Determinant Factors of Regional Disparities using New Economic Geography Framework in Indonesia, Post Decentralization

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The policy of implementing decentralization of authority has changed the constellation of regions in Indonesia. By making use of a new economic geographic framework, determinants of inter-provincial disparities in Indonesia are examined, and the results show that a market of foreign access has a substantial effect on per capita GRP between provinces. Those empirical results support the prediction of a new theory of economic geography: access to market causes differences of GRP per capita and further increases inequalities between provinces. This study also finds that urbanization increases inter-provincial per capita GRP disparities.

Key words: *New Economic Geography, Disparities, Indonesia, Post Decentralization.*

Introduction

The policy of implementing decentralization of authority has changed the constellation of regions in the country. For example, in administrative matters, it was revealed that in the last 10 (ten) years, from 2008-2018, Indonesia has given birth to 205 new autonomous regions, bringing the total number of autonomous regions in Indonesia to 524, which in turn consist of 34 provinces, 398 districts, and 93 cities.

Moreover, changes in the system of government from a hierarchical nature (centralization) to a participatory one (decentralization) turned out to have an influence on the gap in community welfare between regions (Armstrong at al 2000). Therefore, the researchers

suspect this also applies in Indonesia, as the gap in welfare levels between provinces in Indonesia has changed.

There are two different perspectives in economics, each with differing arguments, on the effect of decentralization on the level of welfare between provinces. First, public choice in the Neoclassical school of economic theory argues that decentralization improves the efficiency of resource allocation through better fulfillment of the needs and preferences of the local population, which is due to better knowledge of the needs and preferences of local governments. This efficiency will be strengthened by the mobility of the population, who can choose to live in the area that best suits their preferences (Oates, 1972). In addition, decentralization provides incentives for regions to compete with other regions by attracting migrants, which increases the efficiency of each region's utilization of sub-resources and improves their welfare. However, according to the view of neoclassical economic theory, disparity in welfare levels between regions will decrease in the long term. This happens because capital will move from areas that provide high wage rates to areas that provide low wage rates, and labour will move in the opposite direction. This will persist until returns to capital and labour become balanced (Barro at al, 2004).

In contrast, the Keynesian theory argue that decentralization will reduce the capacity of the central government to use policies to mitigate fluctuations in production and labour. The greater decentralization will hamper the determination of macroeconomic goals, will increase diffusion in the use of policy instruments, and reduce the level of intergovernmental coordination (Canaleta et al, 2004). Strengthening this opinion, New Growth theory in the Keynesian flow, as well as New Economic Geography theory, predicts that even two regions that have the same resources can respond in different ways when exposed to economic shock. The implication is that certain regions will become more advanced and move forward, leaving other regions behind. This will eventually widen the welfare gap among these regions (Eckey at al, 2004).

This shows that decentralization can potentially lead to either an increase or decrease in the level of welfare disparities between regions. Unfortunately, after the implementation of decentralization in Indonesia, there were not many publications related to the theory of New Economic Geography.

Krugman (1991) introduced NEG, which adopted the new trade theory framework. Krugman stated that the NEG has attracted much attention from scientists of regional areas, maturing the body of economic (Ottaviano, 2006). New Economic Geography effects the home market and is used as a basic to explanation for agglomeration and geographical grouping.

Fujita (1999), stated that this model is no longer considered as a market given. Two geographical factors are the main sources of agglomeration (power of centripetal). They are the effect of market size (backward-forward linkages), and labour gathering. In Fujita et al (1999), they explain that companies take advantage of intermediate suppliers to save on transportation (relationship of backward) and take advantage of the market (forward relationship) to increase demand. This reduces trading costs and will ultimately minimise budgets and increase profits. By increasing profits, companies have the ability to pay higher wages to the workforce. The effect of market size drives agglomeration of geography then establishes differential salaries, next to income across the entire economy per capita.

Using the provincial data, this study will model based on the NEG theory to examine determinants of regional disparity in Indonesia, post decentralization.

Literature Review

There are many empirical studies that revealed the effects of market access on per capita income across economies under an NEG framework. Some pertinent examples include the following.

Davis et al (2003) utilized the OECD data set to investigate the existence of domestic market effects of special demand on production patterns. They developed a framework based on the Heckscher-Ohlin model and new economic geography. They found that the results support new economic geographic predictions about manufacturing market access in the broad OECD segment. Redding et al (2004) pioneered empirical results from market access by using the equation wage. They concluded that access to supply and market are not only significant but vital in explaining differentials of per capita income between various countries. Ottaviano et al (2006) used Finnish NUTS 4 regions in 1977-1990 (before recession) and 1994-2002 (after recession) data and found that market access and supply access are a joint measure of nominal market potential. They used a standardized growth regression, which was more than just a set of explanatory variables, and studied three groups to examine market potential effects, but also other variables such as growth income per-capita, population, and house price grown. They concluded the agglomeration of companies and workers impeded the convergence of productivity across regions.

Head et al (2006), utilizing 57 cross-border regions in the European Union, proposed that Potential Real Market (PRM) was an estimated sum of importers of fix securities through an equation of bilateral trade. They found that salary responds to human capital and that potential market influences regional wage variations.

In Indonesia, there are several empirical studies of market access under the NEG framework. They were done by Amiti (2007). Concentration of manufacturing interest in Indonesia, which is largely concentrated in Java, were used to investigate three important sources of agglomeration, as follows: the output-input relationship, workforce gathering, and externalities technology. They used 11,361 data points from companies spread across 210 areas. Through their research, they found that input-output had positive relationship with manufacturing salary in Indonesia. Even though companies impacted workforce relationships, the benefit is very localized. They found that workforce pool had a significant effect on wages, even though it was smaller than that of input-output.

The effects of trade liberalization and production geography in Indonesia were investigated by Sjoberg et al (2004). They tried to list all strongly associated sources of agglomeration of in Indonesia. Although they found that Jakarta metropolitan city was the strongest agglomeration in Java, they also outlined that the agglomeration in Jakarta metropolitan city was not only a question of market influence relations or access but was also about accessibility and infrastructure.

Method

Based on the theoretical mode of NEG, which was explained above, the empirical model of regional wage differentials is as follows:

$$w_{it} = f(MA_{it}, SA_{it}, U_{it}, O_{it}) \tag{1}$$

"w_{it}" is the wage in region "i" at time "t", "MA_{it}" is access market of region "i" at time "t", "SA_{it}" is access to supply area "i" at time "t", "U_{it}" is region of urbanization in "i" at time "t", and "O_{it}" is the other control variable at region "i" in time "t".

In this research, GRP is applied instead of wages. GRP is different from wages per worker because GRP is included in the company's income per capita. However, in the case of unavailable data, we had applied GRP as a proxy for wages per worker per capita. Similar action was conducted by Ottaviano et al, (2006) and Redding et al, (2004).

Ottaviano et al (2006), for the same reasons as in Finland at the regional level, found that separating the effects of access of market and supply across regions are difficult. For example, joint measures access of market and supply are used in the probability. Unlike Ottaviano, et al ('2006') who merely observed access to domestic market, this research also included access to foreign market. Foreign market access and variable access to domestic market are defined as follows.

Access of domestic market variable (DMA) is included as number of regions "j" divided GRP by distance ("D") among regions "i" and "j". Redding and Venables (2004) The measure of traditional geographical source is counted as potential market. Head et al (2004) stated that this is is called access of nominal market. In line with this theory, this variable was hypothesized to positively influence GRP per capita.

Access to foreign market (AFM) is a measure of each region's exports and imports. Therefore, it is defined as such. In this measure, the actual value of foreign trade is used as a substitute for potential data. According to Head et al (2006), the NEG model is related to productivity and trade. Their framework explained wages by potential market as an index of likelihood of company exports in a given region or nation. The relationship among income or growth per-capita by trades openness and which exports and imports contribute to GDP was investigated by Frankle et al (1999). We had to assume that each region of trade is between one importing partner and one exporter country because of the unavailability of disaggregated trade data between regions and their export and import countries. Access to foreign market was hypothesized to affect growth positively. Sjoberg et al, (2004) stated there is abundant labour gathering in rural areas in Indonesia; however, according to BPS (2014) and as seen in the Indonesian statistics yearbook, the agricultural sector has the highest share of labour compared to any other sector, at around 40 percent. Workers who leave the agricultural sector move to urban areas and enter the non-agricultural sector (urbanization). This process results in agglomeration. The sharing of the labour of non-agricultural workers to each region by total population is hypothesized to positively influence GRP (as an effect of urbanization).

Based on the explanation above, the estimation model is as follows:

$$y_{it} = c + \alpha_1 DMA_{it} + \alpha_2 FMA_{it} + \alpha_3 UP_{it} + \varepsilon_{it} \qquad (2)$$

The subscript "i" refers to a region and the subscript "t" describes time.
"y_{it}" : log of per capita GRP of region "i" at "t"
DMA_{it} : log access of domestic market f region "i" at "t"
FMA_{it} : log of foreign market access of region "i" at "t"
UP_{it} : urban population of region "i" at "t"
$\square_{it}$: error term

Equation (2) was formulated using panel data analysis. Compared to other methods, there are several benefits to using a panel data approach. Estimation analysis of panel data had the benefit of using time-series and analysis cross-section. Hsiao et al (2006) stated that repeated observations of cross-section over time are more suitable for studying the dynamics of changes such as exports, imports, and GDP. Analysis of panel data takes the heterogeneity of cross-sectional data into account by explicitly allowing for individual, specific effects

(Davidson et al, 2004). Meanwhile Baltagi, (2001) explains that the method of panel data had less variable collinearity, more variabilities, more freedom degrees, and better efficiency. Provincial-level data is used in this research. Panel data is based on an empirical analysis of years 2014-2018. Data is conducted from the Indonesian Central Statistics Agency database. Data availability during this study is the reason for using 2014-2018 years data. Gross Regional Product (GRP) from 34 provinces is used in this study. The distance variable is predicted as the shortest length between provincial capitals per capita, taken from www.jarakantarkota.com.

"Urban population" is defined as population of non-agricultural labourers, with a separate population total for each province. A proxy of the urbanization variable is used.

Results and Discussion

The first step that we take is to calculate the Coefficient of Variation to assess the trend of disparities between provinces in Indonesia. From figure 1, it can be seen that in 2014 and 2015, there was a decrease in disparity; from 2016 to 2018 there was an increase in disparity.

Figure 1. Coefficient of Variation across Indonesian Provinces 2014-2018
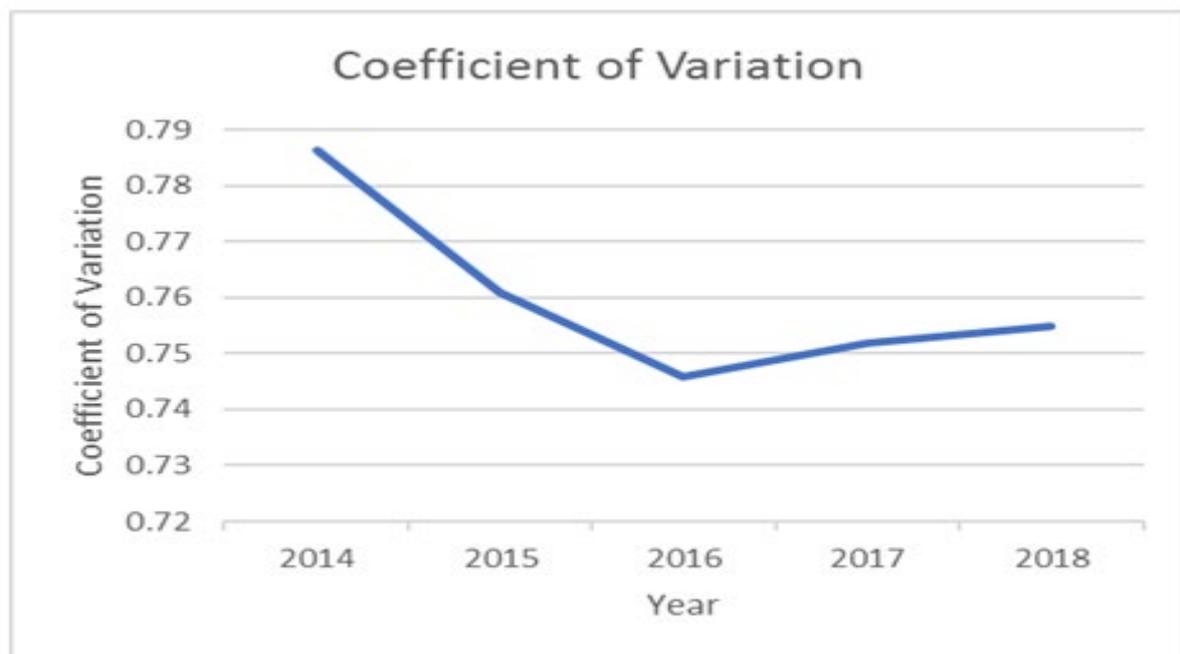
After describing the condition of disparities between provinces in Indonesia in the era of 2014-2018, an estimation was then made using the NEG model outlined above. The effects of access to domestic market and access to foreign market on GRP per capita were examined, as were the urbanization effects. Using panel analysis, 170 observations culminated in an

estimation equation. The Hausman test failed to reject fixed effects, as the estimation (a fixed effects) are considered. Access to domestic market is not significant, while access to foreign market is significant and positive, as shown in table 1, at a one percent level. Access of foreign market had a positive effect on GRP between provinces, and it is therefore suggested that provinces with better market access will have higher GRP per-capita, which will lead to disparity of inter-provincial GRP, as shown in the results of the NEG theory. The imports play an important role in aggregate production, Indrawati (2002).Due to the strong correlation between the import of raw materials and good capital, goods produced are for export over domestic markets. The limits the domestic market because manufacturing companies are expert orientated.

As stated in the basic principles of NEG theory, an increased size of market has the potential to increase labour costs. In regional studies, where mobility of labour makes sense, rather than in cross-border studies, high wages will immediately attract low-income workers. This shows that the movement of labour can cause wage increases due to increased demand, reduced costs, and increased profits.

Table 1: Panel Data Regression Results 2014-2018

Variable	Per capita GRP	
	Regression Results	
	Coefficient	**t-statistics**
Constant	-146.726	-4.727
Domestic Market Access	-8.211	-0.935
Foreign Market Access	21.533***	4.106
Urbanization	268.813***	5.283
# of Obs. (Balanced)	170	
R^2	0.395	
Estimation	Panel (Fixed Effects)	
Hausman test (Random vs Fixed effects)	0.732 (0.865)	

Note:

*, **, *** significant at "10%, 5%", and "1%" level, respectively

Summarizing the results, access to foreign market and urbanization plays a vital role in the gap of GDP per-capita between provinces in Indonesia.

Conclusion

By using a new economic geography framework, determinants of inter-provincial disparities in Indonesia are examined. The results show that access of foreign market has a substantial effect on GRP per capita between provinces. The empirical results supported predictions on the geography of new economic theory, that access market causes differences in GRP per-capita and increases inequalities between provinces. The research also found that urbanization increased GRP disparities between provinces.

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