The Influence of Fiscal Decentralization, Economic Growth, and Economic Openness on the Inter-Provincial Development Disparity on Java 2001-2017

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ABSTRACT

Economic growth is one indicator of the success of development in each country. High economic growth is often used as an indicator of increasing community welfare. Besides economic growth, income inequality is also an important issue for the economic development of each country. Theoretically and supported by many empirical studies it is proven that high economic growth ,widening the gap (gap) between people with relatively good economic levels (rich groups) with those who have low income (poor groups). This study aims to determine the effect of fiscal decentralization, economic growth and economic openness on development disparities. Panel data regression was used with the Random Effect Model as a data analysis technique. The results show that , Individually, economic growth has a negative and significant influence on regional disparity between provinces in Java during such a period. Fiscal decentralization has a positive and significant influence on the development disparity. However, the economic openness, either trade or financial, does not have any influence on the disparity. From these findings, the respective local administrations should formulate policies that further promote economic growth and increase regional revenue to narrow the regional disparity by maximizing their own potential resources.

Key words: Economic Growth, Openness, Fiscal Decentralization, Disparity

ABSTRAK

Pertumbuhan ekonomi merupakan salah satu indikator keberhasilan pembangunan di setiap negara. Pertumbuhan ekonomi yang tinggi sering digunakan sebagai indikator peningkatan kesejahteraan masyarakat. Selain pertumbuhan ekonomi, ketimpangan pendapatan juga merupakan masalah penting bagi perkembangan ekonomi masing-masing negara. Secara teoritis dan didukung oleh banyak studi empiris terbukti bahwa pertumbuhan ekonomi yang tinggi, memperlebar jurang (gap) antara orang-orang dengan tingkat ekonomi yang relatif baik (kelompok kaya) dengan mereka yang berpenghasilan rendah (kelompok miskin). Penelitian ini bertujuan untuk mengetahui pengaruh desentralisasi fiskal, pertumbuhan ekonomi dan keterbukaan ekonomi terhadap kesenjangan pembangunan. Regresi data panel digunakan dengan Random Effect Model sebagai teknik analisis data. Hasil penelitian menunjukkan bahwa, Secara individual, pertumbuhan ekonomi memiliki pengaruh negatif dan signifikan terhadap kesenjangan regional antar provinsi di Jawa selama periode tersebut. Desentralisasi fiskal memiliki pengaruh positif dan signifikan terhadap disparitas pembangunan. Namun, keterbukaan ekonomi, baik perdagangan atau keuangan, tidak memiliki pengaruh terhadap perbedaan tersebut. Dari temuan-temuan ini, masing-masing pemerintah daerah harus merumuskan kebijakan yang lebih lanjut mendorong

pertumbuhan ekonomi dan meningkatkan pendapatan daerah untuk mempersempit kesenjangan daerah dengan memaksimalkan sumber daya potensial mereka sendiri.

Kata Kunci *: Pertumbuhan Ekonomi , Keterbukaan, Desentralisasi Fiskal , Disparitas*

INTRODUCTION

The problem of inequality has not yet been resolved, although the Indonesian people have long been independent. The structure of the Indonesian economy is spatially still facing development gaps or economic disparities both between regions, between islands, and between disadvantaged and developed regions. In Indonesia, the island of Java still dominates the pulse of the Indonesian economy. Although the island of Java is the pulse of the Indonesian economy, it does not rule out the possibility that inequality will also occur between the island of Java itself where inequality will be widened if there is no equal distribution of development. In general, economic growth is defined   as a process which leads to the increase of per capita income of a population in a long term (Sukirno, 1985) It is common to have economic development inequality between regions. This situation results in regional disparity, as recognized from areas with widely diverse economic quality, from developed to underdeveloped ones, sourced from the different attributes. As proposed by Alisjahbana (2005), Indonesia faces this issue due to Java- and Bali-centric developments.

Regional disparity is observable using Williamson index. Williamson index of all provinces in Java in the period of 2013-2017 indicates the regional disparity in these areas. A disparity is wider if the Williamson index is close to 1, and narrower if it gets near to 0 (Bonet, 2006). For the last five years (2013-2017), Special Capital Region of Jakarta has the greatest economic disparity, with the average value of 0.64, and the least one is assumed by East Java, with the average value of 0.18. Whereas, West Java, Central Java, and Special Region of Yogyakarta manage to have a medium level of disparity.

Table 1. Index of Inter-Provincial Disparity in Java in the Period of 2013-2017

Province	Period					Avarange
	2013	2014	2015	2016	2017	
DKI Jakarta	0.64	0.64	0.64	0.64	0.64	0.64
Jawa Barat	0.43	0.43	0.44	0.44	0.44	0.44
Jawa Tengah	0.42	0.42	0.42	0.42	0.42	0.42
DIY	0.45	0.45	0.45	0.45	0.45	0.45
Jawa Timur	0.18	0.18	0.18	0.18	0.18	0.18
Banten	0.26	0.27	0.27	0.28	0.28	0.27

Source: Statistics Indonesia, processed data

There are many factors underlying this inequality. One to mention is the economic growth as an indicator of regional development, easily measured quantitatively. Economy is growing provided that there is an increase of income, either in total or individually, from the increasing gross regional domestic product by disregarding the population growth, regardless the change of economic structure or reduction in economic disparity. For a region, strong growth is analogous to prosperity. However, a high economic growth does not promise an equality of income among individuals and between regions. It even many times leads to a disparity of development. Kuznets (in Todaro, 2004) reveals that in the early stage of economic growth, the distribution of income tends to be poorly uneven, but gets improved over time. This is mostly related to the structural basic changes that take place. Such a situation represents the Kuznets' inverted-U curve.

Table 2. Economic Growth of Provinces in Java in the Period of 2013-2017

Province	Period					Avarange
	2013	2014	2015	2016	2017	
DKI Jakarta	4.69	4.59	4.62	4.63	4.97	4.70
Jawa Barat	4.69	3.40	3.40	4.00	3.70	3.84
Jawa Tengah	4.09	4.27	4.47	4.32	4.34	4.30
DIY	4.06	3.80	3.62	3.73	3.94	3.83
Jawa Timur	5.09	4.94	4.58	4.72	4.64	4.79
Banten	4.13	3.14	3.14	3.04	3.50	3.39

Source: Statistics Indonesia, processed data

From table 2, it is evident that there is an inter-provincial disparity of economic growth in Java. Jakarta and East Java have the highest rate of economic growth at 4.7 percent and 4.79 percent respectively. Whereas, Banten has the lowest one with a rate of 3.39%. Many studies examined the correlation of economic growth and inequality; income inequality for instance. Marta and Sanchez-Robles (2005) and Malinen (2008) analyzed the correlation between income inequality and economic growth using the data from Latin American countries. They concluded that both correlate negatively. On the other hand, the opposite result was acquired from Nahum (2005) with Sweden as the setting of place. Heyse (2006) came with another finding, confirming that there is no correlation between these two variables in developing countries with considerable rate of income inequality, but otherwise in developing countries with low rate of income inequality. Perez-Moreno (2009) observed the causal relationship between economic growth and income inequality in Spain during 1970-2000, by employing panel data analysis and Granger causality test. The result indicates that per capita income reduces the inequality. Ezcurra (2009) also analyzed the causal relationship between income polarization and economic growth in European Union throughout 1993 to 2003. This research concludes the negative correlation between those variables.

Barrios dan Strobl (2009) have confirmed the hypothesis of Williamson econometrically using parametric and semiparametric techniques by employing regional data as a sample of developed countries during 1975 to 2000. There is a strong evidence that supports the inverted-U curve from the correlation between regional disparity and economic growth. Lessmann (2014) utilized panel data comprising 56 developing and developed countries in the period of 1980 to 2009. He confirmed this inverted-U pattern, reflecting the highly increasing spatial inequality of economic growth.

Fiscal decentralization also becomes a factor behind this development inequality. That and regional autonomy policy provide an opportunity for a region to improve its economic condition through efficient development of local potential, both natural and human resources. Fiscal decentralization is defined as an authority granted to the local administrations to govern and manage their regions respectively, with an expectation of reduced regional disparity. Other than relating to the inefficiency of central administration and to the emerging popularity of income equality for the economic growth, decentralization is also associated with the awareness about development as a complex process, filled with uncertainty, under the challenge on control and planning when organized by central government (Kuncoro, 2004). Nevertheless, Bonet (2006), who analyzed the impact of fiscal decentralization on regional income disparity in Colombia, stated that even though the economic development increases after the fiscal decentralization, the regional income disparity grows wider during the period of analysis. Further, Kyriacou, Gallo, and Sagales (2013) viewed that fiscal decentralization may contribute to the reduction of regional disparity. On the contrary, Sacchi and Salotti (2011) expressed otherwise, emphasizing the growing regional disparity due to the fiscal decentralization. Akai and Sakata (2005) frankly discovered no significant impact of the outcome decentralization on regional income disparity.

Table 3. Fiscal Decentralization of Provinces in Java in the Period of 2013-2017

Province	Period					Avarange
	2013	2014	2015	2016	2017	
DKI Jakarta	67.95	71.36	76.20	68.58	67.72	70.36
Jawa Barat	64.25	64.40	66.78	61.54	71.10	66.21
Jawa Tengah	61.55	65.42	64.80	58.79	52.94	60.70
DIY	47.08	46.65	46.86	42.93	36.42	43.99
Jawa Timur	66.50	69.53	69.29	63.37	58.03	65.34
Banten	66.11	69.31	67.86	63.11	59.31	65.14

Source: Statistics Indonesia, processed data

Provinces in Java have various dependency level. From table 3, compared to other regions in Java, DKI Jakarta has the least dependency on the central government with the fiscal decentralization degree of 70.36 on average within 2013 and 2017. Although the fiscal autonomy rate of Jakarta is the highest above all, this number keeps dropping during the period. In this lustrum, Special Region of Yogyakarta is the province in Java with the least capability of managing regional finance, with the fiscal decentralization degree of only 43.99 on average. Similarly, the trend of this figure also tends to decline.

Regional autonomy policy is reflected from the regional authority to manage its own financial assets and resources, as well as from its economic openness. With the increasing regional economic development as the initial expectation, the growth of one region compared to another becomes widely diverse instead. This diversity and the openness of a few or more regions to a broader commercial activity beyond their geographical boundary are feared to spark wider regional disparity. As proposed by Heckscher-Ohlin (Krugman dan Obstfeld, 2004), followers of neoclassical economics believe that trade openness will promote income equality. In contrast, as a non-mainstream economics group, unlike classical or neoclassical schools, the anti-neoclassical or radical economics partisan regards that such an openness may widen the income inequality (Boediono, 1992).

Table 4. Export Value of Provinces in Java in the Period of 2013-2017 (in $)

Period	Province					
	DKI Jakarta	Jawa Barat	Jawa Tengah	DIY	Jawa Timur	Banten
2013	11.000.132.243	25.821.987.400	5.658.468.211	284.609.605	14.091.339.484	9.540.473.777
2014	11.528.387.884	26.318.020.052	6.096.974.271	327.266.279	17.370.939.582	10.227.932.855
2015	11.454.739.240	24.790.851.430	6.206.028.454	333.254.750	15.906.907.341	9.005.406.644
2016	12.519.254.951	24.926.255.584	6.252.299.861	343.878.910	17.055.923.369	9.176.519.425
2017	9.263.145.792	28.712.865.334	7.186.159.994	387.289.808	17.221.607.022	11.123.576.833
Avarage	11.153.142.822	26.113.995.960	6.279.986.158	337.367.870	16.329.343.360	9.814.781.907

Source: Statistics Indonesia, processed in

Table 4 reveals that West Java is the most open province either commercially or financially with an average export value of US$ 26,113,995,960 and an average foreign capital investment of US$ 6,007.88 million in the period of 2013-2017. The region's export value fluctuates during this period. Regarding the trade openness, East Java then follows with an average export value of US$ 16,329,343,360 in the similar interval. However, in relation to financial openness, Jakarta takes the place right below West Java with an average foreign capital investment of US$ 3742.62. The export value trend of East Java tends to be ascending (see fig. 1)
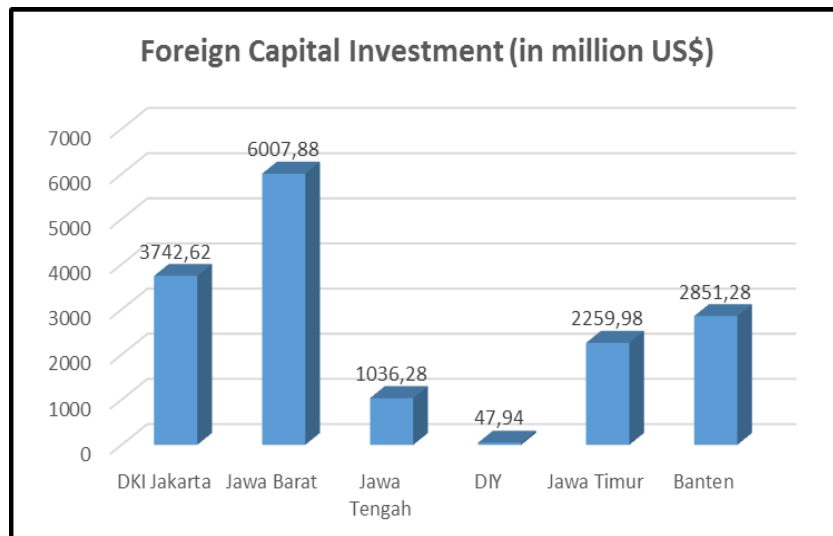
Figure 1. Foreign Capital Investment of Provinces in Java in the Period of 2013-2017 (in million US$)
Source: Statistics Indonesia, processed data

Special Region of Yogyakarta has the lowest average value of economic openness with an export value of merely US$ 337,367,870 and average foreign capital investment of US$ 47.94 million. This region also has the lowest trade openness as export is not the primary source of the gross regional domestic product. Despite these low numbers, the regional disparity of this province is around medium range. This data is compelling for further analysis of the regional disparity among provinces in Java and the extent to which the abovementioned factors affect the development disparity in the respective area. This research builds on the hypothesis that increasing fiscal decentralization, economic growth, and economic openness will reduce the number of development disparities between provinces in Java in 2001-2017.

Regional Development Disparity
Regional disparity is a focus for Douglas C. North in his analysis of Neoclassical Growth Theory which predicts the correlation between the national economic growth rate of a country and the disparity between the regions within. This premise is then known as Neoclassical Hypothesis (Sjafrizal, 2012). According to this hypothesis, in the early development stage of a country, regional disparity tends to increase. Myrdal (1957) declared that an excessively diverse regional economic growth will incline towards backwash effects, overtaking the spread effects of the growth itself, leading to inequality. There would be then more agents with capabilities, thus encouraging regional disparity (Arsyad, 1999).

The Correlation of Fiscal Decentralization and Regional Disparity
Article 1 paragraph 7 of Law no. 32 of 2004 defines decentralization as the delegation of authority from the central to local government to regulate and manage their respective regions under the Unitary State of the Republic of Indonesia. By this definition, regions are granted authority to be in charge of all administrative functions, with defense, security, foreign policy, justice, monetary, national finance, and religion affairs as exception. Sjafrizal (2008) stated that regional autonomy and decentralization are effective methods to narrow down regional disparity as regional development, especially in underdeveloped area, can be more dynamics since local administrations as well as local communities can manage their corresponding regions in an autonomous manner. With an authority of this kind, public initiatives and aspiration to cultivate regional potential are further facilitated. By this fashion, regional development may be improved comprehensively and simultaneously, thus redressing the regional disparity.

The Correlation of Economic Growth and Regional Disparity

Both classical (Adam Smith, David Ricardo, Thomas Robert Malthus, and John Straurt Mill) and neoclassical economists (Robert Solow and Trevor Swan) proposed that essentially, there are four influential factors of economic growth, namely (1) human capital, (2) physical capital, (3) land and natural resources, and (4) technology (Sukirno, 1985). An economy grows or develops when the economic activities are greater than the previous period. Whereas, Boediono (1985) mentioned that economic growth is the long-term increase of output per capita. The process is emphasized as it is the source of the dynamics.

As Kuznets suggested with his inverted-U curve theory, the economic growth of a country will stimulate the increasing regional disparity in the early stage of economic growth, which later decreases gradually when the development stabilizes. In his research, he found that the influence of economic growth and income distribution signifies how initially economic growth and disparity are directly proportional, creating a rising graph line. After hitting a turning point, the economic growth and disparity transform to be inversely proportional, generating a falling graph line.Figure 2 describes that in short term, there is a positive correlation between growth per capita and income disparity. However, in long term, this correlation turns negative.
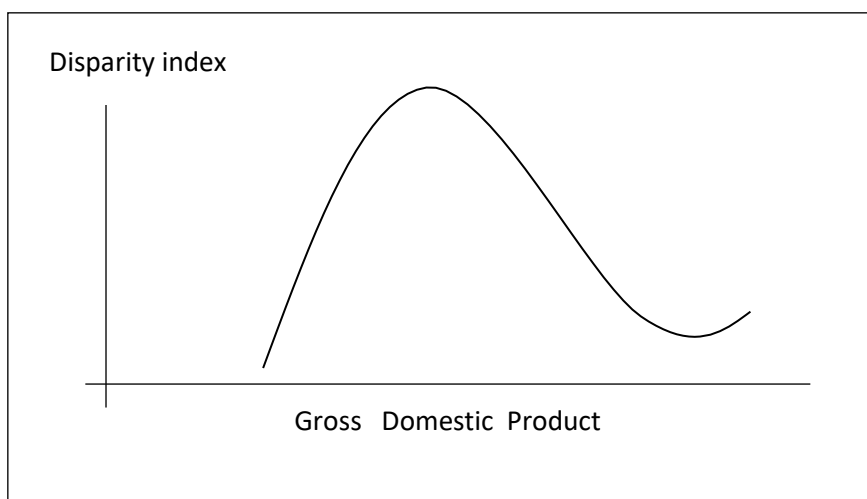

Figure 2. Kuznets Curve
Source: Todaro, 2006

The Correlation of Economic Openness and Regional Disparity

As proposed by Heckscher-Ohlin, followers of neoclassical economics believe that trade openness will promote income equality, as reflected in the correlation between international trade and income distribution. They (in Krugman and Obstfeld, 2004) believed that international trade will provide advantages to the capital owners with abundant factors of production from the established trading relationship. On the contrary, the capital owners with scarce factors of production will have to deal with loss from such a trade. By then, the income disparity between the owners of abundant factors of production and that of scarce factors of production may lessen.

Often against the perspective of neoclassical economics devotee, the radical economics advocates are many times called the disciples of Anti-neoclassicism A difference that put them apart lies in their view about the impact of trade on income disparity. Neoclassicists argue that trade may even the income distribution whereas the Anti-neoclassicists believe otherwise. In accordance with radical economics (Boediono, 1992), there is always a difference of economic power between parties engaging in the trade. This discrepancy will induce inequality of benefit received from the trade. One party may get the most or entire of the advantages whereas the other party may obtain only a small portion or even none of it at all.

Past Studies

Lessmann (2006) conducted a research on fiscal decentralization and regional disparity with member countries of Organization for Economic Co-operation and Development (OECD) as the object of the study. This research utilized OLS estimation method and employed panel data approach on 17 OECD countries during the period of 1980-2001. The findings suggest that in Western Europe, decentralization positively affects regional income disparity, yet insignificantly.

Bonet (2006) conducted a research on fiscal decentralization and regional disparity in Colombia. Similarly, this research utilized OLS estimation method and employed panel data approach during the period of 1990-2000. As a result, economic growth increases in every region following the implementation of fiscal decentralization, but the regional disparity spikes significantly. The controlling variables also negatively and significantly influence the regional disparity.

Obradovic, Lojanica, and Janković (2016) observed the influence of economic growth on regional disparities in OECD countries. The samples taken were selected OECD countries in the period of 2000-2011. The empirical analysis carried out discovers a long-term relationship between the variables. It also found out that he economic growth and regional disparity move towards the similar direction, and the economic growth significantly influences the regional disparity.

Majeed and Tariq (2010) made a research on inequality, trade openness, and economic growth in Asia, using panel data analysis, on 18 Asian countries, namely Bangladesh, Kyrgyz Republic, China, Malaysia, India, Nepal, Indonesia, Pakistan, Iraq, Iran, Philipine, Sri Lanka, Jordan, Tajikistan, Kazakhstan, Thailand, the Republic of Korea, and Vietnam. This study found that there is a positive and significant correlation between the growth and inequality.

Wahiba and Weriemmi (2014) carried out an empirical study on the relationship between economic growth and income inequality in Tunisia within the period of 1984-2011. From the result, economic growth and openness exacerbate inequality and this output is accentuated by the trade liberalization around the country.

Niyimbanira (2017) analyzed the impact of economic growth on income inequality and poverty in South Africa, specifically in Mpumalanga Province. He applied fixed effects model and pooled regression analysis, by collecting secondary data sourced from 18 cities in Mpumalanga. This study concludes that economic growth declines poverty, but not income equality. In addition, it also implies that the policy makers shall formulate strategies to reduce income inequality in South Africa.

Fajrii, Delis, and Amzar (2016) conducted a study on the impact of regional fiscal autonomy, economic growth, and openness on regional disparity, taking Sumatra as the setting of place. It concludes that fiscal autonomy and economic growth are relatively low and there is a resistance concerning trade openness in this province. Thus, fiscal autonomy and growth negatively influence regional disparity, whereas economic openness positively influences such a disparity.

Nurhuda et al. (2014) observed East Java regarding the economic disparity using Williamson index within the range of 2005-2011. The disparity value was found low as it is close to 0. Moreover, Kuznets curve applies to this province as well. From the regression analysis, out of the four variables, local revenue and human development index negatively influence the disparity.

Meilani & Wuryandani (2012) investigated the pattern of economic growth and regional disparity in West Nusa Tenggara province, employing data from the period of 2006-2009, with a various classification of development progress as the result. Out of 11 districts/municipalities, four regions are ranked relatively underdeveloped, two rapidly developing, two developed with low rate of growth, and two developed with high rate of growth.

This study tries to discuss disparities between provinces in Java by first analyzing fiscal decentralization, economic growth, and economic openness in Java in 2001-2017, then starting by analyzing the development of decentralization policies, economic growth and economic openness towards provincial economic development inequality. on the island of Java in 2001-2017. The difference between this study and previous research uses the variables of economic openness and financial openness as benchmarks for variable openness.

METHODS

The object of study covers all provinces in Java. The data utilized is panel data, i.e. the combination of cross-sectional data from the provinces, covering Special Capital Region of Jakarta, West Java, Central Java, Special Region of Yogyakarta, and East Java, and time series data of 2001-2017. The data employed for this research consists of gross regional domestic product (GRDP) on the basis of constant price of 2010, GRDP on the basis of current price, population, GRDP per capita, export value, foreign capital investment, local revenue, and total local revenue of all provinces in Java, obtained from Statistics Indonesia. Operational Definition of Variables in this research are :

Fiscal Decentralization

Fiscal decentralization portrays the regional financial dependency of each of the provinces in managing the region respectively. The degree of fiscal autonomy is expressed in percent. The formula is stated as follows:

$$FD_{it} = \frac{PAD_{it}}{TPD_{it}} \; x \; 100\%$$

Where:

FD_{it} : the fiscal autonomy degree of Province i, in year t

PAD_{it} : Local revenue of Province i, in year t

TPD_{it} : Total local revenue of Province i, in year t

The higher the figure, the higher the fiscal autonomy degree of a region.

Economic Growth

An economy grows when there is a rise of income due to the increasing production of goods and services. Expressed in percent, economic growth is measured by the following formula:

$$G = \frac{PDRB_t - PDRB_{t-1}}{PDRB_{t-1}} \; X \; 100\%$$

Note:

G : economic growth

$PDRB_{t-1}$: GRDP on the basis of constant price of a particular year

$PDRB_{t-1}$: GRDP on the basis of constant price of the previous year

Economic Openness

For this research, economic openness is observable from the point of view of trade openness and financial openness. Trade openness, expressed in percent, is represented by the ratio of non-oil and non-gas export value to GRDP on the basis of current price. Whereas, financial openness, expressed similarly in percent, is represented by the ratio of foreign capital investment to GRDP on the basis of current price.

Development Disparity

In order to provide a clearer picture about each province from the perspective of development equality, Williamson index was employed based on the GRDP of each region, with the formula as follows:

$$IW = \frac{\sqrt{\sum_{i=1}^{n}(Yi - Y)^2 \, fi/n}}{Y}$$

Where: IW = Williamson Index

Yi = GRDP per capita of region i

Y = average GRDP per capita of all regions

fi = population of region i

n = total population of all regions

The result of Williamson index measurement is expressed in 0 to 1, or 0 < IW < 1. The closer the Williamson index value to 0, the narrower the economic development disparity, and the closer the value to 1, the wider the disparity.

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Table 5. Category of Disparity Level

Williamson Index	Category of Disparity
< 0.3	Low Disparity
0.3-0.5	Medium Disparity
> 0.5	High Disparity

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If Williamson index was used to assess the regional disparity, then panel data regression analysis was applied in order to observe the correlation between disparity and economic growth. Panel data analysis was applied to analyze the impact of the influential factors of inter-provincial economic disparity. The general function used is as follows:

$$IW = f(x1)$$

Whereas the following is the model applied:

$$Y_i t = \beta o + \beta_1 EG_{it} + \beta_2 OPEN1_{it} + \beta_3 OPEN2_{it} + \beta_4 FISCAL_{it} + e_{it}$$

Note:
Y	= Development Disparity
EG	= Economic Growth
OPEN1	= Trade Openness
OPEN2	= Financial Openness
FISCAL	= Fiscal Decentralization
β	= parameter
i	= province observed (i=1, ... mm)
t	= research period (t =1)
e	= error term

The data was analyzed using regression estimation, which comprises three models to choose.
a. Common effect method: a panel data estimation combining time series and cross-sectional data with Ordinary Least Square (OLS) method. This approach ignores individual or time dimensions. This model assumes a fixed value of the intercept and regression coefficient for every object of research and period of time.
b. Fixed effect method: assuming that every object has different intercept, but similar coefficient. To separate between one object and another, dummy variables or pseudo variables are taken into account. Thus, this means is also called Least Square Dummy Variables (LSDV) method.
c. Random Effect model: different from fixed effect method, no dummy variable is used in this method. This model makes use of residuals presumed to have intertemporal and interobjects relationship. It assumes every variable having different intercept, either random or stochastic. Therefore, the model equation is formulated into the following:

$$Y_{it} = \beta_{oi} + \beta_1 I_{it} + v_{it}$$

Where

$$v_{it} = e_{it} + u_{it}$$

In this method, residual v_{it} consists of two components, i.e. (1) residual e_{it} as the comprehensive residual combining time series and cross-sectional data; (2) residual of each individual, represented by u_{it} . In this matter, each object has its own, intertemporally fixed residual u_{it} . Generalized Least Square (GLS) method is used to estimate this regression model as a substitution for OLS method.

From the three models above, the most suitable one is selected by means of Chow test for common effect and fixed effect methods. Whereas, Hausman test was conducted to test fixed effect model against random effect model. Table 6 summarizes the testing method for model selection.

Table 6. Panel Data Method Selection Test

Test	Supported	Selected	Criteria of H_a Supported
Chow Test	*Common Effect*	*Fixed Effect*	Fixed Effect supported
Hausman Test	*Random Effect*	*Fixed Effect*	Fixed Effect supported

RESULT AND DISCUSSION
Regional Disparity
Development disparity was measured using Williamson Index, with the output value between 0 and 1. Equitable development is more likely to meet if the Williamson index is closer to 0, and the other way if the value is closer to 1. The data of inter-provincial development disparity value in Java during the period of 2001-2017 is displayed below.

Table 7. Inter-provincial Development Disparity Index in Java in the Period of 2001-2017

Period	Province						Avarage
	DKI Jakarta	Jawa Barat	Jawa Tengah	DIY	Jawa Timur	Banten	
2001	0.625	0.415	0.446	0.238	0.369	0.209	0.384
2002	0.624	0.419	0.445	0.238	0.368	0.217	0.385
2003	0.628	0.423	0.443	0.238	0.366	0.223	0.387
2004	0.626	0.422	0.440	0.239	0.360	0.226	0.386
2005	0.627	0.422	0.437	0.241	0.356	0.231	0.386
2006	0.630	0.422	0.434	0.243	0.355	0.235	0.387
2007	0.631	0.422	0.432	0.244	0.352	0.240	0.387
2008	0.631	0.426	0.427	0.244	0.348	0.245	0.387
2009	0.631	0.427	0.425	0.245	0.343	0.250	0.387
2010	0.636	0.429	0.421	0.245	0.338	0.258	0.388
2011	0.636	0.429	0.421	0.245	0.335	0.258	0.387
2012	0.638	0.432	0.423	0.247	0.183	0.262	0.398
2013	0.638	0.432	0.423	0.247	0.182	0.264	0.398
2014	0.639	0.435	0.423	0.247	0.180	0.268	0.399
2015	0.641	0.437	0.422	0.248	0.179	0.271	0.400
2016	0.642	0.438	0.421	0.248	0.178	0.275	0.400
2017	0.643	0.440	0.421	0.249	0.177	0.279	0.402
Avarage	0.633	0.428	0.428	0.314	0.292	0.248	0.391

Source: Statistics Indonesia, processed data

From the table above, the development disparity in Java during the stated period is on the medium level. On average, DKI Jakarta has the highest disparity value of 0.633 and Banten has the lowest disparity value of 0.248. This disparity sources from contrasting characteristics between these regions or difference in resource and factors of production ownership. Commonly, regions rich in those capitals will have more revenue compared to the others. Todaro (2003) argued that extreme disparity will lead to implications such as economic efficiency, impairment of social stability and solidarity, and considerable, unfair inequality.

The disparity of Special Capital Region of Jakarta is the highest among other provinces as this region is the central of economic activities.   There are several factors underlying this disparity. As Myrdal (in Jhingan, 1993) proposed, regional disparity is closely related to the capitalism system controlled by the profit-making motive. This profit promotes centralized development in regions with high profit expectations, leaving the other regions behind. He declared that this kind of development disparity results from the backwash effect which exceeds the spread effect. The growing backwash effect and declining spread effect are the culprit for the disparity in the underdeveloped countries.

The disparity in Banten is the lowest due to its effort in decreasing regional disparity. This purpose is served by pursuing accelerated development of the central of economic activities as the primary drive of growth.

Economic Growth of All Provinces in Java

An economy grows when there is a rise of income due to increasing production of goods and services. Economic growth is correlated with the increase of production capacity manifested in the increase of national revenue. A country experiencing an economic growth is reflected from the improving life quality of its people. The economic growth of provinces in Java is outlined in the following graph.
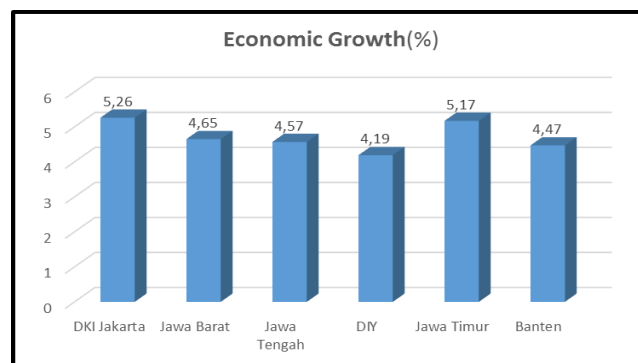

Figure 3. Average Economic Growth of All Provinces in Java
in the Period of 2001-2017 (in %)
Source: Statistics Indonesia, processed data

In this period of 17 years, Special Capital Region of Jakarta sustained the greatest economic growth of 5.26 percent on average, signifying the increasing figure of its gross regional domestic product compared to other regions. East Java follows with the average economic growth of 5.17 percent. Special Region of Yogyakarta endures the lowest economic growth, with the average of 4.19 percent.

Fiscal Decentralization of All Provinces in Java

Fiscal decentralization reflects the capability of managing regional finance as the consequence of regional autonomy by taking into account the regional revenue over the total regional revenue. The following graph describes the fiscal decentralization degree of provinces in Java.
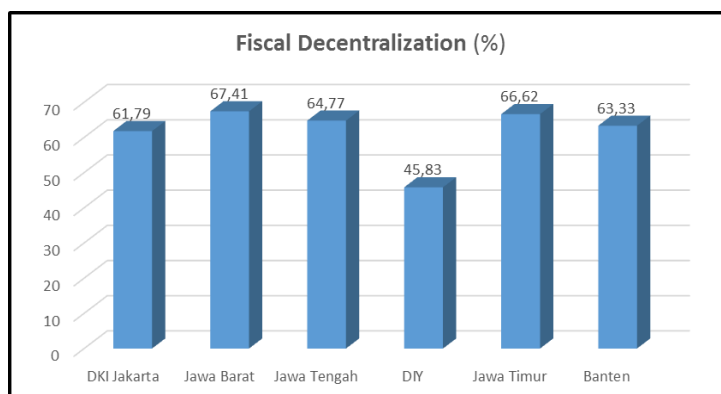
Figure 4. Average Fiscal Decentralization of Provinces in Java
in the Period of 2001-2017(%)
Source: Statistics Indonesia, processed data

Fiscal decentralization indicates the capability of a region in administering its own financial affairs. In other words, it is, among others, the manifestation of regional autonomy. The graph reveals the diverse degree of fiscal decentralization in the object of study. West Java is highly capable of assuming the responsibility in finance, with the value of 67.41 percent. Other subsequent regions consecutively are East Java (66.62 percent), Central Java (64.77 percent), Banten (63.33 percent), Special Capital Region of Jakarta (61.79 percent), and Special Region of Yogyakarta as the least one (45.83 percent) implying its considerable dependency from the central administration.

Economic Openness of All Provinces in Java
Economic openness reflects the subsiding hindrance to engaging in trade, both tariff or non-tariff, and the seamless capital flow between countries. The following graph summarizes the economic openness of provinces in Java.
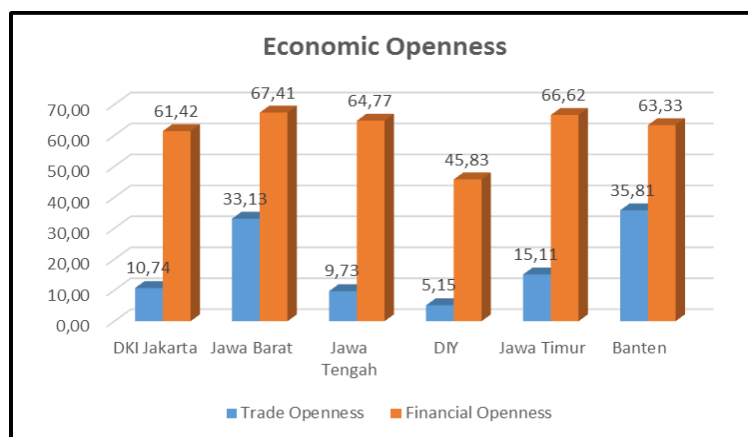

Figure 5. Average Economic Openness of All Provinces in Java
in the Period of 2001-2017(%)
Source: Statistics Indonesia, processed data

Economic openness indicates the degree of trade barrier in a country/region. The more open a country to a trade, the less the barriers are. The measurement is possible by using trade openness, i.e. the ratio of export to GRDP. Based on the figure above, Banten holds the highest trade openness rate (35.81 percent on average). In other words, this region has a minimum trade barrier or adequately greater economic openness. On the contrary, Special Region of Yogyakarta has the lowest trade openness, meaning the export-to-GRDP ratio is so low, or otherwise stated the trade barrier is high, reflecting a lack of economic openness.

From the perspective of financial openness, West Jave receives the most foreign investment, with the highest average ratio of foreign capital investment to GRDP on the basis of current price (67.41 percent). On a par with its low trade openness, Special Region of Yogyakarta attracts the least foreign investment with the lowest average ratio of foreign capital investment to GRDP (45.83 percent).

Association between Economic Growth and Regional Disparity
Panel Data Estimation Model Selection
Chow Test
This model was used to find the most appropriate model between common effect and fixed effect models by comparing their probability with the alpha value of 0.05. The hypotheses are formulated as follows (Widarjono, 2007):

H_0 : Common effect model is supported

H_a : Common effect model is rejected, fixed effect model is supported

This test was conducted by observing the p-value. Fixed effect model is selected if the p-value is significant (less than 5%), and common effect model is selected if otherwise. From the regression analysis of the comparison between common effect model and fixed effect model, the probability value is identified as follows:

Table 8. Chow Test Result

Effects Test	Statistic	d.f.	Prob.
Cross-section F	98.719385	(5.92)	0.0000
Cross-section Chi-square	188.786000	5	0.0000

Source: data processing

Chow test results in the probability value of F-statistic of 0.0000 (< α=0.05), thus H_0 is rejected and H_a is supported, concluding Fixed Effect Model as the most appropriate model. Hausman test was subsequently conducted to test Fixed Effect Model and Random Effect Model.

Hausman Test
The panel data estimated techniques used in this research are Fixed Effect Model atau Random Effect Model. Therefore, below are the hypotheses for the Hausman test:

H_0 : Random effect model is supported

H_a : Random effect model is rejected, fixed effect model is supported

In Hausman test, the probability value of cross-section random is observed. H_a is rejected and random effect model is deemed appropriate if the value is > α=0.05. Conversely, H_0 is rejected and fixed effect is considered appropriate if otherwise. From the result, the probability value of cross-section random is 0.0000 (< α=0.05), thus H_0 is rejected.

Table 9. Hausman Test Result

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	261.673133	4	0.0000

Source: data processing

Estimation Result Using Fixed Effect Model
Using the supported estimation model, below is the estimation result.

Table 10. Estimation Result Using Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.403453	0.006735	59.90785	0.0000*
EG?	-0.006413	0.001488	-4.308623	0.0000*
OPEN1?	-0.000140	0.000102	-1.372866	0.1731
OPEN2?	0.000281	0.000274	1.025654	0.3077
FISCAL?	0.000328	8.78E-05	3.737430	0.0003*

Note: * significant at α = 5%

Source: data processing

From the fixed effect test, the regression formula is written below:

$Y_{it} = 0.403453 - 0.006413EG_{it} - 0.000140OPEN1_{it} + 0.000281OPEN2_{it} + 0.000328FISKAL_{it} + e_{it}$

With the F-statistic of 2380.223 and the probability of 0.000000 (<α= 0.05), it can be inferred that economic growth, trade openness, financial openness, and fiscal decentralization collectively influence the inter-provincial development disparity in Java during 2001-2017.

Economic growth has a negative and significant influence with a coefficient of 0.006413. This means a reduction of disparity of 0.006413, *ceteris paribus*, for every one percent increase of economic growth. This result is parallel with the research by Fajrii, Delis, and Amzar (2016). Francois Perroux, a critic of general equilibrium theory, stated that growth center theory is defined as an industrial cluster capable of promoting a dynamics economic growth strongly connected by the input-output relationship around the leading industry (Setiadi, 2009). The theory enthusiasts believe that the government of developing countries may influence economic growth and welfare through significant investment in capital-intensive industries downtown. This theory is also endorsed by a belief about how the power of free market system serves as a complement for trickle-down economics and establish a spread effect of economic growth from urban to rural areas. The neoclassical economics communities perceive that market power will ensure balance in spatial economics distribution, and the trickle-down effect process will take place by itself after urban welfare is achieved, commencing from cities to hinterlands and rural areas (Mercado, 2002). Thus, new growth centers are required to promote the increase of economic growth to reduce regional disparity.

Economic openness, both trade and financial, leaves no impact on development disparity, thus will not increase nor decrease the value of development disparity in these regions. This has something to do with the fact that the export value during the period of the research tends to fluctuate, although not so significant. Besides, most exporting industries are non-labor intensive. Therefore, the higher the export value obtained by these industries, the less the workforce absorbed so that the welfare of the labor employed by the industry will not improve. Moreover, the financial openness does not have significant influence due to the fluctuating and widely varied foreign capital investment in 2001-2017 in each province. As Myrdal mentioned, the profit motive promotes development in regions with high profit expectations, leaving the other regions behind. Some measures required and viewed as positive approaches to attract foreign investment are streamlining the bureaucracy of service for investment, establishing information system of potential investment, and improving physical infrastructures. These means of economic openness open ways for foreign investors to grow the economy so that the disparity may be reduced.

Fiscal decentralization has a positive and significant influence toward regional disparity in Java, with a coefficient of 0.000328. This means the heightening disparity of 0.000328, *ceteris paribus*, for every one percent increase of fiscal decentralization. This condition is consistent with researches by Bonet (2006), Kyriacou, Gallo, dan Sagales (2013), or Sacchi and Salotti (2011) which conclude that fiscal decentralization influences regional disparity. Since each region varies in their potential, fiscal decentralization will benefit those of business centers or rich in natural resources. In addition, most regional expenditure are spent on local administration, and more than half of the general allocation fund supposed to be appropriated for public service improvement are distributed

to finance provincial and district/municipal personnel expenditure. Regional autonomy and fiscal decentralization policies are expected to reduce disparity between regions by driving the development, including in the underdeveloped area, as local administration and local communities are granted the authority for such an endeavor.

CONCLUSION

Measured with Williamson Index, Java's regional disparity is categorized medium within the period of 2001-2017, with the average value of 0.391. Individually, economic growth has a negative and significant influence on regional disparity between provinces in Java during such a period. Fiscal decentralization has a positive and significant influence on the development disparity. However, the economic openness, either trade or financial, does not have any influence on the disparity. From these findings, the respective local administrations should formulate policies that further promote economic growth and increase regional revenue to narrow the regional disparity by maximizing their own potential resources. They need to make priorities in development by taken into account their potential in term of regional resource and local community to deal with the regional disparity. As for the fiscal policy, infrastructure development is paramount to plan. Infrastructure is of great benefit for economic growth, specifically to establish inter-region connectivity and facilitate economic activities If provided sufficiently, it will open up opportunities of economic activities for people from all walks of life.

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