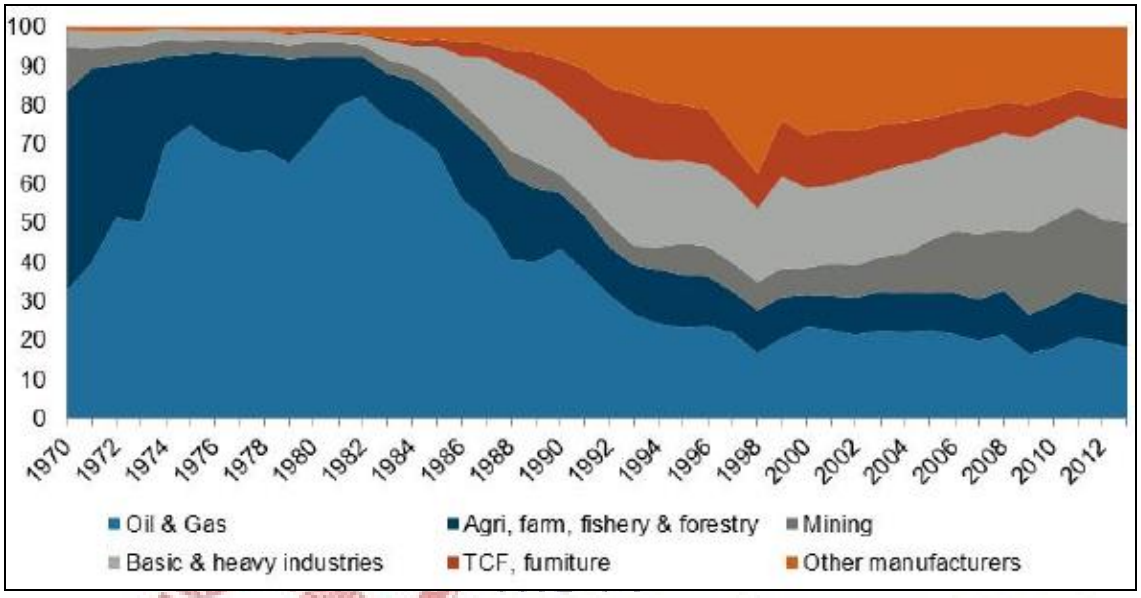
peak oil production and the rise in prices during the period brought a large amount of revenue from oil and also foreign exchange to Indonesia. Oil was the largest export commodities during that period. However, this is mean that the economy has high dependency on the petroleum sector.

FIGURE 1: Share of Indonesia's exports



Source: Patunru & Rahardja (2015)

To reduce the dependency on the petroleum sector, the government began to develop the manufacturing sector. In 1984-1987, the government was aggressively deregulating the economy sector to improve the investment climate, especially by encouraging export-based industries (Wie, 2012). One of the realization was the establishment of bonded zone which is introduced through Government Regulation no. 22 of 1986 on the bonded zone.

The Bonded zone is initiated in early 70's to promote the export of manufacturing industry in Indonesia. In order to promote the export, the government gives tax incentives for the firms to be located in the bonded zone. The incentives are provided through tax expenditure mechanism; the government exempts and defer various taxes that should be paid by the firms such as Value Added Tax (VAT), excise, and import tax.

Bonded zones marking the rise of Indonesia's manufacturing sector. In 1965 the contribution of the manufacturing industry to the total national exports was only 4%. In 1996 the contribution of the manufacturing industry to total national exports rose sharply to above 50%. However, the 1997-1998 financial crisis has made the development of the

manufacturing sector stalled. Indonesia's manufacturing export portion has decreased since then.

Over 45 years the government has provided incentives to companies utilizing the facilities of Bonded Zone (KB), and These incentives reach IDR 67.1 trillion totally In 2016 alone. This equal to 0.5 % of the national GDP in the same year. Despite the incentive given to firms located in the zone (in the form of tax forgone) is very large, until know no one knows exactly their contribution to the economy. No one knows whether the incentives given successfully bring a positive impact to the economy, or only give a benefit to particular enterprise.

This study investigates the economic contribution of the bonded zone to the economy. This paper contributes largely to the existing literature since this is the first study to measure the economic contribution of the bonded zone using firm level data. We undertake a census of economic contribution to 1361 firms in the bonded zone located all over Indonesia.

2. LITERATURE REVIEW ON SPECIAL ECONOMIC ZONE

The development Special Economic Zones (SEZ) is competition as result of globalization. In line with the development of globalization, many countries change the policy of import substitution into export promotion (Aggarwal, 2007). incentive are given in various forms To promote national export. Indonesia also following this trend in early 70's.

The early concept of economic zones is established in New York in 1937 with the adoption of the Free Trade Zone Act by the United States (US) Congress in 1934 (ADB, 2015). Indonesia began to create an economic area in the form of Free Trade Zone and Free Port (KPBPB) or also called Free Trade Zone (FTZ) in 1970. Then in 1972, Indonesia introduced Bonded Warehouse Zones. The next development, in 1989 Indonesia introduced Industrial Zone and then followed by Integrated Economic Development Zone (KAPET) in 1996. Most recently, with the policy of the establishment of Special Economic Zone (KEK) started in 2009 (Damuri et al., 2015).

There are body of literatures analyze the SEZ development policy implications, including: Aggarwal (2007); Aggarwal, Hoppe, & Walkenhorst (2008); Sosnovskikh (2017); Tsagaach (2016); and Warr & Menon (2015). Aggarwal (2007) found that SEZ contributes to economic

growth through the creation of employment both locally and indirectly in non-SEZ areas associated with industry in SEZ, improving skills and quality of human resources, and promote knowledge transfer, new technologies and innovations. Furthermore, Peter Warr & Menon (2015) distinguishes the impact of SEZ in two categories: an orthodox approach based on neoclassical economic theory and a heterodox approach based on endogenous growth theory and the new institutional economics. Table-1 shows static benefit based on an orthodox approach and dynamic benefit based on a heterodox approach.

TABLE 1: Static and Dynamic Impact from SEZ

Static Benefits	Dynamic Benefits
Foreign exchange earnings FDI Employment generation Government revenue Export growth	Skills upgrading Testing field for wider economic reform Technology transfer Demonstration effect Export diversification Enhancing trade efficiency of domestic firms Formation of industry clusters Integration into global value chains

Source: Peter Warr & Menon (2015)

However, some literatures also show that not all SEZs are successful. If SEZs not able to attract investors, will not brings the maximum impact on export promotion and economic growth. There are several factors that make SEZ unsuccessful, such as (ADB, 2015 p.84):

- Inaccurate positioning in determining the type of industry developed that is incompatible with the comparative / competitive advantage of the region.
- Treat SEZ as an industrial islands, which is not prepared in relation to business / business and other commercial activities - or even without adequate infrastructure preparation to make SEZ areas a viable place to live.
- Competition policy of intercultural facilities / incentives which geographically adjacent will be able to result in rent seeking activities and sub-optimal conditions.
- Usually as an incentive in SEZ formation, the government provides a large enough land at a price below the market price that is even a fertile agricultural land. Whereas the realization often happens that the utilization of land for SEZ is only part of what has been allocated.
- The formation of KEK is intended to attract investors / FDI. Dependency on FDI and the absence of local strategies for synergy with FDI make SEZ lack the maximum impact.

3. METHODOLOGY

We undertake the analysis in two steps; the first step is collecting the data on all firms located in the bonded zone in Indonesia, and the second step is assessing its contribution using a simple - descriptive statistic. We describe the methodology more detailed as the following:

We conduct a census of economic contribution to measure firm-level value added, including payment to labor, payment to capital (depreciation), producer surplus, as well as other micro data. We use online census to gather this information. The target population of the census was all 1361 firms in the bonded zone located all over Indonesia who operates during 2016.

We then combine the census data with the following data: tax collection data from Directorate General of Taxes (DGT), trade and incentives data from Directorate General of Customs and Excise (DGCE), and macroeconomic data from Indonesia Statistics (BPS). The firm level data from various source is mapped based on their tax registration data (NPWP).

When all data is collected and mapped, we then employ a simple descriptive statistic to assess the contribution of bonded zone to the economy.

4. EMPIRICAL RESULT AND ANALYSIS

Table 2 summarize the main result of the study. By calculating Value Added of the firms located in the bonded zone, The study shows that they contribute to 1.62 % of national GDP in 2016. In the manufacturing Industry, they contribute 8.89% of the sectorial GDP. They also employ 1.5 Million workers, equivalent with 1.3 % of national employment or 9.89 % of employment in manufacturing Industry. In the export side, they contribute to USD 38.2 billion, or equal with 26.32 % of national export of goods.

TABLE 2: National and Sectorial contribution of Firms Located in the Bonded Zone

Variable	Value	Contribution to National (%)	Contribution to manufacture (%)
GDP/Value Added (Trillion IDR)	200,8	1,62	8,89
Number of Employee (people)	1.537.581	1,30	9,89
Export (billion USD)	42,9	26,32	

On the micro level, the census provides more information on their distribution and characteristics. Table 3 shows number of firms located in the bonded zone by their sector. The sector with largest number of firms operated are Textile & Leather, Plastic, Paper & rubber, and Electronic industry. The Textile & Leather industry contribute to 38.0% of number of firms in the bonded zone, while Plastic, Paper & rubber, and Electronic industry contribute to 13,6 % and 11.0 % respectively.

TABLE 3: Number of Firms Located in the Bonded Zone by Sector

Industry	Number of Firms	(%) row
Textile & Leather	517	38,0
Plastic, Paper & Rubber	185	13,6
Electronic	149	11,0
Metal Industry	98	7,2
Foot Wear	68	5,0
Food Industry	65	4,8
Otomotive	64	4,7
Chemical	40	2,9
Other Industry	40	2,9
Rubber & Glass Industry	31	2,3
CPO	29	2,1
Cosmetics	21	1,5
Sports & Music Instrument	20	1,5
Engine	13	0,9
Agro Industry	9	0,7
Toys	6	0,4
Pharmaceutical	3	0,3
Electric Generation	2	0,2
	1361	100

In Table 4 we calculate value added of firms located in the bonded by their sector. The sector with largest value added are Textile & Leather, Electronic, and Foot Wear. The Textile & Leather contribute to 21.7% to total Value added, Electronic and Foot Wear contribute to 14,0 % and 13,4% respectively to total Value added. However, on the firm level, the sector that has largest average value added per sector was Pharmaceutical, CPO, and Foot Wear.

TABLE 4: Value Added of Firms Located in the Bonded by sector

Industry	Total VA (Billion IDR)	(%) row	Avg VA (Billion IDR)
Textile & Leather	43.635	21,7	84
Electronic	28.029	14,0	188
Foot Wear	26.931	13,4	398
Plastic, Paper & Rubber	21.921	10,9	118

Otomotive	14.182	7,1	221
CPO	13.996	7,0	480
Other Industry	12.708	6,3	321
Food Industry	9.200	4,6	141
Chemical	6.790	3,4	171
Metal	5.651	2,8	58
Cosmetics	4.123	2,1	197
Sports & Music Instrument	3.156	1,6	159
Engine	2.625	1,3	205
Electric Generation	2.224	1,1	954
Rubber & Glass Industry	1.933	1,0	61
Pharmaceutical	1.689	0,8	483
Agro Industry	1.152	0,6	124
Toys	823	0,4	141
	200.766	100	148

In Table 5 we calculate number employee of firms located in the bonded zone by sector. The sector which absorb most labor are Textile & Leather, and Foot Wear. The Textile & Leather sector alone absorb to 49,7 % of total employment in the bonded zone, while The foot wear sector absorb to 19,5 % of total employment in the bonded zone. However, on the firm level, the sector that has largest average worker per sector was Toys and Foot Wear due to number of clerical process needed on those two sectors.

TABLE 5: Number Employee of Firms Located in the Bonded Zone by sector

Industry	Total Employee	(%) row	Avg Employee
Textile & Leather	764.527	49,7	1.478
Foot Wear	300.512	19,5	4.689
Electronic	89.336	5,8	1.322
Plastic, Paper & Rubber	75.947	4,9	509
Food Industry	68.195	4,4	2.341
Otomotive	65.711	4,3	1.659
Cosmetics	30.059	2,0	1.517
Metal	22.772	1,5	123
Sports & Music Instrument	20.688	1,3	1.614
Agro Industry	18.372	1,2	584
Toys	17.200	1,1	4.920
Rubber & Glass Industry	16.474	1,1	168
Other Industry	16.383	1,1	414
CPO	15.792	1,0	753
Chemical	8.534	0,6	131
Engine	5.146	0,3	2.208
Pharmaceutical	1.634	0,1	175
Electric Generation	300	0,0	51

	1.537.581	100	1.130

In Table 6 we calculate export value of firms located in the bonded zone by sector. The sector has the largest export are CPO, Textile & Leather, Electronic, and Foot Wear which contribute to 24,1 %, 20,3 %, 12,3 %, and 10,6 % to total export in the bonded zone. However, on the firm level, the sector that has largest average export was CPO and Pharmaceutical.

TABLE 6: Export value of Firms Located in the Bonded Zone by sector

Industry	Total Export (million USD)	(%) row	Avg Export (million USD)
CPO	10.363	24,1	356
Textile & Leather	8.693	20,3	17
Electronic	5.286	12,3	35
Foot Wear	4.531	10,6	67
Otomotive	3.116	7,3	49
Food Industry	3.016	7,0	46
Other Industry	1.539	3,6	39
Plastic, Paper & Rubber	1.420	3,3	8
Chemical	1.177	2,7	30
Metal	927	2,2	9
Agro Industry	630	1,5	68
Pharmaceutical	624	1,5	178
Sports & Music Instrument	440	1,0	22
Rubber & Glass Industry	404	0,9	13
Engine	342	0,8	27
Cosmetics	264	0,6	13
Toys	155	0,4	27
Electric Generation	0	0,0	0
	42.927	100	32

TABLE 7: Tax Incentive received by Firms Located in the Bonded Zone by sector

Industry	Tax Incentive (Billion IDR)	(%) row	Avg Tax Incentive (Billion IDR)
Textile & Leather	25.630	39,1	50
Electronic	9.822	15,0	66
Otomotive	5.598	8,5	87
Foot Wear	5.518	8,4	82
Plastic, Paper & Rubber	4.016	6,1	22
Food Industry	3.161	4,8	48
Metal	2.752	4,2	28
Other Industry	1.670	2,5	42

Chemical	1.551	2,4	39
CPO	1.499	2,3	51
Sports & Music Instrument	993	1,5	50
Rubber & Glass Industry	980	1,5	31
Cosmetics	670	1,0	32
Pharmaceutical	573	0,9	164
Engine	547	0,8	43
Agro Industry	365	0,6	39
Toys	173	0,3	30
Electric Generation	86	0,1	37
	65.605	100	48

TABLE 8: Number of Firms Located in the Bonded Zone by Province

Province	Number of FIrm	(%) row
Jawa Barat	825	60,6
Jawa Tengah	183	13,4
Jawa Timur	135	9,9
DKI Jakarta	89	6,5
Sumatra Utara	45	3,3
Riau	23	1,7
Lampung	19	1,4
DI Yogyakarta	15	1,1
Sulawesi Utara	5	0,3
Sumatra Selatan	5	0,3
Other Province	17	1,3
Total	1361	100

TABLE 9: Number Employee of Firms Located in the Bonded Zone by Province

Province	Number of Employee	(%) row
Jawa Barat	913.854	59,4
Jawa Tengah	335.025	21,8
Jawa Timur	111.663	7,3
DKI Jakarta	64.561	4,2
Riau	27.089	1,8
Lampung	24.798	1,6
Sumatra Utara	21.841	1,4
DI Yogyakarta	13.910	0,9
Kalimantan Barat	6.336	0,4
Sumatra Selatan	5.458	0,4
Bangka Belitung	3.604	0,2
Sumatra Barat	3.249	0,2
Sulawesi Utara	2.489	0,2
Maluku Utara	1.036	0,1
Bali	874	0,1

Sulawesi Selatan	533	0,0
Kalimantan Selatan	527	0,0
Kepulauan Riau	370	0,0
Kalimantan Timur	275	0,0
Sulawesi Barat	91	0,0
Total	1.537.581	100

5. CONCLUSIONS AND POLICY SUGGESTIONS

The bonded zone contributed relatively largely to the GDP, national exports, and also employment. The study shows that firms located in the bonded zone contribute to 1.62 % of national GDP in 2016. In the manufacturing Industry, they contribute 8.89% of the sectorial GDP. They also employ 1.5 Million workers, equivalent with 1.3 % of national employment or 9.89 % of employment in manufacturing Industry. In the export side, they contribute to USD 38.2 billion, or equal with 26.32 % of national export of goods.

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EXPLORING THE PARTICIPATION OF CITIZEN TOWARDS LOCAL ENVIRONMENTAL PROGRAMME IN A GLOBAL SOUTH CITY. CASE STUDY OF SURABAYA, INDONESIA

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ABSTRACT

Local initiatives play an important role in addressing sustainable developments related problems from its roots. Citizen participation becomes important for an effective and efficient programme delivery, particularly for resource limited areas. This research aims to understand factors influencing citizen participation in improving the result of environmental programmes. This research observes two environmental programmes initiated by Surabaya Municipal Government, namely Surabaya Green & Clean (SGC) or known as Kampung Bersih*, and Mangrove Eco-Tourism (MET) or* Ekowisata Mangrove*. The two programmes aimed to create better environmental quality for Surabaya but with different approach, SGC with competition format while MET with government accompaniment and guidance format. Deriving from public choice and social capital theory, and using data from semi-structured and structured interviews, the research narratively compares six considering factors for public participation. Four factors were found to be pivotal in increasing citizen participation and minimizing free-riders, namely: 1) outcome; 2) citizen empowerment; 3) involvement; and 4) social sanction. Two other factors, which are "control" and "incentives or regulation", were influential but only to an extent, as both were dependent on the mechanism of the programme and the socio-economic condition of the area.*

Keywords: Citizen participation, Local environmental programme, Public choice, Social capital

1. Introduction

The issue of sustainability escalated in early nineties as there were concerns around the world pinpointing on environmental deterioration. As a response, the United Nation (UN) held a World Conference on the Environment and Development (UNCED) in Rio de Janeiro known as the first "Earth Summit" in 1992. A comprehensive action plan called Agenda 21 was produced, it was aimed for participating nations to follow and implement according to each nation's current development state (UN, 1997). However, as the problems of development and environment primarily roots on local scales, local approaches/local initiatives are required (Lafferty & Eckberg, 1998). Agenda 21 recognised this, and stated that local authorities need to work in collaboration with their constituent communities to build consensus and delivers local actions to achieve sustainable development. Local initiatives thus play an important part in attaining a more sustainable future.

Commencing local initiatives was not without difficulty, and the most typical barrier was resource limitation. This limitation is most common in developing countries where human and capital resources are always at their utmost. The resource-limited countries are normally aware of their economic capabilities, and would withdraw any effort in commencing policies that are economically unfeasible for them (Dolowitz and Marsh, 1996), and will consequently affect the progress of sustainable development.

The effectiveness of citizen participation becomes crucial as it could reduce the amount of resource spending. According to Evans et al. (2006), a greater degree of citizen participation has indeed correlates with higher levels of sustainable development achievements. High level of citizen participation could lead to greater policy legitimacy, citizen empowerment, reduced conflicts, increased efficiency, and promotion of sustainable consumption and production (see Evans et al, 2006; Selman, 2000; Putnam, 1995; Arnstein, 1969). In other words, a good quality of citizen participation would result in an effective and efficient programme implementation.

Nonetheless, having citizen to participate, especially in environmental programmes, proved to be problematic. Three factors influencing citizen participation are:

a) Participants' perception associated with cost and benefit of the programmes. (Hyman, 2010; Rydin & Pennington, 2000)
b) Social capital condition, includes the lack of trust and mutuality, insufficient networks, and citizen apathy. (Kusakabe, 2013; Holman & Rydin, 2013; Fudge & Peters, 2009; 6et al., 2005; Rydin & Pennington, 2000)
c) Institutional capacity, includes human capacity, management capacity, and leadership. (Kusakabe, 2013; Evans et al., 2006; Pennington & Rydin, 2000)

The studies above also showed that the three factors intertwined, and will result differently based on each place/region unique features. In the case of Japanese cities for example, Kusakabe (2013) found that different characteristics of social capital condition in three observed cities (i.e. Kyoto, Yasu, Takashima) would need different institutional approaches in order to optimise citizen participation. Regardless, there was no common agreement in the relationship between the three factors influencing citizen participation.

The aim of this research was to understand the factors that could encourage or impede citizen participation towards local environmental programmes, especially in developing countries. A city in Indonesia, Surabaya, was chosen as a study case because it aims to be Indonesia's first green city (Silas, 2014; Ostojic et al., 2013). Two renowned local environmental programmes were observed, namely Surabaya Green and Clean or *Kampung bersih* (SGC), and Mangrove Eco-Tourism or *Ekowisata Mangrove* (MET).

2. Theoretical Framework

Citizen participation has become a neccessity for tackling sustainability related problems from its roots. It also lead to a more efficient usage of resources, wherein participation could lead to the possibility of cost sharing between constituent authorities and citizens, resulting in reduced government spending and thrifty usage of resources (Paul, 1987). In the case of environmental goods and services, resource saving became important due to the fact that environmental goods needed to be maintained for a considerable time, possibly until the end of time.

However, as said before, having an effective participation, especially for environmental related issues, is complicated. One reason is because the environment could be classified as public goods. In economic terms, goods and services can be divided into public and private (Cowen, 2008). Public goods are commodities that are equally distributed to everyone and would not diminish in supply, thus it possesses the attributes of non-excludability and non-rivalry consumption, and vice versa for private goods. Air quality is one example of public goods in the environmental sector. Air will equally be distributed for everyone whether its quality is good or bad, and paying any sum of money to get better air quality for individual purposes does not work. Having said that, public goods theory implies that no single person would need to pay for the provision and the maintenance of those goods, thus it creates no sense of ownership for citizen, and could lead to a long-term maintanance problem. The equal distribution of public goods also means that non-participating citizens would bear no loss, and would thus potentially create free-riding behaviour that could cause collective action problems (Pennington & Rydin, 2000).

Other reasons that affect the level of participation are: (1) cost and benefit of participating; (2) social capital condition and (3) institutional capacity. The first one is derived from public choice theory, where human tend to act based on rational thinking. In that regards, human will try to understand the cost and benefit of their actions (Olson, 1965). Programmes related to public goods usually prompted to give a long term social benefits (e.g. good air quality) and not intended to give direct benefit (e.g. added income) for participants, thus lowering motivation to participate (Hyman, 2010; Rydin & Pennington, 2000).

The other two reasons, which are social capital condition and institutional capacity, are derived from social capital theory. While public choice theory talks about rationality and motivation of participation, it does not solve the problem of free-riding or low quality of participation. Empirical studies on social capital showed that it could minimize those problems (Kusakabe, 2013; Rydin & Pennington, 2000). The term social capital has developed overtime, but it is simply defined as a social

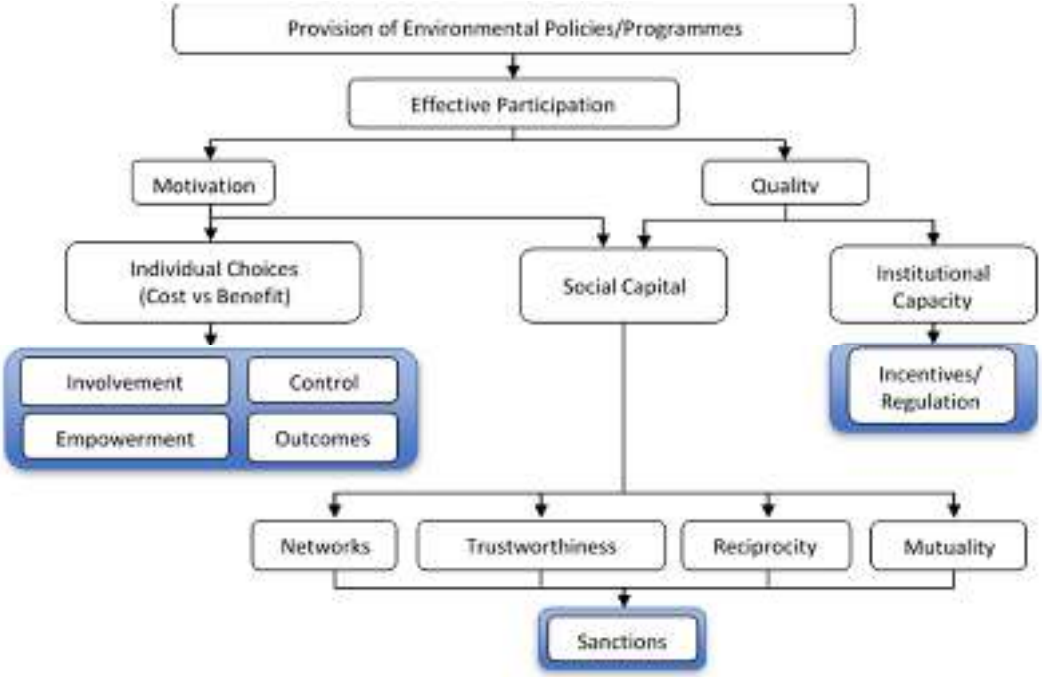
relationships between people in the society featuring trust, networks, mutuality, and reciprocity, and are not enforced by external actors (Lollo, 2012; Sabatini, 2006; Beard, 2005; Putnam et al, 1993; Coleman, 1988). Through this social relationships, social behaviour could be shaped to be more advantageous towards the implementation of environmental programmes and put free-riding as a costly option. For example, a certain neigbourhood with a strong social capital condition might have produced norms/social sanction that are disadvantageous for free-riders. Nevertheless, social capital has its limitations, especially when involving large areas and population. A network too large would create inadequate interaction which minimized the possibility for social capital to develop, and diminishing the probability of sanctions for free-riders. In this case, an external or a formal interference is needed to support building social capital and to maintain the quality of participation (Pennington & Rydin, 2000).

Based on public choice and social capital theory, there are two things that contribute to effective participation, which are motivation and quality. Quality of participation is dependant on the level of social capital (santion/norms) and institutional capacity (regulation). While citizen motivation is dependant on the cost and benefit. In order to increase citizen motivation, a change of their perception towards the cost and benefit of participating is needed. This could be achieved through four points which form effective participation according to Mathbor (2008), namely: (1) involvement; (2) control, (3) outcome, and (4) empowerment.

The first one, Involvement, is the condition where citizens are involved early in the planning stage for decision-making and knowledge sharing, giving them the overview of the programme and its benefits, thus helps forming their attitude toward the programme (Rahman, 1993). Second is Control, or the amount of influence a citizen yields over the course of the programme. Low level of influence could reduce citizen's interest and motivation to participate. This is in accordance with Putnam (1995) and Arnstein (1965) definition of participation, where it is about power redistribution and giving access to the public to decide how development affects their life. Third is Outcome, which is the level of citizen's understanding and expectation towards the programme's goals. A higher level of understanding means a higher chance for continuous contribution from citizen to maintain the goals that have been achieved. Other studies also argue that inducing a sense of ownership would help sustaining the goals of the programme as it increases citizen's commitment towards the programme (Kusakabe, 2013, Hyman, 2010; Adnan et al., 1992). The last one is Empowerment, or the capability of the programme in raising citizen's quality of life as a result of their participation. Improvement in quality of life could be attained in numerous forms, such as new knowledge or skills, enhanced social networking, and increased income.

To conclude, there are a total of six determinant factors in the provision of environmental programmes, that is (1) involvement; (2) control; (3) outcome; (4) empowerment; (5) Sanction; and (6) regulation/incentives. **Figure 2.1** shows the theoretical framework.

Figure 1. Theoretical Framework



3. Methods

The study area for SGC programme was focused on one RW at Jambangan sub-district where SGC was first implemented and developed. On the other hand, MET programme was observed in two districts as they are an integral part, namely Rungkut District and Gunung Anyar District.

Quantitative method was mainly used in this research. The method was used to discover statistical information regarding community perception and social capital condition. The result then supported by data gained from interviews with relevant stakeholders. Semi-structured and structured interviews were used to gather information. The questions for the interviews were adapted from previous collective action and social capital studies (e.g. Grootaert et al., 2004; Putnam, 2001). The semi-structured interview was aimed at SGC and MET programme initiators/stakeholders, while the structured interview was targeted for the participating public.

To get a list of important people/initiators within the two programmes, a snowball technique was used. Two initial interviews took place at programme initiators, which were Department of Cleanliness and Parks or *Dinas Kebersihan dan Pertamanan* (DKP) for SGC programme and the Department of Agriculture or *Dinas Pertanian* for MET programme. Overall, 5 people were suggested for SGC programme, and 6 people for MET Programme. These interviewees consist of people from government, NGOs, and local leaders.

The structured interviews used questionnaires consisting of 34 multiple-choice questions, with a total of 50 random samples from SGC programme and 35 random samples from MET Programme. More samples were taken for the SGC programme as it took place in neighbourhood environment (RT/RW). On the contrary, samples from MET programme did not live in close proximity to one another (some even live in different districts). Therefore, one alternative was to meet them at their meeting point, which was around mangrove plantation area.

Information collected from semi-structured interviews would be presented narratively. Meanwhile, data collected from structured interviews would be summarised and translated into percentage form for better comparison between the two programmes. The outcome of both analyses would help explain which programme is more successful in terms of citizen participation and programme implementation.

4. Programme Overview and Results

4.1 SGC and MET Programme overview

SGC is an annual environmental programme of Surabaya since 2004. It was first initiated due to the closure of Surabaya's one and only dumpsite, implicating serious waste problems throughout the city. Surabaya city government, specifically DKP, then launched SGC initiative as a solution to the problem, targeting local citizens as the main problem solvers. To gain attractiveness, SGC was implemented in competition format, targeting citizens in the smallest form of neighbourhood forum (Rukun Tangga or RT) to compete with other RTs. Involvement of private sector (i.e. Unilever) and local media (i.e. Jawapos) boost the programme implementation and providing extra motivation and incentives for participants.

MET was initiated due to illegal mangrove logging in 2007. The mangrove protects Surabaya's east coastline from abrasion and also acts as an estuary for fauna and flora, becoming a transit area for migrating birds across different continents (Ramsay, 2011). MET was formalized in 2010 as an effort to promote preservation of the area to wider society while also empowering local people. Unlike SGC, MET programme was designed in community development format. The programme iniatiator, which is Surabaya Department of Agriculture, had to make the first move in facilitating participants with related skills/knowledge, and work collaboratively with them in managing the environment creatively and sustainably. During its implementation years, MET did not gain as much attention as SGC. Firstly because SGC was 6 years older than MET, thus making SGC

more established. Secondly, SGC had contributed many environmental awards for Surabaya, and had become one Indonesia's benchmark in participatory environmental planning.

The two programmes targeted different types of participants. SGC took place in an RT neighbourhood environment, where people live in a close proximity and bonded by similar interest. While MET targeted a wider range of people, from local farmers who live and make livings from the land, to local residents who live in the area but work somewhere else.

4.2 Results

Based on the observation of the SGC and MET programme, the six factors influencing citizen participation are explained as follows:

Involvement

Involvement is when the programme was introduced to participants. Earlier involvement could create better understanding and expectations for citizens. Participants in both programmes were involved during the implemantation stage, but with different approach. SGC only trained a couple of representatives from each RT to be environmental cadres/ambassadors. The representatives then will need to share their knowledge with other within their RT. Contrary, MET educated and trained a whole community in turns, and those people have no obligations to pass the knowledge they had gained during the training. MET programmes initiators have acknowledged that the consequences of direct involvement to participants was limited resources (human and capital), which then hindered the distribution of training and leads to delayed involvement for some MET participants.

In terms of engagements, participants of MET felt more engaged (100%) with their programme as all the members were involved from the start, unlike SGC where only representatives were engaged at first (94%). The inability of SGC representatives to pass the newly gained knowledge could affect the commitment of their community members to participate. To conclude, involvement could stimulate people's motivation. In this case, direct involvement as demonstrated by MET had a better influence on participation compared to SGC.

Control

Participants' control over the programmes were shown by their involvement in decision-making. Based on the programme format, it was clear that SGC participants had full authority to creatively achieve the programme goals. Since every RT had their own unique environmental problems, they could initiate actions to address the problems accordingly, from physically designing their neighbourhoods and even creating their own local rules. MET participants on the other hands, had a very limited control as decisions in MET programme mostly taken by the programme initiators. The first initiation of tourism activities were chosen based on collaborative agreement between the participants and the initiators, but participants had no power in deciding future developments. Despite the limited control, a local leader of Wonorejo Mangrove farmer stated that most MET participants were still willing to participate due to the given economic benefits.

Overall, the factor of Control had effect over the motivation of participants but only to an extent. Unlike the constrained participants of MET, SGC participants had more opportunities to keep the cost and benefits according to their preferences, giving them less risk and maintaining their motivation to participate.

Outcome

Most of the samples from both programmes (96% for SGC and 91% for MET) agreed that the programmes were favourable to the community's needs, and they were willing to participate again. SGC programme had provided participants with not only a better, greener neighbourhood environment but also community sense of pride, as winning the competition meant that they would be promoted and became the exemplars for other RTs across Surabaya. Based on interview with one of the cadres, SGC also stimulated the innovation of low-price green technologies such local wastewater treatments and hydroponics. Meanwhile, MET helped the area by providing tourism facilities and road connections thus created more economic opportunities. Prevention of mangrove spoliation would also lead to the improvement of the production of fisheries in the area. However, based on interviews with local environmental activist and local environmental NGO, the programme outcomes were not presented clearly at first and that there was no clear direction on how the programme would be

sustained. Despite these problems, people chose to be involved due to the economic benefits the programme gave.

In general, SGC outcomes were much clearer and concrete compared to the outcomes of MET. Participants were more motivated in SGC because they were conscious of the outcomes, while MET participants were mostly pushed to participate because of economic needs. Having said that, Outcome factor had indeed influenced the motivation of participants.

Empowerment

Both SGC and MET basically empowered all their participants through various trainings. In terms of SGC, 80% of participants felt that the real empowerment they received was of a social aspect. They felt that by participating and eventually winning the competition, it had not only raised their pride and solidarity, but also connected them to the outside RT communities, thus building their social capital, which in turn became a valuable asset for the individuals. Oppositely, 86% of The MET participants also felt empowered but mostly through skills and knowledge. These are important in gaining additional income, especially for the housewives. Suprisingly, 54% of participants also felt that MET provided them new connections outside their communities, thus became important in promoting the local eco-tourism activities. In terms of cost, communities in both programmes agreed that the greatest sacrifice they had to make was time (>65%). Nonetheless, the majority still felt that both programme was worth participating in as it gave them many benefits.

In conclusion, empowerment did affect the level of participation. The kind of empowerment differed between each case, and the one that satisfied citizens according to their preference sustained longer and became a source of motivation for participation. A regular communication with participants would be sufficient in choosing the best empowerment alternatives.

Sanction

Santion is heavily related to the level of social capital in each place. Social capital is shown by the level of trust, reciprocity, social networks, and mutuality/common interest. The element of trust within constituent communities in both programmes was strong, shown by the level of feeling safe (>90%), little number of disputes (<20%), and trust with programme initiators being high (>85%). The level of reciprocity was also high, as more than 90% of people would do favours and help the members in need. In terms of networks, both communities only had small networks outside their communities. This was shown by how many outside acquaintances they had asked to help them achieve the goals of the programmes (<35%). A huge difference in common interest appeared when living place was taken into account. SGC community was better than MET community as people in SGC live in close proximity, thus made interactions easier.

Because SGC had a better social capital, some people felt they would need to participate in the programme to avoid social sanction such as getting a bad reputation. On the other hand, MET communities tended to rely on their leader to take actions. This sometimes resulted in small disputes between some leaders, causing a breakdown of trust between groups and delaying the implementation of programmes. One social sanction apparent in MET were free-riders would be excluded in some activites. The excludability would later implicate on the economic and social life of the free-riders, making them enforced to participate. To summarise, sanctions do have a significant impact in minimizing free-riders, although different social capital conditions lead to different approaches in minimizing free-riders.

Incentives or Regulation

SGC had several incentives because of its format as a competition. The first was no registration fee, and the second was a grant of Rp.1.000.000 that was given to RTs that could get into the top 500. The third was prize money for at least 10 categories of winners, each winner would be given Rp.10.000.000. these money however, was not sufficient to cover the expenditures of each participating RTs. The last incentive were exposure to media, and this was the main reason of people willing to participate in SGC. Comparatively, the incentive for MET programme was procurements of new infrastructure that would raise the eco-tourism quality, such as a jogging track, gazebos, and a rest area. However, as they took a huge amount of money, new infrastructures were only procured once, and the management was then given to the locals. A long term maintanance became a problem and the locals sometimes had to self-fund it.

In terms of regulation, there was no spesific regulation related to SGC programme. SGC communities would rather create their own written RT's law as it was more effective in minimizing unwanted behaviour and free-riders.in MET however, there were City Acts about preserving mangrove and also conservation area. Nonetheless, law enforcements were low, and felt to be ineffective due to the long bureaucracy process. The only thing that stopped unwanted actions was local surveillance, which was useful but legislatively weak. Local community leaders hoped that the city government could increase law enforcement as it would be a great help to in protecting the area and also to create social relationship with the locals. Overall, incentives and regulations would raise the quality of participation, but only if the incentives is in accordance with the needs of participants, and also when strong law enforcement was in place.

5. Conclusion and Limitation

5.1 Conclusion

Through the observation of both programmes, SGC has proven to be more successful than MET, not only in building better effective participation but also in making people understand the real benefits of environmental quality provision. The observation of both programmes had also showed how the six determinant factors played a pivotal role in producing an effective participation. In terms of motivation, two factors namely "outcome" and "empowerment" proved to be crucial in increasing citizen motivation. Those two factors were able to show the benefit of participating in the programmes while also transmitting the importance of environmental safeguarding to citizens and promoting awareness for behavioral change. "Involvement" was a factor which influenced citizen motivation, but an effective and evenly-spread involvements will also need a considerable amount of resources (capital and human). "Control" also influenced citizen motivation but only when the majority of participants were not bound by crucial necessities (i.e. economic needs), otherwise this factor would be disregarded by participants.

In terms of participation quality, "sanction" had proven to be a great way to minimize free-riders in both programmes by making them feel socially insecure (e.g. bad reputation). On the other hand, the affect of "incentives or regulation" were less apparent in minizing free-riders as it depends on a strong law enforcement and appropriate incentives. In conclusion, the four determining factors that needs to be considered to produce an effective participation are "outcome", "involvement", "empowerment" and "sanction". While "control" and "incentives or regulation" would be dependent on the approach/design of the programme and the socio-economic condition of the place.

This research has shown that public choice and social capital theory do play a role in ensuring an effective citizen participation. Understanding the condition of social capital where a programme will take place is advisable, as it could act as guidance for programme initiators to formulate an appropriate programme approach.

5.2 Research Limitations and Further Research

Some limitations that need to be considered in this research are:

1. This research based its measurements on the six factors using citizen perception and the opinion of interviewees. This means that the data collected could be biased.
2. The absence of official report from both programmes caused by the inability of both initiators in recording implementation have limited the researcher to be able to evaluate the programmes as well as explore the factors in greater depth.

Further research in this topic would be finding deeper relations between motivation and participation quality, possibly proving the six factors through a more established environmental programmes where reports are made periodically. Other suggested research would be about creating a standard measurements of social capital condition.

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The Effects of Maternal Age At The Childbirth on Child's Math Score: A Case of Indonesia

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Abstract

I estimate the relationship between maternal age and child's score in primary school by using data from Indonesian Family Life Survey (IFLS) of 3th and 5th wave, which were respectively conducted in the year 2000 and 2014. Using Ordinary Least Square (OLS) method, I find that children born to older mothers have a higher math score in the national exam of primary school, after controlling father's age and child's characteristics. However, when the socioeconomic status (SES) and child's education background are included, the maternal age becomes statistically insignificant. The result shows that, among SES controls, effects of maternal education level is the most consistent predictor of child's score. Thus, rather than worrying about their age when deciding to have a child, mothers should consider their education level that will affect child's cognitive ability.

Keywords: child's score, maternal age, maternal education.

1. Research Background

Globally, the total fertility rate among adolescent women aged 15-19 has been decreasing significantly in recent years. Based on United Nation Population Division (2015) report, the global adolescent fertility rate in 1960 reached 87 births per 1000 women, but this number fell to only 44 births per 1000 women in 2015. This data indicates that there is a changing behavior among adolescent to delay their childbirth until older ages. Higher wage and more accessible career-type jobs requiring higher education to the woman are known as important driving factors of the delay of marriage and the age of childbearing (Morgan & Rindfuss, 1999)

Although the global adolescent fertility has been declined significantly, it can not be rejected that in least-developed and developing countries, adolescent childbearing and teenage motherhood remain high. Based on research conducted by Singh (2014) in global developing countries, sub-Saharan Africa countries (Cameroon, Liberia, Malawi, Niger, Nigeria) had the highest level of adolescent childbearing where some 8 percent to 15 percent of women had a child by age 15. Meanwhile, 15 percent to 20 percent of women in most Latin American and some countries of North Africa, the Near East, and Asia, gave birth by age 18. In parts of South and Southeast Asia, many women also still choose to marry and have their first child at early ages (PRB, 2013).

Based on the early and late childbearing phenomena that occur differently in some countries, several researchers decided to explore and examine some studies concerning effects of mother's age at the time of childbirth. While most studies

concentrate on the impact of maternal age at the childbirth on the mothers itself (Utomo, Iwu D., Utomo 2013; Leigh & Gong 2010), it was also reported that considering the effects on the children was a substantial issue. One of the most favorite topic picked by researchers is children education outcomes of younger or older mothers (Morrison et al. 1992; Goisis et al. 2017; Belmont et al. 1981; Leigh & Gong 2010; Moore & Snyder 1977). Selection of this topic is not without any reason, Mincer (1958) and Gary Becker (1962) had revealed since a long time ago that education was one of the ways to invest in human capital that would contribute significantly to the economic growth of a country. Moreover, education also has a strong association with cognitive capability, well-being, criminality rate, and political participation (Sohn 2013; Magdalyn 2013; Campbell 2006; Desjardins & Schuller 2006). Thus, choosing children's education topic is a right decision since the children will be the future generation that turns the world better.

Observed from several works of literature, the association between maternal age and children's score is still found inconsistent. Using children's test scores aged 15-17, Card (1981) reported that the score gap between children of teenage parents and children of older parents was about 0.4 standard deviations. In another research, Goisis et al. (2017) conducted a study from three the UK birth cohorts and found that for the 1958-1970 cohort studies, children born to older mothers had lower cognitive capability than those born to younger mothers. Contrastly, for 2000-2002 cohort, older maternal age showed a positive association with children's cognitive capability.

Besides the reversing association occurred in Goisis et al.'s studies, another research also revealed an inconsistency of significance between maternal age and children's scores. Cousin comparisons in Geronimus et al. (2015) study showed that there is only a little support for a negative consequence of young maternal age on children's lower academic performance. It suggested that effect of mothers' pre-childbearing characteristics might dominate than the effects of teen birth. Consistent with the findings above, Leigh & Gong (2010) reported that after controlling socioeconomic statuses, such as family income, mother's highest educational attainment, language used in the home, presence of siblings, and children's birth weight, there was no strong evidence of relationship between maternal age and children cognitive achievement.

While many studies concern about maternal age's effects, Moore & Snyder (1977), in their limitation of research, explained the importance of including attributes of a father which seems likely to carry some weight of the effects on child's score. Therefore, I will also examine the unobserved effect came from father attributes by including them in the model.

A major empirical challenge in this study is that any observed correlation between mother's age and children's educational achievement will not essentially suggest causality. For example, mothers who have children at the older age are more likely in the position where they are wealthier and more educated than younger mothers, that will necessarily deliver good impact on children's intelligence. Then, it cannot be assumed that maternal age directly affects children's intelligence without carrying income and education level in the research model. Thus, this study

will carry several socioeconomics statuses (SES) and other characteristics to see the consistency of the maternal age effects. In addition, child's education background has also to be included in the model since some studies proved that it could be a channel that affected child's academic score (Goodman & Sianesi 2005; Llach et al. 2009; Newhouse & Beegle 2006).

The importance of this study is to give an additional perspective on the timing of childbearing. If the result of this study shows that maternal age has an association with child's test score, then parents should consider the optimal age of having the babies since it will impact the children's academic outcomes. Contrastly, mothers do not have to worry about their age when deciding to have children since there is no evidence of causality between mother's age at childbirth and children's academic outcomes.

Based on the research background above, this research is intended to find out the effect of maternal age at the childbirth on children's test scores, both before and after controlling several characteristics of children and family socioeconomic background. Furthermore, the result of this study is expected to give an additional perspective before parents decide to have children.

2. Literature Review

2.1. Indonesia’s Trends of Childbearing

Indonesia is the fourth country with the highest population in the world, after China, India, and United States (World Bank, 2016). Thus, it is interesting to see deeper how the population development changing over the periods.

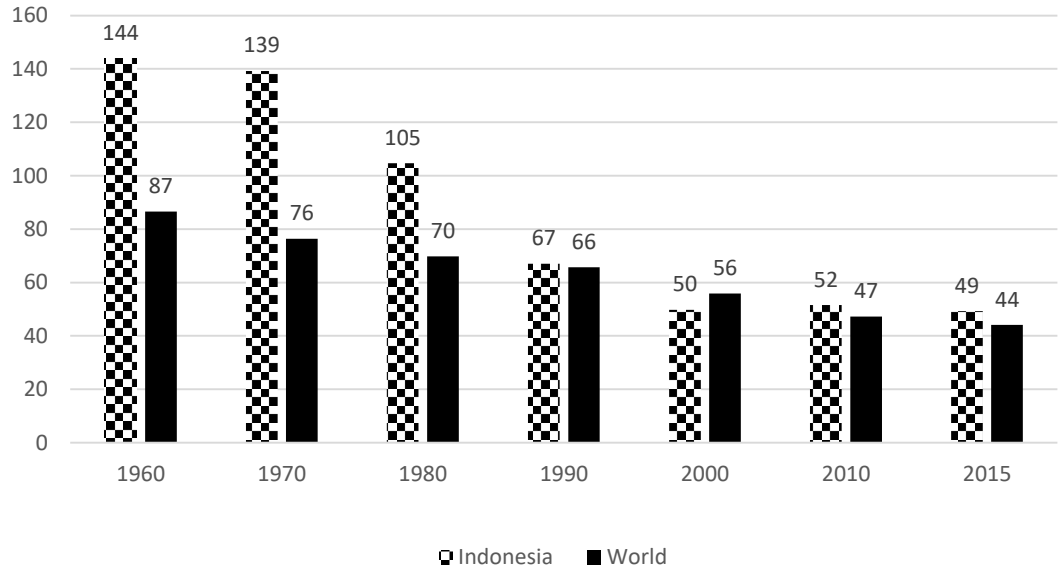
Indonesia had experienced three political waves since its first declaration of independence: the old order, the new order, and the Reformation era. Through a study conducted by Prayudi (2012), it is known that each period has its own characteristics regarding the condition of national population development.

The Old Order period during 1945-1965, where the national economic crisis happened, was frequently associated with high total fertility rate, even up to five children per woman in 1960. At the same time, the adolescent fertility rate was standing around 87 births per 1000 women aged 15-18. Compared to Indonesia and global average, it could be seen that during Old Order period, Indonesia had higher adolescent pregnancy than the global average (see Picture 1). It can be explained by the low school enrollment rate in Indonesia that also indicates an inadequate of sexual knowledge

Moving on to the New Order period during 1966-1998, the total fertility rate and adolescent fertility rate declined in a significant number, only three children per woman and 66 births per 1000 women aged 15-19 in 1990, respectively. Suharto's dictator leadership style, before the major Asian economic crisis in late 90's, succeeded to improve Indonesia's economy and education that were predicted as the factors contributing to the decline of early birth among women.

One of the policies established was the provision of universal elementary education in the early 1970s that successfully improved the number of girls who completed elementary school. Family planning program and the increasing women's involvement in the labor force are also found as another factor that held an important role.

Picture 1. Adolescent Fertility Rate of Indonesia and Global Average (births per 1000 woman ages 15-19)



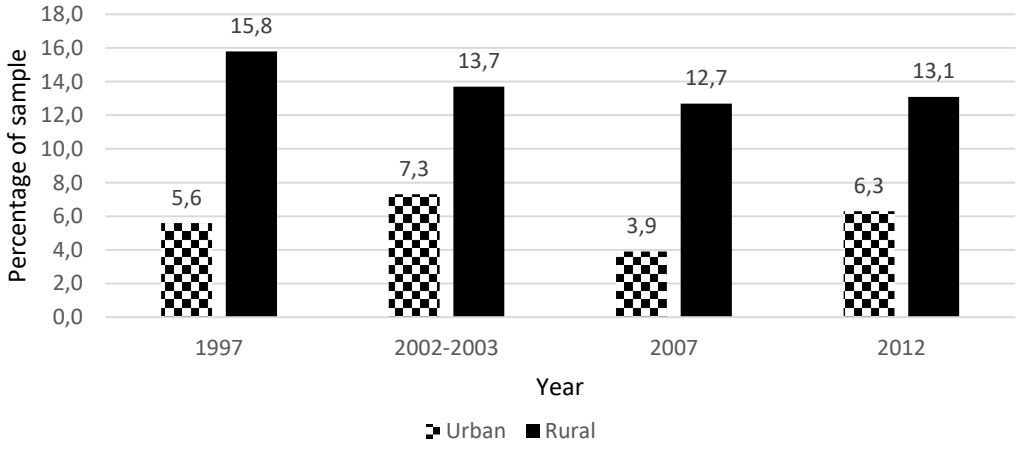
Source: United Nation Population Division (2015b)

In the next political period, the Reformation era, the positive trends was continued. Stabler economic condition and higher education attainment that was campaigned in the global scale, directly and indirectly contributed to the decline of early childbearing among girls all over the world, including Indonesia. In the year 2000, adolescent fertility in Indonesia among women aged 15-19 decreased to 56

births per 1000 women that indicated young women had been aware of the risk of having babies in the early age.

Besides analysing from each political period, Picture 2 shows that in all survey years conducted by Indonesia Demographic and Health Survey (2012), prevelance of childbearing among woman aged 15-19 years old lived in urban has smaller percentage than woman lived in rural. It can be explained by several factors that might be regarded as contributing factors of lower adolescent childbearing in urban areas: increased educational facilities access; higher female work opportunities outside the home; and a better health environment (Chernichovsky et al. 1982).

Picture 2. Teenage Pregnancy Among Women aged 15-19 years old in Urban and Rural in Indonesia (1997-2012)

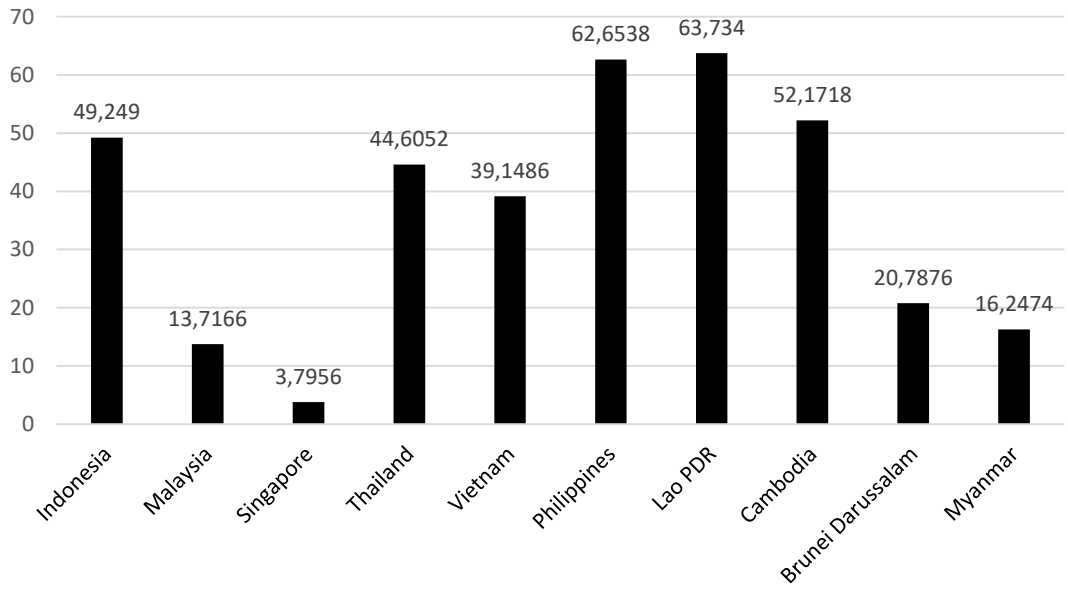


Source: Indonesia Demographic and Health Survey (2012)

Although adolescent pregnancy in Indonesia has declined over the years, compared to other countries, this number is still relatively high. Among Association of South East Asia Nation (ASEAN) countries, Indonesia ranks the 4th place of

adolescent birth after Lao PDR, Philippines, and Cambodia, by 49,2 births per 1000 teenagers (see Picture 3). Meanwhile, Malaysia and Singapore are far below Indonesia by, respectively, 13,7 and 3,7 birth per 1000 teenagers. Moreover, China and India, the most populous country in the world, still have a lower number of adolescent pregnancies than Indonesia.

Picture 3. Adolescent fertility rate among ASEAN countries (births per 1,000 women aged 15-19)



Source: United Nation Population Division (2015)

In summary, the tendency of having children in the early age in Indonesia continues decreasing over the years, but still relatively high compared to other countries, especially among ASEAN countries.

2.2. The Childbearing Decision

There are two general options that parents, specifically mothers, can choose: either deciding to have a child at early ages or delaying to have a child at older ages (Smith et al. 2008; Mills et al. 2011; Mersky & Reynolds 2007). Although there is no specific model that discussed the childbearing decision, below these are the factors that contribute to earlier childbearing and later childbearing.

Several researchers reported that sociodemographic risk factors, such as parents' education, family income, family structure and size, race, age, and household living in a low-income urban neighborhood had a strong association with the time of childbearing (Hayes 1987; Kalil & Kunz 1999). In another research, Mersky & Reynolds (2007) findings indicated that having high school dropped out mother or primary guardian was the most consistent forecaster of early childbearing.

On the other hand, Myrskylä & Margolis (2014) revealed two phenomena contributing to the decision of delaying childbearing. First, young parents tend to have less welfare than older parents, thus, they delayed the first birth because of the social learning. Second, the opinion of transition to parenthood life that had more negatives sides rather than the positives sides led to lower fertility interest. More specific, higher academic achievement, religiosity, parent involvement, and parent-child communication were linked to the tendency to delay the childbearing (Small & Luster 1994; Xie et al. 2001; Metzler et al. 1994; Barnett et al. 1991).

2.3. Children's Score

Academic achievement has been a focus of several empirical studies to measure the student educational outcomes. A standardized test is frequently used as an indicator of education output rather than dropout rate, attendance rate, and school enrollment. It is currently recognized as the best measure since it plays an important role for the individual to obtain higher education (Sirait, 2016). In Indonesia, National Exam (UN), a national standardized test, is widely used as graduate passing requirement at each education level, whether primary, junior, or senior high school.

On the other hand, math test score is predicted as a good indicator of overall achievement in school (Sonnenschein et al. 2012; Meece et al. 1982; Crosnoe et al. 2010). Furthermore, it was reported that early math skill had long-lasting impacts on children progress through school (National Research Council of The National Academies, 2009). Thus, child's math scores in the national exam of primary school can be a suitable proxy for academic achievement.

2.4. Maternal Age At The Childbirth

Maternal age at the childbirth is the main independent variable in this research since it has important consequences on child's score both through the direct and the indirect effects (Moore & Snyder 1977; Arslan et al. 2014; Leigh & Gong 2010; Saha et al. 2009).

Some empirical results reported that most adolescent mothers were emotionally unprepared for motherhood (Furstenberg Jr et al. 1989), less sensitive and responsive to their infant (McAnarney et al. 1986), and less knowledgeable about parenting. Supporting the statement above, the literature on child development in the United States found that, on average, children of younger mothers had lower scores on cognitive and socioemotional aspects and tend to have poorer school achievement than children of older mothers (Roosa et al., 1982; Hofferth, 1987).

Contrastly, not all studies have discovered a positive relationship between maternal age at the childbirth and her child's educational outcomes. Goisis et al. (2017) found that for the 1958-1970 cohort studies, children born to mothers in group age of 35-39 years old had lower cognitive capability than children born to mothers aged 25-29. In a separated study, it was revealed that this negative relationship could occur because of the mothers that were less physically fit, had less support from grandparents, and spent less time with their children (Leigh & Gong, 2010). Furthermore, an analysis by López Turley (2003) reported that after including sister-pair fixed effect to the model, there was no significant correlation between maternal age and mathematics score.

2.5. Paternal Age At The Childbirth

Though maternal age is core independent variable that is predicted affecting child’s score, father’s age is also substantial since it may carry some weight and will be useful to have had such information along with the mother’s information

(Moore & Snyder, 1977). Unlike the maternal age which has been widely observed, research that discusses paternal age is still very little. Saha et al. (2009) conducted a study that found children of older fathers were more likely to suffer from neurocognitive impairments than those with younger fathers. In other words, children of older fathers tend to have reduced intelligence indicated by a lower score in a range of tests. However, a recent study published by Arslan et al (2014) refused to accept previous findings by testing the effect of paternal age on the child's intelligence while controlling parents' Intelligence Quotient (IQ). The result showed a non-significantly negative regression after parental intelligence is controlled which may suggest that parents' IQ effect exceeded paternal age effect.

2.6. Children Characteristics

Gender disparities in children's educational achievement have been investigated through many studies and still leave a debate over the effects of the gender. Halpern et al. (2007) reported that girls are better in mathematical abilities in elementary school than boys; but not in the higher secondary-school grades. It is because most mathematical skills used in elementary school is only a computational knowledge and speed. Meanwhile, mathematical concepts which require more reasoning and spatial skill, including solving problems in geometry and calculus, are required in the higher secondary-school grades. Another result from Indonesia Programme for International Student Assessment (PISA) within 15-year-old students showed that boys are better in science subjects than girls; but no significant gender differences in terms of mathematics subject (ACDP Indonesia, 2013). Coley

(2001) also revealed that using The National Assessment of Educational Progress (NAEP), which covers a representative sample of U.S. students, there is no difference mathematics test score between males and females.

In many developed countries, the children's educational attainment is also found having a negative association with the number of children in a family (Steelman et al. 2002; Featherman & Hauser 1978; Blake 1989). In other words, children with fewer siblings obtain higher schooling than those with more siblings. Similarly, Becker (2009) explained that there was a trade-off between quantity and quality. His research suggested that children with more siblings tend to compete for parental or household resources, such as time spent with parents. Therefore, it can be argued that children will have a lower probability to study with their parents that necessarily would be correlated with children's academic outcomes.

In another study, child's health condition is considered as an essential factor to measure children educational outcome since education and health are known to be highly correlated (Shaw et al. 2015). Through Suhrcke and de Paz Nieves (2011) study in high-income countries, it was found that healthy child tends to have a third of a year more in school. Furthermore, sickness before age 21 decreased education on average by 1.4 years. In another research, Spinath (2012) revealed that students with higher physical activity and physical fitness levels had a strong association with improved cognitive performance.

2.7. Family Socioeconomics Status

According to Baker (2014), socioeconomic status (SES) is a measurement of individual's combined economic and social status. The composition of SES can be used in various ways with different variables depends on the user choice. There are several qualities described in SES, for example, age, gender, education, living residence household income, and etc (Hatch et al., 2011; GESIS, n.d.).

The characteristics in socioeconomics are not only important on its own, but also intersect with each other. The underlying reasons are first without using SES data in research, the researcher can cause the risk of absolutism, in which the assumption that the phenomena of interest in the research are the same regardless of age, gender, education and other SES characteristics (Hammer, 2011).

Regarding the effects on children's educational achievement, two critical socioeconomics factors are mother's and father's education level. In Moore & Snyder (1977) research, policymakers argued that continued schooling for adolescent mothers could return a positive impact on children's cognitive development. It has been a constant occurrence, also revealed by Moore (1985) from analyses of National Survey Children Waves, that children born to adolescent mothers who were dropped out of high school performed lower cognitive attainment than children with adolescent mother who did not drop out. Eriksen et al. (2013) also reported that maternal intelligence is core predictor of child intelligence level. On the other hand, Office for National Statistics reported that

children of a low educated father are seven and a half times less likely to achieve better academic performance in school (The Guardian 2014).

It is also important to consider the effects of individual's living area on child's academic outcomes since several studies suggested the existence of inequality of access between urban and rural areas. Canadian Council on Learning (2006) reported that analyzed from PISA in 2003, urban students performed academically better than rural students in math, reading, and science. Similarly, OECD and ADB (2015) found out that rural females and males in Indonesia had lower educational attainment rate in almost all education levels, except primary school, than those who live in urban. Almost 20% of the rural population had not completed primary schooling and only 3% of the rural population held a university degree. This urban-rural gap can be explained, at least, by two factors: school condition and economic condition. It is argued that rural schools tend to have less experienced teachers and inadequate access to computer and internet than urban schools. Meanwhile, rural economic conditions can force students to leave school and enter the workforce prematurely.

Related to the standard of living, per capita expenditure could be used as a variable that reflects household's economy condition (Minot, 2006). It is proven that family expenditure is one of the main variables that determines student's score achievement (Coleman, 1966). In other words, a student comes from wealthy family tend to have better academic performance than unwealthy students. This could be explained since unwealthy students have limited financial resources to access better academic services.

2.8. Children Education Background

Related to children academic score, several education characteristics are substantial education inputs. One of the characteristics is school type. According to Newhouse and Beegle (2006), in terms of the national exam, graduated students of public junior secondary schools in Indonesia scored 0.15 to 0.3 standard deviations higher than those who graduated from private schools, after controlling other characteristics. It could be explained by the fact that public school is more likely to recruit and provide free school textbooks than private school. On the other hand, this study found no worse on the average score between students attending Muslim private schools and secular private schools.

Besides the school type, class size is also an important consideration. Glass & Smith (1979) revealed that smaller class size led to higher student academic performance, with the strongest effect on early primary grades and among low-income students. Consistent with the statement before, Lazear (2001) stated that student in the smaller class had bigger chance to learn more from the teacher because of the lower probability of students interruption. By contrast, Barnett et al.(2014) discovered no significant relationship between smaller classroom size and higher children's math skill.

In other research, Goodman & Sianesi (2005) emphasized the urgency of pre-school education, including kindergarten, that showed a positive and long-lasting impact on children cognitive test at age 7 up to age 16, though diminished in size of the effect. Meanwhile, Llach et al. (2009) revealed that students which

attended double shift or longer school day in primary school had 21% higher graduation rate in secondary school than those who did not.

2.9. Previous Researches

This research is using two main studies as references and comparisons to develop the research.

Moore and Snyder (1977) study titled Cognitive Attainment Among Firstborn Children of Adolescent Mothers used Ordinary Least Square (OLS) method to estimate the relationship between maternal age and child's scores on Peabody Picture Vocabulary Test (PPVT) of children ages three to seven. It was revealed that among white children, the scores of children born to older mothers tend to be significantly higher than those who born to younger mothers; but not among African-American and Hispanics. Therefore, Moore and Snyder had to identify factors that could explain child's PPVT score. After including mother's school status at the time of childbearing, the mother's age became significant among Whites and Hispanics; but still not significant among African-American. On the other hand, children of mothers who were enrolled in a postsecondary education program had been found to have significantly higher PPVT score test for each group. Another education indicator is mother test' scores and mother's education when children take the test. Surprisingly, mother test' scores in Armed Forces Qualifying Test (AFQT) – a subset of military service selection test, was a stronger predictor of children test's score than mother's education at conception. This study also suggested that environmental and genetic factors played a substantial role.

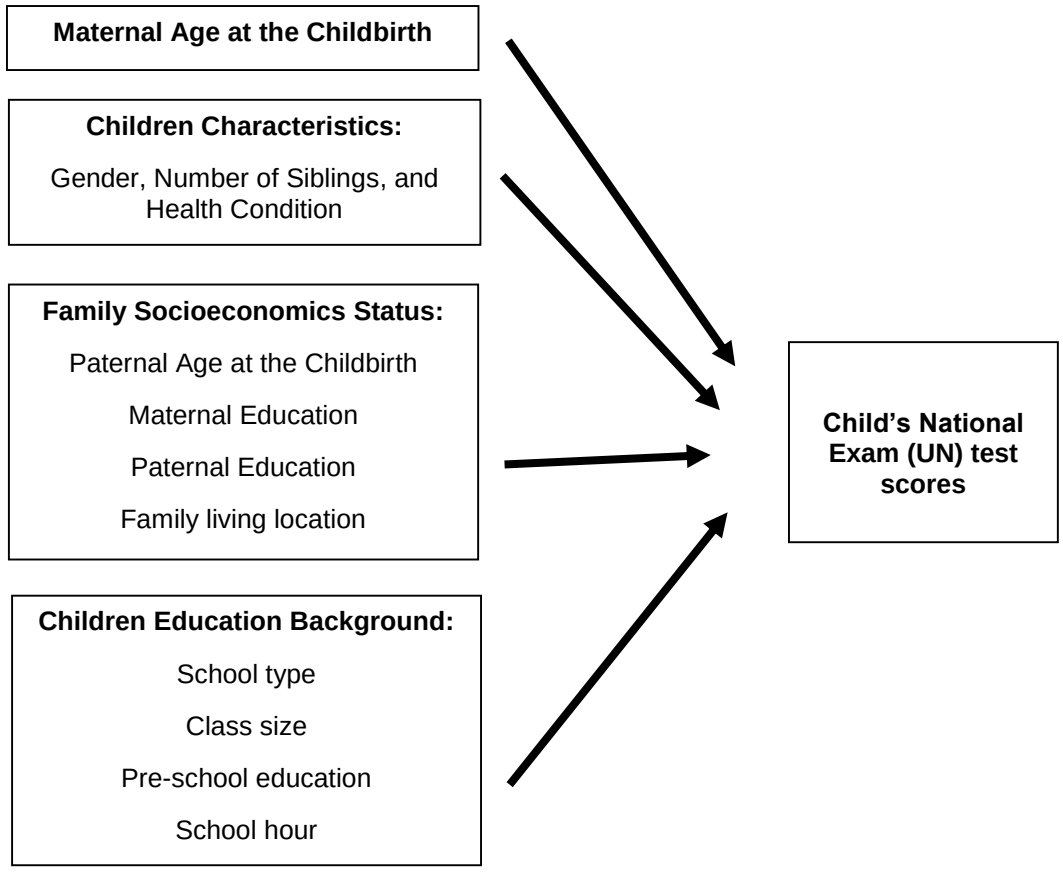
Meanwhile, father's attributes, such as his education and ability, still remained unmeasured in this research because of the lack of information in data.

Not only focusing on early childbearing, Leigh & Gong (2010) tried to estimate the association between maternal age and child outcomes between age range four to five years old. Three indices of child outcomes used are overall outcomes, learning outcomes, and social outcomes. This research used OLS method to analyze and estimate data from Longitudinal Survey of Australian Children (LSAC). Meanwhile, probit regression was also used to identify whether the child is below the lower-cut off for particular indices. In all outcome categories, it was found that children of older mothers had higher outcomes. However, when socioeconomic status, such as family income, parents' education level, the presence of siblings, indicator of living in the remote area, were controlled, the maternal age's coefficients became small and statistically insignificant for each index, except social outcomes. Moreover, results from probit specifications showed that there was no strong evidence of a causal link between maternal age and the probability of child would be in a problematic area for all indices after controlling socioeconomic characteristics. In the end, this study suggested that maternal age is not a predictor of child low cognitive ability, but a marker of another form of disadvantage.

2.10. Research Framework

From the pieces of literature that have been reviewed, the logical framework of this research is depicted as in Picture 4.

Picture 4. Logical Framework of The Research



3. Research Method

3.1. Econometrics Model

This study uses multiple linear model regression with Ordinary Least Square (OLS) method inspired from research titled *Cognitive Attainment Among Firstborn Children of Adolescent Mothers* (Moore & Snyder, 1977) and *Does Maternal Age Affect Children's Test Scores?* (Leigh & Gong, 2010). The specification of the econometric model can be written as:

$$ChildScore_i = f(MaternalAge_i, ChildCharacteristics_i, FamilySES_i, ChildEducationBackground_i, e)$$

Where, $ChildScore$ is a dependent variable of child's score in Math National Exam (UN) of primary school in the form of a continuous number. As the main independent variable, $MaternalAge$ represents mother's age at the childbirth that will be presented in the two form of data; discrete number and group range. Meanwhile, $ChildCharacteristics$ represents child's characteristics controls, including a dummy for child sex, number of siblings, and a dummy for health condition. Another control variable is $FamilySES$ which represents paternal age at the childbirth, a dummy for maternal education and paternal education, dummy for individual living's place, and log per capita expenditure. The last control variable is $ChildEducationBackground_i$ consisted of a dummy for school type of child, average school hour, class size, and a dummy for a child who attended kindergarten.

3.2. Data and Empirical Strategy

In this research, I use data from Indonesian Family Life Survey (IFLS), a continual longitudinal survey collected at the individual, household, and community level, that provides huge information about economic and non-economic indicators. The survey was conducted in 13 provinces by stratified sampling method that represented about 83 percent of the population in Indonesia (Fahmi, 2009).

This research uses 3rd wave and 5th wave of IFLS which, respectively, were conducted in the year 2000 and 2014. Child respondents whose age are from 0 to 1 year old in the year 2000 that indicates an infant (CDC, 2018) becomes the sample of this study. This sample is revisited again in the year 2014 to see the children's academic achievement through their math scores in the National Exam of primary school. This kind of longitudinal review has been widely used by researchers to see the long-term developmental outcomes of infants on their later ages (Blaga et al. 2009; Cardon & Fulker 1991; Lozoff et al. 1991; Betsy Lozoff et al. 1991; Rose & Feldman 1995). I can say that this longitudinal approach is a unique point that can differ this study from previous research which has been conducted. In addition, I also include both characteristics in the year 2000 and year 2014 for variables that may contain time-variant effects. For example, I add children's health condition in the year 2000 (or at the childbirth) and year 2014 (or at the national exam) to see how their health condition change and how it can impact child’s score.

In this research, I do a dataset cleaning in each IFLS wave, IFLS 3 (the year 2000) and IFLS 5 (the year 2014), then, conduct a merge command to link each observation between those years. Since there are information not included in these two waves, for example, children's math test scores in primary school, I can not do a regression on long panel data. Therefore, using cross-section data with wide panel information can be used as a solution to estimate the effect.

Using Book 5 of IFLS, children sample have been reduced from 11.730 to 1.773 observations after creating age limitation between 0 to 1 year old. Then, I have 1668 final child respondents after including information of child gender and child health condition that was also taken from Book 5.

To collect parents observations, I use book K in IFLS 3. Children observation is dropped by keeping only the samples which indicate a relationship of a mother or a father. The initial 54.991 observations in Book K has been reduced to only 18.526 observations after dropping children respondents. In this study, I use a household which has complete parents observations, one father and one mother, then, if there is less or more than one mother and father in a household, it will be dropped. I also try to collect information about parents age and education at the year 2000 which means their age and education level when the child is born. Besides that, information of the number of children siblings and urban or rural living area are also gathered. In addition, per capita expenditure dataset provided by RAND is included. After combing all information related to parents and family, I have 13.888 total observations consisting mothers and fathers, that later reduced to 7.017 observations of parents after it is reshaped to wide data.

In the end, children and parents observations in the year 2000 are merged resulting 1.496 observations remaining in the sample.

The final merged observations of children and parents in the year 2000 is revisited again in the year 2014 to obtain the existing information, such as child health condition, and the additional information, such as child math test score in the national exam of primary school and children education characteristics. In the year 2014, I keep children in the age range between 14-15 years old. After compiling all the children information, there are 1.334 remaining children observations in the sample.

Meanwhile, using the same procedure as I did in IFLS data year 2000, all the parents and family information in the year 2014 are gathered, including total siblings, living in urban or rural, per capita expenditure, and parents' education level. After combining all the parent information, it is known that there are 10.812 remaining parents observations in the sample. In the end, children and parent observations in the year 2014 are merged and result in 1.087 remaining observation in the sample.

At last, the two waves of final datasets in the year 2000 and 2014 can be merged to get the final observations of the sample which only have 629 final observations.

4. Results and Discussions

4.1. Analysis of Statistics Summary

Table ***1*** represents the percentage of respondents based on variables used in this research. As explained in chapter 3, this study uses cross-section data with wide-panel information from IFLS 3 and IFLS 5.

From summary statistics provided, the average math score of child respondents is about 7.3 out of 10 that represents quite high test scores in the sample. These child respondents have both father and mother of varying age. The youngest age of father and mother at the childbirth are, respectively, 19 years old and 16 years old. Based on more specific data provided in Picture 5, young parents aged below 20 years old has the smallest percentage of respondents from total respondents. This is in line with United Nations (2011) findings that reported a significant decline of adolescent childbearing.

On the other hand, the male child is 52 percent of total child respondents. Seen from the health aspects, there is an increasing percentage of a child who sees themselves are healthy from the year 2000 to the year 2014, marked by the average of child healthy variable escalated from 83% to 91% of child respondents. An interesting fact comes from the average of total siblings in the year 2000 to the year 2014 which shows an increasing percentage from average 1.4 siblings to 2 siblings. It is contrary to the data of total fertility rate from United Nations (2011) that showed a slight decline from the year 2000 to the year 2014.

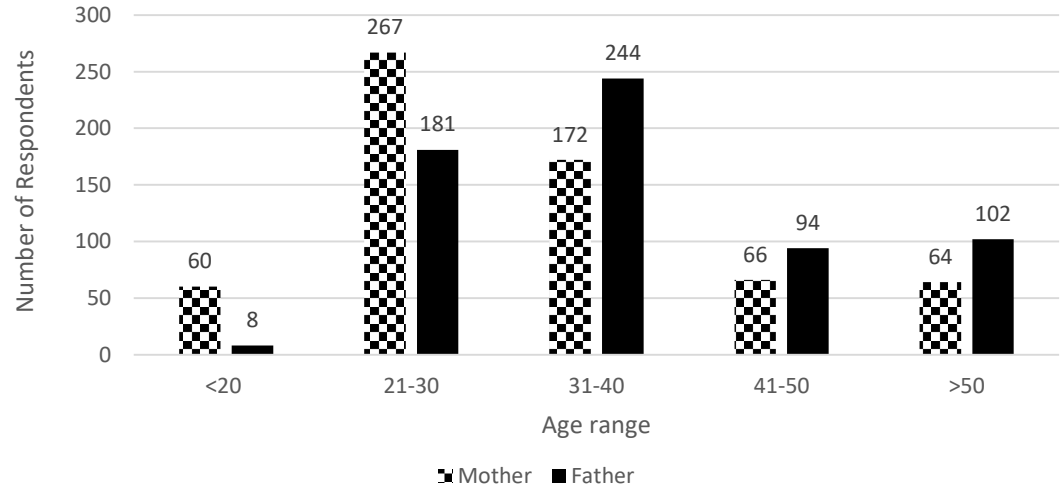
Table 1. Statistics Summary of Variables (n=629)

Variables	Mean	Std. Dev	Min	Max
Child's Score	7.3524	1.5233	0.75	10
Mother's Age	32.7170	11.105	16	72
Father's Age	37.9952	12.6206	19	88
Child's Characteristics				
Male Child	0.5215	0.4999	0	1
Child's number of siblings in 2000	1.4880	1.5481	0	9
Child's number of Siblings in 2014	2.0191	1.4264	0	10
Healthy Child in 2000	0.8394	0.3674	0	1
Healthy Child in 2014	0.9173	0.2756	0	1
Family SES				
Low Educated Mother in 2000	0.5882	0.4925	0	1
Middle Educated Mother in 2000	0.3943	0.4891	0	1
High Educated Mother in 2000	0.0175	0.1312	0	1
Low Educated Mother in 2014	0.5087	0.5003	0	1
Middle Educated Mother in 2014	0.4499	0.4979	0	1
High Educated Mother in 2014	0.0413	0.1992	0	1
Low Educated Father in 2000	0.5517	0.4977	0	1
Middle Educated Father in 2000	0.4149	0.4931	0	1
High Educated Father in 2000	0.0334	0.1798	0	1
Low Educated Father in 2014	0.4754	0.4998	0	1
Middle Educated Father in 2014	0.4610	0.4989	0	1
High Educated Father in 2014	0.0636	0.2442	0	1
Living in Urban in 2000	0.4483	0.4977	0	1
Living in Urban in 2014	0.6169	0.4865	0	1
Log Per Capita Expenditure in 2000	11.8879	0.6955	9.6516	16.6668
Log Per Capita Expenditure in 2014	13.6535	0.5930	11.866	15.5985
Child's Primary School Background				
Public Non Religious School	0.8362	0.3703	0	1
Public Islam School	0.0286	0.1668	0	1
Private Non Religious School	0.0127	0.1121	0	1
Private Islam School	0.1129	0.3167	0	1
Private Other Religion School	0.0095	0.0973	0	1
Average School Hour	5.1844	1.0303	2	10
Class Size	30.2878	9.7762	5	73
Attended Pre-School	0.6280	0.4837	0	1

Simpler explanation in Picture 6 is made to explore the summary statistics of parents education level. From Picture 6, it could be seen that both mother and father respondents are striving for higher education. For example, in the year 2000, 370 respondents or about 59% of the mother respondents are categorized to mother with low education level, but, this number declines to only 51% of the low educated mother in the year 2014. Associated with that condition, the proportion of mothers

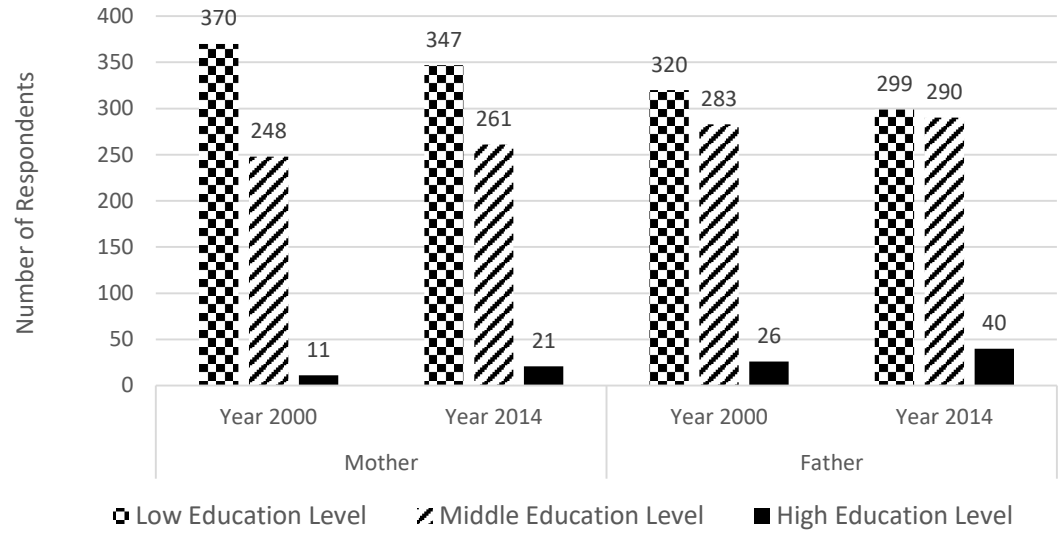
in middle and high education level are also increasing. OECD & ADB (2015) explained the related policies that were predicted increasing Indonesia's education quality during those years, such as the establishment of minimum 20% national budget allocation to education sector, the increasing requirement for teacher academic qualification, the launching of massive school operations grant programme (BOS) and conditional cash transfer programme, BSM and PKH, and the execution of Ministry of Education's Strategic Plan.

Picture 5. Age of Father and Mother at Childbirth



Growing trends of urbanization reported by Central Bureau of Statistics of Indonesia (2013) is also reflected from the sample of this research. The average number of family living in an urban area is found growing from 44% to 62% during the year 2000-2014. The living standard of household reflected from average per capita expenditure is also found growing between the year 2000 to the year 2014.

Picture 6. Parents Education Level (Year 2000 and Year 2014)



The sample of this study shows that almost 84% child respondents are enrolled in public non-religious school type, followed by 11% child in Private Islam school, 2.9% in Public Islam school, 1.3% in Private Non Religious school, and 0,9% in Private other religion schools. Meanwhile, average school hour of primary school in this sample is around 5.2 hours per day. Regarding the class size, summary statistics point out that average students in one class are 30 pupils, with the maximum students in one class around 73 students. The last variable shows that 63% of child respondents attended kindergarten before going to primary school.

4.2. Results

In this part, I estimate several models, following the pattern that is inspired by Leigh & Gong (2010). The first model estimates the relationship between maternal age at the childbirth and child' score in the national exam of primary school, without controlling any variables. I consider this model as the uncontrolled

model. In the second model, father's age variable is controlled. In the third model, I include child's characteristics, such as child's gender, number of siblings, and health condition. In the fourth model, family SES, such as parental education, area of living, and per capita expenditure, were added since it may be correlated with maternal age and child's test score. In the fifth model, I include children's education background in regression since it may impact the child's test score, while Moore & Snyder (1977) and Leigh & Gong (2010) studies ignored child's education characteristics since they used PPVT and LSAC test scores which are taken before the child entered primary school. In addition, for variables that may contain time-variant effects, I include both characteristics in the year 2000 and year 2014.

Table 2 shows the result of each model using a discrete number of maternal age. In each case, I will focus on maternal age rather than paternal age since it is the main variable of this research.

Table 2. OLS Coefficient for Models Predicting Child's Test Score (In The Discrete Maternal Age)

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
Mother's Age	-0.00239	0.0241*	0.0266*	0.0194	0.0190
Child's Characteristics					
Male Child	-	-	-0.286**	-0.304**	-0.263**
Number of Siblings in 2000	-	-	-0.102**	-0.0900*	-0.0903*
Number of Siblings in 2014	-	-	0.0403	0.0667	0.0610
Healthy Child in 2000	-	-	0.114	0.0754	0.140
Healthy Child in 2014	-	-	0.337*	0.304	0.316
Father's Age Control	No	Yes	Yes	Yes	Yes
SES Controls	No	No	No	Yes	Yes
Child's Education Controls	No	No	No	No	Yes
Observation	629	629	629	629	629
R-squared	0.003	0.006	0.026	0.082	0.100

Notes: SES controls are a dummy for maternal education, dummy for paternal education, dummy for individual living in urban. log per capita expenditure. Child's education background controls are a dummy for school type of child, average school hour, class size, and a dummy for a child who attended kindergarten. *,**, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels.

In the first and the second model, it could be seen that maternal age and child's score have a different relationship within these two models. In the first column of the table, it is found that there is no association between mother's age at childbirth and child's math score without controlling any variables. Meanwhile, after it controlled by father's age at the childbirth, maternal age is statistically significant affecting test score of the child. This result confirms Moore & Snyder (1977) research that stated about the importance of including father's attributes along with maternal information since both of them may carry some weights.

In the third model, I find an association between child's score and mother's age after controlling child's characteristics, which is an increased age of the mother by 1 year will impact the increased of children's score by 0.0266 points. In other words, children of older mothers have higher test scores in the national exam than children of younger mothers. Male child and the higher number of siblings are also found having a negative association with child's test score. Meanwhile, child's health condition at national exam year is more impacting child's score than health condition at the childbirth. It suggests that child has to be in a better health condition to obtain higher test score in the national exam.

However, after including a set of socioeconomic variables in the fourth model, maternal age is found insignificant. This result is consistent with Leigh & Gong (2010) research that may explain SES is a stronger predictor of child's cognitive performance than mother's age. Looking further on the result in

***Appendix* 2**, higher maternal education level at childbirth is known having a strong association with a higher test score, respectively, 0.51 and 1.14 point for children born to each middle and high education level of mothers than low educated mothers. On the other hand, father's education level at the childbirth is found insignificant. This result indicates that maternal education at the childbirth has a higher impact on children's academic achievement than maternal age and paternal education level. It is supported by Moore & Snyder (1977) research that reported the effects of maternal education level exceeded the effects of maternal age on child's score among African-American children.

An interesting finding is revealed in the fourth model. Even though father's education level at the childbirth does not affect child's score, but his education level at the national exam in the year 2014 is found significantly affecting child's score. It is discovered that children of a middle educated father at the national exam year score 0.31 point higher than children of a low educated father. I rationalize this as a sign that mothers play an important role to teach and develop children's intelligence at their early development, while fathers are predicted to hold the critical role as a where-to-ask person when a child does not understand about an academic subject in later development. It also could be explained that children frequently ask their fathers about an academic question because their fathers are more likely to understand difficult and conceptual questions, especially in math. This view is supported by Halpern et al. (2007) that reported male, in this context is the father, are better in mathematical abilities, including reasoning and spatial skills, rather than females, in this context is the mother, in the later education grades.

In the fifth model, maternal age remains insignificant after controlling child's education background. However, maternal education at childbirth and paternal education at national exam still significant affecting child's math score. From this model, it is also found that there is no apparent gap of children's score among the school type they are enrolled.

Although a set of children characteristics, family SES, and children education background have been included in the models, it does not rule out the possibility of biased or spurious regression. Therefore, I alter the research model of maternal age which previously in the form of discrete numbers into a specific group in order to check the robustness and consistency of regression results (see Table 3).

Table 3. OLS Coefficients for Models Predicting Child's Test Score (In the Specific Group Maternal Age)

VARIABLES	Model 6	Model 7	Model 8	Model 9	Model 10
Mother's Age (Base: <21)					
21-30	0.548**	0.453*	0.490*	0.330	0.342
31-40	0.529**	0.427	0.582**	0.384	0.409
41-50	-0.0217	-0.0414	0.0894	-0.0364	-0.0368
>50	0.441	0.575	0.617	0.389	0.380
Child's Characteristics					
Male Child	-	-	-0.289**	-0.305**	-0.262**
Number of Siblings in 2000	-	-	-0.128**	-0.118**	-0.123**
Number of Siblings in 2014	-	-	0.0269	0.0609	0.0535
Healthy Child in 2000	-	-	0.0878	0.0572	0.123
Healthy Child in 2014	-	-	0.366*	0.324	0.335
Father's Age Control	No	Yes	Yes	Yes	Yes
SES Controls	No	No	No	Yes	Yes
Child's Education Controls	No	No	No	No	Yes
Observations	629	629	629	629	629
R-squared	0.021	0.025	0.048	0.097	0.116

Notes: As for Table *2*

Through the OLS coefficient in Table 3, there are several substantial points. First, differs from result using maternal age in the form of a discrete number, the relationship between maternal age and child's test score is significantly positive in

the uncontrolled model. This association remains positive after it is controlled by paternal age and child's characteristics. Second, the number of siblings at the childbirth and health condition at the national exam are found having a relationship with child's score. Children's number of the sibling has a consistent negative association with children's test score in all models which validates Becker's (2009) theory of trade-offs between a quantity of children and quality of resources parents give to their children. Meanwhile, better child's health condition at national exam leads to higher test score in the national exam. Third, among all SES controls, mother's education level at the childbirth is standing out as a predictor of child's score. It is even still significant when maternal age turns insignificant after controlled (see Appendix 3). Meanwhile, paternal education level is not significant in all models. The last differs from estimation result using discrete maternal age, it is found that children enrolled in public Islam school type have lower test score than public non-religious school type. Therefore, it explains the superiority of public non-religious school in Indonesia that appears to employ higher quality inputs (Newhouse & Beegle, 2006).

From the two estimation result using discrete and group range of maternal age, several consistent results are revealed. It can be seen that older maternal age has an association with higher child's score after it is controlled by paternal age and child's characteristics. However, when SES and child's education background are controlled, mother's education level at the childbirth becomes a consistent predictor of child's test score rather than the maternal age.

5. Summary and Conclusion

5.1. Conclusion

In this paper, I framed two research questions: Does maternal age at childbirth affect child's score? Is this relationship robust after including child characteristics, family SES, and child's education characteristics on the model?

To answer these question, I examine this research in two data form of maternal age; first, maternal age at childbirth in the form of discrete number; second, maternal age at childbirth in the form of group range.

In the uncontrolled model, the discrete form of maternal age at the childbirth has no relationship with child' score. Meanwhile, after controlling paternal age, this relationship becomes significantly positive. In other words, children of older mothers have higher test score than children of younger mothers. This result confirms previous research conducted by Moore & Snyder (1977) that paternal age may carry some weight of the effects on child's score. It is also found that when child's sex, number of siblings, and health condition is controlled, maternal age is positively associated with child's test score in primary school. However, when family socioeconomic status and children' education background are included in the model, maternal age become statistically insignificant. This study also finds maternal education in childbirth as a critical and consistent predictor of child's test score rather than maternal age. Related to the impact of father's attributes, the higher paternal educational level at the time children taking the exam have a positive association with higher children's test score.

Using maternal age in the form of group range, the result is slightly different. It is found that maternal age is significantly positive affecting child's score in the uncontrolled model. This result remains the same even after controlling effects of paternal age and child's characteristics. However, it suddenly becomes statistically insignificant after including family SES and child's educational background, that turns out maternal educational level as a core predictor of child's score rather than maternal age and paternal education.

Through two mechanisms have been conducted, I draw to a close that maternal age is not a consistent predictor of child's test score in the primary school. Further, this study suggests that maternal education at the childbirth is a better predictor of child's score than maternal age. Thus, the mother has also to focus on their education level that will be impactful to the children's test scores.

5.2. Research Limitation

There are, at least, four general limitations of this research. First, the final sample of this study is relatively small to be able to represent all Indonesia's cases, further research has to have a larger sample to ensure the validity of the results. Second, children ideally take their national exam by the age of 12 years old or in this case by the year 2012. Meanwhile, several variables such as child's siblings, health condition, and all family socioeconomic background, are reflecting the condition of the year 2014 due to the provided IFLS data only exists in that year. The third, the children sample of this study are not firstborn children which may receive less effect of maternal age at the childbirth (Moore & Snyder, 1977). The

last, this research ignores the health risk of younger and older maternal age at the childbirth that may result maternal and neonatal death.

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Appendix

Appendix 1. Definition of Variables.

Variable	Description
Child Math Score	Child math score in primary school national exam year 2014
Mother's Age	Mother's age at the childbirth
Father's Age	Father's age at the childbirth
Child Characteristics	
Male Child	Child gender is male=1, female=0
Number of Siblings in 2000	Child's number of siblings at childbirth
Number of Siblings in 2014	Child's number of siblings at national exam year
Healthy Child in 2000	Child's health condition when was born, 1= healthy, 0=not healthy
Healthy Child in 2014	Child's health condition at national exam year, 1= healthy, 0=not healthy
Family SES	
Middle Educated Mother in 2000	Middle educated mother at the childbirth=1, low educated mother=0
High Educated Mother in 2000	High educated mother at the childbirth=1, low educated mother=0
Middle Educated Mother in 2014	Middle educated mother at national exam year=1, low educated mother=0
High Educated Mother in 2014	High educated mother at national exam year=1, low educated mother=0
Middle Educated Father in 2000	Middle educated father at childbirth=1, low educated father=0
High Educated Father in 2000	High educated father at childbirth=1, low educated father=0
Middle Educated Father in 2014	Middle educated father at national exam year=1, low educated father=0
High Educated Father in 2014	High educated father at national exam year=1, low educated father=0
Log Per Capita Expenditure in 2000	Log Per Capita Expenditure at the childbirth
Log Per Capita Expenditure in 2014	Log Per Capita Expenditure at national exam year
Living in Urban in 2000	Child's living in urban area at the childbirth=1, living in rural area=0
Living in Urban in 2014	Child's living in urban area at national exam year=1, living in rural area=0
Child's Primary School Background	
Public Islam School	Child is enrolled in public islam school=1, in public non religious school=0
Private Non Religious School	Child is enrolled in private non religious school=1, in public non religious school=0
Private Islam School	Child is enrolled in private islam school=1, in public non religious school=0
Private Other Religion School	Child is enrolled in private other religion school=1, in public non religious school=0
Average School Hour	Child's average school hour
Class Size	Number of students in oone class

Variable	Description
Attended Pre-School	Child attended kindergarten=1, did not attend kindegarten=0

Appendix 2. Estimation Result Using Maternal Age in The Form of Discrete Number

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
Mother's Age	-0.00239	0.0241*	0.0266*	0.0194	0.0190
	(0.00563)	(0.0143)	(0.0148)	(0.0146)	(0.0145)
Father's Age		-0.0251**	-0.0222*	-0.0127	-0.0133
		(0.0123)	(0.0127)	(0.0127)	(0.0126)
Child's Characteristics					
Male Child			-0.286**	-0.304**	-0.263**
			(0.121)	(0.120)	(0.119)
Number of siblings in 2000			-0.102**	-0.0900*	-0.0903*
			(0.0500)	(0.0529)	(0.0543)
Number of Siblings in 2014			0.0403	0.0667	0.0610
			(0.0562)	(0.0581)	(0.0597)
Healthy Child in 2000			0.114	0.0754	0.140
			(0.159)	(0.153)	(0.156)
Healthy Child in 2014			0.337*	0.304	0.316
			(0.203)	(0.202)	(0.204)
Family SES					
Middle Educated Mother in 2000				0.510***	0.483**
				(0.196)	(0.194)
High Educated Mother in 2000				1.139**	1.101*
				(0.569)	(0.613)
Middle Educated Mother in 2014				-0.195	-0.199
				(0.188)	(0.187)
High Educated Mother in 2014				0.240	0.250
				(0.506)	(0.511)
Middle Educated Father in 2000				-0.223	-0.236
				(0.180)	(0.180)
High Educated Father in 2000				-0.562	-0.629
				(0.442)	(0.452)
Middle Educated Father in 2014				0.312*	0.283
				(0.183)	(0.183)
High Educated Father in 2014				0.559	0.579*
				(0.346)	(0.347)
Living in Urban in 2000				0.109	0.0905
				(0.154)	(0.152)
Living in Urban in 2014				0.146	0.118
				(0.155)	(0.153)
Log Per Capita Expenditure in 2000				-0.0320	-0.0556
				(0.113)	(0.114)
Log Per Capita Expenditure in 2014				0.159	0.157
				(0.121)	(0.121)
Child's Primary School Background					
Public Islam School					-0.714
					(0.440)

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
Private Non Religious School					-0.413
					(0.635)
Private Islam School					-0.225
					(0.184)
Private Other Religion School					-0.0313
					(0.456)
Average School Hour					0.0778
					(0.0617)
Class Size					0.0137**
					(0.00640)
Attended Pre-School					0.0347
					(0.134)
Constant	7.430***	7.519***	7.141***	4.876***	4.412***
	(0.195)	(0.199)	(0.335)	(1.620)	(1.642)
Observations	629	629	629	629	629
R-squared	0.000	0.006	0.026	0.082	0.100

Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1)

Appendix 3. Estimation Result Using Maternal Age in The Form of Group Range

VARIABLES	Model 6	Model 7	Model 8	Model 9	Model 10
Mother's Age (Base: <21)					
21-30	0.548**	0.453*	0.490*	0.330	0.342
	(0.237)	(0.247)	(0.250)	(0.254)	(0.248)
31-40	0.529**	0.427	0.582**	0.384	0.409
	(0.242)	(0.282)	(0.295)	(0.294)	(0.290)
41-50	-0.0217	-0.0414	0.0894	-0.0364	-0.0368
	(0.298)	(0.374)	(0.378)	(0.379)	(0.382)
>50	0.441	0.575	0.617	0.389	0.380
	(0.288)	(0.441)	(0.434)	(0.431)	(0.435)
Father's Age (Base: <21)					
21-30		0.836	0.859	0.725	0.746
		(0.713)	(0.732)	(0.777)	(0.754)
31-40		0.840	0.939	0.836	0.862
		(0.723)	(0.743)	(0.787)	(0.765)
41-50		0.885	1.069	1.056	1.087
		(0.746)	(0.768)	(0.806)	(0.784)
>50		0.600	0.801	0.885	0.890
		(0.785)	(0.811)	(0.846)	(0.826)
Child's Characteristics					
Male Child			-0.289**	-0.305**	-0.262**
			(0.120)	(0.120)	(0.118)
Child's number of siblings in 2000			-0.128**	-0.118**	-0.123**
			(0.0574)	(0.0592)	(0.0604)
Child's number of Siblings in 2014			0.0269	0.0609	0.0535
			(0.0569)	(0.0593)	(0.0606)
Healthy Child in 2000			0.0878	0.0572	0.123
			(0.158)	(0.154)	(0.156)
Healthy Child in 2014			0.366*	0.324	0.335
			(0.204)	(0.204)	(0.205)
Family SES					
Middle Educated Mother in 2000				0.458**	0.429**
				(0.198)	(0.195)
High Educated Mother in 2000				1.146**	1.105*
				(0.568)	(0.614)
Middle Educated Mother in 2014				-0.141	-0.139
				(0.189)	(0.189)
High Educated Mother in 2014				0.288	0.306
				(0.510)	(0.516)
Middle Educated Father in 2000				-0.203	-0.216
				(0.177)	(0.175)
High Educated Father in 2000				-0.535	-0.611
				(0.446)	(0.454)
Middle Educated Father in 2014				0.297	0.269
				(0.181)	(0.181)
High Educated Father in 2014				0.471	0.492
				(0.355)	(0.355)
Living in Urban in 2000				0.109	0.0885
				(0.152)	(0.150)
Living in Urban in 2014				0.127	0.0966
				(0.154)	(0.152)

VARIABLES	Model 6	Model 7	Model 8	Model 9	Model 10
Log Per Capita Expenditure in 2000				-0.0378	-0.0605
				(0.115)	(0.117)
Log Per Capita Expenditure in 2014				0.139	0.138
				(0.122)	(0.121)
Child's Primary School Background					
Public Islam School					-0.707*
					(0.427)
Private Non Religious School					-0.455
					(0.638)
Private Islam School					-0.248
					(0.184)
Private Other Religion School					-0.0113
					(0.504)
Average School Hour					0.0782
					(0.0598)
Class Size					0.0147**
					(0.00650)
Attended Pre-School					0.0169
					(0.135)
Constant	6.932***	6.193***	5.890***	4.310**	3.745**
	(0.218)	(0.686)	(0.758)	(1.828)	(1.822)
Observations	629	629	629	629	629
R-squared	0.021	0.025	0.048	0.097	0.116

Robust standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1)

Revisiting Growth and Inequality Trade-Off: A Happiness Approach

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ABSTRACT

Research on happiness as an alternative measurement of wellbeing is flourishing in the last decade. In general, the literature on happiness studies can be categorized into two areas: the literature that seeks to evaluate the measurement issue and the literature that attempt to find empirical evidence of correlation of happiness with other socioeconomic variables. This research intends to divert from these two major branches of literature by discussing application of happiness measurement for solving policy debate in economics. One of the oldest and probably the biggest debate on economic policy is to answer which one to prioritize in the economic growth and inequality trade-off: enhancing growth or improving income distribution? This paper aims at using the happiness measurement to resolve the trade-off between income distribution and economic growth in Indonesia using macro and micro model. The micro model utilize happiness questions at household level survey data from 4th and 5th wave of Indonesia Family Life Survey (IFLS) from RAND, while the macro model utilize index of happiness at provincial level from Badan Pusat Statistik (BPS). At the macro level, we find that economic growth positively affects happiness level, but not inequality. On the contrary, at the micro level, we find that inequality has a positive effect on happiness, but not economic growth. Furthermore, we also find that at the micro level the finding vary for individuals across income group. Inequality matters for the upper-middle-income group individuals, they are happier when income inequality increases. Whereas, for the lower-middle-income group individuals, their happiness do not related to income inequality. However, individual per capita income positively affects happiness in both income groups. The policy implication of our findings is that to increase overall happiness of population, Indonesian government should focus more on increasing individual income and economic growth, rather than fixing income distribution.

Keywords: Growth-inequality trade-offs, Happiness, Indonesia

Introduction

Background Studies

Referring to Preamble of 1945 Constitution of the Republic of Indonesia one of objectives is "to promote common welfare". Based on these goals Indonesian government needs to have indicators in formulating policies to realize welfare of community. One commonly used welfare indicator is Gross Domestic Product (GDP). Since it was first introduced in 1944 at Bretton Woods Conference, Gross Domestic Product (GDP) serves as a measure of economic progress and since 1960s has been used as an indicator of welfare.

As time passes, some weakness of GDP is found. Weakness of GDP is not consider external cost, increase absolute income, variety of wealth, income distribution, quality of social relations, privacy and challenges, community life challenges, no problems outside markets or informal transactions, and profit from economic activities on the environment (Den Bergh, 2009; Fleurbaey, 2009; Rahayu, 2016).

The weaknesses of GDP became background of "Beyond GDP" conference held by European Commission, European Parliament, Club of Rome, OECD, and WWF, attended by 650 delegates from more than 50 countries on 19 to 20 November 2007 (European Commission, 2009). “Beyond GDP” produce some alternative step to solve the weakness, one of alternative is determining indicators that can demonstrate wealth and prosperity of nation.

Proposals from Professor for Economic Policy and Non-market Economics University of Zurich in that conference is to make a measure of public's happiness to solve problems of GDP (European Commission, 2009).

> “I can assure you that the life satisfaction indicators we have today are quite valid. When we ask people, ‘How satisfied are you with your life? they don’t just tell you some nonsense; they tell you what they really think. It’s surprising, but it’s true. They tend to tell you how satisfied with their life they really are, and this is confirmed by the fact that people who are satisfied with their life laugh more than other people. They smile and are more sociable. Very importantly they sleep well and they are healthier than others. Happiness leads to better health, and of course, the happier people are, the fewer suicides there are. So these indicators of happiness or life satisfaction are really quite good.”

The measurement of happiness in government began to develop when the previous King Bhutan, Jigme Singye Wangchuck, introduced philosophy of Gross National Happiness (GNH). GNH has four pillars of development, namely equitable development in socio-economic, cultural, environmental sustainability, and good governance (Chen, 2015). GNH is the first index to integrate economy (object) and happiness (subject) into a socio-economic development framework. The concept of GNH is measured from nine aspects of the happiness of nation, namely: psychological tranquility, health, education, use of time, resilience and cultural diversity, governance, community vitality, environmental resilience and diversity, and living standards (GNH Institute, 2011).

Indonesia uses Bhutan's Gross National Happiness a benchmark for establishment of a happiness index. This is because of success experience of Bhutan in producing happiness indicators as a means of measuring prosperity (Haryanto, 2015). Indonesia measures happiness of the people in each province using survey results conducted by Badan Pusat Statistik (BPS).

Until now Indonesia using the measurement of community happiness as a source of information to answer with statistical question "Is society happy?". However, the measurement results have not been used as a reference in policy making. Kittiprapas et al (2007) stated at an international conference on "Happiness and Public Policy" held in Bangkok in 2007 by the United Nations Conference Center (UNCC) that public policy schemes need to be redesigned to enhance individual and social happiness. It is important for policymakers to evaluate effectiveness of policies that have been implemented. This study sees the opportunity to be able to use happiness index as the material of policy formulation in Indonesia.

One of the problems that happened in Indonesia is tradeoff economic growth and income distribution. Kuncoro (2017) using time series data of GDP per capita and Gini Coefficient of 1964-2015 in Indonesia, found that economic growth and income distribution inequality remained positively related. Increased economic growth and more equitable distribution of income are equally important, yet very difficult to realize simultaneously. The government must decide to continue to achieve economic growth with the problem of higher inequality of income distribution or overcome inequality of income distribution but reduce economic growth.

This paper aims at using the happiness measurement to resolve trade-off between income distribution and economic growth in Indonesia. So it can provide a policy view that can be formulated by the government to achieve happiness of society as a general welfare approach. Research on happiness with tradeoff economic growth and income distribution in Indonesia is often done as research conducted Agusalim (2016) but no one has used happiness index and not in macro and micro scale. This research uses two models namely Macro Happiness and Micro Happiness. So that it can produce the right decision by looking at the macro condition in aggregate at the provincial level and at the micro condition at the household level. The index of happiness belonging to Badan Pusat Statistik (BPS) is used as a macro analysis as well as the longitudinal data of IFLS 4 and IFLS 5 belonging to RAND is used as a micro analysis.

Literature Review

Relationship between economic growth and income distribution be affected of economy condition. The possibility of changing patterns in distribution of income and economic growth is further examined in some literature. Kuznets (1955) shows hypotheses when economic growth influence of structural changes in economy, economic sector has increased productivity but not all sectors, causing inequality distribution of income in the community (Appendix 1).

There are several empirical studies on tradeoff of economic growth and income distribution. Development of research conducted by Bengoa and Sanchez-Robles (2005) on the relationship of economic growth and inequality of income distribution depends on conditions in country. Results of this study indicate that in high-income countries both variables have a negative relationship, which means that higher economic growth will reduce inequality of income distribution. While in medium-income country relationship of economic growth and income inequality form an inverted U-curve which indicates in early stages of economic growth an increase in GDP per capita will lead to an increase in inequality of income distribution and once in a position of maximum economic growth inequality will decrease as increases economy growth.

Economic growth has long been considered an important goal of economic policy. In recent years it has been disputed by studies. That the most important is happiness of society. If economic growth does not have much effect in improving social welfare, then it should not be the main objective of government policy (Stevenson and Wolfers, 2008). Happiness is influenced by ability to meet basic needs that reflect quality of life. Economic growth becomes one of the components that affect welfare of society. Some argue that economic growth is positively related to wellbeing such as increasing food intake, infant survival, and life expectancy (Firebaugh and Beck, 1994; Firebaugh and Goesling, 2004). While some literatures with different variables, methods, countries and years, find the same result: economic growth is important to reflect the satisfaction of fulfilling basic needs (Wimberley and Bello, 1992).

As explained by Easterlin (1974) who found that income is positively associated with happiness, as well as development research done with consistent results by Easterlin (1995) and Di Tella et al (2003). While happiness can also affect economic growth. Graham et al. (2004) and Oswald et al. (2015) found that a happy person tended to have high incomes. This is because happiness makes a person work more productively so that it will have an impact to increase of his / her accumulation.

In the others side, impact of inequality in distribution of income to happiness is rooted in a decreased level of satisfaction with income and reduced social solidarity. Compared to low-income communities, high-income communities have lower levels of satisfaction with income (Mikucka et al., 2017). Relationship between inequality of income distribution and happiness depends on the level of development of a country (Iniguez-

Montiel's, 2014). For example, study results show that inequality of income distribution reduces happiness only in some groups, while overall impact inequality in distribution of income is positively related to happiness in middle-income countries.

Psychological literature of economics has two main theories explaining the relationship between satisfaction inequality of income distribution and happiness namely Tunnel Theory and Relative Deprivation Theory (Tavor et al., 2017). According to Tunnel Theory the inequality of income distribution increases life satisfaction (Hirschman and Rothschild, 1973). While Relative Deprivation Theory shows if inequality income distribution reduces the happiness of society. According to Epstein and Spiegel (2001) the basic assumption in most studies is that the average disparity rate of higher income distribution leads to decreased happiness in the population due to unfair taste in the distribution of 'cakes', on a micro and macro scale such as Wu and Li (2013) and Oishi et al. (2011) research. The results of this study do not show the relationship of negative significance so that the result is ambiguous between inequality income distribution and community happiness.

Happiness have a relationship with personal characteristics of people like family condition, economy, education, health, and environment. Blanchflower and Oswald (2008) found that age has a relationship with happiness forming the U-curve, meaning it is the lowest happiness when in middle age between young and old. In addition to age, there is a gender, Lane (2000) shows with a dummy of gender if men have less happiness than women. Family conditions affect a person's daily psychology, Argyle and Hills (2001) found that people who have no children, divorced, are negatively related to happiness. Household expenditure is used to determine whether household income is associated with happiness (Blanchflower and Oswald, 2004). Status of employment finding whether being unemployed has a detrimental effect on happiness (Clark and Oswald, 1994).

Education also shows a contribution to happiness by allowing individuals to better adapt environmental change (Sujarwoto and Tampubolon, 2014). Areas that have high school life expectancies reflect good education. On the other hand, unfulfilled education can decrease happiness (Graham, 2009). Health status is also used as a control can be seen from life expectancy. Education and health are positively related to happiness (Frankenberg and Jones, 2004).

Social and religious have a relationships with happiness Helliwell (2006), found the social relationship to be significant. Some studies have also found that religious people tend to enjoy life and have good mental health (Abdel-Khalek, 2006). Geographic location is included to provide control over individual environments. People living in cities tend to have a higher level of happiness than in the village because of the existing facilities, other than that a safe environment will increase happiness.

Data and Method

This research trying to prove trade off economic growth (per capita GRDP) and income distribution (gini) was conducted in 2007 to 2016. The year's selection adjusts to the availability of data from public happiness, for Macro Happiness using happiness index in 2013 and 2016 for Micro Happiness using IFLS in 2007 (IFLS 4) and 2014 (IFLS 5 as robustness). For control variable in this equation using share of agriculture sector in GRDP. This equation using data in province level, just to look if in the period of research there trade off or not in Indonesia. This research using Estimator Fixed Effect Model for testing trade off.

Macro Happiness model uses happiness index of Badan Pusat Statistik (BPS) in 2014 and 2017 (using 2014 method) for dependent variable, due to implementation of happiness survey conducted in first semester this paper use t-1 variables in 2013 and 2016. Independent variable in this equation is economic growth (per capita GRDP) and income distribution (gini) in province level. For control variables use life expectancy, school life expectancy, sex ratio in province level, and dummy year. This research using Estimator Pooled Least Square for Macro Happiness.

Micro Happiness model uses question SW12 in IFLS “Taken all things together how would you say things are these days would you say you were very happy, pretty happy, or not too happy?” for dependent variable. Independent variable in this equation is economic growth (per capita GRDP) and income distribution (gini) in district level because we use individual observation if use province level it is can not cover effect to individual

happiness. For control variable use personal characteristics, family condition, economy, education, health, environment, and dummy province. This research using Estimator Ordinary Least Square for Micro Happiness.

Function for Macro Happiness :

Happy = f (gini coefficient, GRDP per capita, macro [life expectancy, school life expectancy, sex ratio], year, error term)

Function for Micro Happiness :

Happy = f (coefficient gini, GRDP per capita, micro [personal characteristics, family condition, economy, education, health, environment], province, error term]

Result

The result of Kuznets model estimate shows if tradeoff economic growth (**lnpdrbk**) and inequality of income distribution (**lngini**) in 33 provinces in 2007 – 2016 are occur and consistent not affected by control variables or linear model specifications (**pdrbk** and **gini**) and natural logarithms (ln) (**lnpdrbk** and **lngini**)]. However, this research found no consistent evidence of hypothesis of Kuznets in Indonesia. This is shown by the difference in results when using variables with natural logarithmic specifications (ln) and linear variables. When the model uses a natural logarithmic variable (ln) there is no Kuznets hypothesis found, but if the model uses linear variables found in Kuznets hypothesis (see Appendix 4).

Macro Happiness model estimates show that economic growth (**lnpdrbk**) has a positive effect on improving happiness (**lnhi**) but inequality of income distribution is not significant. So the result of Macro Happiness model is preferred economic growth. In accordance with theoretical basis of economic growth can increase happiness (Firebaugh and Beck, 1994; Firebaugh and Goesling, 2004) and endogenous happening between economic growth with happiness (Graham et al, 2004 and Oswald et al, 2015) and has been overcome by instrumental variables (**urban**). (see Appendix 5).

Meanwhile, according to Tavor et al (2017), there are two theories that explain the impact of inequality income distribution to the happiness of Tunnel Theory and Relative Deprivation Theory. This research assume if on a macro scale both theories occur together so as not to be seen the impact of inequality income distribution to happiness. In addition, inequality at the national level cannot be interpreted, because people are more affected by the inequality of income distribution at a location closer to them.

In Micro Happiness model, this research call for district economic growth (**lnpdrbk**) is not significant in affecting happiness, even though individual per capita income (**lneks_kapita**) positively impacts happiness of individual. But inequality of income distribution (**lngini**) significantly affects happiness of individual (**happy**) positively. This is certainly logically difficult to accept. This research try to explores these findings by estimating Model 6, Model 7, and Model 8 with the aim of gaining an explanation for why inequality income distribution can increase happiness and economic growth has no effect (see Appendix 6). In the Model 6 **inc_gap** (**lneks_kapita - lnpdrbk**) replacing the **lnpdrbk** and **lneks_kapita**, the estimation results show that if **inc_gap** is positive and the positive remains positive. This means that if the individual income (**lneks_kapita**) rises higher than the district income average (**lnpdrbk**) then happiness increases (**happy**). This means that the higher gap between individual income and regional income happiness is increasing.

In Model 7 and Model 8 each viewing by respondent's income group, Model 7 is estimate using only respondents with the top five decile income (upper middle-income group). While Model 8 is the bottom five decile group (middle to lower income). Model 7 shows if this is significant 5% and **lnpdrbk** remains insignificant. So in high-income groups, the inequality of income distribution increases happiness. However, the results of Model 8 show that **lnpdrbk** and **lngini** have no impact on the happiness of low-income communities. The estimation result of Macro Happiness model is different from the research conducted by Mikucka et al (2017) and Wu and Li (2017) who found that inequality has a positive impact on happiness, but in accordance with the research of Tavor et al (2017), that income distribution inequality has a positive effect on happiness in high-income group of respondents in micro or household scale (see Appendix 6).

The conclusions of the estimates are that individuals will be happy when individual per capita income increases are higher than the constant per capita GDP of districts as indicated by positive and significant **inc_gap** coefficients, consistent with findings that inequality of income distribution has a positive impact on happiness. However, this is only relevant for the upper-middle-income group as indicated by significant positive per capita income coefficients (**lneks_kapita**) and income distribution (**lngini**) which also remain significantly positive. Whereas for individuals with low middle income only individual per capita income (**lneks_kapita**) is positive significantly affect happiness (**happy**) while income distribution (**lngini**) is not. This means that inequality does not consistently affect happiness for different income groups, but individual income consistently positively affects both groups (see Appendix 6).

Robustness Micro Happiness Model

The test is re-done for Micro Happiness model using Indonesian Family Life Survey 5 (IFLS 5) data. The estimation results using IFLS 5 data resulted in similar estimates of the relationship of happiness to economic growth and income distribution inequality.

Conclusion

So the results of Macro Happiness and Micro Happiness models show that economic growth affects aggregate happiness at provincial level, but not at the household level (using district GRDP and Gini). The inequality of income distribution does not affect aggregate at the provincial level because it is too far away to be felt by the community. In addition, inequality impact of income distribution on happiness is influenced by income groups, because if high-income groups will be happy when inequality increases, but for low-income groups, the inequality of income distribution has no effect on their happiness.

This result conclude that Central Government and Local Government have a corresponding but distinct focus. The central government in an effort to improve general welfare with a happiness approach focuses on policies to improve economic growth while Local Governments focus on increasing individual per capita income at micro level.

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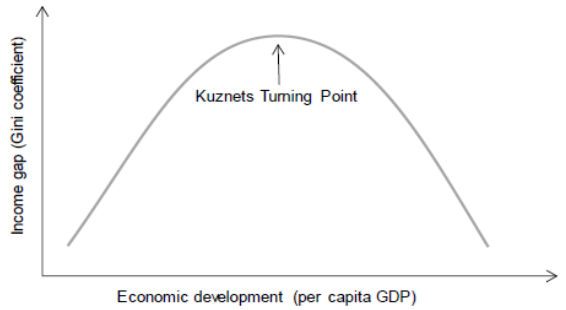
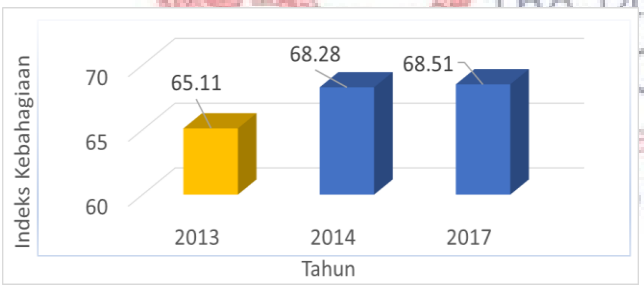
APPENDIX

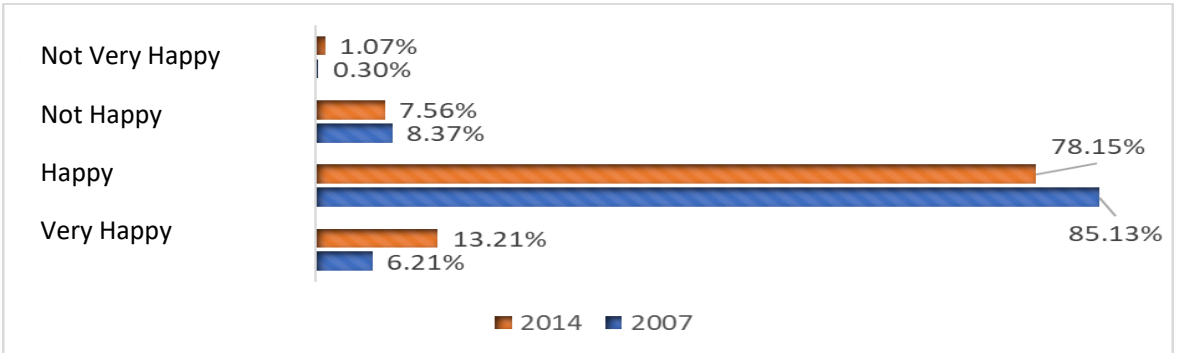
Appendix 1



Appendix 2



Appendix 3



Appendix 4

	lngini		
	Model 1	Model 2	Model 3
lnpdrbk	0.0466*** (6.74)	0.0853** (2.58)	0.0650* (1.95)
lnpdrbkQ		-0.00745 (-1.35)	-0.00469 (-0.84)
agr			-0.00333 (-1.67)
cons	3.460*** (193.93)	3.415*** (74.05)	3.519*** (55.98)
N	330	330	330
R^2	0.151	0.157	0.177

Appendix 5

```
Tests of endogeneity
Ho: variables are exogenous

Robust score chi2(1)          =  3.33995  (p = 0.0676)
Robust regression F(1,58)     =  3.29227  (p = 0.0748)
```

First-stage regression summary statistics

Variable	R-sq.	Adjusted R-sq.	Partial R-sq.	Robust F(1,59)	Prob > F
lnpdrbk	0.7911	0.7698	0.3201	22.3614	0.0000

	lnhi				
	Model 1	Model 2	Model 3	Model 4	Model 5
lnpdrbk	-0.00524 (-0.93)		-0.00329 (-0.66)	0.00742 (1.18)	0.0228** (2.11)
lngini		-0.0649 (-1.33)	-0.0587 (-1.27)	-0.0468 (-1.11)	-0.0546 (-1.28)
ahh				0.000129 (0.10)	-0.00123 (-0.84)
hls				0.0205*** (3.84)	0.0209*** (4.10)
sex				0.00136 (1.46)	0.000402 (0.39)
yr10				0.0139* (1.72)	0.0287** (2.34)
_cons	4.255*** (269.52)	4.474*** (25.48)	4.461*** (26.36)	3.974*** (20.84)	4.139*** (19.57)
N R^2	66 0.017	66 0.046	66 0.052	66 0.381	66 0.336

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendix 6

	happy	
	Model 1	**Model 2**
lneks_kapita	0.539*** (8.64)	0.611*** (9.57)
Age	-0.126*** (-4.56)	-0.131*** (-4.76)
Ageq	0.00128*** (3.86)	0.00138*** (4.14)
Educ	0.265*** (11.06)	0.263*** (10.95)
health	0.0523*** (7.29)	0.0519*** (7.24)
health_peer	0.0575*** (5.77)	0.0576*** (5.79)
religiosity	0.0438*** (7.34)	0.0497*** (8.22)
sex	-0.957*** (-6.37)	-0.953*** (-6.36)
ur_loc	0.0326 (0.23)	0.159 (1.07)
divorce	-2.753*** (-7.19)	-2.826*** (-7.40)
child	0.605*** (3.83)	0.566*** (3.59)
work	0.313* (1.88)	0.379** (2.28)
safe_loc	0.0417*** (4.26)	0.0467*** (4.77)
social	0.0120 (1.37)	0.0160* (1.79)
Dummy Prov	NO	YES

	happy		
	Model 3	**Model 4**	**Model 5**
lngini	1.083** (2.35)		1.104** (2.36)
lnpdrbk		-0.00141 (-0.01)	-0.0434 (-0.30)
lneks_kapita	0.601*** (9.42)	0.611*** (9.53)	0.603*** (9.41)
age	-0.131*** (-4.77)	-0.131*** (-4.76)	-0.131*** (-4.77)
ageq	0.00137*** (4.14)	0.00138*** (4.14)	0.00137*** (4.14)
educ	0.261*** (10.82)	0.263*** (10.94)	0.261*** (10.84)
health	0.0518*** (7.24)	0.0519*** (7.24)	0.0519*** (7.24)
health_peer	0.0576*** (5.79)	0.0576*** (5.78)	0.0576*** (5.78)
religiosity	0.0499*** (8.23)	0.0497*** (8.21)	0.0498*** (8.22)
sex	-0.956*** (-6.38)	-0.953*** (-6.36)	-0.956*** (-6.38)
ur_loc	0.0917 (0.60)	0.159 (1.06)	0.0974 (0.63)
divorce	-2.820*** (-7.38)	-2.826*** (-7.40)	-2.820*** (-7.38)
child	0.564*** (3.58)	0.566*** (3.59)	0.563*** (3.57)
work	0.386** (2.32)	0.379** (2.28)	0.386** (2.32)
safe_loc	0.0473*** (4.84)	0.0467*** (4.77)	0.0473*** (4.83)
social	0.0163* (1.82)	0.0160* (1.79)	0.0162* (1.81)
Dummy Prov	YES	YES	YES

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

	happy		
	Model 6	**Model 7**	**Model 8**
lngini	1.390***	1.261**	1.056
	(3.02)	(1.99)	(1.51)
inc_gap	0.524***		
	(8.70)		
lnpdrbk		-0.257	0.185
		(-1.47)	(0.73)
lneks_kapita		0.352***	0.613***
		(3.51)	(3.71)
age	-0.128***	-0.135***	-0.134***
	(-4.65)	(-3.43)	(-3.45)
ageq	0.00134***	0.00133***	0.00141***
	(4.05)	(2.77)	(3.07)
educ	0.279***	0.277***	0.185***
	(11.73)	(9.27)	(4.48)
health	0.0521***	0.0408***	0.0637***
	(7.27)	(4.40)	(5.68)
health_peer	0.0572***	0.0501***	0.0622***
	(5.75)	(3.67)	(4.26)
religiosity	0.0495***	0.0556***	0.0452***
	(8.18)	(7.03)	(4.84)
sex	-0.973***	-0.713***	-1.179***
	(-6.49)	(-3.54)	(-5.28)
ur_loc	0.189	0.236	-0.115
	(1.24)	(1.11)	(-0.51)
divorce	-2.835***	-2.553***	-2.976***
	(-7.42)	(-4.41)	(-5.87)
child	0.548***	0.808***	0.210
	(3.48)	(3.81)	(0.89)
work	0.402**	0.418*	0.322
	(2.42)	(1.84)	(1.32)
safe_loc	0.0464***	0.0736***	0.0202
	(4.74)	(5.69)	(1.36)
social	0.0151*	0.0235*	0.00882
	(1.69)	(1.95)	(0.66)
Dummy Prov	YES	YES	YES

Mainstreaming Resilience into SDGs and Agricultural Trade pacts: Why and How?

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ABSTRACT

Disasters and Climate change is a looming reality. ASEAN region is projected to be the single most affected region by the impacts of disasters and climate change. The food security in these countries are at a higher risk to future disaster risks and climate change, given their heavy dependence on agriculture, strong reliance on ecosystem services, high concentration of population and economic activity in coastal areas, and relatively poor health services. Effective mainstreaming of resilience considerations requires them consideration into sustinabled development goal (SDG) planning and informed consensus on agriculture trade pacts. Disaster and climate change risks, objectives and policies that are to be based on a good understanding of SDGs tragets and free trade agreements that focus on agriculture. This shared roles and responsibilities of all players, including economic and planning is currently challenged in ASEAN countries, by the general perception among the public, project proponents, and development authorities alike that climate change is the sole responsibility of environmental agencies, disaster responses is a humanitarian assistance issue and food security is better handled by the agriculture ministries, failing to effectively implement necessary measures. As ASEAN economies continue to accelerate growth rates, the responses to disaster and climate change will come under increased scrutiny and pressure. It would be important to move quickly towards reaching a broad agreement with all major stakeholders on SDG tragets and agriculture trade, starting with the identified list, and develop a medium to long-term program of implementing the agreed actions, supported by necessary resources, monitorable targets, and clear accountability mechanisms.

Keywords: climate change, disasters, food security, Sustainable Development Goals

1. INTRODUCTION

The exposure to and thus vulnerability of agriculture sector to natural disasters is significant and increasing in Association of South East Asia Nations (ASEAN). Several studies (FAO, 2015; ADB, 2009; Anbumozhi et al, 2013; Nelson et al, 2009) have clearly shown that the region's food production and distribution systems and thus food security will be severely impacted by climate induced disasters, and about 25% of all damages caused by such disasters in the ten countries between 2003 and 2013 affected agriculture sector (FAO, 2015). In particular, droughts, cyclones and floods have led to agricultural production structures such as lands, post harvest facilities and marketing channels becoming temporarily unproductive. Loss of live stock, greater prevalence of pests, and reduced crop production add uncertainties to food security at national as well as regional level. According to Reddy and Anbumozhi (2016), 84% of the economic impact of droughts were borne by agriculture and livestock in ASEAN between 2003 to 2015. Such losses are projected to

increase as disasters events become more severe and frequent, but also less predictable due to climate change. It is likely that the impact of disasters will be concentrated in a limited number of hotspots along the local and global value chains (Anbumozhi et al, 2009).

However, greater openness to trade in staple commodities can also bring resilience to the agricultural value chains. This could happen at different interconnected levels. First, the level and variability of volumes and prices in the international markets are interlinked and could easily be affected by high intense low frequency floods as well low intensive but high frequency droughts (Von Braun and Tadesse, 2012). International food prices are often characterized by trends and volatility with occasional upward and downward price spikes. The size of the those spikes, which are determined in part by the small short run elasticities of domestic demand and international supply, can be exacerbated by speculative behavior in markets induced by disaster events such as El nino and by changes in trade policies of countries that are large in terms of agricultural exports (Ghosray, 2011) . It is these vegaries, which emanate from disaster events occurring in one country, and which spill over into the food markets of another country, if and when their economies are interconnected, which causes the linkage between trade policy and food security to be the significant one. Moreover, trade contributes to regional food security by balancing food deficits and surpluses across countries, thereby ensuring stable supplies and contributing to price stability. Considering the significant risks of climate change and disasters to crop production, livestock and fisheries, agriculture trade is likely to become even more significant in the future as food demand grows in some of the regions where productivity gains will not be sufficient to meet demand growth (Meinhard and Anbumozhi, 2018).

Nevertheless, the Agenda 2030 for Sustainable Development Goals (SDGs) agreed by all ASEAN member countries has shaped a framework for global or regional governance on food security that responds to compound disasters and interconnected global economies. SDGs recognizes that trade is a key element in addressing fundamental issues such as food security, nutrition and promotion of sustainable agriculture (SDG 2), healthy lives and wellbeing (SDG 3) economic growth (SDG 8), inequality (SDG 10), ocean, seas and marine resource (SDG 14), and global partnership for sustainable development (SDG 17). Agricultural play a major role, particularly in ASEAN, in enabling conditions for facilitating structural transformation, mobilizing different sources of finance, and assuring job creation and social inclusion (Bellman and Tipping, 2105). However, in order to assure that the potential of agricultural trade is optimally used to achieve sustainable development and build resilient systems, it is important to further reinforce the trading system and ensure that resilience considerations are mainstreamed in trade policies and SDG strategies (Kuwornu, 2017).

The key questions that need to be addressed include

- What opportunities trade offers to enable the achievement of the SDGs related to agriculture, fisheries, food security and nutrition?

- How should disasters risks be managed to ensure that the beneficial effects of agricultural trade are equally shared by countries and populations?
- What can be the effect of plurilateral and regional trade agreements in the agricultural trade framework? Can this support further the implementation of the Sustainable Development Goals?

In this paper, it has been argued that the most effective path for implementing SDGs goals in the ASEAN region is to mainstream climate change and disaster resilience goals directly into planning for Sustainable Development Goal targets, and negotiating Agriculture Trade Pacts. Mainstreaming in this paper refers to the incorporation of disaster and climate risks into other existing policies programs, management systems or decision making structures that are not necessarily about climate change or disaster but actions and programs on SDGs and free trade agreements. This allows the ASEAN community to develop economically viable and socially engineered food security system. In order to understand why and how resilience can be mainstreamed into SDGs and Agriculture Trade Pacts, this paper critically reviews ASEAN's current approaches for dealing with resilience issues, and analyze its capacity for mainstreaming principles and solutions on a regional scale. Then, it details different levels of coordination needed for effective ASEAN actions in pursuit of resilience and food security, creating synergies between goals and actors.

2. The Interlinkage among Disaster risks, Climate Change and Food Security in ASEAN

The disaster risk is defined as "The potential loss of life, injury, or destroyed or damaged assets which could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity" (UNISDR, 2010). On the other hand, resilience is the ability of communities to answer natural hazards in an appropriate way, so as to lower this disaster risk (ASEAN, 2016). Currently, disaster risk is a threat to food security in ASEAN member countries. Food security exists when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO, 2015). Underlying this definition of disasters and food production there are number of variables that contribute to the economic conditions that signify the existence of food security.

ASEAN food systems, both agriculture and aquaculture will be heavily affected by the onset of climate change, increase in temperature and swelling disasters. The table 1 presents the predictions for changes in agricultural production in Southeast Asia under the effect of global temperature increase. In terms of agriculture and aquaculture production, even a few degrees of change in temperature can make a difference for food security in ASEAN.

Table 1. Effect of climate change on Food Production in 2025

Mean Global Temp Increase (°C)	Agriculture Production Change	Aquaculture Production
1.0	0.82	-0.12
1.3	0.0	-0.28
1.8	-0.82	-1.39
2.8	-1.58	-1.17
4.0	-2.62	-1.83
4.2	-2.78	-2.04
5.2	-1.78	-3.15

Source: Darwin (2008)

The current aim, as defined by the Paris Agreement, is to limit global warming to 1.5°C above pre-industrial level. As the changes in production level indicates, for ASEAN, this is the limit at which the effect becomes assuredly negative on agricultural production. After this, not only do both aquaculture and agriculture production decline, but they decline at a much higher rate for smaller changes in temperature. Moreover, it has to be noted that climate change mechanisms include feedback processes such as ocean temperature, biodiversity changes, carbon fertilization, that amplify small temperature changes into bigger changes in agricultural production. Therefore, while aiming for 1.5° C stabilization ASEAN needs to prepare for potentially higher changes in temperature, which require important changes in food production systems and their efficiency in trade.

Table 2. Main agricultural products in ASEAN

Country	Main agricultural products
Brunei Darussalam	Indigenous chicken meat, hen's egg in shell
Cambodia	Rice, cassava
Indonesia	Rice, palm oil, natural rubber
Lao PDR	Rice, fresh vegetables
Malaysia	Palm oil, indigenous chicken meat, palm kernels
Myanmar	Rice, dry beans, indigenous chicken meat
Philippines	Rice, indigenous pig meat, bananas, coconuts, sugarcane
Singapore	Hen's egg shell, other bird's egg in shell
Thailand	Rice, natural rubber, cassava, sugarcane
Viet Nam	Rice, indigenous pig meat, green coffee

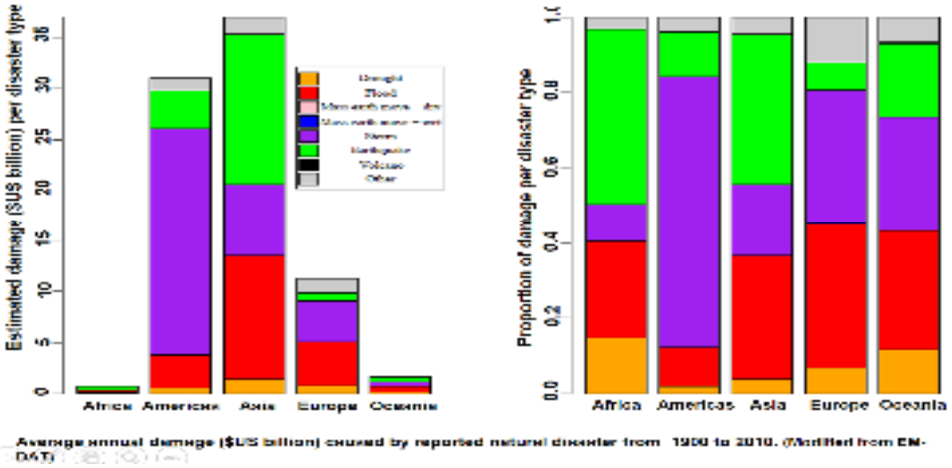
Source: FAOSTAT

Table 3 Rice Production in ASEAN member states in 2015

Country	Production (Thousand Tons)	Import (Thousand Tons)	Export (Thousand Tons)	Domestic Supply (Thousand Tons)	Stock Variation* (Thousand Tons)
Brunei Darussalam	1	330	0	343	12
Cambodia	5,010	82	4,720	83	-289
Indonesia	51,412	7,786	293	56,031	-2,874
Lao PDR	2,428	53	23	2,014	-444
Malaysia	1,667	6,156	337	7,379	-107
Myanmar	22,427	151	573	20,338	-1,667
Philippines	17,569	5,068	46	20,645	-1,946
Thailand	25,275	1,816	10,065	15,645	-1,381
Vietnam	28,279	2,192	4,651	24,557	-1,263

**)Stock Variation = [export + domestic supply] - [production + import] Source: FAOSTAT*

Additionally, Tables 2 and 3 shows that ASEAN agriculture is dominated few major crops such as rice. Except Brunei, Malaysia and Singapore, in other countries, food securities is related to paddy cultivation. Furthermore, only few countries, such as Thailand, Viet Nam and to certain extent Myanmar, seems to be constantly produce sufficient rice to feed their population and have excess to export. In Brunei and Singapore, rice production is insignificant, so the policy for maintaining food sufficiency is straightforward, import from other countries. Malaysia and the Philippines are also rice-deficit countries, despite the considerable amount of rice production each year. They need to import rice to meet domestic demand. As export rice is cultivated in few countries, ASEAN depends heavily on local producers. To safeguard food security in ASEAN, the region needs to protect both production and distribution systems from the effects of climate change and natural disasters. Moreover, both soft and hard infrastructure allowing intra-regional and international trade can compensate for losses caused by geographically distributed disasters and their impacts.



Average annual damage ($US billion) caused by reported natural disaster from 1900 to 2010. (Modified from EM-DAT)

Fig 1 shows the average annual damage cause by the reported natural disasters in the last century. There are different types of disasters events. ASEAN is more impacted by floods, storms, droughts and earthquakes. According to the latest reports of the Global Climate Risk index (2017) ranking countries based on the impact of past extreme weather events like floods and droughts, ASEAN has been one of the most exposed. Four ASEAN countries rank among the most affected worldwide; Myanmar (2nd worldwide), the Philippines (4th), Viet Nam (7th) and Thailand (9th). The Global Water Partnership highlight similar trends. For example, Myanmar, Thailand and Viet Nam are among the top ten countries for flood risk exposure. Moreover, several studies (ADB, 2013; Anbumozhi and Reddy, 2015; World Bank, 2014)show strong evidence of ASEAN's growing vulnerability to climate change and disasters and recommends a more comprehensive response to weather related disasters. Recent major catastrophic response to these like the 2008 Nagris cyclone in Myanmar, the 2001 floods in Thailand, the 2013 typhon Haiyan in the Philippines and the 2015-16 Elnino droughts Vietnam have highlighted the impact of climate induced disasters on its interlinkages to food security.

3. The Interconnectedness of Resilience, Food security and Agriculture Trade

Natural disasters can have an impact on different stakeholders of the food supply chain, which has different entities like food processing and packaging units, food distribution channels, retailers and groceries, food processing houses. The value chain of a food production starts with farmers and usually ends with consumers – who has less control over produces and the parameters that affect crop production. Any adverse impact on food production such as climate induced disasters strikes the producers first, which stops food production temporarily in its first stage and blocks the food supply chain there. However, the disaster could also impact consumers, with increased price – disseminated through different stages. Finally, the disaster can affect infrastructure and stop agricultural production's transport to consumption areas. All in all, attempts to make more resilient food systems target the improving the adaptive capacity of all stakeholders along the supply chain.

One of the measure to deal with the adverse impacts of disasters on agricultural production, at regional level is the ASEAN Emergency Rice Reserve, through which countries would pool together rice reserves as buffers against potential disasters (ASEAN, 2008). This way, even when agricultural production decreased due to unexpected weather events or fluctuations in supply occur there is still emergency provisions available, assuming that the transport infrastructure is made available immediately. However, as shown in table 4 the quantities earmarked for the ASEAN Emergency Rice Reserve is marginal to deal with the needs of a the region and individual countries stock variations shown in Table 3. Further, since the implementation of the ASEAN food security reserve in 1979, the amount of reserve has not increased enough to reach the level necessary to ensure food security or improve the vulnerability of value chains against disasters. Because of the insignificant volume of the rice reserve and the difficult request to delivery procedures, the reserve has very rarely used, even during the 2008 food crisis.

Table 4. The ASEAN Food Security Reserve System

Countries	Earmarked quantity (tons)
Brunei Darussalam	3,000
Cambodia	3,000
Indonesia	12,000
Lao PDR	3,000
Malaysia	6,000
Myanmar	14,000
Philippines	5,000
Singapore	5,000
Thailand	15,000
Viet Nam	14,000
ASEAN	87,000

(Soure: ASEAN Secretiate)

There are several reasons for that. For Thailand and Viet Nam, the main exporters in the region, the reserve option seems to be complicated. As much as the governments would like to earn foreign revenue by exporting rice, they also have to bear in mind that domestic rice farmers can be affected by rice price volatility in the global market due to disasters. They have to ensure that domestic consumers will not suffer, due to export which resulted in various trade restrictive practices. A summary of policy measures taken by ASEAN governments to tackle the impact of 2008 food crisis in 2008 is shown in Table 5

Table 5. Policy measures taken by ASEAN governments to tackle the food crisis in 2008

Strategy	Policy measure		Cambodia	Indonesia	Malaysia	Philippines	Thailand	Vietnam
Consumer oriented	Tax	Customs duty						
	Social support	Food assistance						
		Subsidies		X		x		
		Safety net						
	Market	Price control		x	x			
		Release stocks	x		x		x	
		Food procurement						
Producer oriented	Production support	Producer credit		x	x	x		
	Market management	Minimum producer price			X	X		
Trade oriented	Import	Tariff		X				
	Export	Quantity control	X	X				X
		Export price control through tax		X	X	X		

Source: Compiled by the author

Various goals and policies on food security, resilience and trade when simultaneously implemented by the government of each country, can be far from complimentary to each other. For eg, Viet Nam's decision to restrict rice export during the food crisis in 2008 served to worsen the food shortage situation in importing countries like the Philippines. This suggested that ASEAN needed more effective mechanisms to achieve resilience and integrate with agriculture trade policies.

Usually food security is effected by, on one hand climate induced factors, and on the other trade facilitation factors. ASEAN member countries can act on the side of agriculture trade both to lessen vulnerability and exposure and to limit the impact of development on anthropogenic climate change. Frequently agriculture trade flows depend on the interaction between comparative advantage in food production, which is determined not only by climate change and disaster risks but also other resource endowments like land, water and other inputs, and wide-ranging set of local, regional and national trade policies. Because adaptation to climate change and disaster resilient measures results in new patterns of food production, agriculture comparative also changes, setting up the possibility of change in trade flows as producers respond to changing constraints and opportunities (Yamaji, 2017). As with any change in comparative advantage, unfettered international trade allows comparative advantage to be more fully exploited. Restriction on trade risk worsening the

effects of climate change and disasters while by reducing the ability of the producers and consumers to adjust. It is also important to point out that if climate change and disaster reduces productivity of some crops in ASEAN and does not increase productivity in other regions, trade cannot fully compensate for reduction in food security.

4. Opportunities to Enhance Resilience with Current Agriculture Trade Pacts

The treatment of climate and disaster risks in the free trade agreements reflects the view that trade can, when well designed, contribute to sustainable growth. ASEAN's economic prosperity could be attributed to its openness to free trade (Baldwin and Kawai, 2013).Between 1999 to 2009, regional trade in agriculture have grown almost threefold to reach 1 billion (ASEAN, 2009). Starting from early 1990s, the successive ASEAN Free Trade Agreements, as listed in Table 6. have pushed for economic integration between member countries, and with close trading partners. This is due to reduction in tariff barriers and an overwhelming share of economic growth and change in food consumption. This trend is likely to continue in the coming decades as income and urban population continues to grow, often accompanied by change in diet. The largest demand in the region will come from Indonesia, Thailand, the Philippines, which are expected to exhibit a trade deficit for all commodities in 2025

Table 6. Free Trade Agreements of ASEAN

Name of Agreement	Acronym	Year Established	Tariff Reduction deadline
ASEAN Free Trade Area	AFTA	1992	2020
ASEAN – China Free Trade Area	ACFTA	2002	2018
ASEAN – Korea Free Trade Area	AKFTA	2005	2016
ASEAN – India Free Trade Area	AIFTA	2010	2023
ASEAN – Japan Comprehensive Economic Partnership	AJCEP	2008	2018
ASEAN – Australia New Zealand Free Trade Area	AANZFTA	2010	2020

Source:ASEAN Seceteriate

In case of natural disasters, such trade links provide other sources of agricultural production as well as other outlets for production facing impacts on consumers. Moreover, the trade pacts push countries to build better soft and hard infrastructure for transporting goods, mitigating the possible impact of natural disasters and encouraging trade partners' cooperation. Therefore, it could said that the gradual trade integration observable in ASEAN provides resilience to the region as a whole, by protecting food supply chains in a comprehensive way. The table 6 shows the state of intra-ASEAN trade links in 2014,

compared to trade with outside the region. While the total trade volume varies across the countries, as of now intra-ASEAN trade is relatively lower than trade volume of outside region.

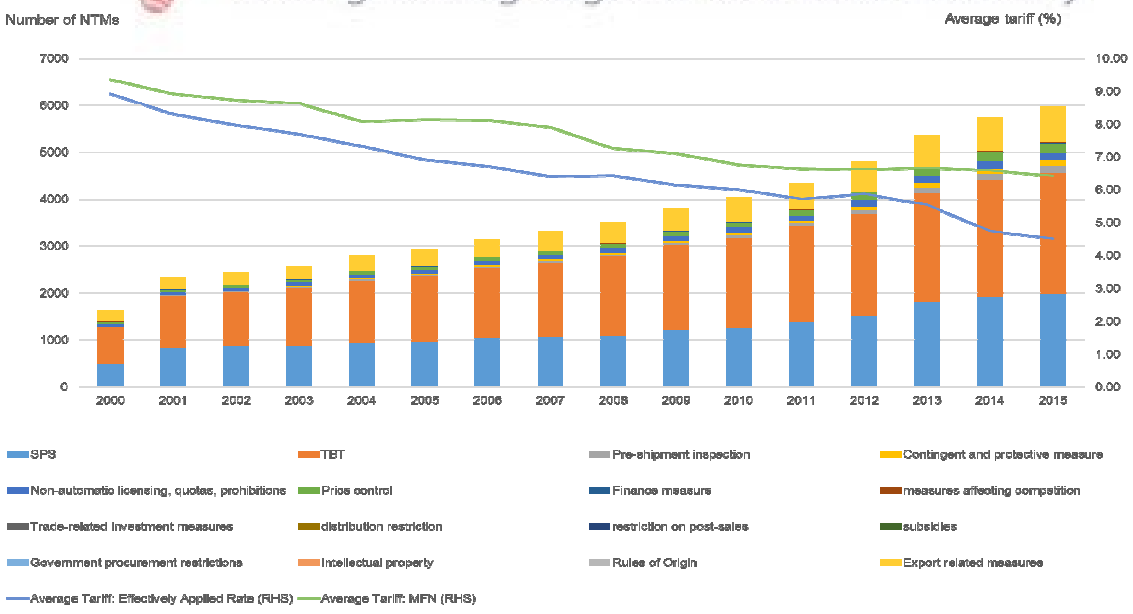
Table 6. Inter and Intra ASEAN Trade values

Country	Intra-ASEAN trade		Extra-ASEAN trade		Total trade (USD million)
	Value (USD million)	Share of total trade (%)	Value (USD million)	Share of total trade (%)	
Brunei Darussalam	3,544.30	29.9	8,315.90	70.1	11,860.20
Cambodia	1,909.90	21.8	6,865.60	78.2	8,775.50
Indonesia	68,162.50	25.6	198,055.20	74.4	266,217.70
Lao PDR	2,215.30	84.2	415.6	15.8	2,630.90
Malaysia	85,076.70	25.1	253,718.00	74.9	338,794.70
Myanmar	5,581.60	53.6	4,833.90	46.4	10,415.50
Philippines	21,398.40	20.3	84,272.60	79.7	105,671.00
Singapore	171,355.40	36.3	300,809.60	63.7	472,165.00
Thailand	69,375.30	19.7	283,158.90	80.3	352,534.20
Viet Nam	29,494.60	20.9	111,862.50	79.1	141,357.10
ASEAN	458,114.00	26.8	1,252,307.80	73.2	1,710,421.80

Source: COMTRADE

But intra-regional trade has been very dynamic in ASEAN , growing at an average of 10 per cent a year, twice its pace in other regions of the world (IMF, 2016). Regional integration in ASEAN has been largely driven by removal of tariff measures. The Most Favored Nation (MFN) tariffs are progressively getting low (Figure 2).

Fig 3. Average Tariffs and NTMs in ASEAN



Yong and Cadot (2016) analyzed the tariff and non-tariff barriers and found that many NTMs stem from non-trade policy objectives such as food safety or environmental protection. They also highlighted the need to streamline trade distortions that accompany in the form

Rules of Origin (RoOs) , streamlining Non-Tariff Measures (NTM) such as sanitary and phytosanitary (SPS) regulations, removing export subsidies, as a way of enhancing regional food security. Many countries have had no intention to dismantle these measures. While export subsidies and NTM restrictions remains a major source of trade distortions, undermining investment on climate smart disaster resilient agriculture practices in ASEAN countries. The policy options for climate smart and resilient agriculture range from improved access to information, availability of extension services, price mechanisms with short and medium term targets (Table 7)

Table 7. Climate smart options to improve the resilience of agriculture systems

Adaptation/Resilience Measure	Policy Option
Crop insurance for risk coverage	Improved access to information, risk management, revised pricing incentives
Near Term Actions (5-10 years)	
Crop/livestock diversification to increase productivity and protect against diseases	Availability of extension services, financial support, etc.
Adjust timing of farm operations to reduce risks of crop damage	Extension services, pricing policies, etc.
Changes in cropping pattern, tillage practices	Extension services to support activities, policy adjustments
Modernization of irrigation structures	Promote water saving technologies
Efficient water use	Water pricing reforms, clearly defined property rights
Risk diversification to withstand climate shocks	Employment opportunities in non-farm sectors
Food buffers for temporary relief	Food policy reforms
Redefining land use and tenure rights for investments	Legal reforms and enforcements
Medium Term Targets (2030)	
Development of crop and livestock technology adapted to Climate Stress: drought and heat tolerance, etc.	Agriculture research (cultivar, fish and live stock trait development
Develop market efficiency	Invest in rural infrastructure, remove market barriers, property right, etc.
Irrigation and water resources consolidation	Investment by public and private sector
Promoting regional trade in stable commodities	Pricing and exchange rate policies
Improving early warning/forecasting mechanisms	Information and policy coordination across the sectors
Capacity building and institutional strengthening	Targeted reforms on existing institutions on agriculture and skills development

Source: Anbumozhi and Reddy, 2015

Some of the support programs for the above climate smart options in Indonesia, Malaysia and Thailand appear to be designed to rectify problems arising from historical low productivity in the agriculture sector and to reduce the large disparity between urban and rural income. Current agriculture trade negotiations aimed at reducing the tariff and non tariff measures is not giving due considerations to the technology and investments that target resilient agriculture. Moreover, regional trade agreements often exclude sensitive food products, which has more NTMs. Walz (2014) estimated that an average RTAs increase agriculture estimate that on average RTA increase agriculture and food exports from 32% and 48% when fully phased in.

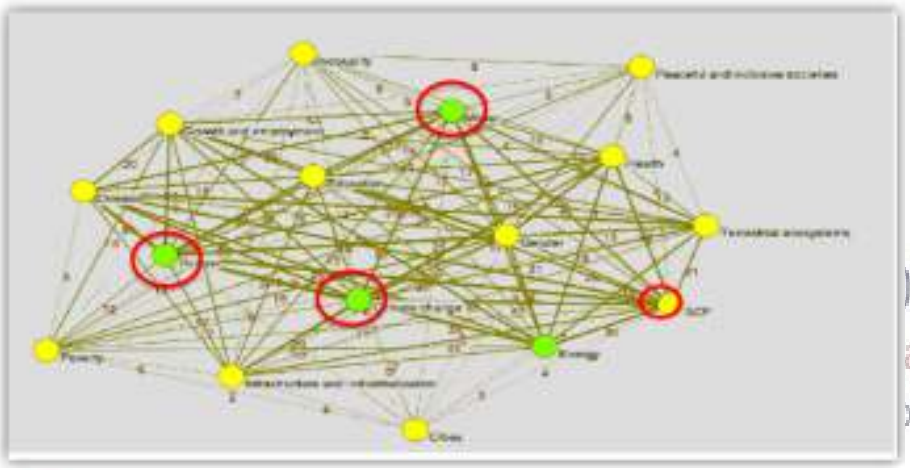
In summary, food systems in ASEAN are threatened by climate change and growing disaster risk, but can be protected through smart trade policy-making. Current projects such as the ASEAN Emergency Rice Reserve and the on-going work of trade integration in the region are going the right way. However, there are still many policy options for ASEAN, which require mainstreaming of resilience into sustainable development goals.

5. Advancing Resilience and Trade Agendas in Sustainable Development Goals

The 17 Sustainable Development Goals (SDG) adopted in 2015, establish a set of highly ambitious goals and targets touching upon a broad range of issues from food security to resilience. Taken together, they provide a critical framework for policy orientation for the next 12 years. In the absence of new international financial commitments, trade and more importantly, policies that affect trade flows will have significant role to play in the implementation process. Goal 2 mainly deals with food security, while Goal 13 is concerned with climate change issues. However, it would be a grave mistake to think of dealing with each development goal individually, because they are all inter-linked. The Figure 3 below links different goals by the number of targets they share:

Fig 3. Interlinkages between climate change, hunger, water and

sustainable consumption related SDGs



Source: ERIA, 2017

The linkages between SDGs show that dealing with them as a whole can be the source of positive externalities, as opposed to dealing with them individually and risking to undermine other goals for the benefits of a certain one. In order to mainstream resilience building most effectively, it's important not just to fit the action into a single development goal, but to understand how it relates to many of the goals, in a positive or negative way.

To achieve these goals in a cost effective timely way, there is a need for change in policies that provide not only access to foods, but also to land, inputs, knowledge and financial services and market opportunities for value addition. It should also call for investments in resilient infrastructure, agriculture extension services, research and development and measures to ensure the proper functioning of food commodity markets and opens to trade that limit extreme price volatility within ASEAN.

Food security and liberalization of trade are often mistakenly thought of as antagonistic interests, even though we showed earlier that liberalization of trade is an important support

of food systems in the wake of a disaster. The diagram below shows some ways in which climate change, food security and trade related SDGs interact.

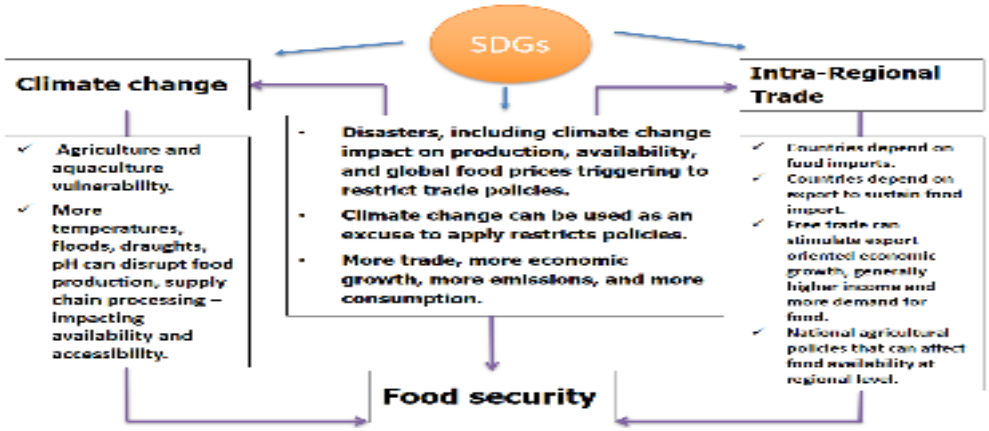


Fig 4. The nexus between disaster risks, and trade as perceived through SDGs

Source: Author

SDGs crown the diagram because their success depends on the development of the economic system, but also the attainment of food security even in the face of climate change. The nexus of all these interests is a complicated mechanism, which requires looking into all the possible interactions.

Advancing SDGs targets of reducing trade distorting support will therefore have to happen to bring resilience. A first step might consist of eliminating the export restrictions. The cost of locking in this policy committeemen would be minimal as these measures are only retard the competitiveness of the domestic agricultural production. Another low hanging fruit might consist of limit the export restrictions by ensuring that such measures does not affect the purchase of food for humanitarian purposes during the disaster emergencies. As with the previous proposal the cost of implementing this idea would be minimal, but implementation would help build trust and facilitate further engagement towards food security. Third measure is prioritizing of eight types of NTMs current exist in the region and addressing them in a progressive and cost-effective way.

The SDGs, as a central preoccupation of development planning in Southeast Asia, are mentioned in each of the three blueprints of the ASEAN community, viz ASEAN Economic Community, ASEAN Socio cultural Community (ASSC) and ASEAN Political and Social Committee (APCC). As illustrated in Table 8, SDGS pops up in the three ASEAN Community Blueprints shows that there are synergies and nexus among different ASEAN mechanisms in reaching SDG goals. It's important to foster communication between the different ministries and the different councils of ASEAN, so as to coordinate their actions and planning for different goals. All in all, the SDGs are a collection of goals which must be dealt with not just individually, but also by understanding the inter-linkages between different interests and fostering communication between the different agencies in charge of planning development policies. Looking from the point of view of food security in ASEAN, it's especially interesting to find the nexus between the SDGs, food security and the development of trade.

Table 8. Synergizing Sustainable Development Goals with ASEAN community pillars

SDGs	Occurrence in the blueprints of ASEAN community			Corresponding Mechanisms
	AEC	APSC	ASSC	
Goal 1 (poverty)	x		x	Ministers meeting of Rural development and poverty eradication
Goal 2 (Hunger)	x		x	Ministers meeting on Agriculture and Forestry
Goal 3 (health)			x	Ministers meeting on Health Development
Goal 4 (education)			x	Ministers meeting on education
Goal 5 (gender)			x	ASEAN committee on Women
Goal 6 (water)			x	Ministers meeting on environment
Goal 7 (energy)	x			Ministers meeting on energy
Goal 8 (work)	x		x	Ministers meeting on labor
Goal 9 (innovation)	x		x	ASEAN committee on Science and Technology
Goal 10 (inequality)			x	IAI Task force (narrowing development gaps)
Goal 11 (cities)	x		x	Ministers meeting on Development Planning
Goal 12 (consumption)	x		x	Ministers meeting on economy
Goal 13 (climate)	x		x	Ministers meeting on environment
Goal 14 (ocean)		x		Minister meeting on maritime
Goal 15 (land)			x	Ministers meeting on land and infrastructure
Goal 16 (Peace)		x		Ministers meeting on foreign affairs
Goal 17 (partnership)	x	x	x	All sectoral bodies

Source: Compiled by the authors

When there are so many objective actions at stake, the question of how to identify possible interactions, trade-offs and co-benefits is crucial. Both development pathways and trade policies need to be designed while keeping in mind inter-sectoral interactions, trade-offs and co-benefits. These can be found, first of all by identifying and benchmarking existing best practices, for example in the Sustainable Development in Agenda 2030. But more importantly, this is where the role of science and thinking outside the box comes into the equation. Through scientific research and looking into innovative ideas, we can eliminate negative externalities and create synergies between the different goals, such as SDGs and trade liberalization goals. In summary, mainstreaming and implementing resilience building can be done effectively in the region, if the nexus between SDGs, trade and food security is correctly identified and researched, to avoid undermining goals while trying to reach others, and encourage possible and innovative synergies between different development goals in the region. But this is only possible if the different actors in charge of planning for and reaching development goals communicate and coordinate their actions.

6. Enhancing the capacity of ASEAN through SDG Nexus Approach

ASCC framework in resilience was formed by a number of thematic guidelines and policy options for countries who want to improve their adaptation capacities. The challenging part is while countries struggle to deal with imminent threats in the form of short term actions, there is less capacity to plan for long-term actions, especially because the information is still incomplete about long-term effects and impacts of climate induced disasters. Working together as ASEAN allows policies to take into account the broader context and a larger timeframe, while pooling resources for research and information gathering. Another difficulty with resilience policies is that every country is limited in their action by several

factors that affect disaster resilience. Below are the five defining factors for improving the adaptive capacity of ASEAN

Box 1. Defining factors of resilience in food value chain

- Scale factors – whether producers and consumers can adopt to disruption upto a certain population or geographic scale, with elements breaking down beyond that point.
- Scope factors – whether the producers and consumers can adapt to disruption for particular types inputs to certain level, with elements breaking down beyond that point
- Temporal factors – whether the producers and consumers can manage a resilient response to a disruption for a certain period, with elements breaking down beyond that point
- Distributional factors – whether the supply chain is resilient for some sections of the community than others (such as low-income households, tourists)
- Industry factors – whether some sections of the industry, by function or product type, are less resilient than others given their particular circumstances, and any dependencies across industries

Clearly, every ASEAN member country has its strength and weaknesses in different factors, and should look at their particular context to know what to prioritize. Working together as ASEAN allows countries to point out their differences and share information about effective policies with which to address their particular weaknesses. ASEAN member countries can also support each other in the face of an emergency, increasing certain factors of resilience in a way that is impossible to achieve when acting as a single country.

As discussed earlier, by mainstreaming disaster risks through the above five defining factors through a nexus approach will bring tangible benefits. For disaster risk and climate issues are to be mainstreamed, it is possible to categories the constraints into three groups viz (i) information gaps (ii) capacity gaps and (iii) financing gaps. The capacity building needs under each category of challenges, as derived from stakeholder consultation (ERIA, 2017) are presented below in Tables 9a, 9 b and 8c, in order to successfully mainstream climate change and disaster issues in the region.

Table 9a Information gaps and Capacity building needs for enhanced resilience

Challenges and Gaps	Capacity Needs
• Imbalances between supply and demand for information to support mainstreaming at all levels of government. • Lack of horizontal and vertical information flows • While the national level information are available to support decision making, at local levels information are lacking with respect to generating, managing and using information • Monitoring, reporting and accountability are not sufficiently linked to disaster risk and climate change objectives	• Improved data collection, analysis and dissemination to all stakeholders • Ensuring timely information generation and exchange across sectors, among departments and subnational level stakeholders • Ensuring public access to research information and reports. • Local level disaster and climate information management, analysis and application • Systems to hold implementing agencies accountable for achieving goals.

Source: ERIA, 2017

Table 9b Decision making capacity and Capacity building needs for enhanced resilience

Challenges and Gaps	Capacity Needs
• Predominance of sector-based planning • Visions, policies and plans are mostly short term and do not consider the long term perspectives • Planning tends to be budget driven rather than mission driven, thereby perpetuating sector planning • Insufficient evidence based planning • Process of engaging stakeholders in planning are not well established • Insufficient opportunities for international cooperation and sharing best practices on mainstreaming resilience	• Structures and process to require cross-sectroal, integrated planning. • Process to institutionalize integrated planning and multi-perspective analysis • Systems and process to effectively and efficiently decentralize policy making and planning process for improved vertical communications • Development of indicators and datasets to support evidence based planning • Creation of networks and communities of practices to support mainstreaming process

Source: ERIA, 2017

Table 9c Decision making capacity and Capacity building needs for enhanced resilience

Challenges and Gaps	Capacity Needs
• Inadequate funding to support mainstreaming • Financing gaps to implement SDGs, Sendai commitments and climate change adaptation plans • Insufficient private sector investments in pursing resilient infrastructure options	• Improved capacity of sectoral agencies to communicate the importance of mainstreaming to the political level. • Capacity to design investment packages that derive co-benefits by exploiting the linkages • Evidence based resource allocation and investment prioritization • Greater private sector engagement in SDG policy formulation and program development • Improved incentive package and ability to communicate to private sector interests

This program of action is quite comprehensive, and it is understandable that single countries in ASEAN can struggle with implementing all of them. To lower the cost of these investments for single countries, it is important to foster communication between member states and find possible synergies between disaster management goals, and other interests of the region.

To get the maximum benefits of this nexus approach, ASEAN member countries should pool their resources together and looking at the broader picture, both in terms of goals and time-frame. ASEAN can work to fill in the knowledge, capacity and finance gaps that will allow resilience issues' mainstreaming into policy-making on a regional basis. However, to mitigate the cost of integrating those issues, we need to understand the possible synergies between resilience and other goals of development policies.

7. Conclusion

The resilience and trade related targets included in SDGs are not fundamentally new for ASEAN, tend to repeat earlier commitments made by them, which have substantial implementation deficits. As governments start implementing the 2030 agenda, the relevance of resilience and full trade liberalization must be assessed in a strategic and selected way. There are a critical capacity building needs in improving the resilience and trade facilitation that would require policy coordination at different levels. In the past, regional responses to make adaptive and resilience measures against climate change and disasters remained progressive but elusive of achieving the targets. As governments are attempting to design new terms of policy engagements through SDGs and Free Trade Agreements will become cost effective solutions.

To lower costs and augment benefits of this mainstreaming process, two sorts of coordination will prove crucial: firstly, finding the nexus between already existing targets of ASEAN planning, such as SDGs and agriculture trade pacts, with goals for natural disaster resilience; and secondly, coordination of the member countries between themselves and with public and private actors inside the countries. Through this coordination, the principles of resilience building can be directly included into ASEAN mechanisms for regional economic development, and protect ASEAN food systems in a durable way by adapting to new developments of climate change as they happen.

As conclusion, this paper proposes a six point agenda for policy-makers, which gives entry points for the nexus approach to the mainstreaming process

First, Alignment with national planning and policy frameworks: This is about figuring out the particular context which the government or planning agency have to deal with, and how to integrate disaster resilience planning with existing policies and mechanisms.

Second, Identifying trade-offs and co-benefits for evidence-based actions. This point is to be based on scientific research to understand which interests and issues are likely to create trade-offs with disaster resilience, or have potential to create co-benefits.

Third, Accelerating frameworks with interlinkages and efficiencies. Once issues with potential co-benefits are identified, this point relies on research and out-of-the-box thinking to find innovative policies to tackle those related issues effectively together.

Fourth, Benchmarking with SDGs, the Sendai Framework , the Paris Agreement and free trade agreements such as Regional Comprehensive Economic Partnership (RCEP). This point uses existing literature and global commitments to find best practices and benchmark existing solutions for disaster resilience, which can be adapted to the situation at hand.

Fifth, Integrating climate change adaptation, disaster risk reduction and trade pacts

This point emphasizes the role of trade negotiations in mainstreaming issues related to climate change, such as food security.

Sixth, Horizontal and vertical policy coherence. This is about making sure actors at all levels of the public and private sphere are included in the mainstreaming process, for better information flows and implementation of policies.

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INFLATION PERSISTENCE AND INFLATION CONTROL POLICY IN BANYUWANGI REGENCY, EAST JAVA

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ABSTRACT

Inflation persistence is a dynamics in inflation that is important to observe because it describes the behavior of prices in response to shocks. The higher the inflation persistence of a commodity, the longer it takes for the inflation of a commodity to return to its equilibrium state. Banyuwangi regency is a major producer of various commodities in East Java, making it vulnerable to inflationary shocks (or even deflation) especially from the supply side. A study of local persistence is important considering that each region has different characteristics that lead to different inflation control policies. So the purpose of this research is to find the persistence value of commodity in Banyuwangi Regency by looking at univariate autoregressive (AR) time series model, mapping the position of inflation persistence into four quadrant, then formulating inflation control policy related to commodity. Of the total 244 commodities in Banyuwangi Regency, five major commodities with the highest inflation were obtained by volatile foods, administered price and core inflation.

The results show commodities that have inflation and high inflation persistence in Quadrant 1 is a salt commodity and the cost of Vehicle Registration Certificate (STNK) renewal. Furthermore, commodities with medium inflation and moderate persistence in Quadrant 3 are tariff of drinking water of PAM, vegetable tomato, mernying fish, bed, lemuru fish, and parking tariff, while commodities having high inflation and low persistence in Quadrant 4 are red chili, electricity tariffs, kindergartens, air transport, motor rental rates, cigarettes, and sand. Inflation control policies must be started from the aspect of production to infrastructure. Several commodities from the volatile foods and core inflation category generally experience inflation due to supply and demand factors, so that it can be controlled in terms of price. Contrarily, the commodities belonging to administered prices, the price is regulated directly by the government and cannot be influenced in terms of price, so it can be optimized in terms of services such as improving ease of payment.

Keywords: Inflation Persistence, Inflation Control Policy, Volatile food, Administered price, Core inflation

INTRODUCTION

Inflation is an economic phenomenon that is crucial because it has a very wide impact in the macro economy. High inflation will cause worsening of income distribution, increase poverty rate, reduce domestic saving, cause trade deficit, increase foreign debt and cause political instability. The government has set a fairly low and declining inflation target of 4% ± 1% for 2016 and 2017 and to 3.5 ± 1% by 2018. To achieve this low inflation target it will require extra effort from all parties . Controlling the inflation rate or maintaining price stability is one of the main macroeconomic issues, as well as some other important macroeconomic issues such as achieving high levels of economic growth, addressing unemployment issues, maintaining balance payment and distributing equitable incomes.

Considering that national inflation is basically a combination of inflation in all regions, then for the purpose of controlling national inflation it is necessary to obtain a complete picture of the behavior of regional inflation. For that reason, studying the persistence of inflation in the regional or regional scope and knowing the cause is important to be done in many areas with the consideration that each region has different characteristics that require different policies of inflation control.

Wimanda (2006) finds that regional inflation and national inflation do not indicate convergence so that the pattern of movement is often different from the national inflation movement. So that it can lead to monetary policy is not fully effective in suppressing the inflation rate in the region, so that regional inflation needs to be specifically studied. In line with Wimanda, Carlino and Defina (1998) also argue that theoretically monetary policy is a national-scale policy, but in reality there is regional divergence in response to the shocks of the aggregate economic variables.

Some research on persistence has been done, such as research in Jakarta by Arimurti and Trisnanto (2011) who found that inflation persistence level in Jakarta is still high in some groups of persistent commodity, namely food, beverages, cigarette and tobacco, and health group goods. Hidayati (2013) concludes that the degree of persistence of inflation in East Java is relatively high due to the shock that occurs in the administered price components represented by housing, water, electricity, gas and fuel groups, and volatile foods group represented by raw food group. Alamsyah (2008) and Yanuarti (2007) studied persistence in Indonesia and found that generally the degree of persistence in Indonesia is very high but tends to decrease in the post-crisis period.

Since July 2005, Indonesia has used an inflation targeting policy framework that replaces quantitative targeting, and one of the objectives of ITF implementation is to change the behavior of inflation expectations from being backward looking to forward looking. This shift is expected to reduce the persistence rate of inflation considering the behavior of backward looking inflation tend to encourage persistent inflation. It makes an interesting point why inflation persistence research is done.

Inflation control is very important to be one of the government's attention for several reasons. First, inflation worsens the distribution of income (becomes unbalanced). Second, inflation leads to reduced domestic savings that are a source of investment funds for developing countries. Third, inflation leads to a deficit in trade balance and increase the amount of foreign debt. Fourth, inflation can lead to political instability. Therefore, it is important to learn about the inflation behavior to support the policy to be applied. Inflation behaviour can be seen from the persistence of inflation.

Marques (2005) defines the persistence of inflation as the rate of inflation to regain the level of equilibrium after the onset of a shock. The high degree of persistence indicates the slow rate of inflation to return to its natural rate is said to be persistent. Conversely, a low degree of persistence shows the rapid rate of inflation to return to its natural rate. Inflation behavior is important to be studied to support policy-making on responses from changes in the pressure on inflation in the country so that inflation control can be more effective.

In general, the inflation fluctuation in Indonesia is triggered by pressure from three commodity groups with various issues. Namely the group of volatile food, administered commodity prices such as fuel, electricity and LPG tariffs and core inflation are the inflation components that tend to be persistent or persistent in the inflation movement and are

influenced by fundamental factors, such as demand-supply interactions. The three components mentioned above have the character of each issue is very distinctive. For example, problems with volatile food commodities, where these components face problems associated with low productivity, long distribution chains, concentrated market structures on a number of actors, information asymmetry, production data accuracy, to consumption and stock issues. While in administered prices, the problems faced are more on dependence on imports, dependence of land transportation on fuel, land transportation business that has not been well regulated, limited public transport subsidized by the government. While in core inflation, the government faces the problem of slowing economic growth, deindustrialization in various sectors as well as conversion of agricultural land into commercial land, considerable depreciation of the rupiah, the structure of exports based on natural resources and so forth.

The study of the persistence of inflation needs to be supported by an analysis of the causes of inflation persistence. As it's known in the CPI inflation component, there is an inflation component whose it's price is heavily influenced by the supply of seasonal supply of goods. In addition, there are components whose prices are influenced by administered prices. These two components are non-fundamental inflation-makers. A policy is needed to control non-fundamental inflation that is difficult to control through monetary policy instruments.

Studies and research on inflation persistence are mostly focused on the national scale. National inflation is formed from regional inflation, so the study of regional persistence is done by considering that each region has different characteristics so that there is a different policy of inflation control. The Regional Inflation Control Team (TPID) of Banyuwangi Regency with various stakeholders in it establishing synergy with many parties to carry out inflation control measures. The steps taken by TPID Kabupaten Banyuwangi are multidimensional, ranging from short, medium, to long term. In addition, the field of work was not focused on the management of supply and demand of goods to reduce prices, but also oriented to strengthening people's economy and economic equity.

Based on inflation disaggregation, inflation in Banyuwangi Regency in 2017 is generally driven by price correction in the administered price category which is an average of 15.55% (yoy). Meanwhile, the slowing of inflation in Banyuwangi Regency in 2017 is supported by volatile foods group average of -5.58 (yoy). While in the core inflation commodity group, it remains stable with an average inflation of 3.21% (yoy). Achieving this inflation target is important as one of the benchmarks of the credibility of Bank Indonesia and government policies.

Table 1: Calendar Year Inflation in 8 Cities, East Java and National

Inflation	2015	2016	2017	2018*
National	3.35	3.02	3.61	0.99
East Java	3.08	2.74	4.04	0.82
Surabaya City	3.43	3.22	4.37	0.83
Madiun City	2.75	2.25	4.78	0.89
Probolinggo City	2.11	1.52	3.18	0.46
Malang City	3.32	2.63	3.75	0.98
Kediri City	1.71	1.3	3.44	0.50
Sumenep Regency	2.62	2.19	3.40	0.73
Banyuwangi Regency	2.15	1.91	3.17	0.98
Jember Regency	2.31	1.93	3.52	0.66

Source: National Bureau of Statistics and East Java

* CPI percentage change in March 2018 against CPI December 2017

Compared to the 2018 (January - March) 2018 calendar year rate in 8 CPI cities in East Java indicated that up to March 2018 Banyuwangi and Malang were the cities with the highest calendar year inflation rate of 0.98 percent each, while the lowest was Probolinggo with an inflation rate of 0.46 percent. While in 2015-2017, the results of inflation monitoring of 8 CPI cities in East Java, Banyuwangi district had the lowest average inflation of 3.46, lower than the average of East Java inflation of 4.41 and the national average of 4.59 inflation. To maintain inflation, realizing inflation targets or controlling regional inflation, research on the persistence of inflation is necessary. So the purpose of this study is the first, to determine the persistence level of commodity inflation in Banyuwangi District. Second, to formulate a policy roadmap for commodities that have potential for inflation.

LITERATURE REVIEW

Inflation

Inflation in economics is a process of increasing prices in general and constantly (continuously) related to market mechanisms that can be caused by various factors, among others, demand pull (inflation) which can cause excess liquidity in the market so that the consumption of society increase, and cost push inflation (Barro, 1997; Sasana, 2004). Meanwhile, according to Lerner, inflation is a situation where there is excess demand for goods in the economy as a whole. Excess demand for these items can be interpreted as excessive spending levels for final commodities compared to the maximum output levels that can be achieved in the long term with certain production sources (Susanto, 2005).

Friedman states that inflation is always and everywhere a monetary phenomenon. He considered that the source of all inflation is a high rate of money supply growth. Only by reducing the money supply growth rate to a low level, inflation can be avoided (Mishkin, 2008). Based on the quantity theory, it is explained that the main source of inflation is due to the excess demand (demand) so that money circulating in the community multiply. In this theory the source of inflation is divided into two: demand pull inflation and cost push inflation.

a) Demand Pull Inflation

This type of inflation begin from an increase in aggregate demand, while production is near or in full employment. In the circumstances of approaching full employment, the

increase in total demand in addition to raising prices can also increase output. In a state of full employment, subsequent demand increases will only raise prices. If this increase in demand causes the equilibrium condition of output to be above or exceed the full employment output it will cause an inflationary gap. Inflationary gap is what causes the inflation (Nophirin, 2009).

b) Cost Push Inflation

In contrast to demand pull inflation, cost push inflation is usually characterized by rising prices and declining production. This situation arises as a result of a decrease in aggregate supply as a consequence of increased production costs. If the situation lasts long enough, there will be inflation accompanied by an economic recession. According to Lipsey (1995) states that cost push inflation can be caused by:

1) Wage cost push inflation
   Wage cost push inflation states that the increase in wage costs, which has nothing to do with demand is the initial cause of inflation.
2) Price push inflation
   Price push inflation, also known as administered price inflation, states that producers have monopoly power, and they are anxious to raise prices, but because they are worried about the mistrust of the government they use an increase in production costs that could justify an increase price.
3) Import cost push inflation
   Import cost push inflation occurs because the import cost push is an important item, generally raw materials for production.
4) Structural rigidity inflation
   Emphasizing structural rigidity, this type of inflation assuming that resources do not rapidly shift from one use to another and are easy to raise wages and prices rather than lower them. Given that wages and prices are rigid, there will be no noticeable decrease in wages and prices in potential sectors. Thus the process of adjusting wages and prices in an economy in the presence of structural rigidity leads to the emergence of inflation.

Inflation Persistence

Many argue that, when there is a shock in the economy, economic variables will tend to stay away from their natural values for a long time, or in other words they do not return directly to their natural value if they experience shocks. This phenomenon is known as the persistence of an economic variable.

Inflation persistence can be interpreted as the tendency of slow movement of inflation to its long-term value when shock occurs in economy (Alamsyah, 2008). Inflation persistence is an inflationary tendency to converge toward long-term equilibrium slowly after a shock that has brought inflation away from its long-term equilibrium (Altissimo et al., 2006). According Gadzinski and Orlandi (2004), the persistence of inflation is slow inflation back to the target value predetermined central bank, when there is a change in the achievement of these objectives, or because of other shocks. Based on this definition, we can know that the inflation rate targeted by the central bank can also be considered a long-term value of inflation.

Willis (2003) defines the persistence of inflation as the rate at which inflation returns to its basic value after a shock. Pivetta and Reis (2004) suggest that the persistence of

inflation is the long-term effect of shocks on inflation. Meanwhile, according to Marques (2005), inflation persistence is the rate of speed at which inflation will return to its equilibrium value after a shock. Based on the definitions mentioned above, it can be concluded that the persistence of inflation is faster than inflation to return to its natural value, when shocks occur, resulting in inflation away from its natural value. According to Angeloni in Alamsyah (2008) explains that the persistence of inflation can be interpreted as the tendency of slow movement of inflation toward its long-term value when shocks occur in the economy.

Measuring Inflation Persistence

Inflation persistence is usually discussed in various literatures with two different approaches. The first approach defines and evaluates the persistence of inflation in the context of unvariate time series representation of inflation, whereas in the second approach a structural econometric model is used which aims to explain inflation behavior. The first approach is generally referred to as an approach with univariate analysis, while the second approach is called an approach with multivariate analysis.

According to Hair, et. al. (1998) multivariate analysis generally refers to all statistical methods simultaneously analyzing multiple measurements on objects being observed. Any simultaneous analysis of more than two variables can be considered as a multivariate analysis. Thus, the multivariate technique is the development of univariate analysis (single variable analysis) and bivariate analysis (cross-linking, correlation, and simple regression of two variables).

Inflation persistence is usually seen as the length of shocks hitting inflation. In a univariate approach, usually a simple autoregressive model is used and the shocks are measured as the white noise component of the autoregressive process. The multivariate approach implicitly or explicitly assumes a causal economic relationship between inflation and its determinants (usually in the form of a Phillips curve or VAR structural model) and views inflation persistence as the duration of influence on inflation when there is a shock to its determinant.

What distinguishes both approaches is the fact that in univariate approaches, shocks to inflation are not identified, in the sense that they can not be given economic interpretations. These shocks are generally viewed as the overall size (summation) of all shocks that affect inflation over a certain period (eg monetary policy shocks, productivity shocks, world oil price shocks, and so on). In a multivariate approach, efforts are made to identify the various shocks that hit inflation so that it can be known specifically the shocks that most influence the emergence of inflation persistence.

The most commonly used method of measuring inflation persistence with a univariate approach is the autoregressive model. If inflation follows a stationary autoregressive process on the degree p (AR (p)). The concept of persistence of inflation is closely related to the impulse response function (IRF) of the AR process (p). However, impulse response function is not a useful measure of persistence because it is a vector of infinite size. To counter this, several measures of statistical scale have been proposed in various literatures to measure inflation persistence. One is the number of autoregressive coefficients used in this study.

METHODS

In line with the purpose of the appropriate type of research is quantitative research using secondary data in the form of time series. Quantitative research is a research that analyzes the data quantitatively / statistically, with the aim to test the predetermined hypothesis and then interpret the results of the analysis to obtain conclusions. The type of data used in this study is secondary data (time series) obtained from Central Bureau of Statistics (BPS) Banyuwangi District. The data used include inflation data and Consumer Price Index (CPI) of commodities in Banyuwangi Regency.

Inflation persistence estimation is done by looking at the univariate autoregressive (AR) time series model as Marques (2005), Arimurti (2008) and Yanuarti (2007). The choice of AR model is because AR model is a good inflation persistence measure. To prove the persistence of inflation of Banyuwangi Regency, then firstly needed testing to degree of inflation persistence in Banyuwangi Regency. The method used to test the degree of inflation persistence in this study is to use univariate approach. Formula AR with order p can be described as follows:

$$\pi_t = \mu + \sum_{j=1}^{k} \alpha_j \pi_{t-j} + \varepsilon_t$$

Where :

π_t : monthly inflation rate at time t

μ : constants from the result of the estimation process, as a control against the average inflation

$\sum_{j=1}^{k} \alpha_j$: the sum of of AR coefficients

ε_t : random error term or residual of regression equation above

The rate of inflation persistence is calculated by summing the AR coefficients as follows:

$$\rho = \sum_{j=1}^{k} \alpha_j$$

According to Marques (2005), inflation persistence is defined as the rate of inflation to return to its equilibrium level after the onset of a shock. The high rate of speed indicates that the inflation persistence rate is low and vice versa the high inflation persistence rate indicates the length of the inflation rate to return to equilibrium. Inflation persistence is said to be high if the current rate of inflation is strongly influenced by its lag value, so the coefficient is close to 1. The value of ρ approaching 1 indicates the high degree of persistence of inflation means the length of time required to return to the old equilibrium level, whereas the more the value close to 0 represents a low degree of inflation persistence so that the time required to return to equilibrium shorter.

After knowing the degree of persistence of Banyuwangi Regency then the time period needed inflation to return natural value after existence of shock is calculated. The

method used to find out how long the time required by inflation to return to the initial balance or its natural value after the shock can be measured using the following formula.

RESULTS AND FINDINGS

Inflation Persistence Analysis on Commodities in Banyuwangi District

Willis (2003) defines inflation persistence as the rate at which inflation returns to its basic value after a shock, whereas according to Marques (2005), inflation persistence is the rate at which inflation returns to its equilibrium value after a shock. The high degree of persistence shows the slow rate of inflation returning to its natural level. Conversely, a low degree of persistence shows the rapid rate of inflation to return to its natural rate. Shocks include government policies, distribution disturbances, natural disasters, and weather changes. The study of inflation persistence is important to improve inflation predictability, gain clarity on the dynamic effect of exogenous price shocks, provide information / guidance and improve monetary policy, and to assess whether different monetary policy regimes will produce different persistence (Arimurti and Trisnanto, 2011) .

From the 244 commodities in Banyuwangi, there were five major commodities contributing to inflation from each disaggregated group as follows:

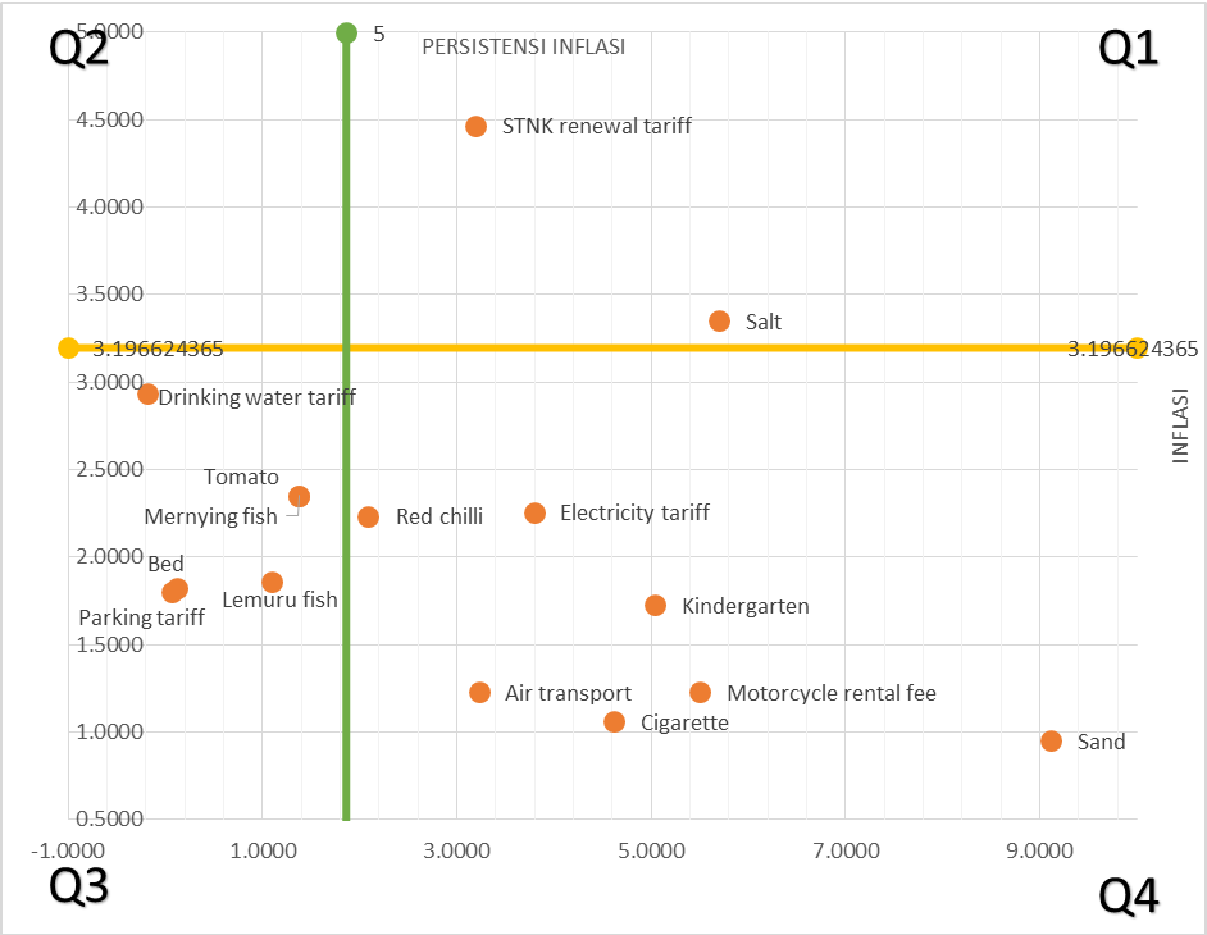
Table 2: Inflation Contributing Commodities in Banyuwangi District

Volatile Food	*Administered Price*	*Core Inflation*
Salt	STNK renewal tariff	Bed
Mernying fish	PAM drinking water tariff	Kindergarten
Tomato	Electricity tariff	Motorcycle rental fee
Red Chili	Parking tariff	Cigarette
Lemuru fish	Air transportation	Sand

Source: Monthly Inflation Data of BPS Kab. Banyuwangi (2015-2017), processed

From table 2 above, it is known that the commodities of the volatile foods disaggregation group is salt (with avegage monthly inflation rate 3.35%); mernying fish (2.35%); tomatoes (2.34%); red chili (2.23%); and lemuru fish (1.86%). While in the administered price group, the top 5 commodities most influencing inflation are the cost of STNK renewal (monthly inflation rate of 4.46%); drinking water tariff (2.93%); electricity tariff (2.25%); parking tariff (1.80%); and air transport (1.22%). Finally, in the core inflation group, the 5 most known commodities that contributed to inflation were among others beds (average monthly inflation of 1.82%); kindergarten (1.72%); motor rental rate (1.23%); cigarettes kr Next inflation persistence estimation is done by looking at the univariate autoregressive (AR) time series model as Marques (2004), Arimurti (2008) and Yanuarti (2007). The choice of AR model is because AR model is a good inflation persistence measure. To prove the persistence of inflation of Banyuwangi Regency, then firstly needed testing to degree of inflation persistence in Banyuwangi Regency. The method used to test the degree of inflation persistence in this study is to use univariate approach.

Graph 1: Quadrant of Inflation Persistence on 15 Commodities by Group



Description: Quadrant 1 is a commodity with high inflation persistence and high inflation; Quadrant 2 is a commodity with high inflation persistence and medium inflation; Quadrant 3 is a commodity with moderate inflation persistence and moderate inflation; and Quadrant 4 are commodities with moderate inflation persistence and high inflation

From the analysis of 244 commodities in Banyuwangi regency, there were 5 big commodities with highest inflation based on disaggregation group. Besides their inflation level, the inflation persistence level of 15 commodities are also observed, so that resulting the quadrant of inflation persistence above. The overlay between the inflation rate and its persistence aims to find out how long the price level of a commodity with high inflation can return to its normal point and its position in the quadrants.

Based on the above quadrant, it is known that commodities with inflation and high inflation persistence in Quadrant 1 are salt commodities and STNK renewal tariff. Furthermore, commodities with medium inflation and moderate persistence in Quadrant 3 are tariff of PAM drinking water, tomato, merny fish, bed, lemuru fish, and parking tariff, while commodities having high inflation and low persistence in Quadrant 4 are red chili, electricity tariffs, kindergartens, air transport, motor rental rates, cigarettes, and sand.

To understand better about the inflation problem in Banyuwangi, a more detailed problem analysis is needed from production to infrastructure aspect. Several commodities from volatile foods and core inflation category generally experience inflation due to supply and demand factors so that it can be controlled in terms of price. While the commodities are classified into administered price, the price is set directly by the government.

Identification of problems is based on the contribution of inflation and persistence as can be seen in the quadrant above.

Identification of Commodity Issues in Kabupaten Banyuwangi

a. Volatile Food Group

Volatile Food Inflation which is a persistent component in inflation and is influenced by fundamental factors such as demand-supply interactions, external environment such as exchange rate, international commodity prices, trade partner inflation, and Inflation expectations from traders and consumers. From the previous quadrant, it was found that the commodities of salt, red pepper, vegetable tomatoes, fish mernying, and lemuru fish were the highest components contributing to inflation. So do the problem analysis of each component as in the following table:

Salt

Aspects	Issues	Required Support
Production	Do not have any salt production field	Application of salt processing technology
	There is a potential for salt production that can not be managed due to high rainfall factor	
Funding	If the production area is opened it costs the application of technology that can protect the field from rainfall is too high	Support technology financing that is able to protect the land from high rainfall
Market Structure	Salt supply still relies on other areas, especially Madura due to economies of scale	Support mapping the potential of processing sea water into salt in Banyuwangi
Infrastructure	The absence of special sites and infrastructure for salt processing	There is a need for research on salt content in sea water in Banyuwangi Regency

b. Administered Price Group

Government administered prices inflation are the dominant inflation influenced by shocks in the form of price policies on commodities whose prices are regulated by the government, such as electricity rates, transport fares, etc. From the previous quadrant, it was found that the STNK renewal tariffs, electricity rates, water tariffs PAM, parking rates, and air transport were the highest components contributing to inflation. So do the problem analysis of each component as in the following table:

Parking Tariff

Aspect	Issues	Required Support
Coverage	Parking tariff are imposed on all levels of society, so the increasing number of transportation and parking tariff will lead to higher money supply and finally inflation	More strictly regulation on illegal parking and optimalization of *parkir berlangganan.*

c. Core Inflation Group

Core Inflation, which is a persistent component in inflationary movements and is influenced by fundamental factors such as demand-supply interactions, the external environment like exchange rates, international commodity prices, trade partner inflation, and Inflation expectations from traders and consumers. From the previous quadrant, it was found that commodities of beds, kindergartens, motor rental rates, clove cigarettes, and sand were the highest components contributing to inflation. In the following discussion, only childcare commodities, motor rental rates, and sand are specifically analyzed because they have a wider influence on society. So analysis of problems of each other core inflation commodities as in the following table:

Motorcycle Rental Fee

Aspect	Issue	Required Support
Demand	The development of tourism in Banyuwangi, pushing motorcycle demand so that the impact on the increase in rental rates that led to inflation	Providing online motorcycle transport opportunities as a choice of transportation services

After identifying the issues and whats need to be done on each inflation group, the researcher outlines the recommendations of activities within five years along with the agencies that can be involved through the roadmap control of inflation below. Expected with the Roadmap, the vision of the region to be able to control inflation can be achieved.

Inflation Controlling Roadmap in Banyuwangi Regency

No	Issues/ Problem	*Policies Roadmap*					Related Agencies
		2018	2019	2020	2021	2022	
1	**Salt:** The absence of salt production land in Banyuwangi Regency	Study of sea water nutrient in Banyuwangi Regency	Mapping of suitable locations for processing sea water into salt	Sea water treatment training for coastal communities	Procurement of sea water treatment equipment	Establishment of industrial centers of salt	Dinas Perikanan dan Pangan, Dinas Perindustrian, Dinas Koperasi dan UKM
2	**Parking Rates:** Parking rates are perceived by all levels of society. With the increase in the number of vehicles accompanied by a rise in parking rates will lead to an increase in the money supply that can increase inflation	Increase the socialization of subscribed parking tariff	Optimization of existing subscribed parking tariff	a. Control of parking area and illegal parking officer b. Improve the quality of parking services for the community especially those who have subscribed	a. Control of parking area and illegal parking officer b. Improve the quality of parking services for the community especially those who have subscribed	Parking rate arrangement by area, for example in one road segment, parking tariff is only charged once	Dinas Perhubungan
3	**Motorcycle Rental Rates:** The growing of tourism in Banyuwangi, pushing motorcycle demand so that impact on the increase of rental rate which lead to inflation	Providing opportunities for entry of online-based transport as a choice of transportation services	Revitalization of public transportation facilities to tourism in Banyuwangi	Optimizing free transportation facilities to ijen through promotion	Improving access to tourism by adding free transport routes to leading destinations other than Ijen Crater	Developing natural-based tourism routes for bicycles and pedestrian	Dinas Pariwisata, Dinas Perhubungan

CONCLUSION

1. Commodities highly contributing to inflation in Kabupaten Banyuwangi include commodities from the volatile foods disaggregation group are salt (monthly inflation rate 3.35%); mernying fish (2.35%); vegetable tomatoes (2.34%); red pepper (2.23%); and lemuru fish (1.86%). Next from the administered price group, the top 5 commodities most influencing inflation are the cost of STNK renewal (monthly inflation rate of 4.46%); drinking water tariff (2.93%); electricity tariff (2.25%); parking rate (1.80%); and air transport (1.22%). Finally, in the core inflation group, the 5 most known commodities that contributed to inflation were among others beds (average monthly inflation of 1.82%); kindergarten (1.72%); motor rental rate (1.23%); clove cigarettes (1.06%); and sand (0.95%).
2. commodities with inflation and high inflation persistence in Quadrant 1 are salt commodities and STNK renewal tariff. Furthermore, commodities with medium inflation and moderate persistence in Quadrant 3 are tariff of PAM drinking water, tomato, merny fish, bed, lemuru fish, and parking tariff, while commodities having high inflation and low persistence in Quadrant 4 are red chili, electricity tariffs, kindergartens, air transport, motor rental rates, cigarettes, and sand.

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Measuring Risk Preferences: Evidence from Rice Farmers in West Java[1]

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ABSTRACT

In this study we investigate risk preferences of rice farmers in West Java, using field experiment. Panel data based on experimental method was created to examine whether the stability of degree of risk aversion through time can be found or not. It is reasonable to consider risk preference as a time-invariant variable when the stability is found. Otherwise, risk preference can be a time-variant variable, which is affected by other factors. Our results shows that risk preferences are not stable through time. It suggests that risk preference might be an endogenous variable.

Keywords: risk preference, field experiment, Indonesia

Ⅰ. Introduction

Agricultural sector in rural Indonesia still plays an important role in terms of output and employment, while manufacturing sector has been the leading growth sector. Thus, development of agricultural sector would contribute to strengthening regional and local economy. We focus, among agricultural sector, on rice farming sector since rice is one of the primary agricultural products in Indonesia.

In order to raise the production level of rice, it is necessary to diffuse new production technology suitable for the conditions each farmer face. However, many farmers keep on employing previous production technology although Indonesian government has implemented various support policies such as education, technological training and

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subsidies for fertilizer and seed. One possible reason why farmers don't adopt new technology is that risk aversion behaviors prevent farmers from changing technology employed. That is, farmers with low degree of risk aversion, risk-loving farmers, may tend to adopt new technology, although farmers with high degree of risk aversion, risk-averting farmers, may have a tendency to continue conventional agricultural practices.

In this study, we analyze risk attitudes of farmers to investigate factors affecting adoption of new agricultural technology. To this end, a field experiment was conducted to measure rice farmer's risk preference in Sukabumi District, West Java Province. Experimental procedure is mostly the same as that in Tanaka et al. (2010), which is a case study of Vietnam, using lottery choices, while currency of rewards from lottery in our questionnaire is converted from Vietnamese Dong to Indonesian Rupiah, following Takashino et al. [2014].

The experiments in our study repeat twice for the same farmers so as to obtain panel data of experiment. Based on the results of the experiment above, we estimate degree of risk preferences of farmers and analyze them, comparing with previous studies using the same experimental method. Additionally, based on the experimental results, we also examine whether so-called "Expected Utility Theory" is valid or not.

Ⅱ. Literature Review

Since Binswanger [1981] conducted field experiments using lottery choices, a lot of studies have employed the similar technique to measure risk preference (for example, Holt and Laury [2002], Vieider et al. [2018]). Recently, Tanaka et al. [2010] developed a new approach to elicit risk preference based on the prospect theory. The method proposed by

Tanaka et al. [2010] can jointly provide the degree of risk preference and parameter of probability weighting in Prelec's probability weighting function (Prelec [1998]).

Using Prelec's probability weighting function, Tanaka et al. [2010] assume the value of prospects as following form.

$$U(x,p;y,q) = \begin{cases} v(y) + \pi(p)\,[v(x) - v(y)], & x > y > 0 \ \text{or}\ x < y < 0 \\ \pi(p)\,v(x) + \pi(q)\,v(y), & x < 0 < y \end{cases},$$

, where

$$v(x) = \begin{cases} x^{\sigma}, & x > 0 \\ -\lambda(-x)^{\sigma}, & x < 0 \end{cases}$$

$$\pi(p) = \exp\,[-(-\ln p)^{\alpha}] \quad .$$

v(·) is value function. $\pi(\cdot)$ is probability weighting function. p and q are probabilities of x and y, respectively. σ represents curvature of value function and can be interpreted as degree of risk aversion. λ and α denote loss aversion parameter and probability weighting parameter, respectively.

In this study, we estimate three parameters (σ, λ and α) of prospects theory following the approach proposed by Tanaka et al. [2010].

Ⅲ. Experimental Design

In this study, we employ the same experimental design with Tanaka et al. [2010]. Questionnaires used in our field experiment to measure risk preferences are shown in Table 1. Panel (a) and (b) in Table 1 represent lottery set of "Series 1" and "Series 2", respectively. Both Series 1 and 2 have 14 sets of lottery, then total 28 sets of lottery, and each lottery consists of two options, Plan A and Plan B. Earnings of subjects from the experiment depend

Table 1(a). Lottery Set (Series 1)

Lottery No.	Plan A	Plan B
1	Rp. 20,000 if ①②③ Rp. 5,000 if ④⑤⑥⑦⑧⑨⑩	Rp. 34,000 if ① Rp. 2,500 if ②③④⑤⑥⑦⑧⑨⑩
2	Rp. 20,000 if ①②③ Rp. 5,000 if ④⑤⑥⑦⑧⑨⑩	Rp. 37,500 if ① Rp. 2,500 if ②③④⑤⑥⑦⑧⑨⑩
3	Rp. 20,000 if ①②③ Rp. 5,000 if ④⑤⑥⑦⑧⑨⑩	Rp. 41,500 if ① Rp. 2,500 if ②③④⑤⑥⑦⑧⑨⑩
4	Rp. 20,000 if ①②③ Rp. 5,000 if ④⑤⑥⑦⑧⑨⑩	Rp. 46,500 if ① Rp. 2,500 if ②③④⑤⑥⑦⑧⑨⑩
5	Rp. 20,000 if ①②③ Rp. 5,000 if ④⑤⑥⑦⑧⑨⑩	Rp. 53,250 if ① Rp. 2,500 if ②③④⑤⑥⑦⑧⑨⑩
6	Rp. 20,000 if ①②③ Rp. 5,000 if ④⑤⑥⑦⑧⑨⑩	Rp. 62,500 if ① Rp. 2,500 if ②③④⑤⑥⑦⑧⑨⑩
7	Rp. 20,000 if ①②③ Rp. 5,000 if ④⑤⑥⑦⑧⑨⑩	Rp. 75,000 if ① Rp. 2,500 if ②③④⑤⑥⑦⑧⑨⑩
8	Rp. 20,000 if ①②③ Rp. 5,000 if ④⑤⑥⑦⑧⑨⑩	Rp. 92,500 if ① Rp. 2,500 if ②③④⑤⑥⑦⑧⑨⑩
9	Rp. 20,000 if ①②③ Rp. 5,000 if ④⑤⑥⑦⑧⑨⑩	Rp. 110,000 if ① Rp. 2,500 if ②③④⑤⑥⑦⑧⑨⑩
10	Rp. 20,000 if ①②③ Rp. 5,000 if ④⑤⑥⑦⑧⑨⑩	Rp. 150,000 if ① Rp. 2,500 if ②③④⑤⑥⑦⑧⑨⑩
11	Rp. 20,000 if ①②③ Rp. 5,000 if ④⑤⑥⑦⑧⑨⑩	Rp. 200,000 if ① Rp. 2,500 if ②③④⑤⑥⑦⑧⑨⑩
12	Rp. 20,000 if ①②③ Rp. 5,000 if ④⑤⑥⑦⑧⑨⑩	Rp. 300,000 if ① Rp. 2,500 if ②③④⑤⑥⑦⑧⑨⑩
13	Rp. 20,000 if ①②③ Rp. 5,000 if ④⑤⑥⑦⑧⑨⑩	Rp. 500,000 if ① Rp. 2,500 if ②③④⑤⑥⑦⑧⑨⑩
14	Rp. 20,000 if ①②③ Rp. 5,000 if ④⑤⑥⑦⑧⑨⑩	Rp. 850,000 if ① Rp. 2,500 if ②③④⑤⑥⑦⑧⑨⑩

（Source）Takashino et al. [2014].

Note: ①～⑩ denote card numbers to determine the amount of money each subject will receive.

Table 1(b). Lottery Set (Series 2)

Lottery No.	Plan A	Plan B
15	Rp. 20,000 if ①②③④⑤⑥⑦⑧⑨ Rp. 15,000 if ⑩	Rp. 27,000 if ①②③④⑤⑥⑦ Rp. 2,500 if ⑧⑨⑩
16	Rp. 20,000 if ①②③④⑤⑥⑦⑧⑨ Rp. 15,000 if ⑩	Rp. 28,000 if ①②③④⑤⑥⑦ Rp. 2,500 if ⑧⑨⑩
17	Rp. 20,000 if ①②③④⑤⑥⑦⑧⑨ Rp. 15,000 if ⑩	Rp. 29,000 if ①②③④⑤⑥⑦ Rp. 2,500 if ⑧⑨⑩
18	Rp. 20,000 if ①②③④⑤⑥⑦⑧⑨ Rp. 15,000 if ⑩	Rp. 30,000 if ①②③④⑤⑥⑦ Rp. 2,500 if ⑧⑨⑩
19	Rp. 20,000 if ①②③④⑤⑥⑦⑧⑨ Rp. 15,000 if ⑩	Rp. 31,000 if ①②③④⑤⑥⑦ Rp. 2,500 if ⑧⑨⑩
20	Rp. 20,000 if ①②③④⑤⑥⑦⑧⑨ Rp. 15,000 if ⑩	Rp. 32,500 if ①②③④⑤⑥⑦ Rp. 2,500 if ⑧⑨⑩
21	Rp. 20,000 if ①②③④⑤⑥⑦⑧⑨ Rp. 15,000 if ⑩	Rp. 34,000 if ①②③④⑤⑥⑦ Rp. 2,500 if ⑧⑨⑩
22	Rp. 20,000 if ①②③④⑤⑥⑦⑧⑨ Rp. 15,000 if ⑩	Rp. 36,000 if ①②③④⑤⑥⑦ Rp. 2,500 if ⑧⑨⑩
23	Rp. 20,000 if ①②③④⑤⑥⑦⑧⑨ Rp. 15,000 if ⑩	Rp. 38,500 if ①②③④⑤⑥⑦ Rp. 2,500 if ⑧⑨⑩
24	Rp. 20,000 if ①②③④⑤⑥⑦⑧⑨ Rp. 15,000 if ⑩	Rp. 41,500 if ①②③④⑤⑥⑦ Rp. 2,500 if ⑧⑨⑩
25	Rp. 20,000 if ①②③④⑤⑥⑦⑧⑨ Rp. 15,000 if ⑩	Rp. 45,000 if ①②③④⑤⑥⑦ Rp. 2,500 if ⑧⑨⑩
26	Rp. 20,000 if ①②③④⑤⑥⑦⑧⑨ Rp. 15,000 if ⑩	Rp. 50,000 if ①②③④⑤⑥⑦ Rp. 2,500 if ⑧⑨⑩
27	Rp. 20,000 if ①②③④⑤⑥⑦⑧⑨ Rp. 15,000 if ⑩	Rp. 55,000 if ①②③④⑤⑥⑦ Rp. 2,500 if ⑧⑨⑩
28	Rp. 20,000 if ①②③④⑤⑥⑦⑧⑨ Rp. 15,000 if ⑩	Rp. 56,500 if ①②③④⑤⑥⑦ Rp. 2,500 if ⑧⑨⑩

(Source) Takashino et al. [2014].

Note: ①～⑩ denote card numbers to determine the amount of money each subject will receive.

on their decisions and chance. Subjects choose either Plan A or Plan B for each lottery in both Series 1 and 2. After a subject select plan for all the lottery, we put 28 balls in a box and subject draw one numbered ball to select one lottery out of 28 lotteries. Then, a subject plays the selected lottery for actual payment.

For example, when the numbered ball selected is “3” and a subject chose Plan A in lottery No.3, he or she has a chance to get 20,000 Rupiah with a probability of 30 percent and 5,000 Rupiah with a probability of 70 percent. Next, we ask a subject to choose one card from 10 cards numbered from 1 to 10. Then, a subject will receive 20,000 Rupiah when the selected card is from 1 to 3, and receive 5,000 Rupiah when the selected card is from 4 to10.

In this experiment, subjects are asked to choose Plan A or Plan B. If subjects choose Plan A, next lottery in the same series of lottery set is shown by us. This process continues as long as subjects choose Plan A. However, if subjects choose Plan B, next lottery in the same series of lottery set is not shown and the session of that series of lottery is over. Then , we consider a subject keep on choosing Plan B in the same series of lottery set when once a subject choose Plan B. In order to do so, we can enforce monotonic switching. The lottery number a subject switch from Plan A to Plan B is called “switching point”. We jointly use the switching points in both Series 1 and Series 2 to calculate the degree of risk aversion, using Table A.1 in Tanaka et al. [2010].

Ⅳ. Results

Field experiments are conducted in March 2014 and March 2017. Subjects of the experiments are rice farming farmers in Sukabumi District, West Java Province in Indonesia.

Table 2(a). Distribution of switching points (Series 1 and 2), 2014

Lottery No. (Series 2)	Lottery No. (Series 1) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	Never	Total
15	18	10	7	1			1						1	1	2	41
16	11	4	2	3												20
17	4	2	2	1	1											10
18	3	2	4		1											10
19																0
20						1										1
21																0
22											1					1
23																0
24																0
25				1												1
26			1												1	2
27																0
28	1	1														2
Never			1	1											2	4
Total	37	19	17	7	2	1	1	0	0	0	1	0	1	1	5	92

(Source) Data from field experiment by author.

Note: Colored boxes denote the switching points consistent with Expected Utility Hypothesis ($\alpha = 1$).

The number of subjects is 92 in 2014 and 96 in 2017. The subjects are chosen using stratified random sampling.

The results of our field experiments is presented in Table 2. Panel (a) shows the switching points from the experiments in 2014, while Panel (b) indicates the switching

Table 2(b). Distribution of switching points (Series 1 and 2), 2017

Lottery No. (Series 2)	Lottery No. (Series 1) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	Never	Total
15	50	9	6											1	1	67
16	8	5														13
17	2															2
18																0
19	1															1
20																0
21																0
22		1														1
23																0
24																0
25																0
26																0
27																0
28														1		1
Never	2	1													8	11
Total	63	16	6	0	0	0	0	0	0	0	0	0	0	2	9	96

(Source) Data from field experiment by author.

Note: Colored boxes denote the switching points consistent with Expected Utility Hypothesis ($\alpha = 1$).

points in 2017. Detailed analysis of these results will be reported at the 14th IRSA International Conference.

Ⅴ. Conclusion

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The Boom and the Bust: An Empirical Investigation on the Nexus between Informal Employment and Commodity Cycle

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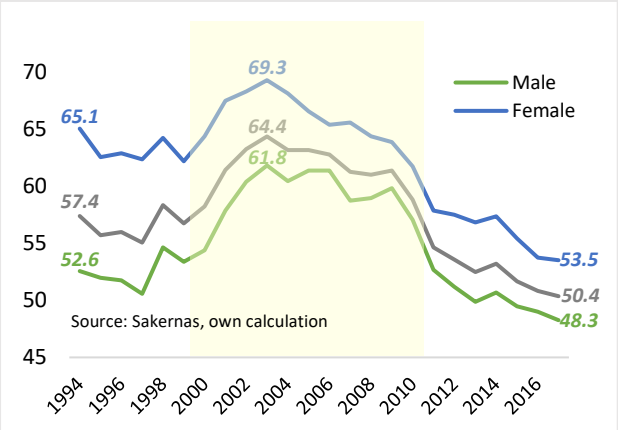
Long-run trend of the size of Indonesia's informal employment suggests that there is a high degree of procyclicality between informal employment and commodity cycle. However, changes in the economic structure during later years in the cycle affected the composition of employment, where to a certain degree, the windfall of commodity boom has a trickle-down effect to formal employment in trade and services sectors. Nevertheless, ironically the windfall failed to create high-paying formal employment in the commodity-related sectors itself. This begs the question, how informal economy reacts to the commodity cycle and what are the determinants of informality in Indonesia during the commodity cycle? Is the state of informality driven by compulsion or choice? while arguing that as Indonesia experienced a remarkable export boom driven by surging commodity exports, the commodity boom and its accompanying real exchange rate appreciation have raised question about the potential for Dutch Disease effects. This paper takes an in-depth look to assess the extent of such concerns. For this, we use an industry-province panel regression at 2-digit ISIC level to see how the commodity cycle through the channel of export value at sectoral-province level affect the determination of the informality size in Indonesia during 2000-2010. An explanatory investigation shows that the employment of formal and informal sector works in complementary behavior. Furthermore, the potential contribution of this paper is to build a deeper understanding of the sectorial composition of the employment and the determinants of informal employment in Indonesia, especially during the commodity cycle while support the government to develop a better formulation of a policy response related to the informal economy in Indonesia.

Keywords: Sectoral shift, commodity cycles, informal employment, Indonesia

INTRODUCTION

A growing literature of informality indicates there is an increasing attention on the economic analysis of the informal economy. Informal economy, sometimes stigmatized as shadow, hidden, black, parallel, second or underground economy is defined as a set of economic activities that operating outside the legal system (Rothenberg et al., 2016; Bruhn, 2013; De Soto, 1989).

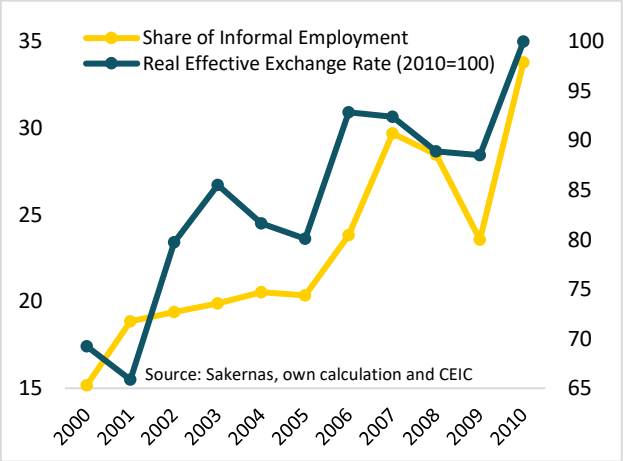
Figure 1 Informal Workers (% of Total Employment) in Indonesia



Informality is a widespread phenomenon and poses social, economic and cultural challenges across the world; however, many issues about its consequences related to commodity cycle still remain under-explored.

Using the Badan Pusat Statistik (BPS) definition of informal employment, we conduct a time series observation and found a cyclicality of informal employment in Indonesia (see Figure 1). Looking at the historical data, during the commodity boom period (2000-10), the share of informal employment gradually increases and peaked at 2003-04, at the height of the cycle,

Figure 2 REER and Non-Commodity Manufacturing Informal Employment



informal employment comprises more than 64% of total employment.

In the 2000s, the Indonesian economy was being under the influence of an oil and mining production and a natural resource export boom that triggered the potential for Dutch Disease effects. It may have significant effects on employment dynamics, especially when the informal sector is sizable.

The main question of this research is how informal economy reacts to the commodity cycle and what are the elements of the economy that best explain the considerable size of informal sector in Indonesia. One of the most worrying aspects of the commodity boom was the appreciation of the exchange rate which often is credited with triggering the Dutch Disease. As high commodity prices were accompanied by formal job creation slows down as manufacturing sector lose competitiveness and then dive in to the premature industrialization.

Data shows that there is an indication of Indonesia went through a premature de-industrialization, during the upswing of the commodity cycle as non-commodity manufacturing sector only contributes a marginal share of employment growth. Besides, increasing real effective exchange rate during the commodity boom hurts the competitiveness of export-oriented manufacturing sector. Driven by upward pressures on the rupiah, the REER appreciated by about 44 percent from early 2000 to 2010.

In particular, we are concerned to take an in-depth look to assess the Dutch Disease related to the coexistence within the traded goods sector of progressing and declining, or booming and lagging, subsectors. Where the booming sector is oils and minerals, the declining tradable sectors would include manufacturing and agriculture, according to the theory.

The rest of this paper proceeds as follows: the following section views related papers on Dutch Disease phenomenon and structural changes in the economy. Section 3 provides some stylized facts related to informality and commodity cycle using National Labor Force Survey Data. Section 4 outlines our empirical strategy and presents the main results and discussions. Section 5 concludes.

LITERATURE REVIEW

In economics, the term “Dutch Disease” refers to a phenomenon reflecting changes in structural of the economy in the wake of a favorable shock (a large natural discovery, a rise in the international price of an exportable commodity, or the presence of sustained aid or capital inflows) (Brahmbhatt et al, 2010). Such structural changes resulting in a contraction or stagnation of other tradable sectors of the economy and to be accompanied by an appreciation of the country’s real exchange rate (Gelb and Associates, 1988).

As presented in Corden and Neary (1982), the Dutch Disease phenomenon is associated with two main effects. The first main effect is ***a resource movement effect*** that refers to the reallocation of factors (labor and capital) from other sectors of the economy (e.g., manufacturing) to the natural resource booming sector. This effect reflects increased demand in the resource intense sector that tends to attract labor from other sectors of the economy by means of higher wages, leading to lower output in other sectors. This process of resource reallocation often leads also to an appreciating real exchange rate. Lower production in the non-booming sector (including non-tradable) results in a loss of production giving rise to excess demand for non-tradable and leading to an increase in the relative price of

non-tradable. The second main effect is ***a spending effect*** that refers to an appreciation of the real exchange rate as a result of increased spending by the public and private sectors from an increased domestic income from booming sectors following a higher aggregate demand. Increased demand for non-tradable leads to higher prices and output in non-tradable one. Wages will tend to rise, squeezing profits in non-resource tradable sector (manufacturing), where prices are fixed at international levels.

Altogether, Dutch disease is often associated with (i) real appreciation, (ii) a slowdown in manufacturing exports, output and employment, and (iii) increase in wages. As presented in Corden and Neary (1982) that a resource export boom will cause growth in tradable sector (such as: manufacturing) to slow by raising input costs and reducing competitiveness relative to substitutes produced in other countries.

Table 1 Empirical Literature Review on Developed Countries

Author	Developed Countries	Methodology	Main Findings
Rudd (1996)	Netherlands	Time series and regression analysis	Government expenditure had significant negative effect on manufacturing sector.
Ellman (1981)	Netherlands	Regression	Real exchange rate appreciated and there was virtual collapse of the manufacturing sector and substantial growth in unemployment. The service sector expanded.
Stijns (2003)	Netherlands	Gravity Trade Model	Collapse of manufacturing sector and appreciation of real exchange rate.
Ross (1986)	The United Kingdom	Regression	The real exchange rate appreciated and manufacturing sector shrank.

Source: Kwaku and Baah-Kumi (2011)

Table 2 Empirical Literature Review on Developing Countries

Author	Developing Countries	Methodology	Main Findings
Kutan and Wyzan (2005)	Kazakhstan	Extension of the Balassa-Samuelson model	Composition of exports changed in favor of energy related activities. Change in the price of oil significant in explaining the real exchange rate.
Rudd (1996)	Indonesia	Time series and regression analysis	Appreciation of the real exchange rate led to the decline in the agricultural sector for Indonesia.
Rudd (1996)	Nigeria	Time series and regression analysis	Appreciation of the real exchange rate led to the de-agriculturalization of the Nigerian economy.

Makochekanwa (2006)	Bostwana	Gravity Model	Trade	Dutch disease did not affect the country's major exports. Good governance and strong public institutions accounted for the avoidance of Dutch disease.

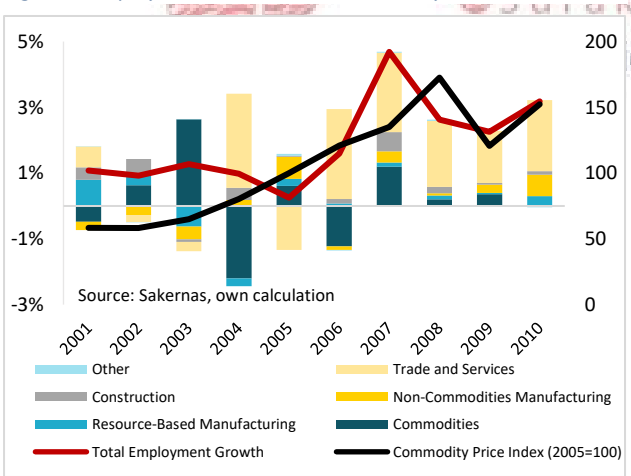
Source: Kwaku and Baah-Kumi (2011)

The empirical evidences on developed and developing countries (table 1 and Table 2) illustrates that two developed countries and three developing countries (including Indonesia) showed evidence of Dutch disease. It is clear that commodity boom results in the appreciation of the country's real exchange rate, thereby reducing the competitiveness of a sector (e.g., manufacturing) as the appreciation makes the production of non-tradable goods more profitable relative to tradable goods in the international market. Hence, the increase in the international market price makes the production of non-tradable more profitable and therefore the non-tradable sector absorbs the factor of production from the less profitable ones.

FORMALITY AND COMMODITY CYCLE: SOME STYLIZED FACTS

Inclusion is a multifaceted problem with no single explanatory hypothesis that could satisfactorily explained the cause and consequence of informality on its own. Based on the literature, there are three models that tries to explain the cause of informality. The first is the **exclusion model**, under this model expensive regulation and bureaucracy creates a prohibitive environment for firms to transitioning to formal economy (De Soto, 1989; Tybout, 2000; Hsieh and Olken, 2014). Second is the **rational exit model**, in this model being in the informal economy is an informed decision made by economic agent (firms/workers) (Maloney, 2004). Third is the **dual-economy model**, where under this model the informal economy is largely disconnected from the formal economy and it is a symptom and consequences of poverty (La Porta and Shleifer, 2008; Bruhn, 2013; Tokman, 1992).

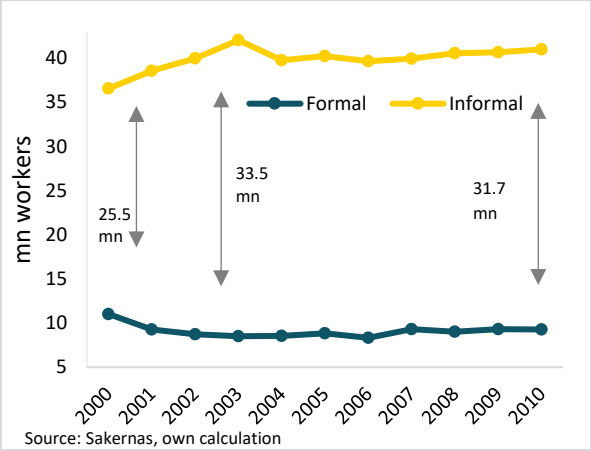
Figure 3 Employment Growth Contribution by Sectors



We present some stylized-facts regarding the informality and commodity cycle that are calculated from the National Labor Force Survey. In the early years of the commodity cycle, a substantial increase in the commodities and resource-based manufacturing sector employment was apparent (see figure3), although the contribution of these sectors in the employment creation had becoming more sluggish further into the cycle. Most of the employment during the later years was in the trade and services sector, as commodity price booms heighten incentives to invest in the commodity sectors that translates into higher corporate profits, household incomes, government revenues, which leads to higher domestic consumption (World Bank, 2015).

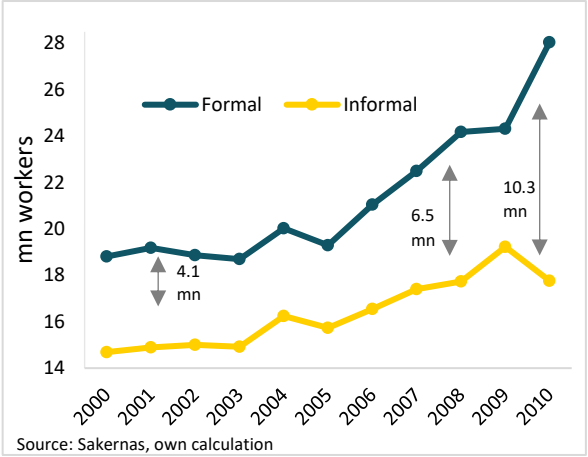
Looking further into the jobs classification (see figure 4 and 5), the quality of the jobs being created during the commodity cycle vary by sectors. Employment in the commodity-related sectors are mostly informal, at the height of the cycle, there are 33.5 million more informal workers compared to formal workers. In contrast, trade and services sectors create more formal employment compared to informal during the commodity cycle, at the end of the cycle, there are 10.3 million more formal workers compared to informal workers in this sector. These facts give out hints that to a certain degree, the windfall of commodity boom did in fact trickle down to formal employment in trade and services

Figure 4 Employment in Commodity-Related Sectors



Source: Sakernas, own calculation

Figure 5 Employment in Trade and Services Sectors



Source: Sakernas, own calculation

sectors. However, ironically the windfall failed to create high-paying formal employment in the commodity-related sectors itself.

EMPIRICAL STRATEGY AND MAIN RESULTS

The empirical strategy that we implement in this paper is to estimate an industry-province panel regression at 2-digit ISIC level to see how the commodity price through the channel of export value at sectoral-province level affect the determination of the size of informal employment. The price-through mechanism that we assumed will be taken into account using instrumental variable, with the explicit assumption on the endogeneity of export value with the commodity price index and trade-weighted exchange rate at industry level.

The commodity price index was represented by the aggregation of several Indonesia's main primary commodities (coal, nickel, copper, palm oil and rubber) with values of Indonesian exports of each commodity used as weights.[1] We then observe the monthly commodity price index from 2000-2010 and calculate the average of all the values for a given month to obtain the annual index of the commodity price.

The control variable that we used is the alternative wage in the formal employment and the job creation in the formal employment. In measure the job creation, we follow the methodology of Davis and Haltiwanger (1992). We exploit the industry-province level data obtained from the tabulation of *Sakernas* data observed annually from 2000 to 2010. To construct the job growth measurement, we use the data on the level of employment at each industry *j* in province *i* at time *t*, denoted by EMP_{ijt}, we then create a new measure x_{ijt} derived from EMP_{ijt} defined as the average size of employment for each sector *i* industry *j* in country *i* at time *t* on the period *t* and *t-1*, as we can see in the equation (1.1).

$$x_{ijt} = \frac{EMP_{ijt} + EMP_{ijt-1}}{2} \qquad (1.1)$$

[1] This commodity price index covers the prices of 38% of coal traded internationally (based on Indonesia's export share to the world of this specific product), 32% of palm oil, 29% of copper, and the rest from nickel and rubber.

We then define the growth rate of each industry *j* in country *i* at time *t*, denoted by g_{ijt}, as the changes in the employment level for each sector *i* from time *t-1* to time *t* divided by x_{ijt}, as we can see in the equation (1.2).

$$g_{ijt} = \frac{EMP_{ijt} - EMP_{ijt-1}}{x_{ijt}} \tag{1.2}$$

From (1.1) and (1.2), we then can defined g_{ijt} as follow:

$$g_{ijt} = \frac{2(EMP_{ijt} - EMP_{ijt-1})}{EMP_{ijt} + EMP_{ijt-1}} \tag{1.3}$$

From (1.3), we will have job creation when $EMP_{ijt} > EMP_{ijt-1}$, and we will have job destruction when $EMP_{ijt} < EMP_{ijt-1}$. In contrast to conventional growth formula, the introduction of x_{ijt} as the denominator of changes in employment instead of EMP_{ijt-1} allows us to creates an integrated measurement of job creation and destruction, g_{ijt}, that lies within a closed hypothetical interval of $[-2,2]$. The other properties of this measurement, is that the conventional growth measurement of employment is monotonically increasing with g_{ijt}.[2]

We also calculate gross job creation as size-weighted job growth rate for industries that are experiencing positive growth rate, denoted by POS_{jt}. In calculating the weighted job growth rate, I use $\left(\frac{x_{ijt}}{X_{jt}}\right)$ as the weight, where X_{jt} is the total changes in employment in each 3-digit ISIC industry in country *j* at time *t*. On the same notion, we also calculate gross job destruction as size-weighted job growth rate for industries that are experiencing negative growth rate, denoted by NEG_{jt} as can be seen in equation (1.4), where E_{jt} is the set of industries at 3-digit ISIC level in country *j* at time *t*.

$$POS_{jt} = \sum_{\substack{i \in E_{jt} \\ g_{it} > 0}} \left(\frac{x_{ijt}}{X_{jt}}\right) g_{ijt} \tag{1.4}$$

The main estimation specification that we use for the instrumental panel regression is laid out as follow:

$$\ln Informal_{ijt} = \gamma_1 POS_{ijt} + \gamma_2 AW_{ijt} + \gamma_3 \ln EXP_{ijt} + c_i + u_{ijt} \tag{1.5}$$

With $Informal_{ijt}$ as the size of informal employment in industry *i* in province *j* at time *t*, POS_{ijt} is the measurement of formal job creation and EXP_{ijt} is the commodity export value.

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[2] Consider conventional growth rate formula for employment:

$$G_{ijt} = \frac{EMP_{ijt} - EMP_{ijt-1}}{EMP_{ijt-1}}$$

Solve for EMP_{ijt} from (1.3), we will get $EMP_{ijt} = \left(\frac{2+g_{ijt}}{2-g_{ijt}}\right) EMP_{ijt-1}$, put into G_{ijt}, we will get $G_{ijt} = \frac{\left[\left(\frac{2+g_{ijt}}{2-g_{itj}}\right) EMP_{ijt-1}\right] - EMP_{ijt-1}}{EMP_{ijt-1}} = \frac{2g_{ijt}}{2-g_{ijt}}$, we can see that G_{ijt} is monotonically increasing with g_{ijt}.

The commodity export value is specified as having the sectoral-specific commodity price effect and the trade-weighted exchange rate as the instrumental variable (as can be seen in the following equation).

$$EXP_{ijt}^{m} = \sum_{j}\sum_{k}\beta_{ij}(Commodity_{k} * P_{t}^{com}) + TER_{ijt} + c_{i} + \mu_{ijt} \qquad (1.6)$$

We decompose sectors of industry into commodity and commodity-related manufacturing sectors and non-commodity related sector, with $Commodity_k$ as the sector dummy for each sector *k*, and P_{ijt}^{com} is the commodity price index and TER_{ijt} is the trade-weighted exchange rate[3]. Although the way we specify commodity sectoral dummy in equation (1.6) will reduce the degree of freedom considerably, but it give us the advantage of being able to have a self-selecting weighted exchange rate for each industry. Meanwhile the trade-weighted exchange rate is set to be equal to zero for sectors that produce only non-tradable output, hence, there is no requirement to set a dummy interaction terms for this variable in the specification above.

DATA DESCRIPTION

The period of the dataset is annual from 2000 to 2010, the decades where Indonesian economy went through the latest commodity price super cycle. The table below summarizes the definitions and sources used to obtain the relevant data as a measure of our explanatory variables.

Table 3 Definitions of Variables and Data Sources

Variable	Definition	Data source
Informal employment	Using the BPS definition, informal employment consists of (1) all own account workers and casual workers (agriculture and non-agriculture) with main occupation of services/sales, agricultural, production, operators and laborers (2) employer assisted by temporary or unpaid workers in agricultural sector and (3) all family/unpaid workers regardless their main occupation.	National Labor Force Survey (Sakernas)
Formal job creation	The job creation in the formal employment that was obtained as size-weighted job growth rate for industries that are experiencing positive growth rate.	National Labor Force Survey (Sakernas)

[3] We follow the methodology of Goldberg (2004) by constructing exchange rate measures that reflect industry-by-industry distinctions by using the time histories of the weights of Indonesia trading partners in the exports and imports of each Indonesia industry. Each industry is denoted by an index *i* and each country/trade partner of that industry by an index *c*. : $ter_t^i = \sum_c((.5\ \frac{X_t^{ic}}{\sum_c X_t^{ic}} + .5\ \frac{M_t^{ic}}{\sum_c M_t^{ic}})\ .\ rer_t^c)$, where rer_t^c are the bilateral real exchange rates of each Indonesia trading partner *c*. Then, the bilateral real exchange rates are constructed by multiplying a country's nominal exchange rate by the ratio of the consumer price indexes of Indonesia against that partner country.

Export	Commodity export value.	WITS Database
Wage	Wage for formal sector employees in the labor market.	National Labor Force Survey (Sakernas)
Commodity price	Price aggregation of coal, nickel, copper, palm oil and rubber (our top primary commodities exports) based on international price using values of Indonesian exports of each commodity as weights.	Monthly commodity price (IMF); Exports (BPS)
Trade-weighted exchange rate (IDR/FX)	A weighted average of exchange rates of home versus foreign currencies, with the weight for each foreign country equal to its trade.	Bilateral exchange rate (CEIC); CPI (CEIC); trade data (WITS)

RESULTS

The empirical results are based on the estimation of equation (1.5) described above. The dependent variable in equation (1.5) is informal employment, measured in terms of the workers in informal sector at industry-province level during 2000-2010. The explanatory variables include the formal cob creation, export (commodity), formal employment wage, commodity price and trade-weighted exchange rate. We also include year, province and industry effect in this panel regression. In addition, to allow for possibility of slow formal employment creation, we consider an alternative specification that includes a lagged of formal job creation among the right-hand side variables.

This study is meant to explore whether the employment of the formal and informal sector works in substitution or complementary behavior. From the statistics presented in Table 4, we can observe some degree of complementarity between informal employment and the formal job creation, the complementarity relationship is robust across both fixed and random effect specification and also the second state instrumental variable specification (with and without lagged on formal job creation). The lagged dependent variable of job creation also has a positive sign, yet insignificant. We interpret this as a sign of sluggish formal employment adjustment, which complements the informal employment during the commodity cycle period.

The table below also suggests that together with negative relationship between the size of informal employment and the alternative formal employment wage indicated a rational exit hypothesis could potentially explain the size of informal employment in Indonesia. In other words, one could argue that informal workers voluntarily “exit” the formal economy as being in the informal economy is an informed decision made by the economic agent.

Table 4 Estimation Result for Informal Employment

Explanatory Variables	OLS	First Stage Estimation		Second Stage Estimation	
		FE	RE	FEIV (I)	FEIV (2)
Formal Job Creation	0.0307	0.152***	0.108***	0.141***	
	(1.38)	(7.45)	(5.49)	(6.77)	
Lagged on Formal Job Creation					0.0162
					(0.77)
Log Export				0.481***	0.583***
				(6.46)	(7.24)
Log Wage	-0.375***	-0.304***	-0.333***	-0.302***	-0.308***
	(-35.15)	(-27.69)	(-32.88)	(-27.12)	(-25.45)
Commodity Price	0.00111***	0.00175***	0.00148***		
	(3.63)	(6.52)	(5.60)		
Trade-Weighted Exchange Rate (IDR/FX)	0.689	0.184	0.525		
	(1.13)	(0.34)	(1.00)		
Year Effect	Yes	Yes	Yes	Yes	Yes
Province Effect	Yes	No	Yes	No	No
Industry Effect	Yes	No	Yes	No	No
Constant	17.21***	11.90***	16.56***	9.652***	9.284***
	(115.34)	(80.60)	(95.05)	(24.67)	(21.90)
Obs	15038	15038	15038	15002	12807
F-Stat	252.22	75.74		18.28	18.76
Hausman Test (Fixed Random)		1850.88***			
R-squared	0.7967	0.257	0.3642	0.0267	0.0257

t statistics in parentheses
* p<0.05, ** p<0.01, ***p<0.001
FEIV (I) IV Regression without lagged on formal job creation
FEIV (2) IV Regression with lagged on formal job creation

Several features stand out from this table, we also found that the commodity export value is contribute positively and statistically significant to the size of informal employment in the second stage estimation. First stage estimation also reveals that commodity price affecting informal employment size through the instrumented variable of export value positively and statistically significant. These result points out that the upward swing of the commodity price during the period of the commodity super cycle did in fact contribute positively to the size of informal employment in Indonesia.

CONCLUSION

This study has analyzed the impact of commodity boom on informal employment in Indonesia using a panel data set for the 2000-2010 period. The study finds that as the prices of natural resources and agricultural products increased significantly between 2000-2010 and Indonesia experienced the export boom of commodity products that induce shifts the composition of employment, especially since a sizeable share of employment in Indonesia are working in the informal economy.

We have examined the determinants of the informal employment during the commodity price super cycle. According to the results of this paper, as expected, the informal employment complements the formal employment, while formal employment wage negatively affecting the size of informal employment and commodity exports positively affecting the size of informal employment in Indonesia. These results can also help to explain the motives of how the informal workers behave, which may be related to the fact that the rational exit theory could possibly explain informality phenomenon in Indonesia.

Going forward, it is also essential to observe the localized effect of sectoral shift due to changes in commodity price. The localized effect will be obtained from the price and regional-sectoral dummy interaction term. Altogether, this will enrich the analysis of a compositional shift in the nature of informal employment over commodity cycle in Indonesia.

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Climbing the Ladder: Estimating the Determinant of Informal Workers Transition into Formal Employment

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ABSTRACT

Conventionally defined as employment that is not registered and does not receive any form of employment benefit, informal employment is often considered as the last resort for workers that are excluded from the formal economy. A preliminary investigation using National Labor Force Survey (Sakernas) reveals that informal employment is characterized by low productivity, workers are also paid less than their formal counterparts even after controlling for workers characteristics. An exploratory investigation from the survey also shows that informal employment offers very little in terms of career advancement, lack of jobs training is not something uncommon in informal employment.

One drawback of the Sakernas data is that it does not allow us to observe the dynamics of informal employment at the individual level. The lack of same person employment status tracking in Sakernas does not allow us to observe labor mobility into and out of informal employment. To overcome the limitation of Sakernas dataset, this paper uses the longitudinal data from IFLS 4 and IFLS 5 to evaluate the mobility of workers that transitioning from informal employment to the formal employment and vice versa. A logistic regression model is considered for exploratory investigation on the determinants of the labor mobility, we will also control for regional and sectoral fixed effect along with individual workers characteristics.

The potential contribution of this paper is to provide a better understanding of the determinant of informal employment and could also potentially contribute to a better formulation of a policy response to promote workers transition to formal employment.

Keywords: Informal employment, labor mobility, transition to formal employment

INTRODUCTION

Informal economy constitutes a significant portion of the Indonesian economy. Around 70 percent of all total workers work in the informal economy (as can be seen in Table 1), and 90 percent of the country's firm are unregistered[1]. The sheer size of informal economy causes concern since literature shows that the informal economy is characterized by low productivity, low value added with considerable wage gap for workers in the informal sector compared to their formal counterparts.

In cross-country context, the share of Indonesian informal workers is higher than other economies at a similar stage of development. From Figure 1, which based on OECD's calculation using informality definition by ILO, Indonesia's share of informal workers to the total of non-agricultural employment is at the upper end of its peer countries in Southern and Eastern Asia. Moreover, given Indonesia's Real GDP per Capita, the average share of informal workers is higher in Indonesia compared to other similar developing countries. For illustration, the share of Indonesian informal workers to the overall

[1] Tabulated from the 2006 Economic Census for West Java case only.

non-agricultural employment is similar to that of Mali, while Indonesian GDP per capita is more than four times the GDP per capita of the Malian.

Table 1. Size of Informal Economy Using Various Definition

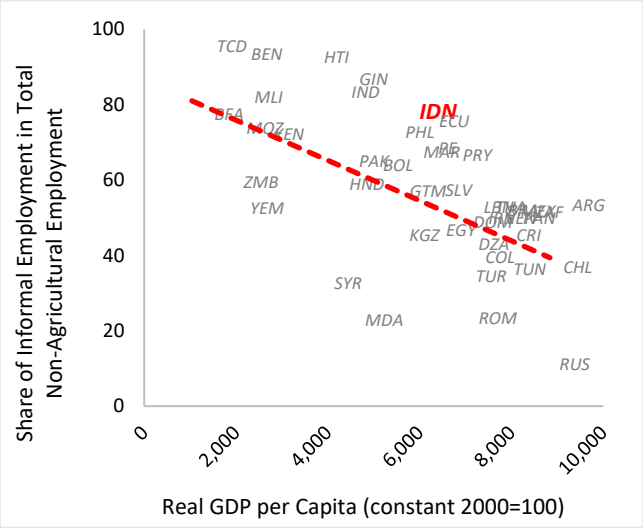
Authors	Size of Informality			Period of Observation	Notes
	Share of LF	Share of Employment	Share of GDP		
Alatas & Newhouse (2010); Firdausy (2000)	61-70%				
Minarsih & Lisna (2015)		51.9-61.5%		2011-2015	*
Nazara (2009)		61.5-69.5%		2001-2009	*
Statistics Indonesia & ADB (2010)		89.4% in Yogyakarta; 75.9% in Banten		2010	*a
Cuevas et. al. (2009)		Lower bound: 29.1%			b
Medina et. al. (2017)			16.0-23.9%		c
Schneider (2004)			19.4-22.9%		c
La Porta & Shleifer			38%		d

*using the same BPS definition, Nazara (2009) observation is 2001-2009, Winarsih & Lisna (2015) observations is 2011-2015, data source is Sakernas

a) Using the same BPS definition, data used is the informal survey sector
b) This a lower bound for definitive informal workers, the differences between Cuevas' result and other estimation is in the "mixed informal" classification
c) Cross-country analysis using MIMIC and DYMIMIC model
d) World Economic Forum's figure as cited in La Porta & Shleifer (2008, 2014)

Informality by itself is a multifaceted problem with no single explanatory hypothesis that could satisfactorily explained the cause and consequences of informality on its own. As summarized in Table 2 below, there are three models in the literature that tries to explain the cause of informality in the literature of informal economy. The first is the exclusion model, under this model expensive regulation and bureaucracy creates a prohibitive environment for firms to transitioning to formal economy (De Soto, 1989; Tybout, 2000; Hsieh and Olken, 2014).

Figure 1. The Size of Informal Employment in Indonesia Cross-Country Comparison



Source: OECD (2009)

Second is the rational exit model, in this model being in the informal economy is an informed decision made by economic agent (firms/workers) (Maloney, 2004). Third is the dual-economy model, where under this model the informal economy is largely disconnected from the formal economy and it is a symptom and consequences of poverty (La Porta and Shleifer, 2008; Bruhn, 2013; Tokman, 1992).

Table 2 Informal Economy in the Literature

	Exclusion Model	Rational Exit Model	Dual Economy Model
Cause of Informality	Expensive regulation and bureaucracy creates a prohibitive environment	Being in the informal economy is an informed decision made by the economic agent	The informal economy is largely disconnected from the formal economy • Arthur Lewis: Excess labor in rural areas, industrialization can reduce the size of informal economy • Harris-Todaro: Transitory Occupation in urban areas, exacerbated by urbanization
Symptom	Missing middle	Irresponsive to regulation	Poverty
Cost of Informality	• Loss in tax revenue • Lower than potential economic growth	• Loss in tax revenue • Lower than potential economic growth • Asymmetrical competition between formal vs. informal economy	• Industrialization • Economic growth
Policy Response	• Deregulation	• Enforcement • Incentive	• Industrialization • Economic growth

Identifying the underlying cause of informality based on these three models is important since each model of informality has different policy responses, e.g., enforcement vs. deregulation. Given the magnitude and the characteristic of informal economy in Indonesia, a better understanding of the determinants of worker transitioning from informal employment to formal employment will be a valuable input for policy making in economic development. This paper offers an investigation on the determinants of out-transition using a longitudinal survey data, IFLS 4 and 5, that track same-person employment and their characteristic in 2007 and 2014. On the determinants, we include the characteristic of workers, initial endowment and the other external factor that could facilitate out-transition of workers into formal employment.

DATA & METHODOLOGY

All the analyses in this paper use data from the Indonesian Family Life Survey (IFLS) wave 3 and 5. It is the only large-scale longitudinal survey currently available in Indonesia with a sample of more than 30,000 individuals living in 13 provinces. The survey was designed to be representative of about 83% of Indonesian population and first conducted in 1993. Households participating in the first survey were then recontacted to take part in the other upcoming rounds of interviews (1997, 2000, 2007, 2014). In IFLS 5 (2014), the recontact rate for both dynasty and targeted individual households are 92.0% and 90.5% respectively. The latter has also included individuals who participated in the past interviews but later split off from their original households. Our final sample in this paper consists of 13,130 observations on individual level.

Statistics Indonesia use two proxies to estimate the size of informality in Indonesia. The first proxy categorizes informality only based on employment status, while the second proxy also includes the occupation of the worker in addition to employment status. Unfortunately, unlike Sakernas, IFLS does not provide workers' occupational data. Thus, we are left with only employment status to determine whether a person is categorized as formal or informal. There are at least seven types of employment status:

1. Own account worker
2. Employer assisted by temp/unpaid worker
3. Employer assisted by perm/paid worker
4. Employee
5. Casual employee in agriculture
6. Casual employee in non-agriculture
7. Family worker/unpaid workers

As defined by Statistics Indonesia, only those with the status of (3) and (4) are categorized as formal. In the next stage, we investigate the determinants of informality by using Logit estimation. The equation is as follows:

$$y_i = \beta_0 + \beta_1 IC_i + \beta_2 Sector_i + \beta_3 HHC_i + \beta_4 Ext_i + \varepsilon_i$$

where

- y_i = an informality transition status: 0 = informal in 2007 and stay informal in 2014, 1 = informal in 2007 and become formal in 2014;
- IC_i = a set of individual characteristics in initial year (2007), including age, sex, marital status, and education level;
- $Sector_i$ = a categorical variable of worker's employment sector in 2014, 1=Extractive, 2=Manufacturing and utilities, 3=Construction and transportation, and 4=Trade and services
- HHC_i = a set of household characteristic in 2007, including the number of children below 6-year-old, number of children between 6 and 15-year-old, number of adult above 55-year-old, household size, and changes in total asset;
- Ext_i = a set of change in external variables, including Infrastructure Adequacy Index, number of industrial establishment, number of financial institutions, and Ease of Doing Business (EoDB).

Education level is the last education completed with 1=Less than Primary School, 2=Primary School, 3=Junior High School, and 4=Senior High School or higher. Total asset is the sum value of all type of household's assets, including liquid assets such as savings and receivable and non-liquid assets such as building and land. The asset variable is in difference, similar with all the external variables. Infrastructure Adequacy Index and Ease of Doing Business (EoDB) are generated from several variables which ask respondents' perception on adequacy of particular public services and infrastructures. The score ranges from 1 (far from adequate) to 4 (adequate). The number of industrial establishment counts the number of factory in the area—including home industry—to measure the extent of industrialization. Likewise, the number of financial institutions available within the area is used as a proxy for access to financial market.

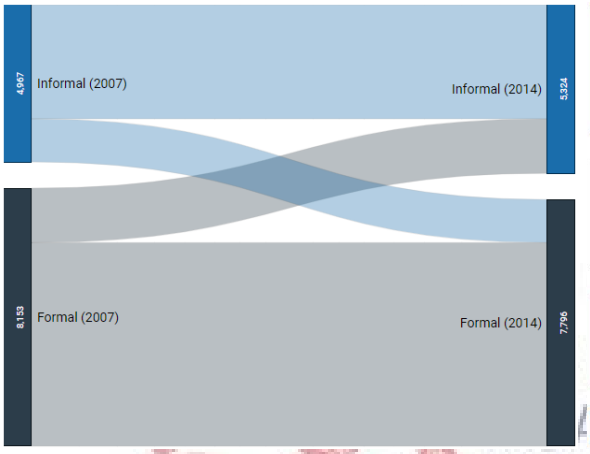
RESULT

Figure 2 (a) shows the dynamics of informality from the IFLS data set. From the total observation of 13,120 individuals interviewed in both 2007 and 2014, we can see that the absolute size of informal employment is actually higher in 2014 compared to the initial period of observation in 2007. We can also observe mobility of workers transitioning into and out from informal employment.

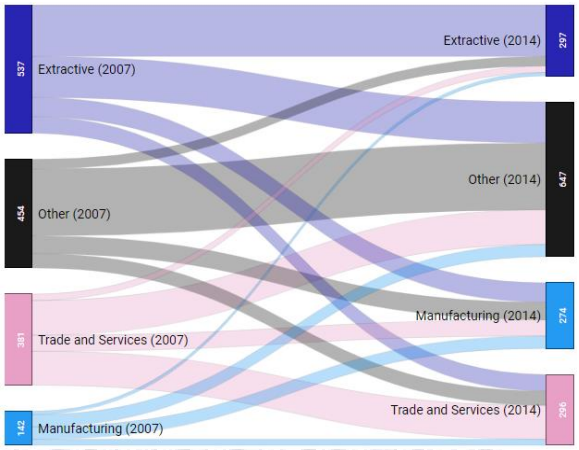
Our scenario of interest is on the out-transition of workers from informal employment to formal employment. In Figure 2 (b), we can see that most of informal workers that transitioning into formal employment are mostly coming from the extractive sector that moves to manufacturing and trade and services.

Figure 2. Dynamics of Informality

(a) Informality Transition



(b) Sector Mobility of Informal Out-Transition*



* Sectoral mobility of workers transitioning into formal employment from previously informal employment
Source: IFLS 4 and IFLS 5

Using logistic regression, we also estimate the determinants of the probability of workers transitioning to formal employment from informal employment. We can see from Table 3 that education contribution to the probability of out-transition is not robust across specifications. In sectoral context, we also observe that being in the Manufacturing and Trade and Services sectors in 2014 increase the probability of out-transition.

The number of dependent (indicated by the number of children and elderly in the household) has an adverse effect on out-transition, although the effect is not statistically significant, the same can also be said on initial endowment that lack statistical significance in explaining out-transition.

In addition to the individual characteristic and endowment, we also estimate how some selected external variable affecting poverty. The external variables used in the study are is changes in Infrastructure Index and Ease of Doing Business (EoDB) Index[2]. We also use the number of industrial establishment—including home industry—to measure the extent of industrialization. Likewise, the number of financial institutions available within the area is used as a proxy for access to financial market. From the estimation we can see that infrastructure, and number of financial institution is not a significant contributor on the probability of out-transition. The rate of industrialization (indicated by the number

[2] These indexes are generated from several variables which ask respondents' perception on adequacy of particular public services and infrastructures. The score ranges from 1 (far from adequate) to 4 (adequate).

of industrial establishment) and the ease of doing business index has a more significant effect (both statistically and in magnitude) toward the probability of out-transition.

Table 3. Estimation Result

Dependent Variable: Out-Transition to Formal Employment

	(1)	(2)	(3)
Characteristic at Initial Period			
Age	-0.018***	-0.019***	-0.014*
	(0.00)	(0.00)	(0.01)
Sex	-0.408***	-0.379***	-0.390***
	(0.04)	(0.04)	(0.09)
Married	-0.315***	-0.352***	-0.471**
	(0.09)	(0.10)	(0.22)
Education[a]:			
Primary School	-0.701*	-0.503	0.462
	(0.42)	(0.47)	(1.08)
Junior Highschool	-0.818*	-0.630	0.420
	(0.42)	(0.48)	(1.09)
Senior Highschool	-0.985**	-0.811*	0.455
	(0.42)	(0.47)	(1.09)
Tertiary	-1.386***	-1.311***	-0.036
	(0.43)	(0.49)	(1.12)
Employment Sector in 2014[b]			
Manufacturing	0.944***	0.987***	0.701***
	(0.11)	(0.13)	(0.27)
Other	0.825***	0.861***	0.553**
	(0.09)	(0.11)	(0.24)
Trade and Services	0.354***	0.424***	-0.489
	(0.10)	(0.12)	(0.30)
Household Characteristic			
Household Size	0.013	0.015	-0.019
	(0.02)	(0.02)	(0.04)
Children under 6 years old	0.028	0.024	-0.040
	(0.05)	(0.06)	(0.13)
Children 6 - 15 years old	-0.017	-0.011	-0.054
	(0.04)	(0.04)	(0.10)
Elder	-0.044	-0.015	0.012
	(0.04)	(0.04)	(0.10)
Changes in Asset		0.010	-0.037
		(0.02)	(0.06)
External Variable (Changes)			
Infrastructure Adequacy Index			-0.010
			(0.12)
Number of Industrial Establishment			0.116*
			(0.06)
Number of Financial Institution			-0.005
			(0.20)
Ease of Doing Business			0.206*
			(0.11)
Constant	-0.453	-0.842	0.086
	(0.46)	(0.64)	(1.49)
Obs	11,660	9,023	1,882
Wald	499.65***	388.84***	123.26***
Pseudo R2	0.065	0.067	0.095

(a) No schooling is the reference group
(b) Extractive sector is the reference group
* p<0.1, ** p<0.05, *** p<0.01

CONCLUSION

From the longitudinal data of IFLS 4 and 5, most of informal workers that transitioning into formal employment are mostly coming from the extractive sector that moves to manufacturing and trade and services. The estimation result confirms the insight, using the extractive sector as the reference group, manufacturing sector create an enabling environment for worker to transitioning to formal employment.

On the external variables, improvement in infrastructure adequacy index along with the number of financial institution lack the statistical significance in explaining the probability of out-transition. We found that the rate of industrialization and improvement in the ease of doing business index as more important determinants required to create an enabling environment for workers to transitioning to formal employment.

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THE BOURDIEU'S THEORY OF PRACTICE AND CORRUPTIOM, COLLUSION, AND NEPOTISM

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ABSTRACT

In 2010-2012, Wiyono (2013) observed the Knowledge, Attitude and Practice (KAP) of a community, acronymly called Kampung Papringan, on Corruption, Collusion, and Nepotism (CCN). By conducting three Focus Group Discussion (FGDs) with 39 participants and interviewing 8 informants, the study offered the following propositions. First, their knowledge on the CCN varied according to their levels of education and occupation, their attitude on it less varied, and their practice was homogenous. Second, their indifference in practice on the CCN seemed to suggest that the phenomenon was a common business. In explaining these findings Wiyono (2013) suggested three theories, namely the Bandura's Behavioral Theory, the Social Capital Theory, and the Institutional Theory.

The present article on the Role of Bourdieu's Theory of Practice on the CCN was the next attempt to understand further, theoretically, on the topic. In order to explain his theory of practice, Bourdieu introduced three concepts – Habitus, Capital, and Field. Habitus referred to a group of dispositions, created and reformulated through a combination of real structures and personal history. According to his or her personal experiences, habitus was very often considered as an instinct that worked spontaneously. Habitus seemed to be similar with a cognitive concept in Bandura's behavioral theory, when an action (practice) was executed, its iteration depended on the social reaction (or field in Bourdieu's theory of practice). When an action was done without negative reaction against it, so the action to be iterated and even copied by others (imitating or modeling principle). Inversely, when an action was negatively reacted against it, the action would be modified by the actor according to the capital owned and the position in the field. That's how Bourdieu created his theory of practice by introducing the following equation: [HABITUS x CAPITAL] + FIELD = PRACTICE, that the behavior (CCN) of people or community depended on their life histories which produced habitus, in combination with various capital owned in the social field where a practice was executed.

Keywords: The Bourdieu's Theory of Practice, CCN.

INTRODUCTION

Krueger (1974) was the first to introduce the notion of *rent seeking* into economics (Buchanan, Tollison & Tullock, 1980) and to define it when she wrote an article entitled "*The Political Economy of the Rent Seeking Society*". The notion was not even implied by Tullock (1967), her predecessor. Unlike Tullock who similarized rent seeking behavior just with theft, which was illegal, Krueger included both, legal and illegal, into that notion. In addition, Krueger also introduced a quantitative model to estimate its social costs in India dan Turkey in 1964 to produce 7,3% dan 15% of their respective national income.

If a country is common with bribery, corruption, smuggling and black market, it is unquestionably ressembling the description of rent seeking society illustrated by Krueger. Indonesia seems to fit perfectly with Krueger's definition of rent seeking society.

> ***"In many market oriented economies, government restrictions upon economic activity are pervasive facts of life. These restrictions give rise to rents in a variety of forms, and people often compete for the rents. Sometimes such competition is perfectly legal. In other instances, rent seeking takes other forms, such as bribery, corruption, smuggling and black markets" (Krueger, 1974: 291)***

A lot of evidences about bribery, corruption, smuggling, and black market have been published in many popular media, printed as well as online particularly since the new millenium. However, this paper relies more on two sources. First, a book written by Kunio (1990) entitled "Kapitalisme Semu Asia Tenggara" provide a good introduction on how Indonesian Business during the New Order Government had been full of rent seeking practices. Second, data on Corruption Perception Index (CPI) published annually by Transparancy International (www.tranparency.org) since 1995 have been reporting how well Indonesia has been coping with corruption ever since.

Kunio (1990: 5), in his book "Kapitalisme Semu Asia Tenggara" stated that capitalism in South East Asia was *ersatz* (unreal), because:

> "It was dominated by *rent seekers*. In facts, there were forms of weird capitalism, like crony capitalists and bureaucratic capitalists. In addition, there were political leaders, their children and relatives, Keraton (Kingdom) families involved in business. What they claimed was not only a protection from foreign competition, but also concession, licenses, monopoly rights, and government subsidies (usually in the forms of a low interest rate loan from the government financial institutions). As a result, there had been growing any kinds of misconducts".

Kunio was, of course, not trying to prove a thesis of rent seeking society, introduced by Krueger, in the South East Asia Nations. He seemed to suspect an unexpected encountering whwn he once visited the Philippines in the early 1970s. the visit had inspired him to do more indepth research on the top layer of the South East Asia economy, and wrote a book about it.

Kunio categorized the South East Asia rent seekers into seven groups, namely [1] The Kingdom's Capitalists, [2] The President's Families, [3] The Crony Capitalists, [4] The Bureaucratic Capitalists, [5] The Ex-polititon Capitalists, [6] The Ex-Capitalists Polititon, and [7] The Other Governement Connected Capitalists. The Kunio's observation had been many decades away when Indonesia was still lead by the otoritarian government of New Order. Yet, his categorization on rent seekers has been alive up to present.

The next prove of how corrupt Indonesia has been can be identified from its CPI. The trend has been positive and promising, but its CPI in 2015 was still very much high. In 2005 the country's

CPI ranked 137 out of 158 countries surveyed, then rose to number 126 out of 180 countries in 2008. In 2012 it rose again to 118 out of 174 countries, and rose again to 88 out of 167 countries surveyed (www.tranparency.org). The government of this country has been struggling heavily to improve its CPI rankings through any kind of reforms in every sphere, not only in state sphere, but also in public sphere, market sphere, and private sphere respectively (Janoski, 1998).

Based on CPI data from the Transparency International, as well as the facts that many people who have been brought to courts were bureucrats from state sphere (excecutive, legislative, and judicative), this study, therefore, is questioning why the government officials who should have benevolen principle have broken their own oath? How could the Bourdieu's theory of practice explain the corruptive behavior?

THE BOURDIEU'S THEORY OF PRACTICE

In 1985, Cheleen Mahar (Harker et al, 2016) interviewed Bourdieu in France to confirm or to verify her understanding on his most recent thinking. When Mahar introduced her thinking on his published thought, Bourdieu replied:

> "In 60an the main issue was to relate symbolic structure with economic structure. That concern has become a fossil and has been replaced by the use of fields and habitus. People played many games autonomously, and yet simultaneously there were many similarities between them, and I think, there were common priciples for the games to function. What I need to write, at the moment, was abot the economy of symbolic things….the heart of economy, in my opinion, was culture".

Harker et al (1990) continued to state that the analogy of the game was an effort to produce intuitive understanding about the whole property of the field. First, a field of the game was an ordered universe where everything might not possible to happen. Entering the game shows acceptance, realized or not, toward rules of the game, both written and implied by players. The players too have to have the spirit to play the game. Such an ability was owned differently by the palyers and determined their master on the game proportionally on their competence.

On the side of the Bourdieu's subjective dialectic, competence and master of the game analogues with one's habitus and capital ownership in the field. To make it work, Bourdieu has introduced an equation. The formula replaced every simple relation between individu and structure with a relation between habitus and field. His generative equation explaining the social practice was:

(HABITUS X CAPITAL) + FIELD = PRACTICE (Bourdieu, 1984: 101)

This formula should be used carefully. Because, although it is an important heuristic tool to simplify the relation between main operating concepts, it is not such a panacea solution either. The use of the formul is simply to provide a determining tool for exposition, not to give a universal solution for social conduct which can become an antithesis against general method. The following is a description of each component of the formula, based on Harker et al (2016, reprint edition).

Fields. It is not such a fenced area, but more like fields of forces. Anyone should view the fields as a dynamics, a sphere where various resources as being. The field is a partly otonomous space of forces, but also a place to positioning struggle. The position is determined by allocation of special capital owned by actors in the field. Once a position has been achieved, it can interact with habitus to produce various positions which have free effects on economizing on "position taking" within it.

The fields, are everytime interpreted as a system of objective power relation between many social positions in accordance with an objective relation system between symbolic things like artworks, art shows, political campaign and others. The structure of the fields is viewed everytime by the balance between points and capital sharing. The concept of fields is adopted in many special instances – most of this writings can be interpreted as ways to identify structures and benefits of the field as a method to define any research objectives.

The fields, according to Bourdieu, are located in a social space. The social space refers to all conceptions of social world. This concept sees social realities as a topology. Therefore, social space consists of many related fields and meeting points. An individual social space is linked with time (life trajectory), within it people struggle for various forms of capital.

Coalision is developed between people who have similarities in social space. Therefore, many researchers can construct many theoretical classes to design people with similar positions who are unified by similar objectives and real connections.

Habitus. It refers to various dispositions conducted and adopted through combinations between objective structures and personal history. The dispositions are explored in many social positions in a field and shows a subjective adjustment to such positions. For instance, in one behavior, a special adjustment is oftenly seen from one's sense on social distance or even on their physical appearance. Therefore, one's place and his or her habitus develops the base for friendship, love, and other personal relations, and also changes many theoretical classes into real classes.

Habitus can also develop in instinctive or unconscious sphere, as stated by the Bourdieu as follow:

> *"The schemes of the habitus, the primary forms of classification, owe their specific efficacy to the fact that they function below the level of conciousness and language, beyond the reach of introspective scrutiny or control by the will. Orienting practices practically, they embed what some*

would mistikenly call values in the most automatic gestures or the apparently most insignificant techniques of the body – ways of walking or blowing one's nose, ways of eating or talking – and engage the most fundamental principles of construction and evaluation of the social world, those which most directly express the division of labor…or the division of the work of domination" (Bourdieu, 1984: 466).

Habitus also consists of one's knowledges and understandings toward the world, which makes one as a separate contribution on the world realities. Hence, someone's knowledge has an authentical deciding force instead of just a reflection of real world. In the course of time, habitus is never "fixed", from time to time for the individual, as well from one generation to the next. As positions in the fields change, habitus determining dispositions also change. However, opportunities are limited as an old saying "we cannot make history as we wish". Bourdieu identified two shortages of agents. The first source was habitus of socialization agents (as products of previous reproduction cycle). In "*Outline of a Theory of Practice*", Bourdieu (2015: 167) states:

"Between the child and the world the whole groups intervenes, not just with the warnings that inculcate a fear of supernatural dangers, but with a whole universe of ritual practices and also of discourses, sayings, proverbs, all structures in concordance with the principles of the corresponding habitus".

Therefore, children are directed to see the world exactly the same as previous generation in its primary group – making the world as its myth. However, in situation of relatively rapid change real conditions of material and social environment would change for the new generation. This determines the second source of habitus in every generation. The objective conditions in the longrun determine many dispositions, then in turn influence their aspiration and practice according to its objective conditions. Therefore, habitus changes with order dan iteration, in order to compromise with material conditions. Of course, the compromise is bias since perception on the objective condition is opened and screened through the habitus. This reason shows that the habitus alone is not more "fixed" than the practices it helped to structure.

Capital. A field should be seen as a field of force and struggle for position and authority, and the logic to govern the struggle is the logic of capital. For Bourdieu, capital includes material things (which can have symbolic value), symbolic (pride, status, authority), and cultural (arts, education, language). For him, capital plays as a social relation in an exchange system, including "everything, materials and symbolic, without difference, shows that self is scarce and worthfighting in a special social formation".

Capital should be present in the fields in order for the field to have value, as ilustrtated by the formula. The relation between the fields, habitus, and capital is direct. The value given to capital is related

with social and cultural character of habitus. The field is limited by the relation of objective power that have material base. Type of known capital in specific field embedded in habitus, partly also provided on the material base. Usually, the size of capital, as well as the structure of additional capital, is also an important dimension in the field.

Capital also becomes domination base. Types of capital can be exchanged with other type of capital, so capital is convertible. The strongest change is symbolic capital, because it is seen and judged as legitimate. In order to be seen as honourable, people should be accepted legitimately, and sometimes as formal leaders. Such a position has power to create (activities, groups), power to represent public opinion, and more than anything, power to create "formally social world". The power is actually rooted from his symbolic capital. The most appropriate example is through the law and the use of symbolic violence by the state to insist its vision. The law guarantees the state on all forms of legal nominancy (such as property name, school name, professional title, and so on). It, in turn, provides individuals an known and accepted identity, and then honoures economic and cultural capital. Unfortunately, this capital logic is not easy to identify, because symbolic capital is not perceived as forms of material power governed and guaranteed institutionally.

Practice.

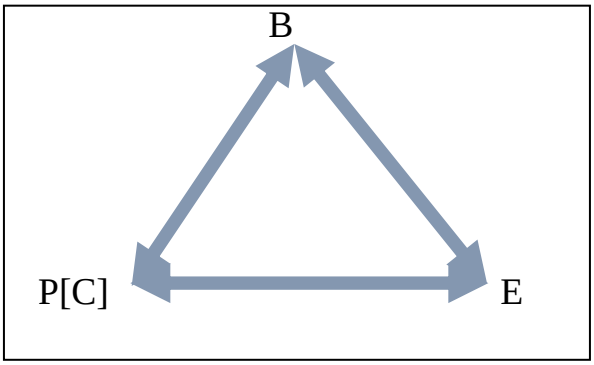
The Bourdieu's method is based on symmetric influence between objective and subjective structures. As a dialectical, it is a way to escape from a debate between structures and agents in social sciences. The core of his method is the process of "internalization of externalities and externalization of internalities". Practice of an individu or social group should be analysed as results of interaction between habitus dan field.

HOW BOURDIEU'S THEORY EXPLAINS CORRUPTION, COLLUSION AND NEPOTISM

The Corruption, Collusion and Nepotism (CCN) is unquestionally a practice in Bourdieu's formula. As suggested by previous section, a practice of CCN is a result of interaction between habitus and field. When habitus is implicitely or explicitely egocentrism and the fields are full of people with egocentric principle, so is the practice of corruption, collusion, and nepotism more likely to happen.

In Indonesian history the practice of CCN can be traced back from the Kingdom Era, the Colonialism Era, the Old Era, the New Era, and at present the Reformation Era. The rise and fall of any Era in Indonesian history can always be associated with the CCN behavior, particularly among the elites. Therefore, the Bourdieu's theory of practice seems to explain the Indonesian CCN behavior perfectly. This behavior seems to represent ordinary people's behavior of struggling for capital (real as well as symbolic) in order to gain position in their social world by adapting their habitus according to the rule of game in the

field. In a simpler way, The Bourdieu's theory of practice can be explained with the Bandura's behavioral theory as displayed in Figure 1.



Sumber: Santrock, 2003: 53.

Figure 1. Bandura's Model of Reciprocal Influence between Behavior, Human Factor and Cognition, and Environment.

Bandura's model (1991 in Santrock, 2003; Wiyono, 2013) about "Reciprocal Influence between Behavior, Human Factor and Cognition, dan Environment" basically illustrates the interrelation between the three (groups) of variables. B is behavior (practice is Bourdieu's formula), P[C] is human factor and cognition (habitus in Bourdieu's formula), and E is environment (field in Bourdieu's formula). The three are interacted reciprocally so that someone's behavior of CCN (B) can influence his human factor and his cognition (habitus) (P[C]), and conversely the individual cognition activity (P[C]) can influence the environment (E), then the environment can influence process of individual thinking (cognition), and so on.

Bandura (1991) and also Mischel (1994), (both in Santrock, 2003) believe that people learn by observing what other people's doing. By observing, also stated as modelling atau imitation, people cognitively often imitate other behavior, either in positive spirit or in negative behavior like the CCN. When the ownership of capital (both real and symbolic) becomes the ultimate goal of struggle, people are more likely to adopt any means to achieve it. This cognitive thinking or habitus mind of "end justifies means" mentality is more likely to support the CCN behavior of society.

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THE IMPLEMENTATION OF SUSTAINABLE URBAN DEVELOPMENT IN INDONESIA: HOW DOES THE PUBLIC PERCEPTION?

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Abstract

Sustainable urban development has three aspects economic, social and environmental.The role of the community is important to the success of sustainable development. The fact happened trade off between economic and environmental aspects and less involved communities. The purpose of the study to find out the achievement of sustainable urban development based on public perception of urban agglomeration areas Indonesia in Semarang city, Semarang Regency, Kendal Regency , Grobogan Regency, Demak Regency and Salatiga city. The data used in this study primary data and measured based on public perception with the method of questionnaire. The respondent consists of the general public, policy makers and community leaders as much as 600 respondents with a purposive sampling method. Analysis tools used in the study is quantitative descriptive. Research results variable cultural heritage preservation, the natural inheritance, and local wisdom, mass transportation, city leadership, the local economy and the informal sector, housing and settlements based on the perception of the public good, while variable open green space, emissions, energy, urbanization and population, disaster risk and climate change, the area of the water's edge, the governance of the city implementation quite well. This showed the average implementation of sustainable urban development is not yet match what is expected by society and yet there is a balance between the economic, social and environmental. For the success of sustainable urban development need increased community participation in the governance of the city. The results of this study can be used as consideration for the city government in urban management decisions.

Key words: development, urban, sustainable, perception, Indonesia

INTRODUCTION

The United Nations has ratified the Sustainable Development Goals (SDGs) Agenda by late of September 2015 as a replacement for Millennium Development Goals (MDGs). The sustainable development goals planned to be achieved by the year of 2030. The implementation of sustainable development goals is a simultaneous development from every aspect of economics, social, and environment both on national and regional levels, urban and rural areas. The importance of achieving those three aspects, in accordance of the result of the research (Cracolici, Cuffaro, & Nijkamp, 2010) that showed the performance of a nation that is not just its economic and social aspect, but also its environment aspect. An environment-related policy in the developing country become a plus point in terms of measuring the performance of the government. Similarly, (Pujiati, 2013a) concluded that cities rating publication by their environment qualities is very useful as a mean of promotion.

SDGs will be achieved if every implementation of development pay attention to those three aspects, economic, social, and environment including urban development. The more rapid a development in a city and the more people live in the city, they need facilities and infrastructures that sometimes to get it, it needs massive effort to obtain, such as natural resources. In fact, urban development is mostly seen as an act of environment destruction both natural and artificial ones. Some researches concern about urban development and environment has been done. There is a positive correlation between urbanization and environmental pollution (Han , Zhou , Li, & Li, 2014). Economically, the triumph of the development is to increase the development of economy negatively correlated to the availability of natural

resources (Kunchu & Sarmidi, 2015). The increasing of economic growth can be noted by identifying the growth of the industries. The more the industries grow, the higher the pollution both water, air, and sound. Thus, equal to the result of the research (Nawawi, Ali, & Eam, 2013). As a matter of fact, the relationship between economic growth and environmental quality known as Kuznets curve hypothesis, which shapes like an inverted U, mostly prove the fact in developing countries (Lee & Oh, 2015), (Hao & Liu, 2016). This negative phenomena of urban development to environment usually happens because people only pay attention to short-term economic interest rather than long-term one. This idea contradicts to the development goals which are to achieve people's well-being that is not only from economic aspect but also, from every other aspect and to pay attention to long-term interest that enables people to reach better standard of living.

The success of sustainable urban development needs commitment of sustainable environment (Xiao, Xue, & Woetzel, 2010). Any need commitments are commitment between government, stakeholder and people. The government role is very important on environmental rating (Bond, Pope , Morrison-Saunder, Retief , & Gunn , 2014), as well as the government role. There is a positive correlation between sustainable urban development and the role of society (Pujiati, Santosa, Sarungu, & Soesilo, 2013b) that there is one factor that determines green city and non-green city is society's level of education. The higher the level of their education in some areas, the higher the awareness about environment so the chance to be a green city is more feasible then the non-green city. The role of society in realization of sustainable urban development is supported by (Fluker & Srivastava, 2016). In addition (Dara , Reddy, & Gelaye, 2017) on their research's result explains that one of the basic principles from the process of environmental impact analysis is the society's involvement. The process of society's involvement is said to be the effective way to increase the capacity and legitimation of environmental assessment (Salomons & Hoberg, 2014).

The impact of urban development to the decreasing quality of environment is also experienced by areas of urban agglomeration in Indonesia. Many researches that assessed the urban environmental quality with some kind of index. A research that has been done by (Pujiati, Sarungu, & Soesilo, 2017) using composite index of Sustainable Urban Development Forum Indonesia (SUD-FI) yielded a result that Grobogan Regency as one of regencies in agglomeration areas in Indonesia is a less sustainable. Also, Semarang Regency, Semarang City, Demak Regency, Kendal Regency and Salatiga City are included to less-sustainable criteria. Less-sustainable criteria is massively opposite to the aim of SDGs.

By looking at its urgency, the sustainable development and the role of society and based on the previous research that shows regency/city of agglomeration of urban areas in Indonesia classified as less-sustainable, thus needs to be researched to obtain more achievement regarding of sustainable urban development based on the public perception. This research will be done in areas of regency/city of agglomeration in Indonesia that are still classified as less-sustainable such as Kabupaten Grobogan, Kota Semarang, Kabupaten Semarang, Kabupaten Kendal, Kabupaten Demak dan Kota Salatiga. Those six regencies/cities in this research is one of the most densely populated and concentrated agglomeration in Indonesia located in Java Island. The problem of sustainable urban development and how does the public participation to achieve sustainable development can be seen from the public perception become the base of this research. The aim of this research is to see the achievement of sustainable urban development based on the public perception within the regency/city of urban agglomeration in Indonesia.

RESEARCH METHOD

This research is a causal effect relationship study. The unit of analysis is regency/city in the agglomeration areas in Indonesia such as Semarang City, Semarang Regency, Kendal

Regency, Demak Regency, Grobogan Regency, Salatiga City. The data used in this study primary data and measured based on public perception with the method of questionnaire. The respondent consists of the general public, policy makers and community leaders as much as 600 respondents with a purposive sampling method. Analysis tools used in the study is quantitative descriptive.The variable of this research is the city leadership, the governance of city, urbanisation and population, housing and settlements, disaster risk and climate change, the area of the water's edge, mass transportation, the local economy and informal sector, cultural heritage preservation , the natural inheritance , and local wisdom, green open spaces, emissions and energy. Each variable contains of few indicators and scoring assessment starts from 0 – 4. Zero (0) scoring means that the public perception is the lowest, whereas score 4 is the highest. Total score of all indicators are 23 with details of leadership variable that contains of 6 indicators, the governance of the city, housing and settlements with 6 indicators, urbanisation and population variable with 6 indicators, disaster risk and climate change, the local economy and informal sector with each 1 indicators, preservation of cultural heritage, the natural inheritance, and local wisdom variable with 2 indicators, green open spaces, emissions, the area of the water's edge, mass transportation and energy variables with each 2 indicators.

RESULT AND DISCUSSION

The success of regencies / cities in implementing sustainable development is highly dependent on urban leadership. A leader must have a vision and creative ideas in building the regencies / city. The quality of leadership that society expects is honest, fair and wise, close to the community, achieving and performing well. Leaders must also have closeness with the citizens. According to community perceptions of leaders who are close to the community if they can dialogue directly, there is feedback on comments on social media accounts, can access leadership activities through social media. Leadership assessments based on community perceptions also look at how coordination is conducted among departments in development programs. The public expectation of the agencies has a common mission vision in running the program as a public facilitator. It is not expected that agencies do not coordinate with each other and do not know the progress of the development program.

Community appraisal of leaders can also be seen from changes in the economic, socio-cultural and environmental sectors. Changes in the economic field can be seen with the increase of people's welfare, the distribution of products smoothly, easy in finding raw materials of production and no illegal levies. Changes in the social field are also a concern of the community in assessing the leadership. People hope harmony of citizen's harmony, no feud between groups, community, especially school children. Changes in the quantity and quality of cultural tourism are also a public assessment of the leadership in running a sustainable development program. Sustainable development emphasizes the economic, social and environmental aspects, for which the environmental aspect becomes an important factor also in assessing the success of leadership in running the development program. Clean environment from garbage, smooth drainage, better air quality supported by growing trees and gardens to offset the increasingly high air pollution from vehicle fumes. In summary the results of the achievement of city leadership can be seen in Table 1.

Table 1 Indicators of Urban Leadership Based on Public Perceptions

Regency/City	Achievement (%)	Criteria
Demak Regency	49	Quite well
Grobogan Regency	72	Good
Salatiga City	65	Good
Semarang City	63	Good
Semarang Regency	55	Quite well
Kendal Regency	66	Good

Source: Processed Primary Data, 2016

In Table 1, Demak Regency is based on the public perception of urban leadership as the main variable in sustainable urban development between expectation and reality reaching 49% or quite well. Indicators that get the highest appraisal from the community are changes in the economic field which is indicated by the improvement of people's welfare, smooth production supported by the ease of obtaining raw materials. The most important change is the absence of illegal levies. The lowest indicator of getting an appraisal from the community is the lack of close association with the citizens. The distance between leaders and citizens is still considered so far that people cannot communicate directly and can only follow the leadership activities of social media. Grobogan Regency, Semarang City, and Kendal Regency based on public perception, the indicators that have the highest rating are similar to Grobogan Regency, which is an indicator of economic change. However, the total leadership variable in Grobogan, Semarang and Kendal regencies according to public perception is much higher than Demak Regency with good criteria with each achievement of 72%, 63%, 66%. Kota Salatiga and Semarang Regency achievement in terms of leadership is much higher than Demak Regency. According to the perception of the people in both districts the highest indicator on changes in the socio-cultural field. This suggests there is an interaction hormone between adolescent, school, community, religious and inter-ethnic groups. As in Demak Regency, regencies / city in urban agglomeration areas based on community perceptions are still lacking in closeness between leaders and their citizens. Based on the variable of city leadership average of regency / city in urban agglomeration area of Semarang achievement between hope and reality 61,67% or good criterion.

The thing that gets the best judgment based on people's perception is the change in the economic field and the ugliest is the lack of closeness between the leader and its citizens. The role of the community in supporting the success of sustainable urban development supports (Xiao, Xue, & Woetzel, 2010) that environmental sustainability commitments not only rely on a program of leaders but the community must play an active role. Commitment to implement sustainable development not only from government but private and community also supported by the results of research (Thoha, 2007) and (Robbins & Judge, 2015) that the success of this implementation cannot be separated from the leadership that has the ability to influence others to perform activities according to goals.

The variables of urban governance (Urban Governance) include the main variables in calculating the index of sustainable urban development. The indicators used to measure urban governance based on public perception are 6 indicators namely licensing, opinion, planning, public procurement, supervision, and community institutions. The development of institutional capacity and the culture of good urban governance values is the result of good urban governance. The quality of people's perception on urban governance in regencies / cities in urban agglomeration area of Semarang is quite good with an average of 41.67%. According to community perception in terms of city governance indicators in regencies/cities in urban agglomeration areas that are still lacking is community participation in the planning, implementation and supervision of development. The existence of Community Self-Help Institution (Lembaga Keswadayaan Masyarakat or LKM) or Community Self-Help Agency (Badan Keswadayaan Masyarakat or BKM) is also less useful. In detail the achievement of the quality of city governance based on public perception can be seen in Table 2.

Table 2 Indicators of Urban Governance Based on Public Perceptions

Regency.City	Achievement (%)	Criteria
Demak Regency	32	Not good
Grobogan Regency	57	Quite well
Salatiga City	33	Not good
Semarang City	47	Quite well
Semarang Regency	41	Quite well
Kendal Regency	40	Quite well

Source: Processed Primary Data, 2016

Based on Table 2, Demak regency achieves the lowest level of public perception compared to other regencies in the urban agglomeration region with 32% achievement while the highest is Grobogan Regency with 57% achievement. The least in Demak Regency in city governance is participation in proposing public policy or regulation. The most highly rated indicator of the community in Demak Regency is in terms of ease of obtaining identity cards and licensing. The highest assessment in terms of easy indicators of identity card and permit handling also occurs in all regencies/cities in urban agglomeration areas. On average, in terms of city governance in all regencies/cities in the areas of agglomeration of urban areas that are still lacking are indicators of participation in opinion, planning, public procurement, monitoring, and community institutions. Urbanization and population in the measurement of sustainable urban development index including the main indicator means that the indicator contains economic, social and environmental aspects. In terms of urbanization and population are expected to encourage urban population control efforts and the prevention of the spreading of uncontrolled physical development (urban sprawl). Criteria for achievement of indicators based on community perception in each regency / city in the urban agglomeration area is quite good, achievement of 55.83%. Detailed achievement of the indicator compared to its ideal value can be seen in Table 3.

Table 3 Indicators of Urbanization and Population Based on Public Perceptions

Regency/City	Achievement (%)	Criteria
Demak Regency	51	Quite well
Grobogan Regency	62	Good
Salatiga City	57	Quite well
Semarang City	63	Good
Semarang Regency	52	Quite well
Kendal Regency	50	Quite well

Source: Processed Primary Data, 2016

Indicators of the assessment of urbanization and population variables are 6, namely the accessibility of demographic data, the existence and the role of the institution, the improvement of human quality, the control of urban population mobility, urbanization control, vertical settlement. Semarang city has the highest achievement compared to other regencies / cities. The high public appraisal of sustainable urban development variables in terms of the existence and role of institutions in population programs such as Lembaga Keswadayaan Masyarakat (LKM) or Community Self-Help Agency (BKM). Kendal Regency is the lowest in terms of mobility control efforts, especially the flow of urbanization and commuting. Kendal Regency residents are many commuting workers to the city of Semarang considering the geographical city of Semarang closest and become the center of industrial activities, government and education of Central Java Province.

Housing and settlement indicators are among the key indicators in the measurement of sustainable urban development indices. Regency / municipal policymakers should be able to encourage the provision of affordable and affordable housing and settlements by low-income

people (Masyarakat Berpenghasilan Rendah or MBR). A detailed objective in housing and settlements in sustainable urban development is to ensure the fulfillment of the needs of urban dwellers to secure feasible, have good accessibility, and the price is affordable.The quality of people's perception on housing and settlement in regencies/cities in urban agglomeration areas is quite good with average achievement of 60.17%. This suggests that according to the average community perception in the regencies/cities in urban agglomeration areas there are still unsuitable habitation, slums, improved sanitation, sewage and waste treatment that needs to be handled seriously and improved settlement facilities such as facilities of worship, health, education, parks, libraries, and markets In detail the achievement of housing quality and settlement based on public perception can be seen in Table 4

Table 4 Indicators of Housing and Urban Settlement Based on Public Perception

Regency/City	Achievement (%)	Criteria
Demak Regency	53	Quite well
Grobogan Regency	60	Quite well
Salatiga City	67	Good
Semarang City	68	Good
Semarang Regency	57	Quite well
Kendal Regency	56	Quite well

Source: Processed Primary Data, 2016

Semarang City is highest in the achievement of housing and settlement variable of 68% above the average value. According to the community's perception, the slum-free community effort (Rukun Warga or RW) gets the highest achievement. The achievement of Demak Regency is lowest based on public perception in waste management indicator. Waste management is expected from the community in supporting sustainable development there is sorting waste between organic and non-organic waste and the establishment of garbage bank. It is a daily garbage management solution.

Disaster risk and climate change are used indicators in calculating the sustainable urban development index intended to increase urban awareness of the threats of disaster and climate change. Objectives generally improve the ability of city stakeholders to address climate change and reduce disaster risks. The expected target is biodiversity sustainability, environmental quality remains stable, the development of a "green" culture in the community, the ability of cities and communities to adapt and mitigate disaster and climate change. Implementation of disaster risk indicators and climate change based on community perceptions is: communities understand the emergency response system. Indicators of disaster risk and climate change if seen from the achievement and criteria of regency/city average in urban agglomeration area of Semarang are good enough criteria. This means that most of the people in districts in the agglomeration region lack understanding of the emergency response system in the event of a disaster. People just know and want to learn, have not even learned and even practiced. In detail the criteria achieved by each regency / city can be seen in Table 5.

Table 5 Indicators of Disaster Risk and Climate Change Based on Public Perception

Regency/City	Achievement (%)	Criteria
Demak Regency	41	Quite well
Grobogan Regency	67	Good
Salatiga City	52	Quite well
Semarang City	60	Good
Semarang Regency	55	Quite well
Kendal Regency	54	Quite well

Source: Processed Primary Data, 2016

On average, the achievement of disaster risk and climate change indicators in regencies/cities in urban agglomeration was 54.83%. The highest achievement is Grobogan Regency with achievement between expectation and reality equal to 67%. This means that in Grobogan Regency in understanding disaster emergency response is not only to know but also to learn and practice temporary of Demak Regency based on public perception in comprehending emergency response just to know without want to learn and even practice it.

One indicator to support sustainable urban development is an indicator of the area of the water's edge. This indicator is intended to encourage the revitalization of the area of the water's edge as a front porch of urban areas. The purpose of the area of the water's edge area indicators to realize the physical condition of the waterfront that is able to provide an active urban space, attractive and can improve the urban economy. The target to be achieved in the waterfront is to maintain the quality and quantity of the waterfront, an active, attractive, and urbanized city. Implementation of waterfront area indicators based on public perception is the presence of public spaces in the area of the water's edge and the area of the water's edge of slum settlements.

The achievement of sustainable urban development from watershed quality indicators can be measured by comparing ideal performance and reality. Table 6 shows the achievement of districts in urban agglomeration areas in terms of waterfront area indicators. The regencies / cities on average reach a fairly good criterion of 42% meaning less have public space in the Area of the Water's Edge and the Water's Edgwaterfront areas less clean than slums.

Table 6 Indicators of the Area of the Water's Edge Based on Public Perception

Regency/City	Achievement (%)	Criteria
Demak Regency	41	Quite well
Grobogan Regency	38	Not good
Salatiga City	36	Not good
Semarang City	54	Quite well
Semarang Regency	35	Quite well
Kendal Regency	48	Not good

Source: Processed Primary Data, 2016

The area of the water's edge as an indicator of sustainable urban development support, achievement in each regency / city highest obtained Semarang City with achievements between expectations and reality by 54% and lowest Semarang Regency by 35%. Semarang City based on public perception of all open space public in waterfront area has been used as active open space while Semarang regency still little used as active public space.

Mass transportation indicators encourage the development of an integrated urban transport system to support urban accessibility and mobility. The objective of mass transportation is to realize efficient, energy-efficient, and low-cost urban transport services. The target to be achieved is the efficient aspect represented by the existence of an adequate mass public transport network both rail-based and Highway and public transport operating system should be done seamlessly so that alternation between modes can be done easily and comfortably. Energy saving aspect is illustrated through the use of renewable alternative energy such as bio-diesel or vehicle technology using BBG. The low emission aspect is represented by efforts to encourage the use of non-motorized vehicles such as bicycle or environmentally friendly low emission LCGC (low cost green car) vehicles. Implementation measured based on public perception is the existence of adequate bike lane facilities and reliable mass public transport services.If seen from the achievement of regencies/cities in terms of mass transportation, the average regency/city in urban agglomeration areas including good criteria with a achievement of 60.33%. This means that reliable public transport services are available and bicycle lane facilities are available well in all regencies/cities in the metropolitan area of

Semarang. Detailed achievements obtained by each regency/city terms of mass transportation based on public perception can be seen in Table 7.

Table 7 Indicators of Mass Transport Based on Public Perceptions

Regency/City	Achievement (%)	Criteria
Demak Regency	50	Quite well
Grobogan Regency	67	Good
Salatiga City	71	Good
Semarang City	62	Good
Semarang Regency	51	Quite well
Kendal Regency	61	Good

Source: Processed Primary Data, 2016

Salatiga city in terms of mass transportation, achievement between expectations and reality based on public perception earned the highest achievement while the lowest Demak Regency. The highest achievement of Salatiga City according to society's perception because mass public transportation service can be relied on in terms of security and comfort. Demak Regency has the lowest achievement due to the lack of adequate bicycle path.

Indicators of the local economy and the informal sector encourage the alignment of urban economic development to the role of the local economy and the informal sector. The purpose of local economic indicators and the informal sector is the equitable distribution of urban economic growth based on the local economy. Target achievement is the development of creative industries and or home industries that can provide expansion of employment opportunities and economic improvements and facilitated urban space for the informal sector especially for street vendors (Pedagang Kaki Lima or PKL). Implementation of local economy and informal sector based on public perception is measured by whether the city government actively involved in the development of the local economy and the informal sector. Average achievement of 60.33% with good criteria. This indicates that according to the average community perception in the regencies/cities the city government has been actively involved in the development of the local economy and the informal sector.

The results of public perception measurement in each regency / city of Grobogan Regency get the highest score based on public perception. This means the city government is actively involved in the development of the local economy and the informal sector. Demak Regency score for the local economy and the informal sector obtaining the lowest score means the city government has not been actively involved in the development of the local economy and the informal sector. In detail the achievement of the quality of the local economy and the informal sector based on community perceptions can be seen in Table 8.

Table 8 Indicators of Local Economic and Informal Sectors Based on Public Perception

Regency/City	Achievement(%)	Criteria
Demak Regency	50	Quite well
Grobogan Regency	67	Good
Salatiga City	71	Good
Semarang City	62	Good
Semarang Regency	51	Quite well
Kendal Regency	61	Good

Source: Processed Primary Data, 2016

Indicators of preservation of cultural heritage, nature heritage, and local wisdom in question is to increase the appreciation, protection and revitalization of cultural heritage, nature heritage, and wisdom. The goal to realize the preservation of cultural heritage assets both physical and non-physical that can be developed as a trigger of creative growth of the city's economy. The implementation of preservation indicators of cultural heritage, nature heritage

and local wisdom based on community perceptions are measured by: People have appreciation, protect and revitalize cultural heritage, nature heritage, and local wisdom, Preservation of cultural heritage buildings.

The results of public perception measurement in each regency / city in terms of preservation of cultural heritage, nature heritage, and local wisdom can be seen in Table 9. Semarang city get the highest score based on public perception. According to the public perception of the high score in Semarang City in terms of preservation of cultural heritage, nature heritage, and local wisdom caused by the protection of cultural heritage buildings by the city government. Semarang Regency scores get the lowest score in the preservation of cultural heritage, nature heritage, and local wisdom. According to the the public perception of the low score of preservation of cultural heritage, nature heritage, and local wisdom is caused by the community lacks appreciation, protect and revitalize cultural heritage, nature heritage, and local wisdom.

The quality of public perception towards the preservation of cultural heritage, nature heritage, and local wisdom in regencies / cities in urban agglomeration area is good with 64.33% achievement. This shows that according to the average community perception in regencies/cities in the metropolitan area of Semarang, the whole community actively protects and revitalizes the cultural heritage, natural heritage and local wisdom. Regencies/cities throughout the urban agglomeration areas also protect and care for the building of cultural heritage as well.

Table 9 Indicators of Cultural Heritage Preservation, Natural Heritage, and Local Wisdom Based on Public Perception

Regency/City	Achievement(%)	Criteria
Demak Regency	62	Good
Grobogan Regency	63	Good
Salatiga City	64	Good
Semarang City	73	Good
Semarang Regency	57	Quite well
Kendal Regency	67	Good

Source: Processed Primary Data, 2016

The green open space indicator included as an indicator of sustainable urban development is intended to encourage urban stakeholders in realizing a green city. The purpose of green open space indicators, emissions and energy to realize a healthy and livable city environment. Based on community perceptions can be measured by: the availability of urban villages that use horticultural crops for shade trees and green open spaces are maintained.

Semarang City achieved the highest achievement based on public perception of 67%. According to the public perception of the high score in Semarang City in terms of green open space, emission and energy caused by the number of townspeople who use horticultural plants for shade trees. Demak Regency has the lowest achievement in terms of green open space, emissions and energy. According to the public's perception of low green open space scores, emissions and this is caused by at least green open spaces are preserved. If seen from the achievement of regencies/cities in terms of green open space, emissions and energy, the average regency/city in urban agglomeration areas including the criteria is quite good at 58.5%. This means that most urban villages have used horticultural crops for shade trees and green open spaces, available in sufficient quantities and under preserved conditions. In detail the achievements of each regency/city in terms of green open spaces, emissions and energy based on community perceptions can be seen in Table 10.

Table 10 Indicators of Open Space Green, Emissions and Energy Based on Public Perception

Regency/City	Achievement (%)	Criteria

Demak Regency	50	Quite well
Grobogan Regency	61	Good
Salatiga City	61	Good
Semarang City	67	Good
Semarang Regency	57	Quite well
Kendal Regency	55	Quite well

Source: Processed Primary Data, 2016

CONCLUSION

The results of leadership indicators, Housing and Settlement, mass transportation, local economy and informal sector, cultural heritage preservation, nature heritage, and local wisdom based on community perception in districts in urban agglomeration area of Semarang are good. Indicators of governance, urbanization and population, disaster risk and climate change, waterfront areas and green open space on average reach a fairly good criteria. Implementation of sustainable urban development in regency / city in urban agglomeration areas is not yet in accordance with what is expected by the community as the recipient of development results. This is where the regency / city governments have to work hard together with the private sector and the community to realize sustainable urban development.

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Economic Valuation and Demand for Pahawang Island Tourism in Lampung: Hedonic Pricing Approach

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ABSTRACT

Valuation method is a method to reveal economic value of an ecosystem or area. The valuation is important particularly for common properties exploitation which oftenly affected by trade-off effect. As an interesting natural tourism area, Pahawang Island creates multiplier effect on some industrial sectors such as inn, transportation, handicrafts, food and telecommunication. On the other side, tourism activity potentially harm tourism park sustainability. Inadequate visitors and community awareness on environmental aspects, will potentially deteriorate and degrade tourism park quality. The purpose of this research are to measure the economic value of coral reefs Island and factors that affect demand for tourism in Pahawang Island using hedonic pricing approach by asking directly to visitors what kind of pleasure value they obtained and felt while take a trip. This research employed primary data from 100 respondents and secondary data to obtain various informations. Economic value is calculated using total economic value and determinant of demand is estimated using Ordinary Least Square (OLS) method. The results show that economic value of coral reefs as tourism object at Pahawang Island is due to Rp 3.719.124.609,00. The estimation results show that factors such as visitor income, the beauty value of coral reefs, center of handycraft and souvenir providers, and accommodation infrastructure, have a positive and significant impact to the demand for tourism, while transportation infrastructure has a positive correlation but not significant to the demand.

Keywords : economic valuation, hedonic pricing, tourism

INTRODUCTION

According to Yoeti (2008) tourism demand can be divided into two, namely potential demand and actual demand. Potential demand is a number of people who have the potential to conduct tourism activities because they have spare time and savings are relatively enough. Actual demand is the people who are doing tourism activities in a particular tourist destination. This research focuses on Pahawang Island, tourism demand in Pahawang allegedly influenced by visitor income, coral reef beauty value which is implicit variable of hedonic, transportation means, center of souvenir and souvenir, and also lodging facility which is hedonic supporting variable. Pahawang Island tourism demand in this study did not use the price of replacement goods because Pahawang Island has unique characteristics for tourists who are not owned by other

marine attractions in Lampung. The demand for tourism can be seen from the public interest in the tourism object, the more interest it is, the more.

The existence of this phenomenon becomes an interesting thing to do research about the estimated demand of visitors Pahawang Island attractions. Increasing the number of visitors is expected to also provide an increase of multiple effects on the activities of visitors during their stay in the maritime attractions Pahawang Island. The presence of visitors can have an impact on the fulfillment of the needs to be paid such as accommodation, infrastructure, transportation, facilities and other services. This will give a domino effect on various fields and certainly provide economic activity (dispossible income) for the host.

This research uses Hedonic Pricing Method (HPM) approach. According to Rosen (in Yeh and Sohngen, 2004), the hedonic method is used to estimate the marginal or price value of the facility for different groups or markets. The main use of the hedonic pricing method is to identify price factors based on the premise that prices are determined by both internal and external characteristics of goods and services. This method tends to be more widely used in environmental economics research or in measuring the value of residential property prices, but has also been used for tourism research. The use of Hedonic Pricing Method (HPM) in this study is based on the condition and characteristics of Pahawang Island attractions that have uniqueness, implicit value and distinctive character for tourists including in it is the supporting aspect of tourism which is around Pahawang Island object, so it can influence the demand of tourist who visited the attractions.

Another purpose of this study, in addition to analyzing the factors that affect demand Pahawang island tourism also to determine the economic value of coral reefs. Economic valuation is one form of effort used to provide quantitative value to goods and services produced by natural resources and environment both on market value (market value) and non market value (non market value) (Fauzi, 2006). One way to conduct an economic valuation is to calculate the Total Economic Value (NET). Total Economic Value is the economic values contained in a natural resource, both useful and functional values that must be taken into account in formulating management policies so that allocations and alternative uses can be determined correctly and on the target.

LITERATURE REVIEW

The hedonic definition according to language is something related to pleasure. The hedonic econometric model is a model in which the independent variable relates to quality, eg the quality of a product to be purchased. The hedonic approach is a method to ensure the value or pleasure that is felt from a good attribute. The value of the attribute is an implicit price (hedonic price) that is not available as a market price.

According to Rosen (in Yeh and Sohngen, 2004), an item is judged according to the attribute concerned with its usefulness or characteristics. The hedonic method is used to estimate the marginal or price value of the facility for different groups or markets. The main use of the hedonist pricing method is to identify price factors based on the premise that prices are determined by both internal and external characteristics of goods and services.

Munn and Palmquist (in Martono and Llewelyn, 2000) say that the hedonic method is used to explain the price of a different product. According to Munn and Palmquist, the hedonist model assumes perfect competition and perfect information on a good or service. While Rosen provides a theoretical basis for the relationship between the price of a consumer goods and the characteristics contained in the goods.

Economic valuation is one form of effort used to provide quantitative value to goods and services produced by natural resources and environment both on market value (market value) and non market value (non market value) (Fauzi, 2006). Economic assessment in the context of the environment is about measuring the preferences of the community for a good environment compared to a bad environment (Puswanhari, 2003).

According to Barbier (1997) in Irmadi (2004), there are three types of approaches to the assessment of a natural ecosystem namely impact analysis, partial analysis and total valuation. The impact analysis approach is carried out when the ecosystem economic value is seen from the impacts that may arise as a result of certain activities, for example due to coastal reclamation of coastal ecosystems. The partial analysis approach is done by defining two or more alternative ecosystem utilization options. Meanwhile, the total valuation approach is conducted to estimate the total economic contribution of a particular ecosystem to the community. One of the challenges faced by policymakers is how to appraise a natural resource comprehensively. Assessment is not only about the market value of goods generated from a resource, but also the services generated by those resources. One way to conduct an economic valuation is to calculate the Total Economic Value (NET).

Total Economic Value is the economic values contained in a natural resource, both useful and functional values that must be taken into account in formulating management policies so that allocations and alternative uses can be determined correctly and on the target. Total Economic Value (NET) can be broken down into several components. As an example illustration in the context of determining alternative land use from coral reef ecosystem. Under a cost-benefit law, the decision to develop a coral reef ecosystem can be justified if the net benefits of the ecosystem development outweigh the net benefits of conservation. This NET can also be interpreted as NET from changes in the quality of the environment (Irmadi, 2004).

DATA AND ESTIMATION METHOD

Primary data in this study comes from questionnaires and interview to visitors Tourism Object Pahawang Island and other parties concerned directly in this study. The population in this research is the visitors of Pahawang Island in Pesawaran Regency which is estimated to average 700 visitors in one week (Darma Wisata Pahawang Group, 2016). The sampling method used in this research is quoted accidental sampling, which is a sampling method done arbitrarily (addressed to anyone found in the location) but limited in number. Based on the above mentioned, the respondent criteria in this research are tourism object of Pahawang Island whether male or female, minimum age 17 years old, able to communicate well, willing to be interviewed, and can provide information according to data requirement in this research. By using the slovin formula on the above calculation obtained the number of samples of visitors Pahawang Island attractions as many as 87 samples.

The analysis used in this research is method using OLS (Ordinary Least Square) method. To know the effect of free variable to dependent variable used Ordinary Least Square (OLS) method.
Specification model used are:

$$LnY = \beta_0 + Ln\beta_1 X_1 + Ln\,\beta_2 X_2 + Ln\,\beta_3 X_3 + Ln\beta_4 X_4 + Ln\,\beta_5 X_5 + \varepsilon_t$$

Information

Ln	: natural logarithm
Y	: visitor request
β_0	: constants
X_1	: revenue
X_2	: the beauty value of coral reefs
X_3	: transportation facilities
X_4	: center for souvenirs and souvenirs
X_5	: means of lodging
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$	: regression coefficient
ε_t	: standard error

Assessing the Economic Value of Coral Reefs in Pahawang Island Tourism Object
Total economic value is the values contained in a natural resource both use value and functional value (Djijiono, 2002). The total economic value can be written in the mathematical equation as follows:

$$TEV = (DUV + IUV + OV) + (XV + VB)$$

Information

TEV :Total Economic Value
DUV :Direct Use Value
IUV : Indirect Use Value
OV : Option Value
XV : Exsistence Value
VB : Beques Value

EMPERICAL RESULT

Based on the estimation result, the following equation is obtained:

$$LnY = 0.162842646224*LnX_1 + 0.115766321887*LnX_2 + 0.0970556588279*LnX_3 + 0.405756329253*LnX_4 + 0.139784380558*LnX_5 - 0.708812072612$$

R = 0,524858
F-statistic = 17,89507

The result of the parameter significance test shows that income has a significant influence. The value of earnings regression coefficient (X_1) of 0,162843 with positive value indicates that any increase in income of 1 rupiah will affect a person in allocating his income for travel, this causes the increasing demand for tourism Pahawang Island. Increased revenue will affect someone in determining the choice for travel. Increased revenue will increase the allocation of funds in the needs of someone including travel needs. These results show that visitor revenue has a positive and significant impact on visitor demand. The results of this study in accordance with research conducted by Nugraha (2015) that income has a positive and significant impact on visitor demand.

The value of regression coefficient of coral reef value (X_2) of 0,115766 which has positive value indicates that the value of coral reef beauty that increase will cause the increasing demand of visitors Pahawang Island attractions. This shows that the value of the beauty of coral reefs has a positive and significant impact on visitor demand. The results of this study in accordance with research conducted by Nugraha (2015) that the value of the beauty of tourism attribute positive and significant impact on visitor demand. The value of coral reefs found in Pahawang Island is the main attraction for tourists visiting. Because in Pahwang Island tourists and see underwater scenery colorful with a depth of less than 3 meters, the depth is more shallow than coral reefs in other attractions. Therefore, the coral reefs on Pahawang Island are maintained and conserved by surrounding communities. Coral reefs are planted and not sold in large quantities, then the number is growing and diverse. Conservation of coral reefs will beautify the underwater scenery that can add to the satisfaction of tourists so that tourists have the desire to visit again.

The value of the positive centralized regression coefficient of souvenirs and souvenirs (X_4) of 0,405756 indicates that the increasing quality and quantity of the souvenir center and the souvenir will cause the increasing demand of visitors to Pahawang Island. This shows that the center of souvenirs and souvenirs have a positive and significant impact on visitor demand. The results of this study in accordance with research conducted by Nugraha (2015) that the center of souvenirs and souvenirs have a positive and significant impact on visitor demand. The existence of the center of souvenirs and souvenirs around Pahawang Island tourism objects as well as a means to market the results of Micro Small Medium Enterprises (SMEs) in the local area, to be better known to the wider community. Currently, souvenirs and souvenirs are available around Pahawang Island attractions are merchandise such as hats, t-shirts and other accessories. The most popular merchandise is T-shirts bearing the island of Pahawang, no souvenirs and souvenirs typical Pahawang Island food. Therefore, it is necessary to train the surrounding community to make handicrafts related to tourism such as handicrafts from shells and so on as well as the expertise of processing seafood such as seaweed, fish, squid, shrimp, and other marine products in order to increase income local communities.

The result of the parameter significance test shows that the lodging facilities have a significant influence. The value of lodging regression coefficient (X_5) of 0,139784 which has positive value indicates that the increasing quality of lodging facilities will lead to increased demand for visitors on the island of Pahawang. This shows that the lodging facilities have a positive and significant impact on visitor demand. The results of this study in accordance with research conducted by Nugraha (2015) that lodging facilities have a positive and significant impact on visitor demand. The lodging facilities located on Pahawang Island currently have 50 villas / cottages and 100 homestays (which are local residents). The most famous is a villa owned by a French citizen known as Mr.Jo on Pulau Pahawang Kecil and Kudus villa in Bedah Pahawang Besar area. The facilities of existing lodging facilities are now sufficient to accommodate tourists visiting, but the lodging facilities have not offered the desired facilities by visitors. Tourists feel less comfortable with the facilities of lodging facilities owned by local residents (homestay), such as poor condition of the toilet, slightly dim lights, and the house is also inhabited by the owner. While the lodging facilities villa / 'cottage condition less well maintained. Managers should be able to maintain and maintain existing lodging facilities, cooperation with outsiders is also needed to improve the quality of lodging facilities for the better.

Total Economic Value (TEV) From the calculation results obtained from the estimated economic value of coral reefs in Pahawang Island attractions amounting to Rp3.719.124.609,00 Coral reefs have supported the lives of fishermen subsystems around Pahawang Island attractions. In addition, coral reefs are also protective against the ocean waves, so that coastal areas, agriculture, and residential populations are not

easily damaged by sea waves. Similarly coral reef is a place of recreation for divers and other marine tourism. In addition, with the biodiversity of coral reefs will attract the attention of scientists, students, and pharmaceutical companies, and so forth. With the benefits of coral reefs as mentioned above, it is certain that the value will continue to increase. However, in case of damage to coral reefs in Pahawang Island attractions will result in losses of Rp3.719.124.609,00 The damage can occur due to various human activities, namely fishing with poison (patas), the use of explosives (bombs) in fishing, coral reef for housing and building materials, beach retreats and pollution as a result of deforestation, industrial erosion and exhaust, and overfishing.

CONCLUSSION

Income, the value of the beauty of coral reefs, souvenir centers and souvenirs and lodging facilities have a positive and significant impact on visitor demand. While the transportation means have positive and not significant effect to visitor demand. The economic value of coral reefs in 2016 in the attractions of Pahawang Island is Rp3.719.124.609,00.

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The dynamics of intra-household decision power:

Evidence from direct longitudinal information

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Abstract

This paper utilizes direct information on household decision making from a large-scale longitudinal survey to assess different household decision models. It shows that household decision power of the wife and husband varies substantially across households and over time. Panel regressions show that husband's decision power is positively associated with household's expenditure share on alcohol and cigarettes, which are male private consumption in the country analysed. Pre-marriage characteristics, such as relative education between husband and wife, are associated with decision power of wife and husband. The higher the wife's education is relative to her husband, the more likely she is the sole decision maker. Post-marriage change in husband's and wife's status, such as working status, is also associated with changes in their decision power. Controlling for husband's working status, working wives are more likely to be the sole decision makers than non-working wives. These results are consistent with non-unitary household decision models that allow for change of decision power of the husband and wife after household formation. They also suggest that responses from household decision module about who makes decisions on different aspects of household lives can be used to measure intra-household decision power.

1. Introduction

In the past few decades, household decision has been an exciting field in economics. The introduction of non-unitary models has opened a door for analysis of policies that have potential distributional effects within the household.[1] Manser and Brown (1980) and Chiappori (1992) introduced non-unitary decision models under the bargaining framework and collective framework respectively. They assume that household members' preferences differ and they go through a bargaining process to decide about whose preference is reflected more in household allocations. The concept of decision power is central in non-unitary models, since it captures the bargaining position of household members and decides whose preference is taken into account more. The collective framework explicitly models decision power, which is the weight in front of each household member's utility function when the household maximizes the sum of weighted utilities.

Although a straightforward theoretical concept to understand, decision power is hard to observe or measure empirically. As a result, little is known about the variation of decision power across households and over time. Also there is no conclusive evidence about what determines decision power. This lack of understanding makes it hard to pin down decision models because they depend heavily on the variation and determinants of decision power. For example, if decision power does not vary across households, then non-unitary household

[1] These policies include change in divorce laws, social security policy, tax policy, among others. Voena (2015) has found that the introduction of unilateral divorce law is associated with higher household savings and lower female employment. Doepke (2014) has shown that cash transfer to women (Progressa in Mexico) leads to an increase in spending on children, but a de cline in savings rate. Selin (2014) shows that the change from joint tax filing between spouses to individual tax filing in Sweden in the 1970s has increased married women's labour force participation, especially for the ones with high income husbands. Duflo (2003) found that during the expansion of social pension to black population in South Africa in the 1990s, pensions received by grandmothers had large positive impact on health measure of granddaughters.

models are not better than unitary models (Chiappori, 2017). If decision power is determined at time of marriage and does not change after marriage, then full-commitment models that assume households decide and commit to allocations at time of marriage may be more appropriate than limited commitment models that assume that households cannot commit to initial agreements (Mazzocco, 2007; Chiappori, 2017).

Two approaches can be used to address the lack of understanding of decision power. One is to recover decision power parameters through structural estimation from observed household allocations. This approach, however, hinges on a specific decision model and other identification requirements (Mazzocco, Ruiz and Yamaguchi, 2014; Voena, 2015). The other approach is to try to measure decision power directly. This approach will not depend on any specific decision model, and will in fact help to assess decision models.

A limited number of household surveys have attempted to measure household decision power directly. They follow a similar format that ask household members about who make decision in different aspects of household life, usually including expenditure on food, financial decisions and children's education, etc.[2] It is not common, however, for the survey to also follow the same individuals over a long period of time. The Indonesian Family Life Survey (IFLS) is unique in this respect as it is longitudinal survey that follows the same individuals for almost 20 years. It measures decision power in four rounds of the survey spanning 17 years.

This paper uses the IFLS, especially information from the household decision making module, to assess the variation of decision power across households and over time. Then it employs

[2] Examples of surveys that have this decision module are the Matlab Health and Socio Economic Survey in Bangladesh, the Mexican Family Life Survey and the Indonesian Family Life Survey.

Hausman-Taylor panel regression models to investigate whether pre-marriage characteristics and after-marriage changes are associated with decision power measures (Hausman and Taylor, 1981). To evaluate whether change in decision power as measured in the survey lead to change in actual household allocations, this paper also estimates panel regressions on the association between decision power and household expenditure share on alcohol and cigarettes. Assuming alcohol and cigarette are predominantly male consumption items, which is the case in Indonesia, this regression will show whether households in which husbands have more power spend more on male consumption items.

The results show that decision power of wife and husband varies greatly across households and also over time. Pre-marriage characteristics, such as relative education between husband and wife, are associated with decision power of wife and husband. The higher the wife's education is relative to her husband, the more decision power she has. Post-marriage change in husband's and wife's status, such as working status, is also associated with changes in their decision power. Controlling for husband's working status, working wives have higher decision power than non-working wives.

It is also found from Hausman-Taylor panel regressions that control for a large set of household and community characteristics that decision power pattern of the household is associated with the expenditure share of alcohol and cigarettes of the household. The higher power the husband has, the higher the expenditure share on alcohol and cigarettes is.

Although Hausman-Taylor panel regressions are used to address omitted variable problems that are inherent in relationships between household allocations and decision power, the

results from this paper are more descriptive than causal.[3] The patterns and relationships shown in this paper bring a unique insight into the variation and dynamics of household decision power and provide support for non-unitary decision models that allow for changes of decision powers after marriage. The results also imply that policies can be used to change decision power dynamics within the household after the household is formed, and the resulting change in decision power may also lead to changes in consumption patterns. Furthermore, the results show that the existing decision modules in household surveys may be a useful way to measure decision power, as they capture variations that are highly correlated with variables that are predicted to be correlated with decision power by existing household decision models.

The rest of the paper is organized as follows: Section 2 will discuss the literature. Section 3 discusses the Indonesian context and introduces the IFLS survey. Section 4 discusses the cross-section and over-time variation of decision power measures. Section 5 discusses the relationship between decision power measures and spouses' characteristics and household allocations. Section 6 concludes.

2. Literature

This paper is relevant mainly to two strands of literature: the literature on household decisions and the literation on women's empowerment. It contributes to the literature on household decisions by describing variation of and correlates to direct measures of household decision power from a large-scale longitudinal survey. It contributes to the literature on

[3] Refer to Basu (2006) for a careful discussion about the endogenous relationship between household decision power and household allocations.

women's empowerment by finding correlates with women's household decision power and by discussing the appropriate ways to measure women's household decision power.

2.1 Household decisions

The theoretical literature on household decisions has postulated many household decision models, ranging from unitary to collective to non-collective bargaining models.[4] The theoretical discussion, however, is not fully supported by empirical evidence. As a result, it is unknown which model, or what features of the models, are necessary for policy analysis. For example, if decision power structure does not vary across households, then collective or bargaining models are not better than unitary models (Chiappori, 2017). If decision power does not change after marriage, then full commitment model is more appropriate than limited commitment model (Mazzocco, 2007; Chiappori, 2017). These are all empirical questions.

The existing evidence comes mostly from indirect tests of the implications of different models in terms of income pooling and household allocation efficiency.[5] Direct tests about decision power, however, is rare, due to the fact that decision power is not observed. Limited household surveys have tried to elicit direct information on household decision making, by asking household members who made decision in different aspects of household life. Several

[4] Refer to Chiappori (2017) for an updated discussion of the literature on household decisions.

[5] For the test of income pooling refer to Schultz (1990), Thomas (1990), Bourguignon et al. (1993), Phipps and Burton (1998), Fortin and Lacroix (1997), Lundberg, Pollak, and Wales (1997), Attanasio and Lechene (2002) and Ward-Batts (2008). For the test of household allocation efficiency refer to among others Udry (1996), Ashraf (2009) and Bobonis (2009).

papers have used this information to construct measures of household decision power and tried to estimate determinants of household decision power (Anderson, 2009; Antman, 2014; Majlesi, 2016). These papers, however, do not aim to distinguish between different decision models, and rather take a decision model implicitly as given.

This paper uses the same set of information, but aims to find out which of the existing decision models are supported more by data. As a result, this paper focus more on describing variation of decision pattern across different aspects of household life, across households, and across time. The variation across different aspects will deepen our understanding about the multi-dimensional nature of decision power. The variation across households will help to distinguish between unitary and non-unitary models. The variation across time will help to distinguish between limited commitment vs. full-commitment models. The correlates with decision patterns, although not causal, can also help to distinguish between different non-unitary models.

2.2 Women's empowerment

Women's empowerment has been an important topic in development literature because gender equality is a development goal itself. Also, evidence shows that women's empowerment could be related with better outcomes for children (Lundberg, Pollak and Wales, 1997; Duflo, 2003). Although an important topic, the literature has yet to come to a standard way of measuring women's empowerment, and as a result finds it difficult to test what influences women's empowerment.

In media and policy dialogue, women's empowerment has been linked with increase in women's labour force participation, increase in representation of women at executive levels

of organizations and increase in representation of women in politics. These measures, however, are choices made by women which are results of intra-household and intra-society power dynamics.

Using household surveys that elicit information on who makes decision on different aspects of household life, Anderson (2009), Antman (2014) and Majlesi (2016) have constructed measures of women's decision or bargaining power within the household. These papers, however, do not discuss the rationale and validity of their measures of decision power, and rather focus on finding the determinants of decision power. As a result, there is no in-depth analysis of the answers from the decision modules themselves.

This paper contributes to the empowerment literature by looking at the decision modules more in detail and in depth. Through the more thorough analysis it is possible to discuss how we should treat this module and how we can construct measures of women's power using this module. Also by showing correlates with decision patterns in different aspects of household lives, we can gain a deeper understanding of how decision power of women is manifested in the household.

3. Indonesian context and IFLS data

3.1 Indonesian context

As the fourth most populated country in the world, Indonesia is a large archipelago that comprises of thousands of islands and hundreds of ethnicities. The biggest ethnic group is Javanese which comprises of around 40 percent of Indonesian population. Ethnicity is highly correlated with region of residence. There are bilineal, patrilineal and matrilineal ethnic groups in Indonesia. Over 90 percent of Indonesians are Muslims. While the other significant

religious groups are Catholic (mainly Chinese and Eastern Indonesians) and Hidu (Bali). Traditionally Indonesian communities were governed by customary laws called Adat. Adat vary by region and ethnicity and governs marriage, divorce, inheritance, etc. (Frankenberg, 2001). Regional and cross ethnicity variation of household decisions is likely to be high in Indonesia. It will be important to control for ethnicity when analysing correlates with household decision power.

Women in Indonesia, especially on Java, have relatively high autonomy compared with other Muslim countries. It is Javanese tradition for women to own small businesses and trade in the market. Anecdotal evidence suggests that Javanese women are the `mangers of household life'. (Geertz, 1961; Frankenberg, 2001)

Child marriage is not particularly high in Indonesia. Labour force participation of women is around 50-60 percent, depending on the survey used. Men tend to have higher education than women, but there is a converging trend for recent cohorts.

3.2 IFLS and the decision module

IFLS is a large-scale longitudinal household survey spanning from 1993 to 2014. There have been six rounds in 1993, 1997, 1998, 2000, 2007 and 2014. The 1998 round is a 25 percent survey administered after the Asian financial crisis and is not publicly available. At baseline in 1993 around 7000 households were interviewed. IFLS tried to follow individuals who were in the 1993 households until 2014. If 1993 individuals formed new households, everyone in the new households was also interviewed. The attrition rate for 1993 individuals is remarkably low.

The comparative advantage of IFLS is its richness of information and its longitudinal nature. Starting in 1997, a household decision module was added to the questionnaire. For 17 decision categories, the respondent reports who make decision in each category. Reporting single or multiple decision makers are both allowed. Both the wife and the husband answer same set of questions so that their response can be compared. The 17 categories can be broadly categorized into five groups: 1. expenditure on household public goods including food eaten at home, routine purchase, children's clothes, children's education and children's health. 2. expenditure on private goods including husbands' clothes, wives' clothes, time husband spends socializing and time wife spends socializing. 3. financial decisions including expenditure on durables, savings, transfers to wife's family, transfer to husband's family, and arisan (rotated saving). 4. whether husband/wife works. 5. whether husband/wife uses contraception. The household decision module in the survey is in Appendix A.

4. Cross-section and longitudinal variation of decision-making pattern

Using the information from the household decision module in IFLS from 1997 to 2014, I construct the overall distribution of decision patterns across categories, households, and years in Table 1. The numbers are percentage of couples who exhibit a specific decision pattern (husband making sole decision, wife making sole decision, husband and wife making joint decision, or other) in a specific year, for a specific decision category. The last column shows the percentage of couples who do not agree on the decision pattern (for example, husband reporting joint decision making while wife reporting sole decision by the wife). Overall the table shows large variation across categories, households and years.

Across categories, it shows that for expenditure on food and expenditure on routine purchase, women are dominant in decision-making. For the rest of the categories, joint decision between husband and wife seems to be the most common decision pattern, especially for children's education, children's health, expenditure on durables, transfer to husband's and wife's family, gifts for parties, working, and contraception. For none of the categories husband is the dominant decision maker, but husbands are more likely to make sole decision for husband's clothes, expenditure on durables, time husband socializing, and whether husband and wife work. Several implications can be made from the cross-category variation of the decision patterns. First, for some categories it is possible that the decision pattern reflects more about specialization of household tasks instead of decision power. The fact women are predominant decision makers in food and routine purchase support this idea, as in more traditional societies like Indonesia, women are much more likely to cook in households and do small household chores. Second, joint decision making is the most common decision pattern overall, followed by wife making decision by herself. Third, when it comes to private consumption decisions, including wife's clothes, husband's clothes, time wife socializing and time husband socializing, it is more likely for the person who consumes to make the decision.

Table 1: Distribution of who makes decision across categories and years

		Joint		Husband		Wife		Other		Disagree
According to		Wife	Hus.	Wife	Hus.	Wife	Hus.	Wife	Hus.	
Food	1997	11.44	13.01	5.85	5.94	70.31	70.19	12.4	10.86	26.5
	2000	14.68	16.08	5.44	7.65	67.23	65.96	12.65	10.31	33.7
	2007	20.53	20.76	7.11	8.68	60.2	60.47	12.16	10.09	37.56
	2014	15.78	19.92	10.75	11.66	62.93	61.15	10.54	7.28	42.38
Routine purchase	1997	13.62	13.68	5.87	5.7	69.04	70.98	11.47	9.65	28.4
	2000	17.78	17.15	6.12	7.65	64.63	66.14	11.47	9.05	34.71
	2007	22.91	22.84	5.83	5.83	60.81	62.74	10.44	8.59	37.59

	2014	11.13	13.92	7.91	9.28	71.5	70.73	9.47	6.06	35.43
Wife's clothes	1997	33.22	35.42	11.47	9.24	51.55	52.3	3.77	3.04	40.56
	2000	31.11	33.04	6.74	7.72	58.82	56.62	3.33	2.61	41.65
	2007	42.94	46.72	6.48	5.44	48.48	46.06	2.09	1.78	43.72
	2014	13.79	16.1	7.83	7.92	75.93	74.58	2.45	1.4	32.71
Husband's clothes	1997	39.44	37.28	26.97	31.72	30.06	27.72	3.54	3.28	45.31
	2000	40.57	33.19	27.16	33.73	29.26	30.22	3.01	2.85	49.9
	2007	51.3	44.56	19.19	25.42	27.29	28.01	2.21	2.01	48.18
	2014	21.32	18.67	29.45	36.63	46.8	42.62	2.43	2.07	48.56
Children's clothes	1997	43.39	44.01	7.31	7.68	33.53	33.91	15.77	14.4	38.26
	2000	40.46	41.19	6	7.48	36.04	36.06	17.5	15.27	46.54
	2007	56.31	56.18	3.34	4.31	26.43	27.1	13.92	12.41	41.75
	2014	21.35	23.74	5.76	7.12	56.57	56.17	16.33	12.96	43.17
Children's education	1997	65.82	66.23	10.68	13.97	14.91	12.2	8.59	7.61	33.66
	2000	64.78	62.09	7.66	11.22	13.41	13.43	14.16	13.26	39.26
	2007	79.73	77.49	4.44	7.59	9.18	8.18	6.66	6.75	27.06
	2014	54.95	53.83	11.29	18.24	26.07	20.99	7.7	6.94	51.22
Children's health	1997	69	70.03	7.23	10.44	18.11	14.28	5.67	5.25	30.74
	2000	69.86	69.23	5.47	9.32	17.37	14.69	7.3	6.75	35.81
	2007	81.65	79.82	3.15	6.25	10.34	9.02	4.86	4.92	25.12
	2014	58.17	60.24	7.53	16.45	29.99	20.12	4.3	3.19	47.27
Durables	1997	64.64	65.48	18.56	19.77	6.84	5.57	9.96	9.18	33.2
	2000	66.9	66.83	14.63	16.84	7.22	6.57	11.25	9.76	36.31
	2007	76.08	73.25	9.64	12.59	5.79	6.68	8.5	7.49	31.12
	2014	53.73	55.34	20.38	20.46	17.45	17.79	8.44	6.4	48.23
Transfer to wife's family	1997	79.08	79.93	7.67	8.72	12.93	10.94	0.32	0.41	24.46
	2000	77.06	76.24	8.21	10.67	13.57	12.18	1.16	0.91	29.56
	2007	87.52	85.95	4.41	5.55	7.3	8.17	0.77	0.33	19.54
	2014	60.3	61.49	15.69	18.73	22.72	19.25	1.3	0.52	46.08
Transfer to husband's family	1997	80.48	79.32	9.78	13.4	9.37	6.76	0.37	0.53	24.18
	2000	77.6	74.43	10.13	15.74	11.38	8.63	0.89	1.2	30.4
	2007	88.32	84.6	6.01	9.02	5.16	5.9	0.5	0.48	19.91
	2014	61.87	59.61	18.66	25.63	18.71	13.93	0.76	0.84	45.94
Gifts for parties	1997	66.28	68.14	6.18	8.62	24.78	21.09	2.77	2.15	32.7
	2000	69.96	69.45	6.63	11.01	19.98	16.67	3.42	2.87	36.43
	2007	82.31	81.14	4.36	6.68	11.54	10.72	1.79	1.46	25.64
	2014	56.65	59.24	11.07	16.38	29.65	22.57	2.63	1.8	48.46
Arisan	1997	47.79	49.91	7.42	10.38	42.57	37.64	2.22	2.07	36.39
	2000	49.68	48.71	7.47	14.02	39.67	34.49	3.18	2.78	45.32

	2007	60.13	58.67	4.77	8.28	32.6	31.17	2.5	1.89	38.32
	2014	36.14	36.36	11.33	14.65	49.99	47.29	2.54	1.7	47.08
Savings	1997	56.13	58.42	13.22	17.66	25.55	18.35	5.1	5.56	36.6
	2000	55.42	56.06	14.74	20.09	26.02	20.59	3.81	3.25	44.26
	2007	69.84	68.57	7.62	11.16	20.26	18.47	2.27	1.8	32.57
	2014	40.07	41.05	15	18.72	42.34	38.22	2.59	2.01	50.45
Husband socializing	1997	43.02	42.85	46.96	52.63	9.55	4.14	0.46	0.38	35.39
	2000	43.81	40.58	45.96	52.34	9.64	6.51	0.59	0.57	43.05
	2007	53.14	51.61	38.17	43.86	8.23	4.18	0.47	0.35	42.15
	2014	32.55	29.65	54.94	62.31	12.15	7.73	0.37	0.31	46.32
Wife socializing	1997	46.21	47	9.77	7.51	43.52	45.11	0.5	0.39	36.88
	2000	47.86	45.93	10	10.45	41.56	43.1	0.57	0.51	42.76
	2007	56.66	56.71	8.26	9.3	34.62	33.6	0.46	0.4	41.32
	2014	38.85	36.51	11.96	17.04	48.51	46.2	0.69	0.25	52.34
Working	1997	65.51	64.87	26.01	31.21	7.6	3.01	0.88	0.91	29.4
	2000	61.77	60.42	30.71	34.47	6.38	3.95	1.13	1.16	32.33
	2007	73.94	71.11	19.39	25.3	5.77	2.72	0.9	0.87	27.41
	2014	54.86	48.77	34.12	46.19	10.11	4.37	0.9	0.66	42.36
Contraception	1997	73.94	75.33	5.69	5.04	19.33	18.94	1.04	0.7	24.59
	2000	57.58	57.25	6.49	6.76	35.68	35.49	0.25	0.5	35.6
	2007	72.98	69.24	3.17	3.9	23.67	26.55	0.19	0.31	27.45
	2014	48.82	48.19	10.6	11.95	40.06	39.42	0.53	0.44	48.58

Note: Author's tabulation from IFLS. Sample for each year are couples who both respond to the decision module. Sample size varies across years and across categories. Cross-section weights that match the age, gender and province distribution of the survey year are used. The first row is decision pattern groups (who makes decision). Joint means joint between husband and wife. Husband means husband only. Wife means wife only. Other means other groups. Disagree means the broad categorization between joint, husband, wife and other is different between wife's and husband's reports. The second row means the report is according to wife or according to husband.

Decision pattern varies greatly across households. Across-household variation is higher for expenditure on husband's clothes, savings and time husband spends socializing, because the decision is not dominated by one decision pattern. For some categories, decision pattern only varies between joint, husband only and wife only. For other decision categories, namely expenditure on food, routine purchase, children's clothes, children's education and expenditure on durables, other household members beside husband and wife are also likely to participate in the decision making.

The distribution also varies greatly over years. In 2007 across all categories decision is more likely to be joint instead of individual. In 2014, however, the pattern reverses back to more individual decision making.

The distribution is remarkably similar between the ones calculated using husbands' reports and the ones calculated using wives' reports. There is a high degree of disagreement, however, between husband and wife, and degree of disagreement also varies over years. Disagreement is highest in the last round in 2014, and for many categories the degree of disagreement seems to be lower when joint decision is more common.

Table 2 shows the across-time variation of decision patterns for the couples who report an answer for all years for the specific decision category. The numbers are percent of couples who report the same decision pattern between two consecutive rounds (for example, reporting wife only in 1997 and wife only again in 2000). This table shows that there is large time variation in decision pattern within the same couples. On average, only about 50 percent of couples do not change the decision pattern between two rounds. The highest churning rates are for husband's clothes, children's clothes, time husband socializing and time wife socializing.

Table 2: Percent of couples who do not change decision pattern between years

	1997-2000	2000-2007	2007-2014
Food	59.8	52.5	50.62
Routine purchase	57.32	52.8	55.19
Wife's clothes	45.59	49.48	47.05
Husband's clothes	42.44	42.88	34.49
Children's clothes	44.32	40.45	30.8
Children's education	51.82	55.03	43.37
Children's health	59.3	61.97	47.74
Durables	58.72	61.52	46.55
Transfer to wife's family	70.47	74.15	54.49

Transfer to husband's family	71.62	75.02	56.74
Gifts for parties	59.54	64.52	52.32
Arisan	52.51	51.08	46.24
Savings	55.76	55.76	43.64
Husband socializing	41.92	42.05	38.85
Wife socializing	43.06	42.25	40.32
Working	58.86	61.59	52.97
Contraception	53.51	52.97	50.38

Note: Author's calculation using IFLS. Samples for this table are couples who report an answer to the decision module in all of 1997, 2000, 2007 and 2014. Sample size vary by decision categories because missing observations vary by decision categories. This table shows percent according to wife's report. The numbers according to husband's report are very similar.

5. Correlation between decision power and household characteristics and allocations

The previous section shows that both cross-household and over-time variation of household decision pattern is high. If the decision pattern reported in the survey reflects decision power, then the observations made in the last section support non-unitary models of household decision making and the limited commitment dynamic models, as these models predict variation of decision power across households and across time. Whether the decision patterns reflect decision power, however, is not clear from the analysis in the last section.

One way to assess whether the answers to the decision module reflect decision power is to look at the correlation between the answers and household allocations. In the collective framework and bargaining framework, decision power decides whose preference is more likely to be taken into account when making household allocations. Therefore, a direct implication is that decision power should be correlated with expenditure share on private goods. In most household surveys, it is hard to measure private consumption because

consumption is measured at the household level. One exception is alcohol and cigarettes. Because consumption by item is usually available in household surveys, and because alcohol and cigarette consumption is predominantly male consumption in many developing countries, including Indonesia, the expenditure on alcohol and cigarette can be used as measure of male private consumption. Therefore, to assess the degree to which the decision patterns reflect decision power, I regress expenditure share of the household on alcohol and cigarettes on the decision power patterns, while controlling for a large set of individual, household and community characteristics. I also control for unobserved time invariant household effects by using Hausman-Taylor panel regression model over three years (1997, 2000 and 2007) (Hausman and Taylor, 1981; Green, 2012).[6] More specifically, I estimate the following equation:

$$Share_{i,c,t} = \alpha_1 Husband_{i,c,t} + \alpha_2 Joint_{i,c,t} + \alpha_3 Other_{i,c,t} + \alpha_4 Disagree_{i,c,t} + \alpha_5 SpousePrnt_{i,c,t} + \beta_1 EduWife_{i,c} + \beta_2 EduHusband_{i,c} + \beta_3 AgeWife_{i,c,t} + \beta_4 AgeHusband_{i,c,t} + \beta_5 WorkWife_{i,c,t} + \beta_6 WorkHusband_{i,c,t} + \gamma_1 PCE_{i,c,t} + \gamma_2 HHAgeGenderComp_{i,c,t} + \delta_1 CommChar_{c,t} + \delta_2 Province_{c,t} + \delta_3 City_{c,t} + \delta_3 Year_t + u_{i,c} + \epsilon_{i,c,t} \quad (1)$$

Where *i* represents couple, *c* represents community, and *t* represents time. $Husband_{i,c,t}$ is indicator variable indicating husband making decision by himself. $Joint_{i,c,t}$ is an indicator variable indicating husband and wife make joint decision. The omitted group in terms of decision patterns is wife making decision by herself. $Other_{i,c,t}$ is an indicator variable indicating other decision patterns. $Disagree_{i,c,t}$ is an indicator variable indicating whether

[6] These are the years for which I have full consumption information for the household.

husband and wife disagree in the decision pattern. $SpousePrnt_{i,c,t}$ is whether spouse is present during the interview. $EduWife_{i,c}$ is wife's education. $EduHusband_{i,c}$ is husband's education. $AgeWife_{i,c,t}$ and $AgeHusband_{i,c,t}$ are wife's and husband's age respectively. $WorkWife_{i,c,t}$ and $WorkHusband_{i,c,t}$ are wife's and husband's working status (whether working) respectively. $PCE_{i,c,t}$ is real per capita household expenditure. $HHAgeComp_{i,c,t}$ is the age and gender composition of the household (number of household members in different age and gender groups). $CommChar_{c,t}$ is a vector of community characteristics including access to piped water, access to electricity, access to paved road, population, and main industry. $Province_{c,t}$ is a vector of province dummy variables. $City_{c,t}$ is an indicator variable indicating whether the household lives in cities. $Year_t$ is a vector of year dummy variables. $u_{i,c}$ is unobserved couple time-invariant effect. $\epsilon_{i,c,t}$ is error term that is specific to the couple, the region, and the year.

I estimate Equation 1 for each decision category using wife's reports. The main interest is on α_1- α_4, the coefficients on the decision pattern variables. The categories for which the decision pattern variables are significant are expenditure on husband's clothes, transfer to wife's family, savings and whether husband and wife work. The results from these categories are shown in Table 3 below:

Table 3: Relationship between decision patterns and expenditure share on alcohol and cigarettes

	Husband's clothes	Transfer to wife's family	Savings	Working
husband only	0.38***	1.06***	1.08***	0.45*
	(0.14)	(0.28)	(0.35)	(0.23)
joint	0.37***	0.55***	0.57**	0.49**
	(0.12)	(0.2)	(0.25)	(0.22)
N	19219	16672	6041	19648

Note: Data from IFLS. Estimates from Equation (1). Standard error in brackets. * means significant at 10 percent level. ** means Signiant at 5 percent level. *** means significant at 1 percent level.

Although of different magnitudes, the coefficients in Table 3 show a consistent pattern. Compared with wife making decision by herself, husband making sole decision and joint decision between husband and wife both increase expenditure share on alcohol and cigarettes. Husband making sole decision increases this share more. The magnitude of the coefficients is large. For example, compared with the situation in which wife is the sole decision maker on transfer to wife's family, when husband is the sole decision maker in this category, expenditure share on alcohol and cigarettes is about one percentage point more. As the average expenditure share on alcohol and cigarettes is around 5 percent points, this is a 20 percent increase from the average. This evidence is consistent with the explanation that the decision patterns reflect decision power and decision power determines expenditure share on private consumption of the husband.

An interesting follow up question is whether the variation in decision power can be explained by variables that are predicted to determine decision power based on collective or bargaining decision models. From both frameworks, it is predicted that decision power is influenced by distributional factors that influence both parties' outside options (Chiappori 2017). Outside option usually takes the form of divorce or separation.[7] Any factors that influence the spouses' wellbeing at the outside option will affect their decision power within marriage. According to this argument, distributional factors should include spouses' education and working status,

[7] With the exception of the separate spheres model introduced by Lundberg (1993) and the non-cooperative household allocation model introduced by Leuthold (1968), Ashworth and Ulph (1981), and Bergstrom, Blume, and Varian (1986).

as these will influence their income generating ability in the scenario of separation. Age should be a determinant of decision power since age is correlated with re-marrying possibility. As decision power is relative between the husband and the wife, the relative education, age, and working status should be more relevant than absolute values. Cultural norms and custom are also likely to influence decision power as they influence the practice around marriage, divorce, ownership of assets, division of labour within the household, etc.. Cohort is also likely to influence outside options as different cohorts are subject to different culture norms. Length of marriage is likely to be a determinant because repeated bargaining may change bargaining position of the wife and husband, and lead to a more efficient outcome (Chiappori 2017). Change in household composition may also change decision power as addition of new members, especially birth of children, is likely to affect spouses' outside options. I also control for urban/rural and community characteristics to control for additional variation of cultural norms and relative opportunities of men and women. From a survey point of view, another important factor when answering about household decision power is whether the spouse is present or not. Luckily the IFLS has this information and I am able to control for it. As a result, I estimate the following equation using Hausman-Taylor panel regression over 1997, 2000, 2007 and 2014:

$$Husband_{i,c,t}/Wife_{i,c,t}/Joint_{i,c,t}/Other_{i,c,t}/Disagree_{i,c,t} = \beta_1 EduWife_{i,c} + \beta_2 EduDiff_{i,c} + \beta_3 AgeWife_{i,c,t} + \beta_4 AgeDiff_{i,c,t} + + \beta_5 Cohort_{i,c} + \beta_6 WorkWife_{i,c,t} + \beta_7 WorkHusband_{i,c,t} + \beta_8 WorkWife_{i,c,t} * WorkHusband_{i,c,t} + \gamma_1 FirsMarriage_{i,c,t} + \gamma_2 LengthMarriage_{i,c,t} + + \gamma_3 SpousePrnt_{i,c,t} + \gamma_4 HHAgeGenderComp_{i,c,t} + \delta_1 CommChar_{c,t} + \delta_2 Ethnicity_{i,c} + \delta_3 City_{c,t} + \delta_3 Year_t + \eta_{i,c} + \zeta_{i,c,t}$$

(2)

Where *i* represents couple, *c* represents community, and *t* represents time. $Husband_{i,c,t}$ is indicator variable indicating husband making decision by himself. $Wife_{i,c,t}$ is an indicator variable indicating wife makes decision by herself. $Joint_{i,c,t}$ is an indicator variable indicating husband and wife make joint decision. $Other_{i,c,t}$ is an indicator variable indicating other decision patterns. $Disagree_{i,c,t}$ is an indicator variable indicating whether husband and wife disagree in the decision pattern. $EduWife_{i,c}$ is wife's education. $EduDiff_{i,c}$ is the difference between husband's education level and the wife's education level.[8] $AgeWife_{i,c,t}$ is the wife's age, and $AgeDiff_{i,c,t}$ is the difference between husband's age and wife's age. $Cohort_{i,c}$ is the cohort of the wife (born in the 1960s, in the 1970s, etc..) $WorkWife_{i,c,t}$ and $WorkHusband_{i,c,t}$ are wife's and husband's working status (whether working) respectively. $FirsMarriage_{i,c,t}$ is an indicator variable indicating this is the first marriage for both spouses. $LengthMarriage_{i,c,t}$ is the length (in years) of the marriage. $SpousePrnt_{i,c,t}$ is whether spouse is present during the interview. $HHAgeComp_{i,c,t}$ is the age and gender composition of the household (number of household members in different age and gender groups). $CommChar_{c,t}$ is a vector of community characteristics including access to piped water, access to electricity, access to paved road, population, and main industry. $Ethnicity_{c,t}$ is a vector of ethinic group dummy variables. Province is not controlled in this equation since province is highly correlated with ethnicity. $City_{c,t}$ is an indicator variable indicating whether the household lives in cities. $Year_t$ is a vector of year dummy variables. $\eta_{i,c}$ is unobserved couple time-invariant effect. $\zeta_{i,c,t}$ is error term that is specific to the couple, the community, and the year. Hausman-Taylor estimation is used here because I am interested in the coefficients on time-invariant variables such as education and ethnicity, but still want to control for the

[8] The education levels are no education, primary education, junior high school, senior high school, and post-secondary education.

possible correlation between time variant variables such as working status and the unobserved couple effect. Linear probability model is used to model the binary outcome variables.

Overall results suggest that age, cohort, ethnicity, and year are all significantly correlated with the decision patterns. Household composition is also highly correlated with decision patterns. Community characteristics are in general not significant correlates with household decision patterns. The results according to wife's reports are similar to the results according to husband's reports.

What is of main interest is whether the distributional factors predicted by collective and bargaining models are significant in these regressions, and whether pre-marriage characteristics are more important than post marriage changes. The most prominent pre-marriage characteristic is education, and the most prominent post-marriage change is working status. Another interesting coefficient to look at is the coefficient on length of marriage. This will be a test of the theory that repeated games change decision powers as marriage matures. Therefore, in the following tables I summarize the coefficients before relative education, working status and length of marriage. Due to the limit of space, I only report results for five decision categories. These five categories are expenditure on routine purchase, expenditure on husband's clothes, children's education, children's health, large expensive purchase. They cover household public expenditure (routine purchase), investment on children in terms of education and health, expenditure on private goods (husband's clothes), and financial decisions (large expensive purchase). I only report results according to wife's reports as the results according to husband's reports are similar.

Table 4: Correlates with decision pattern - routine purchase (N=28066)

	Wife	Husband	Joint	Other	Disagree
Husband education 1 level higher	-0.0045	0.0025	0.0093	-0.0062	0.0047
	(0.0079)	(0.0041)	(0.0062)	(0.0046)	(0.0081)
Husband education 2+ level higher	0.013	0.00021	0.013	-0.026***	0.0041
	(0.013)	(0.0066)	(0.010)	(0.0075)	(0.013)
Wife's education 1 level higher	0.012	-0.00084	-0.013*	0.0013	-0.0021
	(0.0094)	(0.0049)	(0.0075)	(0.0054)	(0.0097)
Wife's education 2+ level higher	0.044**	-0.0011	-0.033**	-0.0088	-0.022
	(0.018)	(0.0096)	(0.015)	(0.011)	(0.019)
Wife working	0.13***	-0.0086	-0.055**	-0.069***	-0.051
	(0.032)	(0.019)	(0.028)	(0.018)	(0.035)
Husband working	0.053**	0.015	0.013	-0.081***	-0.0012
	(0.024)	(0.014)	(0.021)	(0.013)	(0.026)
Wife working*Husband working	-0.10***	0.0045	0.039	0.061***	0.044
	(0.033)	(0.019)	(0.028)	(0.018)	(0.036)
Length of marriage	0.00070	0.00041	-0.00048	-0.00076	0.0016
	(0.0011)	(0.00065)	(0.00096)	(0.00063)	(0.0012)

Note: Data from IFLS. Estimates from Equation (2). Standard error in brackets. * means significant at 10 percent level. ** means Signiant at 5 percent level. *** means significant at 1 percent level. Husband education 1 level higher means husband has primary education, wife has no education, or husband has junior secondary education, and wife has primary education, etc.. Husband education 2+ level higher means husband has junior secondary or higher education, wife has no education, or husband has post-secondary or higher education, and wife has primary education, etc..

Table 5: Correlates with decision pattern - husband's clothes (N=27002)

	Wife	Husband	Joint	Disagree
Husband education 1 level higher	-0.019**	-0.0071	0.027***	0.0076
	(0.0082)	(0.0077)	(0.0083)	(0.0084)
Husband education 2+ level higher	-0.046***	0.0079	0.037***	-0.0061

	(0.013)	(0.012)	(0.013)	(0.013)
Wife's education 1 level higher	0.035***	-0.025***	-0.011	-0.0043
	(0.0097)	(0.0091)	(0.0098)	(0.010)
Wife's education 2+ level higher	0.034*	0.028	-0.062***	-0.027
	(0.019)	(0.018)	(0.019)	(0.020)
Wife working	0.036	-0.022	-0.014	0.056
	(0.037)	(0.036)	(0.038)	(0.043)
Husband working	-0.018	0.022	-0.0046	0.0024
	(0.028)	(0.027)	(0.029)	(0.033)
Wife working*Husband working	-0.026	0.026	0.00081	-0.030
	(0.037)	(0.036)	(0.039)	(0.044)
Length of marriage	0.0016	0.0033***	-0.0050***	0.000046
	(0.0012)	(0.0012)	(0.0013)	(0.0014)

Note: Data from IFLS. Estimates from Equation (2). Standard error in brackets. * means significant at 10 percent level. ** means Signiant at 5 percent level. *** means significant at 1 percent level. Husband education 1 level higher means husband has primary education, wife has no education, or husband has junior secondary education, and wife has primary education, etc.. Husband education 2+ level higher means husband has junior secondary or higher education, wife has no education, or husband has post-secondary or higher education, and wife has primary education, etc..

Table 6: Correlates with decision pattern - children's education (N=24594)

	Wife	Husband	Joint	Other	Disagree
Husband education 1 level higher	-0.024***	0.0091*	0.011	0.0039	0.0094
	(0.0065)	(0.0049)	(0.0081)	(0.0048)	(0.0083)
Husband education 2+ level higher	-0.036***	0.037***	-0.013	0.013*	0.024*
	(0.010)	(0.0078)	(0.013)	(0.0076)	(0.013)
Wife's education 1 level higher	0.031***	-0.0081	-0.025**	0.00037	0.018*
	(0.0078)	(0.0059)	(0.0098)	(0.0058)	(0.010)
Wife's education 2+ level higher	0.084***	-0.011	-0.081***	0.0059	0.045**
	(0.015)	(0.012)	(0.019)	(0.011)	(0.020)

Wife working	0.052*	0.017	-0.035	-0.034	-0.0035
	(0.028)	(0.022)	(0.037)	(0.024)	(0.040)
Husband working	0.039*	0.036**	-0.041	-0.035*	-0.027
	(0.021)	(0.016)	(0.028)	(0.018)	(0.030)
Wife working*Husband working	-0.052*	-0.023	0.045	0.030	0.013
	(0.029)	(0.022)	(0.038)	(0.024)	(0.040)
Length of marriage	-0.00062	0.000017	-0.00025	0.00081	0.00062
	(0.0010)	(0.00080)	(0.0014)	(0.00084)	(0.0014)

Note: Data from IFLS. Estimates from Equation (2). Standard error in brackets. * means significant at 10 percent level. ** means Signiant at 5 percent level. *** means significant at 1 percent level. Husband education 1 level higher means husband has primary education, wife has no education, or husband has junior secondary education, and wife has primary education, etc.. Husband education 2+ level higher means husband has junior secondary or higher education, wife has no education, or husband has post-secondary or higher education, and wife has primary education, etc..

Table 7: Correlates with decision pattern - children's health (N=25558)

	Wife	Husband	Joint	Other	Disagree
Husband education 1 level higher	-0.015**	-0.0034	0.024***	-0.0057	0.0076
	(0.0067)	(0.0040)	(0.0077)	(0.0038)	(0.0080)
Husband education 2+ level higher	-0.014	0.0083	0.010	-0.0054	0.023*
	(0.011)	(0.0065)	(0.012)	(0.0060)	(0.013)
Wife's education 1 level higher	0.035***	-0.0081*	-0.030***	0.0034	0.020**
	(0.0080)	(0.0049)	(0.0092)	(0.0045)	(0.0097)
Wife's education 2+ level higher	0.081***	-0.013	-0.067***	-0.0017	0.027
	(0.016)	(0.0096)	(0.018)	(0.0089)	(0.019)
Wife working	0.073**	0.012	-0.057	-0.029*	0.012
	(0.030)	(0.018)	(0.035)	(0.017)	(0.038)
Husband working	0.068***	0.022	-0.056**	-0.034***	-0.035
	(0.022)	(0.014)	(0.026)	(0.013)	(0.028)

Wife working*Husband working	-0.079***	-0.023	0.067*	0.035**	-0.00034
	(0.030)	(0.018)	(0.035)	(0.018)	(0.038)
Length of marriage	-0.0018*	-0.00032	0.0015	0.00063	0.00061
	(0.0011)	(0.00066)	(0.0013)	(0.00063)	(0.0014)

Note: Data from IFLS. Estimates from Equation (2). Standard error in brackets. * means significant at 10 percent level. ** means Signiant at 5 percent level. *** means significant at 1 percent level. Husband education 1 level higher means husband has primary education, wife has no education, or husband has junior secondary education, and wife has primary education, etc.. Husband education 2+ level higher means husband has junior secondary or higher education, wife has no education, or husband has post-secondary or higher education, and wife has primary education, etc..

Table 8: Correlates with decision pattern - large expensive purchase (N=27239)

	Wife	Husband	Joint	Other	Disagree
Husband education 1 level higher	-0.0076	-0.0039	0.027***	-0.013***	-0.016**
	(0.0050)	(0.0061)	(0.0079)	(0.0050)	(0.0080)
Husband education 2+ level higher	-0.0027	0.0027	0.035***	-0.034***	-0.013
	(0.0080)	(0.0099)	(0.013)	(0.0082)	(0.013)
Wife's education 1 level higher	0.016***	-0.0098	-0.015	0.0091	0.0024
	(0.0059)	(0.0073)	(0.0094)	(0.0059)	(0.0095)
Wife's education 2+ level higher	0.028**	0.015	-0.054***	0.014	0.028
	(0.012)	(0.014)	(0.018)	(0.012)	(0.018)
Wife working	0.078***	-0.044*	0.027	-0.061***	-0.012
	(0.022)	(0.026)	(0.034)	(0.019)	(0.037)
Husband working	0.014	0.013	0.035	-0.063***	0.0086
	(0.017)	(0.020)	(0.025)	(0.014)	(0.028)
Wife working*Husband working	-0.065***	0.026	-0.020	0.059***	0.031
	(0.022)	(0.027)	(0.034)	(0.019)	(0.038)
Length of marriage	-0.0015*	0.0022**	-0.0015	0.00054	-0.0010
	(0.00079)	(0.00094)	(0.0012)	(0.00068)	(0.0013)

Note: Data from IFLS. Estimates from Equation (2). Standard error in brackets. * means significant at 10 percent level. ** means Signiant at 5 percent level. *** means significant at 1 percent level. Husband education 1 level higher means husband has primary education,

wife has no education, or husband has junior secondary education, and wife has primary education, etc.. Husband education 2+ level higher means husband has junior secondary or higher education, wife has no education, or husband has post-secondary or higher education, and wife has primary education, etc..

Overall the results show significant effect of relative education. The more education the wife has relative to the husband, the more likely for her to be the sole decision maker. The more education the husband has relative to the wife, the more likely for the husband to be the sole decision maker. The magnitudes of the coefficients are large. This is consistent with collective or bargaining models, as education level is an important determinant of the spouse's income generating ability at the point of divorce or separation. Also the fact that relative education is positively correlated with the degree to which the spouse makes decision supports the collective or bargaining models.

In terms of working status, however, the results are not immediately clear. Among the five decision categories presented, working status of husband and wife is not significant for expenditure on husband's clothes and barely significant for children's education. For the rest of the three categories, the coefficients on the working status variables show a similar pattern. Namely if the wife works, she is much more likely to be the sole decision maker. If the husband works, it is also more likely for the wife to be the sole decision maker. The interaction terms shows that if husband is working, the effect of wife working on her decision power is smaller compared with a situation when the husband does not work. The positive coefficients on wife's working status and on the interaction term is consistent with bargaining or collective models because relative working status of the wife is related to future income of the wife relative to future income of the husband, which is related to the outside options of the spouses. The coefficient on husband's working status, however, is less consistent with

bargaining theory. The fact that in a couple in which the husband does not work it is less likely for the wife to be the sole decision maker points to the explanation that husband has more time to be involved in household decisions when he is not working. It should be noted that the positive relationship between wife's working status and the likelihood for her to be the sole decision maker is more consistent with bargaining theory.

Length of marriage, as shown in Table 4 - Table 8, is either not significant or of small magnitude. Therefore, there is no evidence that repeated bargaining changes household decision power.

The evidence discussed so far indicates that pre-marriage characteristics are important correlates with decision power. The higher the wife's education relative to her husband's, the more decision power she has. At the same time, changes in working status after marriage also change decision power of women. Changing from not working to working increases the likelihood that wife is the sole decision maker in the household.

6. Conclusion

The analysis so far has shown the following points: 1. Self-reported household decision patterns vary substantially between households and over time. 2. After controlling for a large set of individual, household, and community characteristics and using Hausman-Taylor panel regression to control for couple fixed effects, the decision patterns are significantly correlated with male private consumption share in the household, namely alcohol and cigarettes. The more decision power the husband has, the higher the expenditure share on alcohol and cigarettes. 3. After controlling for a large set of individual, household, and community characteristics and using Hausman-Taylor panel regression to control for couple fixed effects,

relative education of husband and wife and relative working status are correlated with decision patterns as well. More specifically, the higher the wife's education level is relative to her husband, the more likely for her to be the sole decision maker. Working increases the likelihood for the wife to be the sole decision maker.

All of these evidence suggest that the self-reported decision information do reflect intra-household decision power. Decision power vary across households and also over time within the same households. Pre-marriage characteristics influence decision power. Post-marriage changes also influence decision power. The change in working status of women has a large impact on women's decision power.

The analysis in this paper has used large-scale household data to assess the consistency between direct information on household decision making and household decision theories. The evidence points to non-unitary household models that allow for change of decision power after household formation.

This paper has also laid groundwork for understanding and utilizing the household decision modules in household surveys to construct measures of household decision power. It has shown that these information are overall consistent with household decision theories, and correlated with household allocations and spouses' characteristics. It may be a fruitful line of research to probe deeper into the meaning of the responses to the decision modules, and how we can use these information in combination with the theoretical frameworks to conduct better policy analysis.

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Appendix A: Household Decision Module in IFLS

SECTION PK (HOUSEHOLD DECISION-MAKING)

We would like to know how your family makes decisions about expenditures and use of time.

PK18 TYPE: EXPENDITURES AND USE OF TIME	PK18 In your household, who makes decisions about: (CIRCLE ALL THAT APPLY ON EACH LINE)																		
	Respondent	Spouse	Male Child	Female Child	Mother	Father	Mother in law	Father in law	Brother	Sister	Brother in law	Sister in law	Grandparent	Other, specify_____	Son/Daughter in law	Grandchild	X/W/Y/V	Can't Answer
A. Food eaten at home	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P		Z
B. Routine Purchases for the household of items such as cleaning supplies	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P		Z
C. Your clothes	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P		Z
D. Your spouse's clothes	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P		Z
E. Your children's clothes	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P	W	Z
F. Your children's education	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P	W	Z
G. Your children's health	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P	W	Z
H. Large expensive purchases for the household (i.e., refrigerator or TV)	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P		Z
I. Giving money to your parents/family	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P	X	Z
J. Giving money to your spouse's parents/family	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P	X	Z
K. Gifts for parties/weddings	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P		Z
L. Money for monthly arisan (savings lottery)	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P	X	Z
M. Money for monthly savings	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P	X	Z
N. Time the husband spends socializing	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P		Z
O. Time the wife spends socializing	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P		Z
P. Whether you/your spouse works?	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P	V	Z
Q. Whether you and your spouse use contraception?	A	B	C	D	E	F	G	H	I	J	K	L	M	N _____	O	P	Y	Z

Code PK18:
V. Don't work
W. No children
X. Never used money for this purpose
Y. Never used contraception

Factors Affecting Productivity among Small Farmers in Indonesia

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ABSTRACT

The declining share of agriculture contribution on the economy has many consequences. One of them is the deficit in domestic rice production which has been widening since domestic supply cannot fulfill the demand. On the other hand, the tight control on import of rice has raised the domestic price well above international price. Protecting small paddy farmer has been the main reason which is popular among policy makers, despite the fact that its impact on poverty was on the contrary. Government support in terms of fertilizer subsidy has also long been debatable. The spirit to support small holder was always been questioned since poor targeting and overuse which again become counterproductive with the goal of the policy. These facts has led us to shed some light on the recent agriculture condition in Indonesia. Utilizing the household level data from Indonesia Family Life Survey, this study is aimed to investigate the factors which contributes to the sustainable production of rice production in Indonesia. It will consider several aspects in agricultural production which includes employment, farm area as well as agriculture infrastructure. After employing a regression analysis, the results show that small farms have higher rice productivity which is consistent with the long puzzle in economic study (inverse productivity-size relationship). In terms of infrastructure, irrigation system matters in achieving higher production per hectare. Moreover, the use of capital in terms of machinery as well as farming equipment is also important in determining the yield. These findings shows that agriculture support must be redesigned. The input price subsidy will be more beneficial if it is reallocated towards agriculture infrastructure development.
Keywords: productivity, agriculture, Indonesia

I. BACKGROUND

For a developing economy as well as one of the most populous country in the world, agriculture policy has become main concern for the Indonesia government. The raised concerns were quite huge which spans from food sufficiency to protecting smallholder. Furthermore, sometime the undertaken policies were quite contradictive to each other. For instance, ban for import on staple food for the sake of protecting domestic farmers has led to higher rice price since domestic rice price is well above international price, despite the fact that generous input subsidy is also provided by the government as well. As a consequence, the rise in staple food sometime can lead to higher inflation which in turn makes the low income family worse off.

One reason for the higher domestic price is the relatively higher domestic cost of production. Indonesian farmers spend around twice on production cost compared to the farmers in Vietnam or Thailand (Arifin, 2018). Therefore, the farm management needs to be improved to allow for modern as well as efficient agriculture technique. The first step towards improving farm management is to find the main determinants of productivity among smallholders. This study is aimed to the important determinant of the productivity among small farmer in Indonesia. It utilizes household level data to determine those main factors using a regression analysis.

The result shows that agriculture infrastructure as well as modern agriculture practice matters for the per hectare rice yield. Irrigation system as well as the use of modern agriculture equipment are positively correlated with per hectare rice yield. This finding implies that support towards agriculture infrastructure must be revitalized against the inefficient input subsidy.

II. LITERATURE REVIEW

Agriculture sector development, which is commonly being associated with rural sector development, matters for eliminating poverty since rural area contribute more to the national poverty rate. Several previous studies found that non-agriculture sector was important to lift up low income household in rural areas (Booth, 2002; Hadiwidjaja & Suryahadi, 2011). Nevertheless, other also finds that agriculture sector development also important in inducing the growth of non-agriculture sector in rural areas (Suryahadi, Suryadarma, Sumarto, & Molyneaux, 2006). Therefore, agriculture development remains important to spur the growth in rural areas as well as to reduce poverty.

The development of agriculture sector in rural area cannot be separated from the productivity of smallholders which many of them are paddy farmers. Poverty rate in rural area also linked to the relatively low income of small paddy farmers which stems from the higher production costs. Labor cost and land rent are deemed as the main contributors of higher cost in farming.

On the other hand, fertilizer subsidy remains as the biggest input subsidy despite the irrational use of fertilizer as well as poorly targeted fact. (Osorio, Abriningrum, Armas, & Firdaus, 2011) found that fertilizer subsidy was enjoyed by rich farmer instead of the poor one. Moreover, the increasing amount of input subsidy also crowded out the public goods provision in agriculture (World Bank, 2010). The declining public goods provision in agriculture was correlated with the declining productivity as well. Therefore, in order to determine the most contributing factors, one must take into account the provision of agriculture infrastructure e.g. irrigation system.

III. DATA & METHODOLOGY

This study utilizes household survey data obtained from the Indonesian Family Life Survey (IFLS) which is managed by the RAND Corporation. It is a longitudinal survey which covers around 30,000 individual across 13 of 34 provinces in Indonesia and represents 83% of Indonesian population. The two latest waves of this survey (2007 & 2014) will be employed in this study since the policy of interest was implemented in between those waves. The undertaken sample of this study is household owning farm business especially those who cultivate paddy field. Around 3000 households from the two latest wave of IFLS are included in the sample. The summary statistics of the variable is shown in Table 1.

Table 1, Summary statistics

Variable	Mean	Std. Dev.
Dummy tractor	0.05	0.22
Dummy irrigation equipment	0.08	0.27

Dummy equipment	0.03	0.18
Male headed	0.90	0.30
HH head education	6.03	4.21
Log yield per hectare	-1.45	1.22
Log area	7.52	1.46
Dummy wet season	0.58	0.49
Dummy gadu	0.33	0.47
Log cost per hectare	15.09	1.46
Dummy irrigation canal	0.49	0.50
Dummy pump/tube well	0.04	0.18
Dummy other irrigation system	0.08	0.27

In order to determine the factors which influences the productivity, the following linear regression model is employed:

$$Y_{it} = \alpha + X'\beta + \epsilon_{it}$$

Yit is the outcome variable which is rice production per hectare of land. X'B are the vector of factors which determines the yield per hectare. Those factors include the land area, irrigation system utilized by the farmer, the possession of agriculture mechanical equipment, farmer education, and the incurred cost per hectare of land.

IV. RESULTS & DISCUSSIONS

The main result of linear regression is shown in Table 2. It is found that productivity is negatively correlated with land area. In other words, farmer with larger plot tends to have lower productivity per hectare of land. Despite its counterintuitive nature, it is in accordance with many previous study on land productivity. It has been a long puzzle in the history of economic, nevertheless several explanations also exist for this phenomenon.

The first argument emphasizes on the statistical artifact which laid on the possibility of omitted variable bias due to the inability to control for land quality (Lamb, 2003; Bhalla & Roy, 1988; Benjamin, 1995; Assuncao & Braido, 2007). The second explanation is based on multiple market failures which led to inverse-size productivity relationship. Labor market causes the inability of larger farmer to hire and supervise labor which leads to lower productivity for larger farm (Chayanov, 1991; Sen, 1966; Feder, 1995).

The new argument emphasizes on the "edge theory" which states that farmer tends to oversee the smaller plot against larger plot, thus leading to better nurturing for smaller plot (Little and Hills, 1978; Barchia and Cooper, 1996; Bevis & Barrett, 2017).

Table 2, Regression results

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

Dummy irrigation canal	0.387***	0.161***	0.171***	0.166***	0.162***	0.166***	0.165***	0.168***
	(0.043)	(0.033)	(0.034)	(0.035)	(0.034)	(0.032)	(0.033)	(0.033)
Dummy pump/tube well	0.438***	0.175**	0.180**	0.194**	0.187**	0.089	0.092	0.097
	(0.113)	(0.087)	(0.087)	(0.088)	(0.088)	(0.081)	(0.080)	(0.085)
Dummy other irrigation	0.175**	-0.063	-0.048	-0.042	-0.042	-0.030	-0.023	-0.003
	(0.077)	(0.060)	(0.060)	(0.061)	(0.061)	(0.057)	(0.057)	(0.058)
Dummy tractor	0.009	0.633***	0.633***	0.637***	0.629***	0.430***	0.295***	0.314***
	(0.096)	(0.075)	(0.075)	(0.076)	(0.076)	(0.070)	(0.071)	(0.069)
Dummy irrigation eq.	0.107	0.232***	0.232***	0.218***	0.218***	0.093	0.086	0.106*
	(0.078)	(0.060)	(0.060)	(0.061)	(0.061)	(0.057)	(0.057)	(0.058)
Dummy equipment	0.119	0.270***	0.273***	0.265***	0.271***	0.118	0.144*	0.147**
	(0.112)	(0.087)	(0.087)	(0.088)	(0.088)	(0.081)	(0.079)	(0.071)
Log area		-0.543***	-0.544***	-0.545***	-0.552***	-0.359***	-0.397***	-0.383***
		(0.011)	(0.011)	(0.011)	(0.011)	(0.013)	(0.013)	(0.017)
Dummy gadu			0.152***	0.162***	0.158***	0.166***	0.178***	0.165***
			(0.059)	(0.060)	(0.059)	(0.055)	(0.054)	(0.063)
Dummy wet season			0.179***	0.185***	0.181***	0.203***	0.230***	0.186***
			(0.056)	(0.057)	(0.057)	(0.053)	(0.052)	(0.061)
HH head education				0.010***	0.008**	-0.002	0.001	0.004
				(0.004)	(0.004)	(0.004)	(0.004)	(0.003)
Male headed					0.252***	0.204***	0.174***	0.166***
					(0.053)	(0.049)	(0.048)	(0.048)
Log cost per hectare						0.306***	0.277***	0.314***
						(0.013)	(0.013)	(0.020)
Constant	-1.678***	2.496***	2.347***	2.286***	2.133***	-3.811***	-3.090***	-3.603***
	(0.033)	(0.088)	(0.100)	(0.102)	(0.107)	(0.262)	(0.267)	(0.392)
District fixed effect	No	No	No	No	No	No	Yes	Yes
Time fixed effect	No	No	No	No	No	No	No	Yes
Observations	3,685	3,685	3,685	3,603	3,603	3,555	3,555	3,555
R-squared	0.024	0.416	0.417	0.417	0.421	0.504	0.537	0.546

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The water source matters for the per hectare yield as irrigated farm shows a higher per hectare yield. The magnitude on the estimate is quite high since farmer which has access to irrigation system has more …. Per hectare yield compared to those with other water sources. This finding implies that the quality of agriculture infrastructure is one of the important factor to be considered in order to improve agriculture productivity. It becomes alarming given that input subsidy crowding out the public sector spending on agriculture infrastructure.

The ownership of modern agriculture equipment also important for productivity improvement. Farmer who utilizes tractor can have higher per hectare yield. The use of irrigation equipment as well as other agriculture equipment also significant in improving the per hectare yield. This finding implies that the use of modern agriculture technique also matters for farmer to improve productivity. However, the result must be interpreted with cautions since correlation does not imply any causation. Further study with more rigorous approach can eliminate the caveats of this study.

V. CONCLUSION

This study is aimed to investigate several main determinants of the productivity among smallholder. It utilizes household level data which contain information regarding family owned farm business. The results show that inverse size-productivity relationship does present which means smaller farms have higher productivity compared to larger farms. Irrigation system as well as the use of agriculture equipment are found to be significant in determining per hectare yield. These findings imply that agriculture infrastructure matters to improve the productivity of farmers in Indonesia. Therefore, conventional approach in input subsidy must be considered again since it can crowd out investment in agriculture infrastructure as well.

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RETURN ON EDUCATION OF EMPLOYMENT IN INDONESIA

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ABSTRACT

The UU No. 20 Tahun 2003 regarding the National Education System mandates that the state prioritizes education budgets of at least 20 percent in education. This study aims to find out how the return on education of labor in Indonesia, to find out if inflation of education exists. This study was conducted in Indonesia by using Indonesian Family Life Survey (IFLS) panel data in 2007 and 2014, where the analytical technique used is Two Stage Least Square (2SLS) and used the number of schools as Instrument Variable (IV) with the help of STATA program. Based on the analysis, it is concluded that the return on investment of education in Indonesia (return on education) gives financial benefit from each additional one year of education by 19.7 percent. This is in line with previous literature which says that developing countries have a higher rate of return on investment than developed countries. The statement was supported by research conducted by World Bank (2014) where South Africa has a rate of return of 19.1 percent and Chile has a rate of return of 11.9 percent while developed countries such as Italy have a rate of return of 6.7 percent, and Finland has a rate of return of 7.7 percent. Workers who finish higher education are more able to improve the quality of life and health and more efficient in solving problems also have better skills. Educated workers will behave preventively in overcoming life problems. Educational investment serves to prevent social problems and develop various resources.

Keywords: return on education, educational level, labor, variable instrument, two stage least square

INTRODUCTION

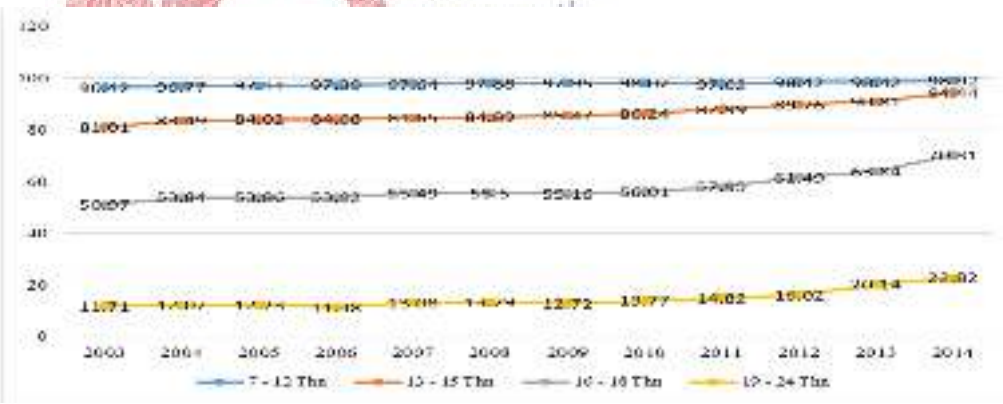
The number of Indonesian population growing every year has an impact on the increasing number of people seeking work (Mahayana and sukadana, 2014). Better access to education makes the long-term goal of the government so that later the benefits of education can be gained by looking at the capabilities offered by the workforce to the company, the more educated and able to adapt to new technologies that are increasingly sophisticated. Workers with a high level of education will progress on the skills and skills of the workers themselves (Magdalyn, 2013).

Not a few parents willing to work hard and spend more money to send their children to abroad with the assumption that education abroad better quality than the education in the country. This condition illustrates the magnitude of parents' expectations of the role of education in the process of improving income levels (Kurniawan, 2016). Recognizing the enormous benefits of education, the Indonesian government is putting efforts to improve

access to education that will ultimately increase school participation (Purnastuti et al., 2013). Based on Law Number 20 of 2003 on National Education System, set forth in Article 31 paragraph 4 of the 1945 Constitution of the Fourth Amendment mandates that the state prioritizes the education budget of at least 20 percent.

Indonesia's return on labor investment returns is indicated by several studies that examine the return on education investment (return on education) in Indonesia. Duflo conducted a study in 2001 using 1995 data examining the economic benefits of an educational return on education of 10.6 percent. Meanwhile Mustofa conducted his research in 2011 using IFLS data from 2000-2007 showing an investment return on education of 9.5 percent. Losina Purnastuti reported the return on education investment in 2007 amounted to 5.66 percent. The return on investment in education from 1995 to 2007 decreased.

Psacharopoulus (1994) says that developing countries have a higher rate of return on education investments than developed countries. This is supported based on several studies conducted by World Bank (2014) on the trend of return on education in developing countries and developed countries where the data base used in 2010 rate of return of South Africa of 19.1 percent, Indonesia is at the rate of return by 10.4 percent and Chile's rate of return by 11.9 percent. As for developed countries with 2010 data base rate of return Italy of 6.7 percent, Finland rate of return of 7.7 percent.

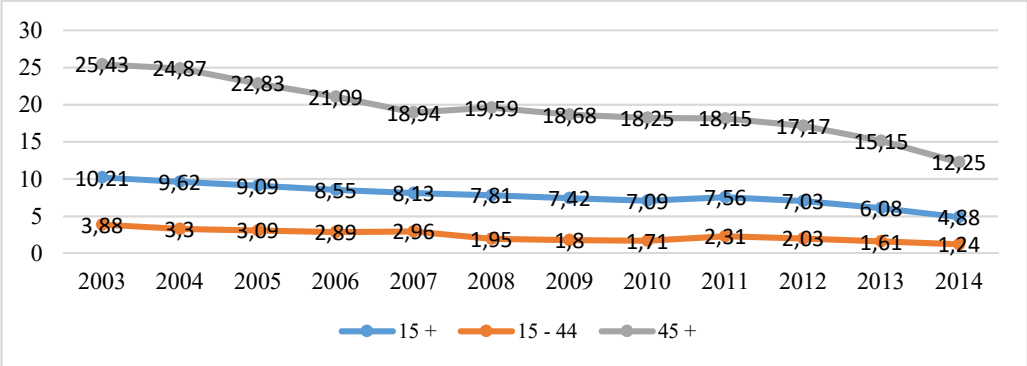


Source : Badan Pusat Statistik Indonesia, 2015

Figure 1. Percentage of School Participation Rate Indonesia Year 2003-2014

Figure 1. shows that the percentage of school participation rate of Indonesian population in 2003-2014 is relatively increasing. In 2014 the percentage of school participation rate of 7-12 year olds reaches 98.92 percent and is the highest percentage. The lowest percentage of school enrollment rate at the age of 7-12 years ie in 2003 reached 96.42 percent. In the adolescent age range, the population of Indonesia has a very high percentage of school enrollment rate of 13-15 years in 2014 reaching 94.44 percent not far from the school participation rate of 7-12 year olds. The lowest percentage of school enrollment rate at the age of 13-15 years ie in 2003 reached 81.01 percent. The highest percentage of enrollment rate of 19-24 year olds in Indonesia in 2014 reached 22.28 percent and the lowest percentage in 2003 was 11.71 percent. The higher the school participation, the greater the

number of people who have the opportunity to receive education and participate in the school process (Nicho Wahyu and Sukadana, 2017).



Source : Badan Pusat Statistik Indonesia, 2015

Figure 2. Precentage of illiteracy Rate of Indonesia Population Year 2003-2014

Figure 2. shows that the percentage of illiteracy rate of Indonesian population is relatively decreasing. In 2014 the level of illiteracy aged 15 years and over in Indonesia reached 4.88 percent which is the lowest percentage. The highest percentage of illiteracy rate of the population aged 15 years and over reached 10.21 years occurred in 2003. The percentage of illiterate rate of the population aged 15-44 years is the lowest reaching 1.24 percent in 2014. In 2003 the percentage of illiteracy rate of the population aged 15-44 years to reach 3.88 percent which is the highest percentage of the illiterate population of Indonesia. Based on the percentage rate of school enrollment rate of Indonesian population that continues to rise and the percentage of illiteracy rate of Indonesia's population continues to decline, this study aims to obtain evidence of how much the return on education education conducted by a worker in Indonesia.

DATA AND METHODOLOGY

The dependent variable in this research is the return on education with the interest variable that is the level of education and the control variable is gender; working hours; job status; location; sector; training; age; religion, with the number of schools, ethnic differences and natural disasters as candidates of variable instruments as variables used to overcome the omitted variables in this study. To make it easier to solve the problem in this research is used regression analysis technique: Two Stage Least Square, two stage least square is used in conditions where the independent variable is correlated with unobserved variable or error. There are omitted variables or variables that are neglected in this research that is ability. To overcome the problem then Instrument Variable is used to overcome the problem of endogenity and omitted variable Wooldridge (512-515: 2012). The initial regression equation is as follows:

$\text{Log } (Y) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + e$ .....(1)

Keterangan:

Log (Y)	= *Return on education*	β_0	= *Intersept*
X_1	= Educational Level	$\beta_1 - \beta_2$	= Koefisien regression
X_2	= *Ability (omitted variabel)*	e	= *error*

In this research, there are three candidate of variable instrument that used is number of school, perbedaat ethnic, and disaster prone area within 5 years. Terms IV in this study the first is the number of schools, perbedaat ethnic, and areas prone to natural disasters within 5 years does not berkolerasi with ability.

$$cov(X_2, Z) = 0$$

The second requirement of IV is ethnic differences, the number of primary schools in the region, and areas prone to natural disasters within 5 years is correlated with the level of education.

$$cov(Z, X_1) \neq 0$$

Thus the final regression equation of IV is as follows:

$$Log\ (Y) = \beta_0 + \beta_1 X_1 + \beta_2 X_i + \beta_3 Z_3 + e$$

Log (Y)	= *Return on Education*	X_i	= *Control* variabel
β_0	= Intersept	Z_3	= *Instrumen* variabel
$\beta_1 - \beta_3$	= Koefisien Regression	e	= *error*
X_1	= Educational Level		

EMPIRICAL RESULT

In this study used 14.944 data available on IFLS wave 4 (2007) and 15,338 data available on IFLS wave 5 (2014) data. The 2007 and 2014 data panels provide 17,086 data matching the requirements in this study of 15,810 individual data and community data. Candidate IV is Number of Schools, Ethnic Differences, and Natural Disasters. Some studies have been conducted such as research conducted by Carneiro et al (2011) with IFLS3 data using distance to the nearest junior secondary school as a variable instrument and yielding an educational investment return of 14 percent. Hai Fang et al (2012) uses the institutional features of an educational system to improve the year of study, Shengwen Lou (2017) using compulsory rules as an instrument assumed that the rule will increase the learning year, and Purnastusi (2013) uses parental education levels as instrumental variables. To determine whether the number of schools, ethnic differcity and natural disasters meets the second requirement of IV, the level of education correlates to the number of schools, ethnic differcity, and natural disasters, before determining the instrument variables it will be regressed in advance by the number of schools, ethnic differcity, and natural disaster as the result as follows:

Hasil Estimasi First Stage Least Square

Tabel 1. First Stage Least Square Tahun 2007

educ	IV^1	IV^1	IV^2	IV^2	IV^3	IV^3
	Coef.	*Robust std.* err.	*Coef.*	*Robust std.* err.	*Coef.*	*Robust std.* err.
SD	.0117639*	.0057594				
SMP	.031405*	0.116389				
SMA	.0020751*	.0108072				
Ethnic			.030119	.0335624		
Flood					-.0381161	.0174964
Earthquake					-.1506151	.0193528
Landslide					-.0672677	.0246886
Tsunami					-.0898953	.0814346
Drought					-.0933527	.0238379
Forest Fire					-.1279128	.0343878
Great Fire					-.0472584	.0240181
Cons_	3.234703	.1180045	3.404709	.1103182	3.689608	.3193025

Source : Data Indonesia Family Life Survey (IFLS).
Catatan : *** p<0.01, ** p<0.05, * p<0.1. Controls (1) controls variabel (2) Instrument Variabel. IV^1 : Number of Schooling, IV^2: Ethnic Differcity, IV^3: Natural Disasters

Table 1. shows that the number of schools has a probability value of 0.01 and a positive coefficient value. This means that the number of schools has a positive correlation with the education level so that it meets the second IV requirement and is used as the instrumental variable in this study. However, in Table 1. Variable variables of ethnic and natural disasters indicate that the probability value is not significant. This means that ethnic differcity and natural disasters do not qualify for the second IV so they can not be used as instrumental variables.

Tabel 2. First Stage Least Square Tahun 2014

educ	IV1	IV1	IV2	IV2	IV3	IV3
	Coef.	*Robust std. err.*	*Coef.*	*Robust std. err.*	*Coef.*	*Robust std. err.*
SD	.0212566***	.0033889				
SMP	.0402036*	.0065943				
SMA	.0001934*	.0058417				
Ethnic			-.055421	.045956		
Flood					-.0568266	.0194651
Earthquake					-.1356396	.0336319
Landslide					-.0287725	.0237503
Tsunami					-.0364677	.1220204
Drought					-.0145664	.0247041
Forest Fire					-.0275098	.0761997
Great Fire					-.0603123	.0295226
Cons_	4.076946	.1108087	4.296827	.1127161	4.645052	.4779715

Source : Data Indonesia Family Life Survey (IFLS).
Catatan : *** p<0.01, ** p<0.05, * p<0.1. Controls (1) controls variabel (2) Instrument Variabel. IV^1 : Number of Schooling, IV^2: Ethnic Differcity, IV^3: Natural Disasters.

Table 2. shows that the number of schools has a probability value of 0.01 and a positive coefficient value. This means that the number of schools has a positive correlation with the education level so that it meets the second IV requirement and is used as the instrumental variable in this study. However, in Table 2. Variable instruments of ethnic differcity and natural disasters show that the probability value is not significant. This means that ethnic differcity and natural disasters do not qualify for the second IV so they can not be used as instrumental variables.

Hasil Estimasi Two Stage Least Square

Tabel 3. *Return On Education* Tenaga Kerja di Indonesia Panel Data

Variables	*2SLS*	*2SLS*	*2SLS*
	IV[1]	*IV*[2]	*IV*[3]
Education	0.197**	-1.183	0.0122
	(0.0858)	(2.232)	(0.134)
Training	0.466***	3.346	0.808***
	(0.162)	(4.722)	(0.249)
Job Status	3.969***	4.709***	4.050***
	(0.0506)	(0.992)	(0.0680)
Working Hours	0.000819***	0.000113	0.000785**
	(0.000313)	(0.00130)	(0.000309)
Work Location	0.173***	1.001	0.284***
	(0.0617)	(1.358)	(0.0882)
Controls (1)	Yes	Yes	Yes
Instrument Variabel (2)	Yes	Yes	Yes

Source : Data Indonesia Family Life Survey (IFLS) diolah dengan aplikasi stata.
Catatan : *** p<0.01, ** p<0.05, * p<0.1. Controls (1) controls variabel (2) Instrument Variabel. IV^1 : Number of Schooling, IV^2: Differcity Ethnic, IV^3: Natural Disaster.

The result of 2sls estimation for panel data of table 3. shows that the impact of education level when there is addition of variable amount of school instrument. So it can be seen that the return on education of labor with panel data in 2007 and 2014 amounted to 19.7 percent. This means that every addition of one level of education will increase income by 19.7 percent. Eddy Gunawan (2012) in his research said that educated workers have the advantage of uneducated labor because education is a passport to get a good job and also improve the quality of life through income generation, which supports current research. Tilak (2003) said that through education can improve the quality of health, reduce infant mortality and poverty. The result of the estimation using instrument variables is higher than the OLS estimation where the OLS estimation ignores the endogenous problem resulting in a still-biased element. This supports research conducted by Chen (2016). This study was conducted in China using a 2004 data base saying that the results of estimates generated using the instrument variables are higher than the OLS estimate is due to the negligible factor of the edogenity of the OLS estimation while in the 2SLS estimate using the variable instrument to overcome endogenity, where the return on education resulted from the OLS estimation of 2.0 percent while the estimation result using the instrument variable of 7.6 percent.

Based on the results of the job training estimation in table 3. it shows that job training increases the income of the workforce who receive job training than the unskilled laborers is 46.6 percent. As in the previous estimation it is supported by research conducted by Suyanto, Losina and Mustofa (2014) which states that the implementation of job training or courses

can increase labor productivity due to increase the skill development owned by the worker either through technology training and language so as to increase productivity which will ultimately increase labor income.

Employment status as shown in table 3. labor employed in the informal sector of 396 per cent of the workforce working in the informal sector or nearly 4 times as much from the workforce working in the formal sector as the growth of trade, services, and the emergence of household industries that are able to absorb labor. This growth is due to the structural changes occurring in Indonesia caused by the ongoing government to prepare decent workers in entering a new era in the economy of the coming ASEAN Economic Community by 2015, causing a lot of informal workers, from sustaining economic growth whereby one of the efforts undertaken by the government is the simplification of the conditions in conducting business capital loans (ILO, 2013).

In addition, the estimation results in table 3. shows that the workforce working in the city increased incomes higher than the labor working in the village by 17.3 percent. This is because Indonesia is currently undergoing a shift from a predominantly rural-based agricultural economy, to an economy with a larger share of activities in the urban industrial and service sectors. The use of more sophisticated technology in urban areas results in faster, more efficient productivity that gives more profit and indirectly increases labor income (ILO, 2015). Return on education of most of the elementary-educated workers working in the informal sector while undergraduate and graduate-educated workers mostly work in the formal sector. Alexander Kern (1976) reveals that several studies have shown that labor with low education will increase the likelihood that a person may use illegal means to meet his or her economic and social needs. Educational investment serves to prevent social problems and develop various resources.

CONCLUSIONS

If current structural change trends are headed for an economy focused on the industrial and service sectors then the educated workforce will continue to be needed. Looking at the results of the estimated return on education is at a rate of 19.7 percent and almost 20 percent of this should be made into consideration to determine better policies in the field of education. So it is expected that the policy makers will continue to support the young generation to continue their education so as to reduce the labor force with low education in the labor market.

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Synchronizing the Job Market: The Analysis of the Vocational Schools Role amidst Developing Labour Market in Indonesia

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Abstract

In 2006, Indonesian government began to expand its vocational school system (*Sekolah Menengah Kejujuran* or SMK) to build the labour force which is compatible with multiple developing industrial sectors. Since 2004 - 2015, much funding has been allocated to increase quantity and quality of vocational schools, however, there has been a minimal evaluation of its large allocation on fulfilling the demand of labour force (Kementerian Pendidikan dan Kebudayaan 2017).

This research tries to evaluate the efficiency of the vocational school distribution by examining the supply-demand pattern of vocational school graduates at the national and the regional level in Indonesia using employment, underemployment, and wage level as the indicators. We use the recent data of the *Indonesian National Labour Force Survey* (SAKERNAS) and *Core Educational Data* (DAPODIK) to conduct statistical analysis on assessing the vocational school outcome.

The result indicates that vocational school graduates odds to get a job is generally better than the high school graduates. However, we find that high school graduates get higher wage level compared to vocational school graduates. Moreover, we also find that there is a different pattern of enrolment of the vocational study program in different regions. The additional results also suggest that job training with a certificate has a better effect than attaining vocational school on earnings. The result can be considered as a valuable input in the form of policy recommendation to re-calculate which study program that is needed in which region and providing alternatives to take job-training as a strategy to boost workers wage level.

Keywords: vocational school, school efficiency, labor market

The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of The World Bank and The SMERU Research Institute.

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Introduction

The Indonesian government continued to promote the vocational schools with "SMK Bisa!" jargon despite limited evidence of its success to boost the labour market. As we have studied from other countries experiences, we found a positive impact of attending vocational school in **Thailand**, **Egypt**, and **Israel**. In contrast, general high school graduates get a higher wage in **Suriname** and **Tanzania**. Moreover, studies in **East Germany**, **South Korea**, and **Romania** shows that both vocational school and general high school are not significantly different.

Newhouse and Suryadarma (2011) and Chen (2009) conducted the most recent previous study on a vocational school in Indonesia. Newhouse and Suryadarma (2011), using *Indonesian Family Life Survey* (IFLS), revealed that the estimated wage premium is higher for women than men relative to general high school graduates, and male vocational graduates challenged by a substantial wage penalty. Chen (2009), also using IFLS, discovered that there were similar wage and employment outcome.

This paper tries to evaluate Indonesia's vocational school program by inspecting whether the vocational school output creates better workers in Indonesia. We examine the output, using *Indonesian National Labour Force Survey* (Sakernas), by observing the unemployment, underemployment, and real wage level as our primary indicators of outcome. We also use those indicators to inspect any differences in output between vocational school and general high school at national and regional level. Furthermore, we try to picture the changes of supply and demand equilibrium of vocational schools themselves to explain which type of program is growing and failing on their student enrolment account using the *Core Educational Data* (DAPODIK). As our additional report, we also want to provide some perspectives on the characteristic of industries owned by SMK and SMA graduates and how do they differ from other types of education graduates.

Ideally, we may analyse the case using data from tracing survey which comprises individuals' choice of schooling, study program, and employment indicator including their income. However, we decided to use two separated datasets because such data from tracing survey is currently unavailable. Sakernas covers the information on the job market while DAPODIK covers the information of the educational institutions. Further explanation of each data will be provided later.

This paper gives two contributions to the discussion. First, we distinguish the effect of attending vocational school relative to general high school on employment probability and the wage level at national and regional level. Second, we provide the information on the enrolment pattern of vocational school at national and regional level. Although we are now unable to provide a more thorough analysis using DAPODIK, we expect more detailed data will be available for the forthcoming paper.

There are four main findings. First, we find from the national level analysis that SMK graduates have a higher probability of getting a job compared to SMA graduates. We also find that the effects are vary at the regional level. We find SMK graduates gain positive benefit only in Sumatera, Jawa/Bali, Sulawesi, and Maluku. Second, SMK graduates also has a lower probability to be underemployed when they already got a job. The result shows a different

effect at the regional level. The evidence shows that SMK graduates' odds to underemployment are lower only in Sumatera, Jawa/Bali, Nusa Tenggara, and Papua. Third, we find that SMK graduates earn less than SMA graduates despite their higher likelihood of getting a job. At the regional level, our calculation finds that SMK graduates in Sumatera, Kalimantan, and Sulawesi are paid less than their SMA graduates counterpart. Fourth, although training certificate does not always increase the odds of getting a job, it can provide a better effect on wage level than entering vocational school. This result also consistent when we calculate at the regional level.

The remaining of this paper comprises four sections. In Section I, we will explain the secondary education in Indonesia briefly. Section II will describe the data that we use and explain their relevance towards our research questions. Section III and Section IV will respectively describe the findings at the national level and regional level.

Indonesian Secondary Education

The Ministry of Education and Culture (MoEC) divides Indonesian education system into three parts; primary, secondary, and higher education. The secondary education is divided into junior secondary education and senior secondary education; each takes three years to complete. The senior secondary education is distinguished by the core curriculum to general high school and vocational school. While the general high school provides three types of stream (i.e. natural science, social science, and language), the vocational school has various stream collapsed into 9 types of expertise (i.e. agri-business, business and management, energy and mining, maritime, health and social worker, tourism, art and creative industry, engineering, and ICT). On average, children aged around 15 should choose the type of senior secondary education where they will study. First, they may decide to continue with *general high school* which we will refer to SMA[3]. Second, they may decide to continue to *vocational high school* which we will refer to SMK[4].

According to MoEC (2017), as the students finish their SMA or SMK, they can choose either continuing to higher education or decide to enter the labour market as a job-seeker. In designing the SMK, MoEC used Djojonegoro's (1998) concept which pictured SMK as an institution to prepare the students for entering the labour market as a somewhat skilled worker compared to their SMA counterpart. Consequently, the MoEC generally distinguish SMK graduates from SMA graduates on their competence on specific skills needed in the labour market (Menteri Pendidikan Nasional 2009).

In 2006, MoEC began to expand its vocational school system. The intention was mainly to reduce the number of youth unemployment by preparing a large number of the labour force who are ready-to-work in the industrial sectors. MoEC introduced a paradigm of "SMK Bisa!" to assert an idea that SMK graduates can perform better than SMA graduates when entering

[3] Our definition of SMA also includes the students or graduates from religious and extraordinary school (e.g. SMA-LB, MA, and MA-LB).

[4] Our definition of SMK also includes the students or graduates from religious school (e.g. MAK).

the labour market. MoEC also have increased the budget allocation for SMK from 2006 to 2016.

Data

We find it difficult to obtain a comprehensive and updated data to evaluate the output of the vocational school. Therefore, this paper uses two datasets to capture the output of vocational school graduates in the labour market. First, we use *the Indonesian National Labor Force Survey* (Sakernas) which was collected in the second semester of 2016. Second, we use the *Core Educational Data* (DAPODIK) from Ministry of Education and Culture (MOEC).

The Indonesia National Labor Force Survey, abbreviated as Sakernas, is designed to collect general information of Indonesian labour force between survey period (Subdirektorat Statistik Mobilitas Penduduk & Tenaga Kerja 2017). Sakernas main objective is to obtain periodical update of Indonesian labour force, specifically to gather information on numbers of people who are employed, unemployed, no longer employed, and shifting their job at municipal, provincial, and national level. Sakernas 2016 collects information from 200.000 households as samples throughout Indonesia. It provides general information such as total workers, wage level, working hour, and other individuals characteristics (e.g. age, province, education).

The Core Educational Data, abbreviated as DAPODIK, is a national-scale database system which collects and store the information relevant to national educational planning. DAPODIK access permission is regulated by MoEC (Menteri Pendidikan dan Kebudayaan Republik Indonesia 2017). DAPODIK consists but not limited to student data, school facilities, school-principal data, budget allocation, teacher profile, and curriculum description. Although DAPODIK portrayed a large-scale database system, this research only uses a particular aspect of DAPODIK which is publicly available. Our data consist of the number of students grade 10 to 12 of each study program in all registered SMK in Indonesia. The exact retrieval date is unrecorded, but it was at the beginning of 2018. Therefore, the last update is covering the data uploaded in December 2017. In short, we have population data of SMK students along with their study program and types of expertise.

Vocational School Output on Labour Market at National Level

At the beginning part of this section, we will start the discussion by explaining the SMK enrolment as a proxy for education market equilibrium at the national level. Our explanation will focus on describing how many students are currently enrolled in SMK and how does it shape the admission pattern. Then, we will move to the next part to observe the labour market using employment rate, underemployment rate, and wage level as the proxy for labour market equilibrium. In the second part, we will also provide our evidence in regression result.

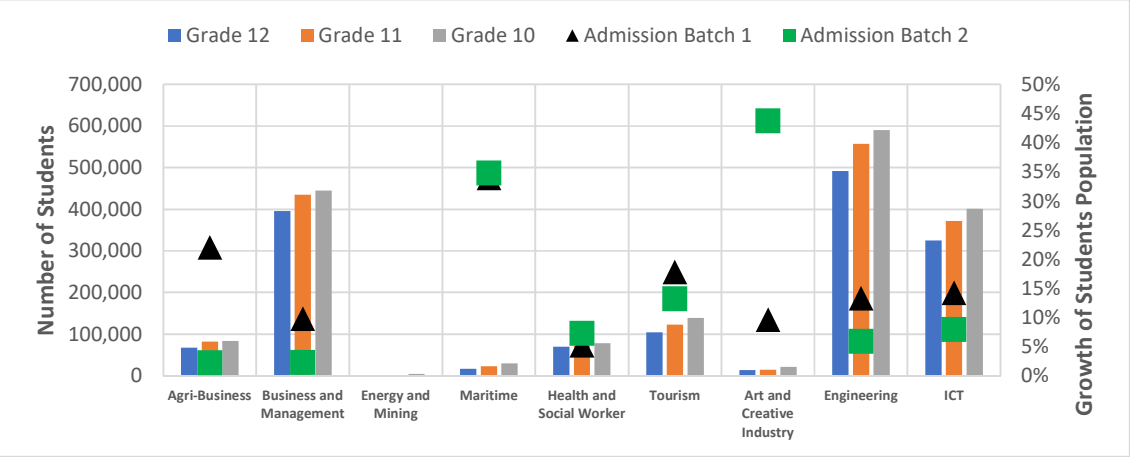
As MoEC ambitiously planning to increase the number of SMK to fulfil 70:30 ratio to SMA, they allocate massive budget to SMK gradually from 2006 to 2016 (Kementerian Pendidikan dan Kebudayaan 2017). Although it is a 10-year period, the budget for SMK has been increased six-fold. Considering that the expenditure per student for SMK is higher than SMA

(Newhouse and Suryadarma 2011), we may expect that the budget may substantially surpass the current SMA budget. Therefore, the increase of budget allocation to SMK made MoEC had to decrease others' allocation considering the education budget always at 20% cap of the national budget. The government now need more evidence to see which expertise types they should invest more and which one they should recalculate.

SMK enrolment being a pioneer for the future labour force

Figure 1 shows, in all types of expertise, a trend of increasing number of student enrolment at the national level. For the types of expertise which already have relatively large of students, the increase of admitted students are relatively lower such as business and management, engineering, and ICT. However, we also may observe that agri-business, health and social worker, and tourism has a relatively low increase in admitted students despite their relatively low total students. This finding may suggest that the expertise with a low increase of admitted students may have reach its maturity. For maritime and creative industry, the growth trend is relatively higher compared to other expertise. We may expect that the number may rise in the following year. Unfortunately, we are unable to observe the energy and mining expertise from the data. In general, we may infer that some expertise types are maturing while the others are still growing. However, we cannot get any evidence of ideal student numbers for each expertise type yet.

Figure 1 Number of Vocational School Students in Indonesia Year 2017



SMK and SMA graduates' opportunity in the labour market

Now, let move to the next discussion of this part; the job market for SMK graduates. By examining Figure 2, we may observe visually that the pattern of the unemployment rate between SMK graduates, SMA graduates, and all labour force are visually similar. However, to get more detail understanding on SMK graduates' role in the labour market, this paper suggests to compare it head-to-head with its SMA graduate counterparts.

Figure 2 Indonesia Unemployment Rate in 2016

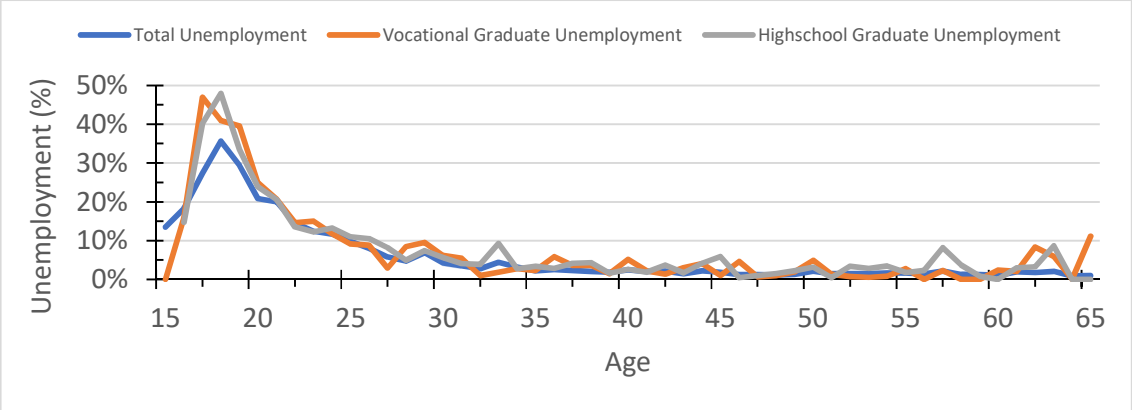
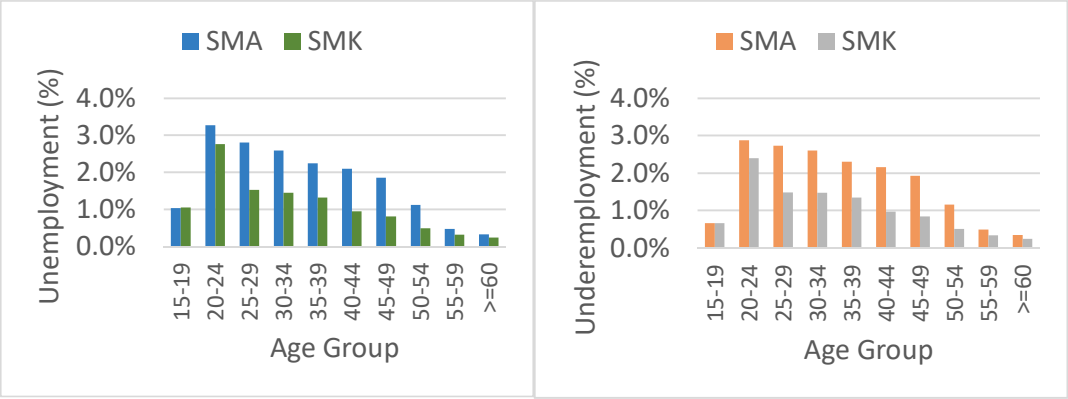


Figure 3 shows a similar pattern of the unemployment and the underemployment rate of both SMK and SMA graduates. This graph is produced from Sakernas 2016. The unemployment chart is produced by calculating the ratio those who are in labour force but not working against those who declare themselves that they already have a job or being employed or currently opening or doing their own business. The underemployment chart is calculating the number of SMA and SMK graduates who declare that they have a job and work less than 35 hours per week. We need to put its mind that the underemployment rate shown in Figure 3 is conditional to employment status.

From Figure 3, we can describe that the unemployment rate starts to rise significantly in the age group of 20 to 24 and gradually decreasing to the oldest age group. The low rate of unemployment in the first age group may be due to the schooling age, or most students are still being wholly related or partially related to their SMK and SMA program, i.e. doing their internship or on-the-job training.

According to Figure 3 also, we may see that the pattern of the underemployment is shaped similarly with the unemployment. The youngest age group has low underemployment rate, and the rate is a jump in the second age group and gradually decreasing in the following age group. The results we obtained are anecdotally similar to the unemployment pattern.

Figure 3 Unemployment and Underemployment Rate of Graduates in 2016



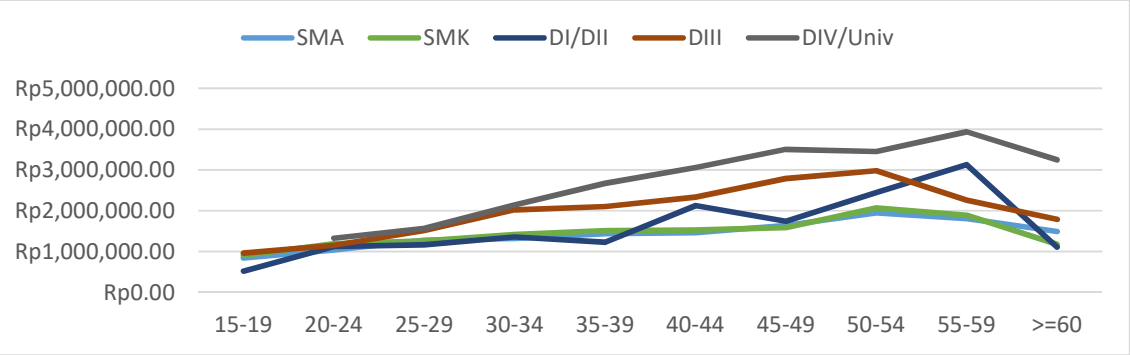
Looking at Figure 3 roughly, we can see it the probability of SMK graduates to get a job is higher than SMA graduates. Likewise, the similar rough inference may also applicable to the underemployment of which SMK graduates tend to have lower odds to become underemployed compared to SMA graduates due to the similar pattern previously explained.

After inspecting their probability not only to get a job but a full-time job, the following discussion will show how much they are paid. Figure 4 shows the real monthly wage the workers received by their highest education level which cover SMA, SMK, DI, DII, DIII, and DIV or university degree. This chart is calculated also using Sakernas 2016 and adjusted with inflation to get a real wage.

Figure 4 suggests that the wage level visually related to worker's education level. Workers with a university degree have the highest wage compared to those who have no university degree. The pattern also consistent with DI, DII, and DIII of an additional year of study generally provide higher wage level.

Now, let us focus on the wage level of SMA and SMK graduates. Figure 4 shows that their wage level is visually similar. This suggests an idea that SMK and SMA have no significant difference in terms of their wage level. As general theory said that productivity is reflected to the wage level, we may also suspect that SMA and SMK productivity is not so different by assuming that all axioms are applied. If this is true, then MoEC mission to provide skilled worker by introducing SMK and effortfully increasing SMK to SMA ratio is not fruitful.

Figure 4 Real Monthly Wage by Education Level



To inspect the data more profound, we need statistical analysis to verify whether our visual interpretation is not misleading.

Statistical analyses

To verify whether the unemployment rate, underemployment rate, and wage level differ between SMA and SMK graduates, we conduct two regression analysis. First, we will test whether both underemployment and employment level significantly affected by the type of school using logit regression analysis. And second, we will test whether the type of school is significantly affecting the wage level using Ordinary Least Square (OLS).

For the effect of SMA/SMK on employment rate, we use Model 1:

Model 1

$$Unemployed_i = \beta_{SMK} SMK_i + \beta_{Certificate} Certificate_i + \beta_{region} Region_i + \beta_{X_i} X_i + \varepsilon_i$$

For the effect of SMA/SMK to underemployment rate, use the Model 2 below conditional to being employed:

Model 2

$$Underemployed_i = \beta_{SMK} SMK_i + \beta_{Certificate} Certificate_i + \beta_{region} Region_i + \beta_{X_i} X_i + \varepsilon_i$$

In both Model 1 and Model 2, $Unemployed_i$ is the dummy for being employed or unemployed, SMK_i is dummy for attaining SMK or SMAa a , $Certificate_i$ is dummy for having on-the-job training or any training ra a elated to work the whthe ich provide certificate upon completion, $Region_i$ is the categorical variable for region (e.g. Jawa/Bali, Sumatera, Kalimantan), X_i is a vector of the the control variable which covers individual character, and ε_i is the error of our statistical measurement.

Table 1 Logit Regression for Unemployment and Underemployment

LOGIT REGRESSION	UNEMPLOYMENT	UNDEREMPLOYMENT
Urban (Dummy)	0.058***	-0.758***
	-0.001	-0.001
Male (Dummy)	0.044***	-0.703***
	-0.001	-0.001
ln(Age)	-2.292***	0.119***
	-0.003	-0.002
Married (Dummy)	-1.399***	-0.179***
	-0.002	-0.001
Owning Certificate (Dummy)	**-0.069*** **	**-0.166*** **
	-0.002	-0.001
General high school (Base)	0	0
	(.)	(.)
Vocational high school (Dummy)	**-0.097*** **	**-0.325*** **
	-0.002	-0.001
Sumatera (Dummy)	-0.200***	0.447***
	-0.002	-0.001
Java/Bali (Base)	0	0
	(.)	(.)
Kalimantan (Dummy)	-0.186***	0.254***
	-0.003	-0.002
Sulawesi (Dummy)	-0.449***	0.448***
	-0.003	-0.002
Nusa Tenggara (Dummy)	-0.626***	0.641***
	-0.005	-0.003
Maluku (Dummy)	0.076***	0.483***
	-0.006	-0.004
Papua (Dummy)	-0.163***	0.415***
	-0.006	-0.004
Constant	5.948***	-0.987***
	-0.009	-0.006
N	3.61E+07	3.26E+07
* p<0.05, ** p<0.01, *** p<0.001		

The reduced logit regression result of Model 1 and Model 2 is provided in Table 1. The results show that studying at SMK gives you the statistically significant lower probability of being unemployed and underemployed. This shows that being an SMK graduate may provide a better outcome of competing in the job market compared to the counterpart. Moreover, the results also show that having a certificate of training courses also provide a better chance to get a job both for SMA and SMK graduates.

After our results verify our visual inference that SMK has better opportunity to get a job and work at least 35 hours a week, we also need to check whether being an SMK graduate significantly affecting the wage level.

Therefore, we use Model 3 to examine SMK effect of wage level:

Model 3

$$RMWage_i = \beta_{SMK} SMK_i + \beta_C C_i + \beta_R R_i + \beta_W W_i + \beta_{SMK_i R_i} SMK_i R_i + \beta_{X_i} X_i + \varepsilon_i$$

Table 2 OLS Regression for Real Monthly Wage

OLS REGRESSION FOR LN(REALMWAGE)	MODEL 3A	MODEL 3B	MODEL 3C
Urban (Dummy)	**0.201*** **	**0.198*** **	**0.199*** **
	0	0	0
Male (Dummy)	0.218***	0.217***	0.217***
	0	0	0
ln(Age)	0.343***	0.338***	0.333***
	-0.001	-0.001	-0.001
Married (Dummy)	0.068***	0.069***	0.069***
	0	0	0
Owning Certificate (Dummy)	**0.182*** **	**0.183*** **	**0.183*** **
	0	0	0
Work at least one year (Dummy)	**0.187*** **	**0.186*** **	**0.186*** **
	0	0	0
Status: Own account (Base)	0	0	0
	(.)	(.)	(.)
Status: Employee (Dummy)	0.176***	0.178***	0.178***
	-0.001	-0.001	-0.001
Status: Casual worker in agricultural sector (Dummy)	-0.216***	-0.211***	-0.211***
	-0.001	-0.001	-0.001
Status: Casual worker in non-agricultural sector (Dummy)	-0.204***	-0.204***	-0.204***
	-0.001	-0.001	-0.001
Distance: < 10km (Base)	0	0	0
	(.)	(.)	(.)
Distance: 10 - 29 km (Dummy)	0.187***	0.185***	0.185***
	0	0	0
Distance: > 30 km (Dummy)	0.321***	0.320***	0.320***
	-0.001	-0.001	-0.001
General high school (Base)	0	0	0
	(.)	(.)	(.)
Vocational high school (Dummy)	0	-0.049***	-0.087***
	0	-0.001	-0.004
Sumatera (Dummy)	-0.109***	-0.118***	-0.119***
	0	0	0
Java/Bali (Base)	0	0	0
	(.)	(.)	(.)
Kalimantan (Dummy)	0.016***	-0.011***	-0.012***
	-0.001	-0.001	-0.001
Sulawesi (Dummy)	-0.151***	-0.142***	-0.142***
	-0.001	-0.001	-0.001
Nusa Tenggara (Dummy)	-0.325***	-0.358***	-0.359***
	-0.001	-0.001	-0.001
Maluku (Dummy)	-0.090***	-0.106***	-0.106***
	-0.001	-0.001	-0.001
Papua (Dummy)	0.219***	0.191***	0.191***
	-0.001	-0.002	-0.002
Vocational high school # Sumatera		0.021***	0.021***
		-0.001	-0.001
Vocational high school # Java/Bali		0	0
		(.)	(.)
Vocational high school # Kalimantan		0.083***	0.083***
		-0.001	-0.001
Vocational high school # Sulawesi		-0.047***	-0.046***
		-0.002	-0.002
Vocational high school # Nusa Tenggara		0.101***	0.102***
		-0.002	-0.002
Vocational high school # Maluku		0.056***	0.056***
		-0.003	-0.003
Vocational high school # Papua		0.079***	0.080***
		-0.003	-0.003
Vocational high school # ln_age			0.010***
			-0.001
Constant	12.124***	12.160***	12.175***
	-0.002	-0.002	-0.003
R-squared	0.285	0.29	0.29
N	2.07E+07	2.07E+07	2.07E+07
* p<0.05, ** p<0.01, *** p<0.001			

$RMWage_i$ represents the real monthly wage (logaritmic value) reported by respondents, SMK_i represents SMK dummy againts SMA, C_i is certificate dummy, R_i is categorical variable for region, W_i is dummy for already working for one year at current job, SMK_iR_i represent the interaction between attaining SMK and working location, X_i covers all control variables, and ε_i posit the error terms in Model 3. We also expand Model 3 to Model 3A, Model 3B, and Model 3C which have small modification to check for robustness.

The result shows SMK graduates get a lower wage to their counterpart. Although the magnitude is relatively small, it is statistically significant. The result also provides exciting result that owning certificate increase the wage level in a similar magnitude of already working in the current job for at least one year.

By paying attention to the magnitude, getting certificate might provide more significant increase on wage level compared to attending SMK.

The evidence clearly suggests that the SMK mission to increase the skill and, therefore, increasing their income has not been attained. However, we still need further study to get any evidence on this premise.

Vocational School Output on Labour Market at Regional Level

This section will provide brief explanation similarly to the previous section. However, this part will focus on how SMK roles at the regional levels.

Table 3 Logit Regression for Unemployment by Region

LOGIT REGRESSION FOR UNEMPLOYMENT (DUMMY)	Sumatera	Java/Bali	Kalimantan	Sulawesi	Nusa Tenggara	Maluku	Papua
Urban (Dummy)	0.160***	**-0.062*** **	0.051***	0.310***	0.141***	0.828***	0.767***
	-0.003	-0.002	-0.005	-0.005	-0.008	-0.011	-0.01
Male (Dummy)	-0.171***	0.200***	-0.095***	-0.446***	-0.061***	-0.573***	-0.438***
	-0.003	-0.002	-0.005	-0.005	-0.008	-0.011	-0.011
ln(Age)	-2.225***	-2.321***	-1.839***	-2.320***	-3.578***	-2.892***	-1.639***
	-0.006	-0.004	-0.012	-0.011	-0.021	-0.025	-0.022
Married (Dummy)	-1.606***	-1.385***	-1.553***	-1.129***	-0.402***	-0.967***	-1.893***
	-0.004	-0.002	-0.007	-0.007	-0.011	-0.013	-0.014
Owning Certificate (Dummy)	0.108***	**-0.093*** **	**-0.387*** **	0.107***	**-0.063*** **	**-0.127*** **	**-0.651*** **
	-0.004	-0.002	-0.007	-0.008	-0.011	-0.019	-0.017
General high school (Base)	0	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)	(.)
Vocational high school (Dummy)	**-0.089*** **	**-0.097*** **	0.327***	**-0.047*** **	0.338***	**-0.458*** **	0.698***
	-0.003	-0.002	-0.005	-0.006	-0.008	-0.017	-0.011
Constant	5.642***	6.030***	4.468***	5.681***	9.188***	7.860***	3.845***
	-0.019	-0.011	-0.036	-0.035	-0.064	-0.078	-0.07
N	8352439	2.11E+07	2101222	2380978	1108433	447078	525602
* p<0.05, ** p<0.01, *** p<0.001							

Table 4 Logit Regression for Underemployment by Region

LOGIT REGRESSION FOR UNDEREMPLOYMENT (DUMMY)	Sumatera	Java/Bali	Kalimantan	Sulawesi	Nusa Tenggara	Maluku	Papua
Urban (Dummy)	**-0.836*** **	**-0.750*** **	**-1.067*** **	**-0.580*** **	**-0.595*** **	-0.008	**-0.696*** **
	-0.002	-0.001	-0.004	-0.003	-0.005	-0.007	-0.007
Male (Dummy)	-0.629***	-0.723***	-0.821***	-0.869***	-0.685***	-0.938***	-0.353***
	-0.002	-0.001	-0.004	-0.003	-0.004	-0.008	-0.008
ln(Age)	-0.093***	0.318***	0.087***	-0.007	0.013	-0.350***	-0.583***
	-0.003	-0.002	-0.007	-0.005	-0.008	-0.013	-0.013
Married (Dummy)	-0.184***	-0.086***	-0.357***	-0.512***	-0.233***	-0.016	-0.031***
	-0.002	-0.002	-0.005	-0.004	-0.006	-0.009	-0.009
Owning Certificate (Dummy)	**-0.212*** **	**-0.155*** **	0.031***	**-0.149*** **	**-0.094*** **	-0.012	**-0.289*** **
	-0.003	-0.002	-0.005	-0.004	-0.006	-0.01	-0.011
General high school (Base)	0	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)	(.)
Vocational high school (Dummy)	**-0.145*** **	**-0.299*** **	0.023***	0.067***	**-0.200*** **	-0.007	**-0.262*** **
	-0.002	-0.001	-0.004	-0.004	-0.005	-0.01	-0.009
Constant	0.190***	-1.751***	-0.327***	0.139***	-0.029	0.858***	1.494***
	-0.011	-0.008	-0.023	-0.017	-0.027	-0.044	-0.044
N	7596027	1.90E+07	1906603	2215876	1026483	401935	475579
* p<0.05, ** p<0.01, *** p<0.001							

Table 3 and Table 4 provides the effect of studying in SMK against SMA at the regional level. Table 3 shows that SMK graduates' odds to get a job is better in Sumatera, Jawa/Bali, Sulawesi, and Maluku and Table 4 shows that SMK graduates probability to be underemployed is lower in Sumatera, Java/Bali, Nusa Tenggara, Maluku, and Papua. It is interesting to get a result where SMK statistically does not benefit the workers in both employment and underemployment. This result might be due to the small industrial scale in Kalimantan relative to its population.

Table 5 shows that being SMK graduates have mixed results on improving the wage level in each region. We also find that the effect magnitude of owning the certificate on wage level is higher for both SMA and SMK graduates in all region in Indonesia.

Table 5 OLS Regression for Real Monthly Wage by Region

OLS REGRESSION FOR LN(REALMWAGE)	Sumatera	Java/Bali	Kalimantan	Sulawesi	Nusa Tenggara	Maluku	Papua
Urban (Dummy)	**0.121*** **	**0.284*** **	**0.207*** **	**0.048*** **	**0.091*** **	**0.085*** **	**0.128*** **
	-0.001	0	-0.001	-0.002	-0.002	-0.003	-0.003
Male (Dummy)	0.355***	0.171***	0.227***	0.273***	0.143***	0.295***	0.376***
	-0.001	0	-0.001	-0.002	-0.002	-0.003	-0.003
Distance: < 10km (Base)	0	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)	(.)
Distance: 10 - 29 km (Dummy)	0.131***	0.207***	0.104***	0.147***	-0.004	0.210***	0.008*
	-0.001	0	-0.001	-0.002	-0.003	-0.004	-0.004
Distance: > 30 km (Dummy)	0.173***	0.401***	0.146***	0.161***	0.358***	0.482***	0.179***
	-0.001	-0.001	-0.002	-0.003	-0.008	-0.016	-0.005
ln(Age)	0.451***	0.240***	0.367***	0.516***	0.619***	0.409***	0.440***
	-0.001	-0.001	-0.003	-0.003	-0.005	-0.005	-0.005
Married (Dummy)	0.083***	0.050***	0.146***	0.165***	0.070***	-0.001	0.054***
	-0.001	0	-0.001	-0.002	-0.003	-0.003	-0.003
Owning Certificate (Dummy)	**0.318*** **	**0.120*** **	**0.191*** **	**0.267*** **	**0.205*** **	**0.262*** **	**0.083*** **
	-0.001	0	-0.001	-0.002	-0.002	-0.004	-0.004
Work at least one year (Dummy)	**0.204*** **	**0.174*** **	**0.276*** **	**0.156*** **	-0.003	**0.368*** **	**0.350*** **
	-0.001	0	-0.002	-0.002	-0.002	-0.004	-0.005
Status: Own account (Base)	0	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)	(.)
Status: Employee (Dummy)	0.213***	0.127***	0.184***	0.331***	0.146***	0.137***	0.145***
	-0.001	-0.001	-0.002	-0.002	-0.004	-0.004	-0.004
Status: Casual worker in agricultural sector (Dummy)	-0.235***	-0.245***	0.047***	0.101***	-0.185***	0.875***	
	-0.002	-0.003	-0.005	-0.005	-0.007	-0.009	
Status: Casual worker in non-agricultural sector (Dummy)	-0.196***	-0.222***	-0.192***	-0.052***	-0.145***	0.032***	0.140***
	-0.002	-0.001	-0.004	-0.003	-0.006	-0.007	-0.007
General high school (Base)	0	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)	(.)
Vocational high school (Dummy)	-0.158***	**0.023*** **	-0.141***	-0.153***	**0.130*** **	**0.032*** **	**0.072*** **
	-0.002	-0.001	-0.003	-0.004	-0.004	-0.005	-0.004
Constant	11.451***	12.662***	11.899***	10.977***	11.118***	11.647***	11.854***
	-0.005	-0.003	-0.009	-0.01	-0.017	-0.019	-0.018
R-squared	0.292	0.288	0.39	0.238	0.312	0.301	0.308
N	4357924	1.30E+07	1191693	1165685	507098	247407	264937

* p<0.05, ** p<0.01, *** p<0.001

Conclusion

To conclude there are four main findings. First, we find from the national level analysis that SMK graduates have a higher probability of getting a job compared to SMA graduates. We also find that the effects vary at the regional level. Second, SMK graduates also have a lower probability to be underemployed when they already got a job. The result also shows a different effect at the regional level. Third, we find that SMK graduates earn less than SMA graduates despite their higher likelihood of getting a job. At the regional level, our calculation finds that SMK graduates in Sumatera, Kalimantan, and Sulawesi are paid less than their SMA graduates counterpart. Fourth, although training certificate does not always increase the odds of getting a job, it can provide a higher effect on wage level than choosing a vocational school. This result also consistent when we calculate at the regional level.

The primary constraint on expanding this research is the availability of data. If we may get data of Figure 1 with a longer year-span, we may observe how the admission pattern changes over time. Moreover, if we are able to link them to the job market with Sakernas or any more detailed data, we may find how education and job market interact and how much the lagging time between both markets.

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Optimization of Human Resources Education through Lifelong Learning in Indonesia

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ABSTRACT

Based on Indonesia Statistics Office 2014, workers in Indonesia are dominated by primary school graduated. This phenomenon indicates the low quality of worker, which affect their income. Using Indonesia Family Life Survey (IFLS) wave 1997 and 2014 through descriptive and quantitative method, this study tries to analyze the consequence of education disparity and the role of lifelong learning to workers income. Lifelong Learning is a concept of education where each individual has education throughout their lives. The empirical strategy is arranged using several education variables by comparing the monthly income based on education and then estimate it using ordinary least squares (OLS) model. The result proves a gap of income between each level of education. Moreover, 71.62% of workers did not improve their education level on 17 year period which is 1997 until 2014. Lifelong Learning, which explained by workers training, offer a significant impact to higher income. This concept is a suitable solution to be implemented by the government of Indonesia through the ministry of labor regulation specifically in workers training regulation.

Keywords: Higher Education, Lifelong Learning, worker quality, OLS, IFLS

JEL code: I23, J24, B23

Introduction

Human development supports economic growth through individual capabilities and productivity improvement. This productivity influence how workers do their job in order to contribute more to economic growth (Ranis, 2000). As the one of production function, workers have an important role in economics activity inside a country. Therefore, workers productivity become substantial.

Workers productivity are determined by their skills and abilities. Besides, years of education is one of the most important factor that affect the skill and ability of labor. Therefore, workers should take higher education in order to increase their productivity (Chansarn, 2015). In this 21th century the skills needed to fulfill the labor market demand differ from the past decades because of the globalization (Green, 2002). In the other hands, the rapid growth of technology makes a new layer

of labor market demand. Therefore, workers nowadays should have a compatible skills to compete in labor market.

Based on the productivity measurement and labor skill through mean years of schooling, Indonesia has the lowest value among several countries such as Malaysia, Singapore, Finland, and South Africa. Based on UNDP report 2016, mean years of schooling in Indonesia year 2015 was only 7.9 years, while Malaysia 10.1 years, Singapore, Finland, and South Africa each of them 11.6, 11.2, and 10.3 years. Thus, it indicates that quality of workers in Indonesia are worst than others.

Meanwhile, Indonesia has an education program where everybody that live in this country should get a compulsory education for 9 years. Contrast with the report which showed mean years of schooling Indonesia only 7.9 years, indicates that this country still has not succeeded to carry out this program.

Furthermore, based on Indonesia Statistics Office in 2014, The 27% of population aged 15 years above which is included as productive age, ended their education on primary school. Followed by 25% of the population ended in high school, 22% in secondary school, 2% diploma and 5% universities. The large portion of this population with only primary school become an important issue, because worker with lower education indicates a low skill worker and give a small impact to the economy of the country (Schefe, 2001). Thus, the group of workers that have a low education and skill generates lower income because they cannot compete with the higher education group of workers. The education disparity delivers a gap of income in each level of education.

To anticipate the lack of education, Lifelong Learning appear as a suitable solution. It is a concept of each individual can get education throughout their lives. This concept has been implemented in several countries through formal or informal education and training. This type of education is implemented regardless of age, place, and income. It means, individual can get education anytime they needed. Moreover, within Lifelong learning, the productive workers in specific age above the formal education requirement, can get an access to those education.

Literature Review

The definition of Lifelong Learning is anybody can learn anywhere and anytime without considering the place and age. In other words, learning can be done since birth until the end of life. Everybody has a chance to get either formal or non-formal education (Green, 2002). Based on The World Confederation for Physical Therapy in Laal (2001), Lifelong Learning is a qualified development and education that hold continuously to fulfill the needs of worldwide conditions that growth faster. Then, Lifelong Learning become an important thing in this period

because the world has changing, developing, and growing faster and it will give a disadvantage if the people who involved it don't be a part of Lifelong Learning. Those group will be a burden for each countries caused by lack of knowledges and skills that are required. Therefore, each of people have to increase their knowledge and skill (Eggelmeyer, 2010).

Differ with the previous explanation, Green (2002) said there are 3 reason Lifelong Learning should be implemented. First, the condition and demographic form of each countries, specifically for the population of elderly age that become a potential disadvantage if it not give a positive contribution to the economy. Second, change of the economic cycle that increase a firm demand of skilled labor and reduce the unskilled labor demand. Lastly, change of the culture that become more diverse and people have to adapt faster through their education. Moreover, Organization for Economic Co-operation and Development at 1996 in Green (2002) explain that there are several reason why Lifelong Learning expected to appears and contributes. One of the important reason is education has changed gradually from young people into adult people with specific education needed. Other, an increase in average of teacher age in labor supply can increase a cost of education if it determined with a years of teacher's experience. If the individuals can't get the ability and skill needed by globalization, it can't be denied that will rise a harmed group because of a harder level to get a job and group with low wages (Hutton, 2011).

Lifelong Learning is not only give a benefit to the self adaptation or environment, but also make individuals able to provide a wide impact such as positive contribution to the economy, ability to adaptation in the modern world, give a new chance to get job, and fulfill of life needed better (Laal, 2012). Actually, there is a change in global economy because of development and Lifelong Learning become one of the most powerful policy that can response it, with the aim of knowledge and skill increased. Furthermore, the goals can't be achieved without a support of vocation and bachelor programs, an adult age education, and increase of sustainable training (Green,2002). In other hand, result from Commission of the European Communities report (2000), Lifelong Learning is not only has a goal as increasing of formal education participation, but also an increase of non-formal and informal education. Main factors of those aims are informal education can growth more flexible, easier, and cheaper cost than formal education which can't respond a change of skill demanded quickly and costly.

Lifelong Learning give general and vocational education by several aspect like education itself, worker, and research. Base of Lifelong Learning is give a change to individuals to increase their knowledge, skill, and competency to utilized optimally from an independence of choosing the place

they want to study for (Harvey, 2004). Therefore, the individuals have expected to fulfill the new requirement after it. Several factors that can give a success of the job in 21 century are English language skill, mathematic, third level literate NALS, and higher education after senior high school such as polytechnic and vocation (Pont, 2004). Depend on those qualification, government has to make a more chance to develop the skill and competency through Lifelong Learning for people with 30 ages or above by vocation and enterprise-based training.

Pont (2004) also stated the countries like Canada, Korea, England, and Sweden have realized earlier that Lifelong Learning is an important policy which can develop the skill of labor within the financial incentive policy. Meanwhile, in Portugal use a non-financial incentive to implemented the Lifelong Learning policy. Furthermore, there are several policy such as improving supply or collaboration between government and private sector. Besides the policies above, Green (2002) provides another several Lifelong Learning policies and its more specific such vocational training in different countries. For Germany and Austria, there is social collaboration through formal system and voluntary collaboration through informal system for England. Actually, education give a benefit not only to increase skill and fulfill the demand for labor, but also increase workers welfare because the positive relationship with income and wage. (Scheve, 2001). Each of enhancement for individual's years of schooling, can increase the income and wage significantly (Robinson & Sexton, 1994).

In the beginning, Lifelong Learning is hard to observe because there is no suitable classification. But, Saisana (2010) has classified Lifelong Learning into several groups learning such as Learning to Know, Learning to Do, Learning to Live Together, and Learning to Be. Moreover, there are 36 variables including adult participation rates in formal education and training, share of 30 to 34 years old with tertiary education, participation in job-related non-formal education and training, etc.

Data and Methodology

This study used data from Indonesia Family Life Survey (IFLS) wave 1997 and 2014. This survey is provided by an organization named RAND. The respondents are Indonesia households spread in 13 provinces. IFLS started it first survey in 1993-1994 in collaboration with Lembaga Demografi University of Indonesia. Until today, IFLS has successfully done five wave of surveys which is in 1993, 1997, 2000, 2007, and 2014.

The descriptive method of this study focuses on education mobility from 1997 to 2014, specifically for people aged 15 above (workforce) who experience either dropped out or graduated. For the quantitative method, this study focuses mainly on cross-section study of year 2014. The data consist

around 8000 individuals who work in formal sector, either government or private firm. We use only worker in formal sector because it is known to have a consistent income. Some firms in this sector is also known to give a proper training in order to boost worker's productivity.

Using ordinary least square method, this research aim to explain income in log form as the dependent variable that affect by several independent variable. We also include training variable; if respondent received training from workplace, as the proxy of lifelong learning variable. Main focus of this study is to see if there's any correlation between lifelong learning to individual's productivity which is represented by their income per month.

The model can be written as:

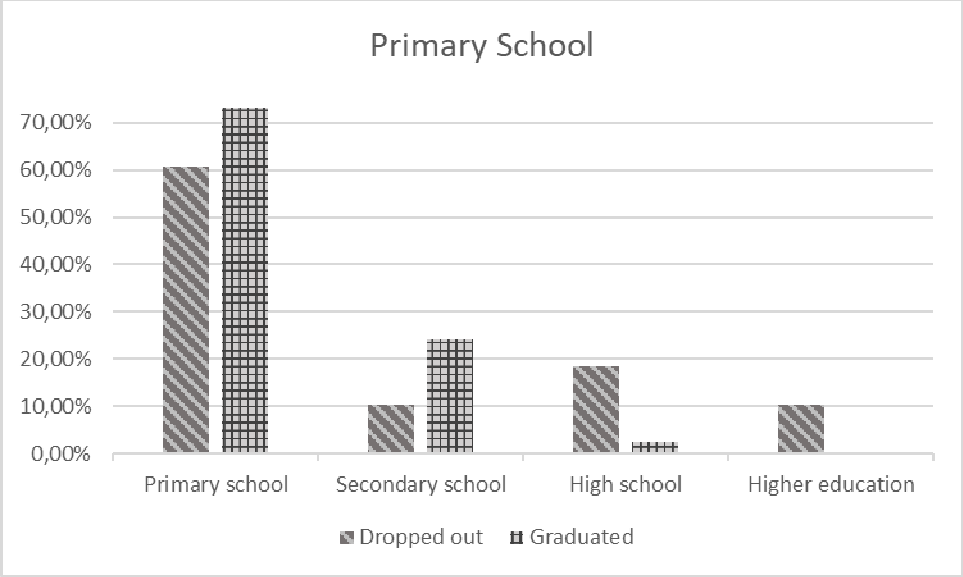
$$logincome_i = \beta_0 + \beta_1 x_1 + \ldots + \beta_k x_k + e_i$$

The variables used in the model can be seen in the following table:

No	Variables	Type	Definition
1	logincome	continuous	Respondent's monthly income in log form
			Independent Variables
2	urban	binary	Live in urban area, (1=yes, 0=otherwise)
3	age	continuous	Age of respondent in 2014
4	agesqr	continuous	Age of respondent squared
5	male	binary	Male, (1=yes, 0=otherwise)
6	married	binary	Married, (1=yes, 0=otherwise)
7	noprimary	binary	Ever in primary school but not graduate, (1=yes, 0=otherwise)
8	primary	binary	Primary school graduated, (1=yes, 0=otherwise)
9	junior_school	binary	Junior high school graduated, (1=yes, 0=otherwise)
10	high_school	binary	Senior high school graduated, (1=yes, 0=otherwise)
11	diploma	binary	Diploma graduated, (1=yes, 0=otherwise)
12	university	binary	University graduated, (1=yes, 0=otherwise)
13	other_educ	binary	Other education, (1=yes, 0=otherwise)
14	government	binary	Work in government sector, (1=yes, 0=otherwise)
15	hour_month	continuous	Work hour per month
16	training	binary	Received training from workplace, (1=yes, 0=otherwise)

Tabel 1 Variables

Results



Graph 1 People dropped out and graduated from primary school in IFLS 1997

In descriptive method, graph 1 provides the percentage of highest education attended by people who dropped out and graduated from primary school in 1997. There are 5067 people included to productive age recorded dropped out from primary school in IFLS 1997. The result is people who dropped out from primary school in year 1997 mostly ended up their education on primary school in 2014 with 60.79 percentage point. Followed by secondary school for 10.42, 18.45 for high school, and 10.34 percentage point for higher education (high school above). It indicates people with dropped out education level have a low motivation to increase their education in 2014 because of neither have an access to higher education nor do not know the benefit from it.

Graph 1 also shows people who graduated from primary school in 1997. From 704 observations, mostly 73.30 percentage point not continue their education to the higher level. Followed by 24.15 percentage point people who continue their education and ended on secondary school, 2.41 high school, and only 0.41 percentage point continue to higher education. This graph proves that in 2014, people in productive age are dominated by primary school as their education background.

From the results above, we can conclude many people in productive age only have a low education background. Therefore, it creates a low quality of skills and abilities for workforce and makes them cannot compete well with the others in labor market. Moreover, those condition will promote low income and welfare as a whole.

VARIABLES	logincome
Urban	0.248***
	(0.0247)
age	0.0683***
	(0.00637)
agesqr	-0.000700***
	(8.02e-05)
male	0.353***
	(0.0228)
married	0.120***
	(0.0297)
noprimary	0.571***
	(0.112)
primary	0.721***
	(0.110)
junior_school	0.978***
	(0.111)
high_school	1.281***
	(0.109)
diploma	1.647***
	(0.118)
university	1.690***
	(0.112)
other_educ	0.790***
	(0.195)
government	0.239***
	(0.0336)
hourmonth2	0.00595***
	(0.000130)
training	0.387***
	(0.0256)
Constant	9.741***
	(0.145)
Observations	8,789
R-squared	0.394

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

For the estimation result using OLS method, we found that education have a positive and very significant result toward income, in line with previous studies. The result also shows that the higher the education level, the higher the income.

The other socioeconomic factors shows significant impact. Workers who lives in urban area are tend to have a higher wage than the one who lives in rural area. Age and sex are also shown to have a significant impact.

Estimation shows that government sector tend to have a higher wage than the private sector. Hours worked per month also shows a positive outcome; the more or longer people work, more income they obtain.

Now we take a look at the main variable of interest. Training is a proxy variable which represent the lifelong learning variable. The result shows a positive result, which means that a worker who received training from their workplace are tend to have a higher income than the one who doesn't. The result itself is significant in 0.01 level. This result confirm previous studies that lifelong learning can increase income and wage significantly.

Next, we also try to compare the effects of lifelong learning to workers in certain education levels. We try to see the difference of income which the trained workers obtained compared to other workers with the same education level who don't receive training.

VARIABLES	(1) no education	(2) not graduating primary school	(3) primary school	(4) junior high school	(5) senior high school	(6) diploma	(7) university	(8) other education
urban	0.287	0.0994	0.0522	0.0563	0.320***	0.464***	0.548***	0.331
	(0.227)	(0.0883)	(0.0588)	(0.0587)	(0.0412)	(0.103)	(0.0629)	(0.324)
age	0.0454	0.0617***	0.0562***	0.0753***	0.0609***	0.00973	0.141***	0.268**
	(0.0458)	(0.0215)	(0.0141)	(0.0168)	(0.0126)	(0.0290)	(0.0249)	(0.0985)
agesqr	-0.000486	-0.000763***	-0.000651***	-0.000877***	-0.000650***	0.000201	-0.00118***	-0.00335**
	(0.000435)	(0.000248)	(0.000175)	(0.000227)	(0.000169)	(0.000351)	(0.000309)	(0.00122)
male	0.235	0.417***	0.515***	0.371***	0.315***	0.251***	0.227***	0.629**
	(0.251)	(0.0930)	(0.0587)	(0.0570)	(0.0366)	(0.0882)	(0.0552)	(0.292)
married	0.125	0.226*	0.213***	0.212***	0.109**	0.0480	-0.128	-0.349
	(0.273)	(0.116)	(0.0760)	(0.0759)	(0.0465)	(0.118)	(0.0791)	(0.436)
government	-1.281**	0.723**	0.0997	0.0275	0.204***	0.221**	0.182***	0.986*
	(0.642)	(0.285)	(0.167)	(0.142)	(0.0518)	(0.0985)	(0.0590)	(0.512)
hourmonth2	0.00707***	0.00570***	0.00590***	0.00549***	0.00632***	0.00642***	0.00525***	0.00346***
	(0.00125)	(0.000454)	(0.000290)	(0.000293)	(0.000208)	(0.000679)	(0.000427)	(0.00108)
training	-0.583	0.357*	0.242***	0.207***	0.366***	0.414***	0.565***	0.196
	(0.663)	(0.189)	(0.0937)	(0.0693)	(0.0350)	(0.0897)	(0.0608)	(0.392)
Constant	10.26***	10.72***	10.81***	10.86***	11.13***	12.11***	9.507***	7.737***
	(1.172)	(0.429)	(0.262)	(0.279)	(0.201)	(0.511)	(0.444)	(1.623)
Observations	97	592	1,299	1,336	3,463	492	1,472	38
R-squared	0.384	0.301	0.313	0.284	0.328	0.317	0.395	0.640

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

From the second estimation, workers who received training—even compared with other workers who have a similar education level, are having larger proportion of monthly income. The result are significant in almost all education level except on people with no education at all. Effects of training to people without education degree are oddly found to be negative but with insignificant result. From both estimations, it can be concluded that lifelong learning can increase productivity—which represented by monthly income.

Conclusion and Limitations

Education has a significant impact to improve labor productivity. Indonesia has low labor productivity represents with small number of workers mean years of schooling, and workers which is dominated by primary school graduated. Moreover there is a correlation between productivity and worker income. Thus, low productivity of labor in Indonesia generates a low income. This research find that there is a difference of income between each education level. In other words, worker in Indonesia has a low income dominantly. To anticipate it, lifelong learning is a concept where every individual can get education throughout their lives. Our result proved that lifelong learning which is explained by worker's training has a significant impact to increase worker's income. Worker can improve their skill by training, which means they also improve their education through non formal education.

Based on our result, Indonesia needs to improve their worker education and lifelong learning become a suitable concept. We suggest Indonesia government to reform their employment regulation about the standard system of national labor competence in order to make worker's training as a compulsory for Indonesia workers. The aim of the regulation is to improve worker productivity and get higher income in order to have better welfare.

The further research of effects of lifelong learning are still needed in future studies. This study has limit its assumption; (1) working people only, and (2) workers in formal sector only. For future studies, authors recommend to seek another dependent variable other than income, in order to predict lifelong learning impact for the unemployed people. This study only emphasize on workers in formal sector, so another research to find the effects of informal workers are also needed. Authors also recommend to use a panel data for future studies.

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ARE THERE CAUSALITY BETWEEN HUMAN DEVELOPMENT INDEX, HIGH TECHNOLOGY, AND ECONOMIC GROWTH?: STUDY CASE IN EAST ASIA AND SOUTH EAST ASIA, 1980-2013

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ABSTRACT

This paper focus to analyze and detected relationship between human development index, high-technology, and economic growth (represented by annual growth of GDP per capita) in East Asia and South East Asia (in this research using some countries from East Asia and South East Asia). For estimating that model using several variables such as Human Development Index (HDI) data from UNDP, high-technology (HT) from World Bank, and annual growth of GDP per capita (EG) from World Bank with periods of observation 1980 until 2013. This paper also estimated by using Panel data and Engel-Granger causality model for testing this case.

The results show there are bidirectional causality runs HDI to EG and EG to HDI, both in East Asia and South East Asia. The other hand, bidirectional causality is found among HT and EG in South East Asia. The last result causality is found bidirectional causality between HDI and HT in South East Asia, but unidirectional causality of HDI to the HT in East Asia. This research can conclude that role of human capital or HDI has important role to the economic growth and conversely on both in East Asia and South East Asia. Beside that, high technology gave important role to the economic growth in South East Asia, but not in East Asia.

The results indicated human capital or HDI and high technology have influence to the economic growth in South East Asia. Conversely, economic growth could driven better human capital and innovation of technology. Same with South East Asia human capital or HDI could pushed economic growth and conversely in East Asia. Beside that, only human capital could driven high technology in East Asia. From this research also has potential contribution for policy maker such as for making growth and sustainability of economy should be based on their own human capital or HDI and inovation of technology. Meanwhile, the main role of economic growth would made improvement of human capital and innovation of technology, so in the future could reached good institutions and sustainable economic endowment for all countries in South East Asia and East Asia especially for developing countries.

Keyword: Human Development Index, Panel Data, Engel-Granger Causality, annual growth of GDP per capita, high technology, South East Asia, East Asia, unidirectional causality, sustainability, endowment, bidirectional causality

PART I
BACKGROUND

In a quarter of the last decade on 20th century economic growth of countries in South East Asia and East Asia is very fast. Meanwhile, on the way countries in South East Asia (sometimes called ASEAN countries) and East Asia got crisis, but they could woke up and also they were done reformation to the economy, law, and politics.

This reformation used to build efficiency and effectiveness in all sector. In South East Asia had various political and government system. Because of that South East Asia made association to unite the diversity among countries. This association called ASEAN (Association South East Asia Nations). Principal and ethics in ASEAN ways conclude sovereignty and no intervention between ASEAN members. This principal and ethics has been code of

conduct international partnership in South East Asia. ASEAN has become transformation to be one of regional organization successfully.

South East Asia has a huge potential economic growth. In this paper using some countries from South East Asia likes Malaysia, Indonesia, Philippine, Singapore, Thailand, and Brunei Darussalam. Based on table 1.1 and 1.2 below showed at 2013 South East Asia countries had various annual growths of GDP per capita and human development index (HDI). The highest annual growth of GDP per capita is Philippine by 5%, but lower HDI by 0.66. Meanwhile, Singapore had highest HDI by 0.9, but Brunei Darussalam had lowest annual growth of GDP per capita by -3%.

Table 1.1 Annual Growth of GDP per Capita (%) in ASEAN-6, 2013

Countries	Annual Growth of GDP per Capita (%)
Brunei Darussalam	-3%
Malaysia	3%
Singapore	2%
Thailand	1%
Philippine	5%
Indonesia	4,5%

Table 1.2 Human Development Index (HDI) ASEAN-6, 2013

Countries South East Asia	HDI (*human development index*) period 2013	HDI World Rank	HDI Rank of South East Asia
Brunei Darussalam	0.852	30	2
Malaysia	0.773	62	3
Singapore	0.901	9	1
Thailand	0.722	89	4
Philippine	0.660	117	6
Indonesia	0.684	108	5

Differently with South East Asia countries, East Asia countries popular with higher economic growth. East Asia countries in this paper include Japan, China, and Hong Kong. They have highly productivity and highly international competitiveness. This is caused by their government institution has important and big role in all sector, such as government policy for manage financial system, government policy for governance in industry, and soon (Chang, 1997 and Chang, 1998). East Asia miracle successfully because they could adopted Anglo-Saxon system into their institutions, but mixed with their local culture (Chang, 1998).

The existing East Asia countries cause this area to be strategies for international relationship between them and had same principles. After World War 2 East Asia countries more powerful and had higher economic growth, where it growing so rapidly until now. Higher economic growth in East Asia also caused by open economy in China, Japan, and South Korea and done specialitation on their technology. For unity East Asia economy, they made association that called APEC (Asia Pacific Economy Cooperation) at 1995.

The role of China economy has important contribution for world economy, because China grown to be one of powerful economy in the world currently. Based on Table 1.3 and Table 1.4 shown China has highest annual Growth of GDP per capita (7%), but lower human development index (0.7). Different with China Hong Kong and Japan had same annual growth of GDP by 2%, but highest human development index by 0.891 and 0.890. If compare between East Asian and South East Asia, East Asia countries more better than South East Asia countries from their Human Development Index

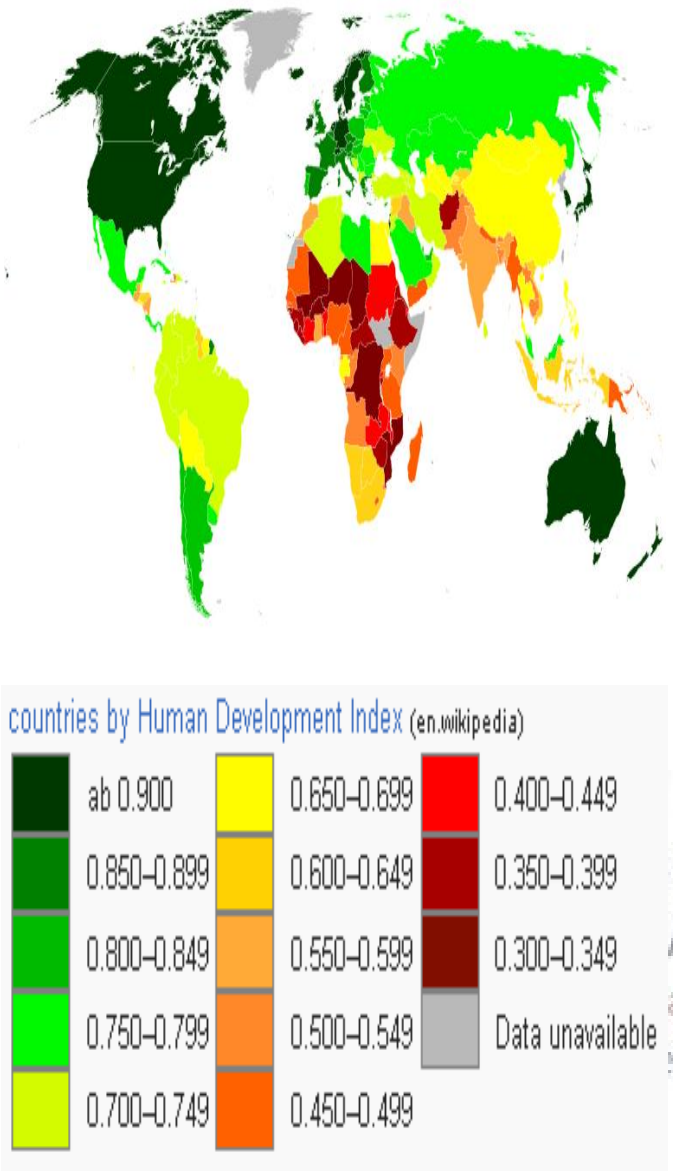
Table 1.3 Annual Growth of GDP per Capita (%) in East Asia, 2013

Countries	Annual Growth of GDP per Capita (%)
Japan	2%
China	7%
Hong Kong	2%

Table 1.4 Human Development Index (HDI) East Asia, 2013

Countries	HDI (*human development index*) period 2013	HDI World Rank	South East Asia rank
Japan	0.890	30	17
China	0.719	62	100
Hong Kong	0.891	9	15

FIGURE 1



Source: //http.wikipedia.org

Based on Figure 1 above green dark area had very high Human Development Index. Meanwhile, if the color area more red can explained that countries are had lower Human development index.

Main focus in this paper to analyze and detecting whether had occurred causality among human development index, high technology, and economic growth in East Asia and South East Asia. For measuring this causality by using Engel-Granger causality test.

PART II

LITERATURE STUDY

2.1 Literature Study

Driving factors economic growth seen from GDP per capita and investments, the investment on these decade's not only physical investment, but also investment in human capital. Physical investment is an all expenses that can create new capital in the future (Mankiw, 2000:24). Human capital investment is a learning values and experience that exist within each labor such as increased productivity, income, and also economic growth (Schultz, 1961).

Essentially human development on the human development index report (in BPS-Statistic Indonesia) is a process to reproduce the options possessed by humans. Among the many options, the most important choice are to live long, healthy, have a knowledge, and have knowledge of the source access needed in order to live decently. Humans are the real wealth of a national asset's as well as an important asset of development and also the subject of development itself. According Human development report (HDR) in 1990 clearly emphasizes that human development at the global level national and local that human-centered puts human beings as the ultimate goal of development rather than as a development tool.

Ranis (2004) gave his opinion that human development has an important effect on economic growth. Human development can be seen as an aspect that may affect the maximization of profit. Thus, human development is always related to human capital, while human capital can affect the economic growth of the region. From his paper can concluded human development would have an effect to the economic growth. The main elements of the economic growth that enables people (agents) to develop a comparative advantage, to increase the capacity and available function work to made people most productive.

According to the Birdsall (1993) by using data from Malaysia, Ghana and Peru In the field of agriculture, shows that each year, when there was additional education of farmers then associated with that output will increase by 2,5 percent per year. Duflo (2002) by using data Indonesia expects wage he said there is increasing 1,5 to 2,77 percent on wage for each additional year of school and it gave an impact on productivity and income. Education also affects the level of innovation and technological improvements. Foster and Rosenzweig (1995) argued that stated could increase education related to the faster technology adoption of Green Revolution in India. Similarly, more higher education level's shown increase business innovation in Sri Lanka (Ranis, 2004).

According to Ramirez et al. (1997) who use data across the State he said that the public spending for

health and education, especially for women, are very important and can determine the strength of the relationship among economic growth and human development. The level of investment and the distribution of income have a significant link that determines the strength of the relationship of development to economic growth.

Mincer (1981) explain that the personal human capital accumulation generate income individuals and economic growth. Human capital can be seen as a coordination factor of production with the physical capital. This means that contribution to the greater growth is the volume of physical capital and vice versa. While the aggregate production function framework also showed that the growth of human capital is a condition and a consequence of economic growth. Firmly Mincer said that human capital involves not only the embodiment of the transition and knowledge that available, but also has implications for the creation of new knowledge that is a source of innovation and technical change that encourage all factors of production. Last function of human capital can generate economic growth worldwide.

From several studies above, by using indicators human development index or HDI such as; level of education, health, ect were shown portrait of how economic growth can be influenced when there is an improvement in HDI indicators (education, health, and income per capita). This means, when the improvements made by the function of the distribution of income to the public with purposes in order to improve education, health and to boost per capita income then, will indirectly affect the increase in output and may increase economic growth.

Increasing level of health, level of education from public spending (government expenditure) undertaken are the real form of the government's role in effort to establish a productive workforce. Utilization of labor productivity aims to generate optimal output. In this case was already seen from productive labors as preparing and necessary inputs to produce the output. And then from that case is called the production function. Production function is the relationship between the amount of the maximum output that can be produced with the inputs needed to produce the output, with a certain level of knowledge (Samuelson, 1992: 128). The validity of this production function explanation views "how the inputs used and produce maximum output". By using continuous input can increase revenue for offenders who carry out such activities. When revenues continue to rise and followed by high purchasing power, so indirectly economic growth will occur.

HDI (human development index) is used to increase labor productivity and increase the economic growth. HDI can be said had a positive correlation with GDP per capita (one of variable to measure economic growth). Because this study used data cross-country and cross-area, the question that arise is how the relationship and causality of HDI, high technology, and economic growth in the East Asia and South east Asia countries would happen. In this study will use data across countries there are Japan, China, and Hong Kong as representing East Asia, and also Brunei Darussalam, Singapore, Malaysia, the Philippines, Thailand, and Indonesia as representing South Eeast Asia.

PART III

DATA AND METHODOLOGY

3.1 Data

In this paper using secondary data and panel data (mixing between time series and cross section data). Time series data there are Human Development Index from UNDP (United Nation Development Program), GDP per capita growth (annual %) from World Bank, and High-technology exports (% of manufactured exports) from World Bank, with observation periods from 1980 until 2013. Cross section data there are East Asia countries such as Japan, China, and Hong Kong and South East Asia countries such as Indonesia, Philippine, Singapore, Malaysia, Thailand, and Brunei Darussalam.

3.2 Methodology

This paper using model that comes from Abubakar et al. (2015). They are using panel data for estimate causality between Financial Development, Human Capital Accumulation, and Economic Growth, but in this paper using causality between Human Development Index, High Technology, and GDP per capita growth from East Asia and South East Asia countries during 1980 until 2013. In this paper using high technology for another proxy and will used for build equation. Thereby, the equation in this paper following new growth model based on Abubakar et al. (2015) and there are two formulation as follows:

$$EG\_SouthEastAsia_{it} = \beta_0 + \beta_1 \Delta HDI\_SouthEastAsia_{it} + \beta_2 \Delta HT\_SouthEastAsia_{it} + \varepsilon_{it} \quad \text{.....1)}$$

$$EG\_EastAsia_{it} = \sigma_0 + \sigma_1 \Delta HDI\_EastAsia_{it} + \sigma_2 \Delta HT\_EastAsia_{it} + \varepsilon_{it} \quad \text{.....2)}$$

Where:

β_0 *and* σ_0: intercept

$\beta_1, \beta_2, \sigma_1, \sigma_2$: coefficient of human development index of South East Asia, high technology of South East Asia, human development index of East Asia, and high technology of East Asia

ε_{it} *and* ε_{it}: Error term

EG_{it}: GDP per capita growth (annual %) i and time t

ΔHDI_{it}: proportion change of Human Development Index country i time t

ΔHT_{it}: proportion change of High Technology country i time t

Formulation above then tested with some test. This paper use several test includes stationary test, co-integration test, and causality test.

3.2.1 Stationary Test for Panel Data

This test used for analyze whether the data was already stationer or not in level or first order derivation or second derivation and soon. If data stationer in level we do not derivation data to the first or n order derivation. However, if data not stationer in level we must derivation to the first derivation or until data stationer. We using ADF (Augmented Dickey Fuller) test for detecting the data were stationer or not. Null Hypothesis (H0) of stationary test is exist unit root (not stationer) and alternative hypothesis (Ha) is none unit root (or stationer).

For testing this we can use probability of ADF-Statistic compared with level of significance 5%. If probability of ADF-Statistic < level of significance 5%, we can reject H0 and accept Ha and vice versa.

3.2.2 Johansen Co-integration Test for Panel Data

Second step in this paper is co-integration test. This test used for detecting whether the data had already co-integrated or not, and for proved the data had long term relationship or not. In this paper using Johansen test for co-integration because this method does not separate independent and dependent variables. Null Hypothesis (H0) is no co-integration (has no long term relationship) and alternative hypothesis co-integrated (has long term relationship). If H0 rejected and Ha accepted we can see from value of Max-Eigen Statistic and Trace Statistic more than critical value of Max Eigen and Trace and vice versa.

3.2.3 Engel-Granger Causality

The last test in this paper using Engel Granger causality test for Panel Data. This test for analyze whether between human development index, high technology, and growth of GDP per capita (annual %) had relationship or not. Null Hypothesis (H0) is no causality between variables and alternative hypothesis (Ha) exist causality between variables. The first step of causality test are modeling equation 1) and 2) into VAR model for determine optimum lag. If already got optimum lag, the next step is estimating variables with using Engel Granger causality test. For knowing that variables had causality or not with compared probability of F-Statistic with level of significance 5%. If probability of F-Statistic less than level of significance, so H0 rejected and Ha accepted. Can concluded between variables have causality and vice versa.

PART IV
RESULTESTIMATION AND ANALYSIS ESTIMATION

4.1 Stationary Test

Result estimation of stationary variable for panel unit root test shown by Table 4.1. In this table known that all of variables stationer in first difference I (1) except economic growth in East Asia.

TABLE 4.1
RESULT OF PANEL UNIT ROOT TEST

VARIABLE	Level		First Difference	
	ADF - Fisher Chi-square	ADF - Choi Z-stat	ADF - Fisher Chi-square	ADF - Choi Z-stat
GDP per capita growth East Asia	16.057*	-2.352*	-	-
	(0.014)	(0.009)		
Human Development Index East Asia	0.070	4.206	32.432*	-3.928*
	(1.000)	(1.000)	(0.000)	(0.000)
High Technology East Asia	4.587	0.115	29.727	-4.192
	(0.598)	(0.546)	(0.000)	(0.000)
GDP per capita growth South East Asia	-41.6797*	-4.57097*	-	-
	(0.000)	(0.000)		
Human Development Index South East Asia	0.0059	8.0676	56.689*	-5.807*
	(1.0000)	(1.0000)	(0.000)	(0.000)
High Technology South East Asia	3.107	1.825	66.765*	-6.531*
	(0.995)	(0.966)	(0.000)	(0.000)

***Significance at level 5%**

Table 4.1 above shown average all data was not stationer in level but in first order derivation. This evidence showed by probability of ADF-Fisher Chi Square and ADF Choi Z-Statistic less than 5%. So H0 rejected and Ha accepted or variable or data was stationer. But for variable GDP per capita growth of East Asia and South East Asia was stationer in level (probability of ADF-Fisher Chi Square and ADF Choi Z-Statistic less than 5%).

4.2 Co-Integration Test

Before testing co-integration must determine optimum lag criterion by using VAR estimation. In Table 4.2 and Table 4.3 shown result's optimum lag.

TABLE 4.2
LAG OPTIMUM WITH ENDOGENOUS VARIABLES FROM SOUTH EAST ASIA: EGSEA DHTSEA DHDISEA

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-179.016	NA	0.004	2.889	2.957	2.917
1	-158.352	40.016	0.003	2.704	2.974	2.814
2	-99.4626	111.236	0.001	1.912	2.385	2.104
3	-64.8299	63.7682	0.001	1.505	2.181	1.779
4	-21.8235	**77.1385***	**0.001***	**0.965***	**1.843***	**1.322***

optimum lag

TABLE 4.3
OPTIMUM LAG WITH ENDOGENOUS VARIABLES: GDPGRKAP_EASTASIA DHDIEASTASIA DHTWASTASIA

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-114.819	NA	0.010	3.927	4.032	3.968
1	-82.921	59.543	0.005	3.164	3.583*	3.328
2	-67.640	**26.997***	**0.004***	**2.955***	**3.688**	**3.241***

optimum lag

In Table 4.2 showed optimum lag from information criterion SC, FPE, LR, AIC, and HQ for endogenous variables in South East Asia are four. Meanwhile, Table 4.3 showed optimum lag from information criterion SC, FPE, LR, AIC, and HQ for endogenous variables in East Asia are two.

Second step is co-integration test with using Johansen test. The results showed in Table 4.4 below.

TABLE 4.4
RESULTS OF JOHANSEN FISHER PANEL COINTEGRATION TEST

EAST ASIA			
DHDIEASTASIA DHTWASTASIA GDPGRKAP_EASTASIA			
H0	Ha	Fisher Stat.*(from trace test)	Fisher Stat.*(from max-eigen test)
r = 0	r = 1	22.270*	22.620*
		(0.001)	0.001
SOUTH EAST ASIA			
DHDISEA DHTSEA EGSEA			
H0	Ha	Fisher Stat.*(from trace test)	Fisher Stat.*(from max-eigen test)
r = 0	r = 1	1580.000*	444.700*
		(0.000)	(0.000)
r > 1	r = 2	111.200*	131.900*
		(0.000)	(0.000)

Significance at level 5%

For East Asia variables co-integrated in rank = 1. It means variables HDI, EG, and HT in East Asia have 1 long term relationship (H0: no co-integration rejected and Ha: co-integrated in rank = 1 accepted). Meanwhile, for South East Asia variables co-integrated in rank = 2. It means variables HDI, EG, and HT in South East Asia had two long term relationship (H0: no co-integration rejected and Ha: co-integrated in rank = 2 accepted)

4.3 Engel-Granger Causality

Table 4.5 below contained causality test results from proportion change of Human Development Index (HDI), GDP per capita growth (annual % EG), and proportion change of High-Technology (HT). It revealed that bidirectional causality runs from proportion change of HDI to EG and EG to proportion change of HDI both in East Asia and South East Asia. On other hand, bidirectional causality is found among proportion change of HT and EG in South East Asia. The last result causality is found bidirectional between proportion change of HDI and proportion change of HT in South East Asia but unidirectional HDI to the HT in East Asia.

TABLE4.5
RESULTS OF PAIRWISE GRANGER CAUSALITY TESTS

Pairwise Granger Causality Tests between EG, HT, and HDI in South East Asia		
H0:	**F-Statistic**	**Prob.**
DHTSEA does not Granger Cause DHDISEA	7.999*	(0.000)
DHDISEA does not Granger Cause DHTSEA	34.922*	(0.000)
EGSEA does not Granger Cause DHDISEA	29.518*	(0.000)
DHDISEA does not Granger Cause EGSEA	3.462*	(0.003)
EGSEA does not Granger Cause DHTSEA	13.771*	(0.000)
DHTSEA does not Granger Cause EGSEA	13.360*	(0.000)
Pairwise Granger Causality Tests between HT, HDI, and EG in East Asia		
H0:	**F-Statistic**	**Prob.**
DHTEASTASIA does not Granger Cause DHDIEASTASIA	0.545	0.583
DHDIEASTASIA does not Granger Cause DHTEASTASIA	10.634*	(0.000)
GDPGRKAP_EASTASIA does not Granger Cause DHDIEASTASIA	7.836*	(0.001)
DHDIEASTASIA does not Granger Cause GDPGRKAP_EASTASIA	2.651**	(0.076)
GDPGRKAP_EASTASIA does not Granger Cause DHTEASTASIA	1.102	0.340
DHTEASTASIA does not Granger Cause GDPGRKAP_EASTASIA	1.101	0.340

*,** **Significance at level 5% and 10%**

PART V
CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

Some conclusions from the results above, as follows:

1. On average human development index and high technology both East Asia and South East Asia stationer at first difference.
2. GDP per capita stationer at level.
3. All variables in South East Asia co-integrated in rank 2. It means variables in South East Asia had two long term relationship.
4. All variables in East Asia co-integrated in rank 1. It means variables in East Asia had one long term relationship.
5. Based on Engel Granger causality test for East Asia there are bidirectional causality runs from HDI to EG and economic growth to HDI both in East Asia and South East Asia. Besides that, bidirectional causality is found among HT and EG South East Asia.
6. The last result causality is found bidirectional between proportion change HDI and HT both in South East Asia but unidirectional HDI to the HT in East Asia.
7. Based on this result we can conclude between proportion of change human development index and GDP per capita growth (in this paper reflection economic growth) both in East Asia and South East Asia have important role in East Asia and correlation and causality.
8. No warranty if a country had high income per capita followed by high human development index (higher income per capita but lower human development index).
9. Human development index and high technology detected positive impact to the economic growth.
10. In the future human development index have important role for economic growth in all sectors.

5.2 RECOMMENDATIONS

From that result above have some recommendation for decision maker, as follows:

1. Government institutions has important role to increase human development index and high technology to support economic growth.
2. Human development index can be increased with raising education, healthy, and income per capita that can be conducted and encouraged by government.
3. Good policy can created if government institutions had good performance.
4. High technology can produced if government has high quality education and health.

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What Makes an Entrepreneur? Evidence from Indonesia

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Abstract

Entrepreneurship are proven to contribute positively on regional growth according to some studies. It gives jobs, technology spill-over, and even may increase well-being. Considering the contribution of entrepreneurship to economic growth—regional or national—and great benefits for the entrepreneur themselves, still, not everyone are willing or interested of becoming one. It emanates a question, what makes people want to become an entrepreneur in Indonesia? This study found that women tend to not to be self-employed while the probability rises with age and asset. People who could tolerate risk are having higher chance while the one who have higher education are tend to hurt the chance. Having a father or a mother who is entrepreneur themselves are significantly improve the probability for becoming one.

Introduction

Entrepreneurship are generally considered to bringing positive effects—new job opportunities, labour force absorption, technological spill-over, innovations. Innovation itself is commonly known as one of the source of economic growth. Innovation could lead to more efficiency in all aspect, making it appealing to encourage through entrepreneurship encouragement.

Studies have confirm that entrepreneurship enhances regional growth (Audretsch & Keilbach, 2004). On the other hand, the effect of entrepreneurship to unemployment rate are still ambiguous (Blanchflower, 2000; Thurik et al, 2007) where it has positive effect on some country and negative effect on some others. It also have contribution in wealth concentration (Quadrini, 1999).

Now, let's talk about the smallest aspect of entrepreneurship, the person behind it—the entrepreneur itself. When we talk about entrepreneur, by definition, it has various meanings. Entrepreneur is someone who created business, someone who create innovation and willing to take risks to gain profit, someone who exercises initiative by taking venture to take benefit, et cetera. Economist Joseph Schumpeter says that entrepreneur is a person who is able and willing to cultivate new ideas and

invention, and then convert it into a new innovation. Until today, there's still no official definition of entrepreneur. Regardless of the real meaning, their existence are really beneficial.

The topics of entrepreneurship are often discussed in these days. Its existence are known to bring a lot of benefits to all aspect in business to everyday life. For the entrepreneur themselves, it is known to give various benefit for them. Some of it are the utility of becoming our own boss, expected higher wage, and others. Considering the benefit, still, not everyone are able or wanted to be an entrepreneur themselves. This rise a question: what makes an entrepreneur? Are there some certain characteristic that act as determinant of becoming one?

Literature Review

Entrepreneur in its simplest kind is self-employed. Opportunity to become self-employed is largely determined by capital and financial aspect which that is the main constraint (Blanchflower and Oswald, 1998; Praag and Ophem, 1995). It means that, people with greater asset or more access to capital are likely to switch to self-employment rather than employed. The expected wage between two sector—self-employed and other sector, are theoretically having effect. People will prefer the sector that has larger expected wage.

The probability of being a self-employment is lower for women compared to men while rises with age. Lower education are known to have positive effect toward being an entrepreneur, but highly educated are also have relatively high probability (Blanchflower, 2000; Rees and Shah, 1986).

Family background are also known to have a contribution. When the father or mother is self-employed, living with parents, and being a first or second generation immigrant are having a positive correlation on being a self-employed (Hout and Rosen, 1999).

Another social study argue that psychological factor also have an effect. A study by J. Ekelun et al (2005) using psychometric data of Finland found that the more people avoid risk, the less probability for them for becoming an entrepreneur. Douglas and Shepherd (2002) and Segal et al (2014) also confirm that tolerance for risk are positively significant affect the probability.

Data and Methodology

Data

For this study author utilize Indonesian Family Life Survey (IFLS) dataset, an on-going longitudinal survey takes place in Indonesia. The sample is representative of about 83% of the country population and contains over 30000 individuals living in 13 of 27 provinces. So far, IFLS has been conducted in five waves in general: IFLS1 (1993), IFLS2 (1997) and IFLS2+ (1998), IFLS3 (2000), IFLS4 (2007), and IFLS5 (2014).

The sample is consist around 17,000 individuals from various socioeconomic background. This paper is a cross-section study utilizing the IFLS 5 year 2014 data. The dependent variable is the individual's job—self-employed or otherwise, which allegedly affected by these independent variables—socioeconomic factors, asset, risk tolerance, parents job, and unemployment rate. To capture the risk tolerance, author establish an index—Absolute Risk Aversion, based from Arrow-Pratt index of Absolute Risk Aversion (ARA) (Permani, 2011) in Sanjaya (2013). Author also use household asset data from the previous dataset, IFLS 4. Because it is arguably that the asset condition when people "haven't" becoming self-employed are more impactful than the asset when they have already becoming one.

Variables	Types	Description
selfemployed$_i$	Dummy	…. is self-employed
	Independent Variables	
female$_i$	Dummy	…. is female
married$_i$	Dummy	…. is married
age$_i$	Continuous	Age in 2014
urban$_i$	Dummy	Live in urban area
islam$_i$	Dummy	…. is Muslim
lnhhasset$_i$	Continuous	Log of household asset in 2007
ARA$_i$	Continuous	Absolute Risk Aversion index
noelementary$_i$	Dummy	Had attended elementary school but did not graduate
elementary$_{ii}$	Dummy	Elementary school graduate
juniorschool$_i$	Dummy	Junior high school graduate
seniorschool$_i$	Dummy	Senior high school graduate
diploma$_i$	Dummy	Vocational graduate
university$_i$	Dummy	University/ graduate
f_selfemployed$_i$	Dummy	Father is self-employed
m_selfemployed$_i$	Dummy	Mother is self-employed
lnunem$_i$	Continuous	Log of open unemployment rate February 2014

Methodology

Probit regression is used to capture the latent factors that contribute on people's probability of becoming self-employed (1 = self-employed, 0 = otherwise). The main goal of this paper is to test whether previous empirical evidences are applicable in case of Indonesian. Also, author try to examine the role of socioeconomic factors on decision to becoming an entrepreneur. The hypothesis is that due to the cultural and social differences, some previous findings may not be applicable in case of Indonesian.

Result and Discussion

VARIABLES	(1)	(2)	(3)	(4)
female	-0.109***	-0.114***	-0.0181	-0.0178
	(0.00709)	(0.00718)	(0.0237)	(0.0237)
married	0.122***	0.127***	0.0696**	0.0691**
	(0.00765)	(0.00775)	(0.0338)	(0.0338)
age	0.00704***	0.00635***	0.00711***	0.00706***
	(0.000231)	(0.000268)	(0.00140)	(0.00141)
urban	-0.0955***	-0.0827***	0.0160	0.0176
	(0.00729)	(0.00750)	(0.0224)	(0.0227)
islam	-0.0298**	-0.0408***	-0.0465	-0.0393
	(0.0119)	(0.0121)	(0.0446)	(0.0506)
lnhhasset	0.00609***	0.0148***	0.00860	0.00852
	(0.00236)	(0.00251)	(0.00945)	(0.00945)
ARA	-0.000695*	-0.000930**	-0.00271**	-0.00271**
	(0.000412)	(0.000412)	(0.00138)	(0.00138)
noelementary		0.0205	-0.0380	-0.0384
		(0.0168)	(0.0909)	(0.0909)
elementary		0.0199	-0.0868	-0.0864
		(0.0168)	(0.0655)	(0.0662)
juniorschool		-0.0279	-0.103	-0.103
		(0.0174)	(0.0929)	(0.0933)
seniorschool		-0.0291*	-0.129	-0.129
		(0.0172)	(0.0899)	(0.0903)
diploma		-0.0832***	0.0292	0.0295
		(0.0245)	(0.161)	(0.162)
university		-0.174***	-0.0941***	-0.0946***
		(0.0144)	(0.0286)	(0.0285)
f_selfemployed			0.169***	0.167***
			(0.0338)	(0.0343)
m_selfemployed			0.195***	0.195***
			(0.0308)	(0.0309)
lnunem				-0.0101
Observations	16,992	16,992	658	658

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In line with previous studies, women are tend to have a lower probability of being self-employed. Age does have a positive significant result, and consistent in all models. Living in urban area weakens the chance, but it has an ambiguous effect although it is not significant. ARA also confirm previous studies that the more people avoid risk, the lower the chance that they going to be an entrepreneur. Consistent with previous study, having a father or a mother who is self-employed themselves does have a positive significant effect for becoming an entrepreneur. Judging from the

result, it seems that macro-economic factor—unemployment rate does not play significant part as the determinant factor.

Education—at elementary and middle school, are having little significance to no significance at all. Those who graduate from vocational school are having negative effect to self-employed. But, this effect are still need more investigation due to inconsistent result at the last two model. The most significant and consistent education level is university graduate. Contrary to the previous finding, higher education is found to lower the probability, in this case, university graduate. It is arguably that higher education graduate are tend to avoid becoming self-employed, because they prefer jobs with more stable wage. The rest of education variables are showing no significant result.

Some variables that show promising result but lost its significance in the latest model are need more investigation. Although it could be argued because of the significant loss of the total observation in the third and fourth model.

Conclusion

- Women tend to have lower chance to become self-employed than men. The probability is rising along with age and when they are married. Being a Muslim hurt the probability compared to other religion, but not significant anymore in the latest model.
- Asset still hold a positive effect. But lose its significant effect when other variables are taken into account.
- Psychological factor, tolerance of risk, does have a positive significant effect. The lower the tolerance, the lower the probability
- Contrary to previous study, being a university graduate lower the chance of being self-employed. Arguably because people with high education are preferring jobs with stable wage. People with lower education are shown to have no effect.
- Having a father or a mother who is self-employed themselves are boost the probability of becoming one. As a side note, this study doesn't try to investigate the effect when both of them are entrepreneur.

Limitations

This paper mainly focused on whether people are becoming an entrepreneur or otherwise. Setting aside becoming one by choice or not, successful or not, and being an employer or own-account worker. This study also does not include the expected profit or utility gain between being a self-employment and other sector due to the absence of data. There's still lack of entrepreneurship related data on individual level in Indonesia which prevent author to investigate the other latent factors. A lot of missing data is also make it difficult to capture the full effect of independent variables.

Since this is a cross-section study, for future study author recommend to use longitudinal data to study the effect overtime. Author also hope that there will be more comprehensive data related to entrepreneurship—individual to enterprise level, in the future. With the complete data, there will be more comprehensive study covering the gap in this topic.

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