Regional Inequality in Indonesia: Did Convergence Occur Following the 1997 Financial Crisis?

Tirtosuharto, Darius

Bank Indonesia

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Darius Tirtosuharto*

Abstract

Regional inequality remains one the most challenging issues to overcome in developing countries due to the large gap between poor and rich regions. This paper is to assess the extent of regional inequality in Indonesia and analyze whether convergence did occur during the 1997 financial crisis and the period of decentralization that was started in 2001 following the crisis. The 1997 financial crisis represents a turning point in the country's economy as growth levels plummeted to the new low level. A financial crisis could be the factor that triggers economic convergence between regions assuming rich regions are highly affected than poor regions due to the scale and size of economies in rich versus poor regions. The implementation of decentralization in 2001 is also considered as a crucial factor in determining whether regional convergence did occur following the 1997 financial crisis. Despite the argument that decentralization aims to promote regional equality by accelerating growth in the lagging regions through a more efficient and effective fiscal allocation and incentive structure, there is a potential risk of diverging in the regional economy due to the failure in optimizing the benefits of decentralization in supporting growth. The findings of this paper can be used to identify effective policies that balance development and decrease the level of inequality.

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* The author is an economist at the Division of Regional Economic Analysis & Inflation, Department of Economic Research and Monetary Policy, Bank Indonesia. The views expressed in this paper are the author's own and do not represent those of Bank Indonesia

1.   Introduction

For many developing countries, a centralized government system may have served the purpose of targeting development and accelerating economic growth. Central governments could better organize themselves and produce effective policies, which consequently, make development strategies and priorities achievable. Yet, there is also a potential negative consequence as the path of development is largely influenced by the vision of the central government. The most debated issue from this central planning system is the decision on where development should occur and the impact of regional inequality.

In the central planning system, regional development is affected by a larger scheme of development strategies at the national level. The key factor to determine where development and growth should occur are both long and short term development goals and the means to effectively achieve those goals with a limited number of resources. Among a number of strategies that central governments consider to pursue, investing in regions with large resource endowments and economies of scale are typically a high priority. This generally means that development is focused on certain areas that have the capacity and capability to accelerate the rate of growth. These high growth areas include regions with rich natural resources, large concentration of industries, large population and labor pool, and urban areas that have a large number of educated middle class and various economic activities that produce significant spillovers.

Lack of funding capacity and access to capital for development is the most common resource limitation for a country to grow, which forces governments to target specific sectors and geographical areas of growth. Among others resource limitations that have been identified as the impediment of growth in developing countries is infrastructure and skilled labor, which all require government support to a certain degree. Specific to the infrastructure, the geographical condition of a region could play a role in determining whether development is focused on specific regions. Historically, high growth regions are in the coastal area where ports are a driver of economic activities.

The main impact from this development targeting policy is the growing regional inequality, which potentially impedes the sustainability of development in the long-run. Regional inequality remains one the most challenging issues to overcome, particularly in developing countries due to the large gap between poor and rich regions. Following the Kuznets law, growing inequality in the initial phase of industrialization in most developing countries will eventually decrease when a country reaches the convergence stage between the poor and the rich. Unfortunately, this is not always the case as the gap between the poor and the rich is significantly large and particularly when central planning policy that favors targeted growth has been implemented for decades. It is evident that regional convergence does not necessarily occur through a natural process of development.

The large gap between rich and poor regions reflects inequality in the distribution of wealth and access to resources. Rich regions could consume a large portion of a country's resources, while depriving poorer regions the opportunity to grow. Whether intentional or not, many developing countries give little consideration to the consequences of inequality and unbalanced growth which is detrimental to sustainable growth for the entire country in the long run.

This paper is to assess the extent of regional inequality in Indonesia during the 1997 financial crisis and the period of decentralization that was started in 2001 following the crisis.[1] The key question that this paper attempts to answer is whether convergence occurs between lagging (poor) and leading (rich) regions during and following the 1997 financial crisis. Generally, the term regional inequality in Indonesia refers to the economic gap between the Java region that includes the capital district Jakarta and regions outside of the Java region. It also known as inequality between the Western Indonesian region (Java and Sumatera regions) and the Eastern Indonesian region (Kalimantan, Sulawesi, Maluku and Papua regions). Most of the provinces outside of the Java region are considered as lagging regions measured by per capita income.

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[1] Previous studies have confirmed an increase in regional inequality indicated by large dispersion of per capita income in Indonesia during the central planning system (Akita 2002).

The 1997 financial crisis represents a turning point in the country's economy as growth levels plummeted to the new low level and poverty reached the highest level. While a financial crisis may affect an entire country resulting in less or even negative growth, it does not necessarily mean that all regions within the country are affected by the same degree. A financial crisis could be the factor that triggers economic convergence between regions assuming rich regions are highly affected than poor regions due to the scale and size of economies in rich versus poor regions.

The implementation of decentralization in 2001 is also considered as a crucial factor in determining whether regional convergence did occur following the 1997 financial crisis. Despite the argument that decentralization aims to promote regional equality by accelerating growth in the lagging regions through a more efficient and effective fiscal allocation and incentive structure, there is a potential risk of diverging in the regional economy due to the failure in optimizing the benefits of decentralization in supporting growth.

2.   Inequalities and Convergence in Economics

Economists have different views on regional inequality or spatial disparities that affect growth. Kuznets (1955) attempted to explain this issue and concluded that inequality typically accompanies economic development since initially, only certain people benefited from the economic development.   However, inequality levels will eventually decline when the poor slowly succeed in following the rich and convergence begins to occur. This theory is explained using what is known as Kuznets curve that takes the shape of an inverted U. The illustration indicates that economies start from low income agricultural with equitable distribution. When growth occurs, there is a migration from low income to high-income regions, which create inequality. As the agricultural sector phases out and transfers to an industrial sector, the degree of inequality decreases.

Another premise of inequality and growth from literature is a reverse causation of Kuznets' argument. The theory, which represents thoughts of Kaldor (1961) and Stiglitz

(1969), was built based on the conventional wisdom that inequality has a positive impact on growth. The main argument for this theory is that the marginal propensity to save is higher for the rich than for the poor. This claim has a similar assumption with the Solow-Swan growth model, in which a higher steady state of income level is reached by more unequal economies that have higher saving rates. The claim also predicts that the growth rate of aggregate output (in transition) is dependent upon the distribution of wealth and it predicts that a more unequal economy reaches a higher steady state of income level. These conventional theories were rejected in the 1990's by several economists based on various empirical analysis using real data. Alesina and Rodrik (1994), Birdsall et al (1995) and Deininger and Squire (1998) are a few of the economists that proved the negative and statistically significant correlation between inequality and economic growth using several research methods.

Sachs (2005) argues that convergence in economies depends on the ability of underdeveloped countries/regions to mobilize capital and technology to support faster growth and not because the richer countries became poorer. Furthermore, Sachs claims that the 20th century has provided the best opportunity for LDCs to catch up after being left behind for several centuries. Thus, there are several third world nations that have had the opportunity to converge their economy to a steady state based on the Solow-Swan growth model.

In the unconditional convergence concept, which Baumol (1986) examined, all countries/regions are assumed to have the same steady state since they do not significantly differ in the rates of technological change, population growth, saving propensity rates, and depreciation rates. This means that over a period of time, growth rates will decelerate to a steady state. However, a region that starts at a higher steady state will experience a lower growth rate, and vice verse, a region that starts at a lower steady state would grow faster. In the case where there are several regions within a country, there is the probability of unconditional convergence, which rarely occurs between two countries. This notion encouraged further research by Mankiw, Romer, and Weil (1992) that revealed the concept of conditional convergence. Conditional

convergence is a dynamic model with time and parameters differences. Under this theory, the poorest regions that start below the steady state will not always have the highest growth rate since the test is "conditioning" the possible differences (Raj 1998).

Mankiw, Romer, and Weil's theory of convergence is a broad approach to the Solow-Swan growth model, which cannot fully explain the hypothesis of this paper. From a literature study, a paper by Valdes (2003) provides a different approach that can be used to modify the Solow-Swan model. The paper predicts that World War II was a negative externality for Japan's economy since it decreased the growth of income per capita. World War II is in a way similar to a financial or economic crisis since both are a major disruption to the rate of growth that occurs during a specific time and affects capital stocks and income per capita. Under normal circumstances, the initial growth rate is set at below the steady state which then induces a higher rate of growth after a major disruption. Eventually after convergence occurs, the growth rate will decelerate back to its steady state. There is also a possibility that instead of converging, the economy in a region diverges due to un-recovered loss from the crisis. This typically occurs when a crisis disrupts the capability and capacity to generate productive economic activities. This can push the economy farther away from the steady state of equilibrium towards a decreasing economic return.

Studies on region convergence in Indonesia find different results due to a different period observation for the most part. The recent study by Firdaus and Yusop (2009) found that the convergence process took place among regions (provinces) in Indonesia for the period 1983 – 2003, hence, the speed of convergence is very slow compared to other studies in developing countries. Another studies (Akita and Alisjahbana, 2002 and Garcia and Soelistianingsih, 1998) also found an indication of regional convergence by using indexes and decomposition method. Some of those studies demonstrate the role of investments in human capital, particularly investment in health and education sectors, to reduce regional disparity. In contrast, a study by Hadi (2001) found a regional divergence on income disparity when similar policies on monetary and banking were implemented between regions.

3.   Regional Inequality in Indonesia

The discussion on regional inequality in Indonesia has been focused on the extent of disparities between Java and other regions. There are a number of reasons for economic development policies and initiatives to be concentrated in Java, which among others are due to large population. Java regions also have the highest per capita income and the largest urban area. The transition in the 1970s from an agricultural economy to an industrialized economy had given the most benefit to Java region that has better infrastructure, large and skilled labor force.[2] All of those factors have influenced the decision of firms and industries to locate their production activities and consequently affected the structure and diversity of the economy.

Regional inequality in Indonesia grew despite the promotion of a balanced growth policy by the government. Fiscal transfers to backward regions were considered as the short term solution to help reduce inequality. Those transfers could be used for capital spending on infrastructure, health and education with the intention to alleviate poverty and generate jobs. Yet, it was not as effective as expected since it did not accelerate productive economic activities but instead encouraged soaring corruption and rent seeking activities.

Demography played a crucial role in regional inequality in Indonesia due to the large urbanization and migration in the high growth areas. To balance population growth between Java and other regions, the central government promoted an inter-regional migration program in the 1980s. Under this program, the government provided agricultural land, infrastructure and financial aid for new settlements. Hence, this program geared toward agricultural activities rather than supporting the process of industrialization outside of Java.

Low mobility between regions as a result of high transportation costs and lack of supporting infrastructure is also one of the factors that have limited growth in regions

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[2] Yet, there was lack of focus on the advancement of R&D and real technological change to further accelerate and sustain growth. A number of technological advancement also has not been integrated well into real economic activities.

outside of Java. To a certain degree, the developments of road networks and ports have supported the expansion of firms and industries in Sumatra. The connectivity between Java, Sumatra and also Bali through sea and land transport provides a significant economic benefit through intraregional trade. Yet, low connectivity has been the case in other regions outside of Java that significantly drives the logistic and transportation costs up and makes businesses less competitive.

The obstacle of development that has limited the growth in the regions outside of Java is also its smaller market economy and lack of access to capital. Inadequate access to capital is considered a barrier for private sector growth and development of entrepreneurs.   Lack of capital for private sector development has hindered the expansion of production, trade and investment, which has further restrained the expansion of market economy.

Government policies have supported growth in Indonesia's lagging regions through various initiatives in the 1990s. Unfortunately, the government programs were not effective due to the lack of incentives for private sector to invest. The infrastructure, capital investment, bureaucracy and fiscal incentives were still unattractive for private sectors to invest in regions outside of Java. As a result, the gap between the Java and other regions in Indonesia remains wide, posing a great risk to long-term growth, national unity and stability. The problem was made worse by social and religious conflicts that geared toward disintegration within the Indonesian society following the financial crisis from 1997.

4.   Economic Growth and the 1997 Financial Crisis

The 1997 Asian financial crisis began with a currency crisis that quickly led to a collapse in the banking system in several countries as well as hyperinflation. In Indonesia, the collapse of the financial system inflicted a bank rush, hyperinflation, and finally the collapse of the government under the Suharto regime. The financial crisis that started in the end of 1997 was widespread affecting many businesses and industries beyond the

banking sector. Foreign Direct Investment (FDI) significantly decreased as foreign investors became cautious due to social unrest and political instability. Besides the risk of economic volatile at the time, Indonesia also faced the risk of losing its financial credibility because of possible debt defaults.   As rating agencies downgraded Indonesia's long-term bonds, both public and private sectors' access to capital market became limited.

The crisis also severely hit the socio-economic dynamic of the country as poverty levels and unemployment in Indonesia reached its highest point in 1999. Inflation skyrocketed from 11.05% to 77.63% while real GDP contracted by more than 15%.[3] The World Bank predicted that there were about 14-15 million people unemployed in Indonesia in 1999. Hence, many believe that many of the unemployed moved into low-paying urban or rural informal sectors that could not be properly identified or measured clearly.

Poverty rates at the regional level significantly increased during the peak of the crisis particularly states in Java that experienced a significant economic decline (Table 1). To some extent, the epicenter of the crisis was in the urban areas because of high inflation, food shortage, and a lack of jobs. The crisis also put pressure on urban areas more than in rural areas because of the vast social issues in particular the wide gap between the rich and poor.

The crisis also triggered a political crisis and unrest in a number of regions in Indonesia that demanded more authority to administer their region. Regional disintegration was the crucial issue that the central government had to address on top of recovering the economy. To respond to the growing demand for more autonomy and fair resource allocation, new laws on decentralization was approved in 1999 and implemented in 2001. Under the new decentralized policy, local governments play a significant role in the development process and regional growth. Decentralization is expected to reduce poverty significantly and decrease the degree of inequality between regions in Indonesia. Moreover, decentralization is also considered as a strategy to promote equal growth across region as part of an effort to accelerate economic recovery.

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[3] Source: Indonesia National Bureau of Statistics, 2002.

The episode of Indonesian financial crisis was officially ended in 2000 where most regions recorded a positive economic growth. Despite a relatively speedy economic recovery and the implementation of decentralization, high uncertainty and increased risk both from an economic and political standpoint remained several years and affected the economic activities. The fact that the crisis escalated the instability and tension was an indication that there was a much larger issue than the crisis in the financial sector.

Table 1. Poverty Rate and Gini Index of Indonesian States, 1996-2002

States/Provinces	Poverty Rate*		Gini Index**		Pop. Growth*
	1996	1999	1996	1999	1990 – 2000
DI Aceh	12.72	14.75	0.26	0.27	1.46
North Sumatra	13.22	16.74	0.3	0.27	1.32
West Sumatra	9.84	13.24	0.28	0.25	0.63
Riau	12.62	14	0.3	0.27	4.35
Jambi	14.84	26.64	0.25	0.26	1.84
South Sumatra	15.89	23.53	0.3	0.27	2.39
Bengkulu	16.69	19.79	0.27	0.28	2.97
Lampung	25.59	29.11	0.28	0.29	1.17
DKI Jakarta	2.35	3.99	0.36	0.46	0.17
West Java	11.06	19.78	0.36	0.29	2.03
Central Java	21.61	28.46	0.29	0.27	0.94
DI Yogyakarta	18.43	26.1	0.38	0.34	0.72
East Java	22.13	29.47	0.31	0.29	0.7
Bali	7.81	8.53	0.31	0.28	1.31
West Nusa Tenggara	31.97	32.96	0.29	0.25	1.82
East Nusa Tenggara	38.89	46.73	0.3	0.28	1.64
West Kalimantan	24.21	26.17	0.3	0.27	2.29
Central Kalimantan	13.5	15.06	0.27	0.27	2.99
South Kalimantan	8.53	14.37	0.29	0.27	1.45
East Kalimantan	9.73	20.16	0.32	0.29	2.81
North Sulawesi	17.94	18.19	0.34	0.28	1.33
Central Sulawesi	22.31	28.69	0.3	0.3	2.57
South Sulawesi	16.71	18.32	0.32	0.28	1.49
Southeast Sulawesi	29.23	29.51	0.31	0.28	3.15
Maluku	44.57	46.14	0.27	0.29	0.08
Papua	42.26	54.75	0.39	0.44	3.22

Source: * Central Bureau of Statistics (BPS)
      ** Figures represent Gini coefficient for household expenditure based on Susenas data.

Figure 1. Regional Growth Rate
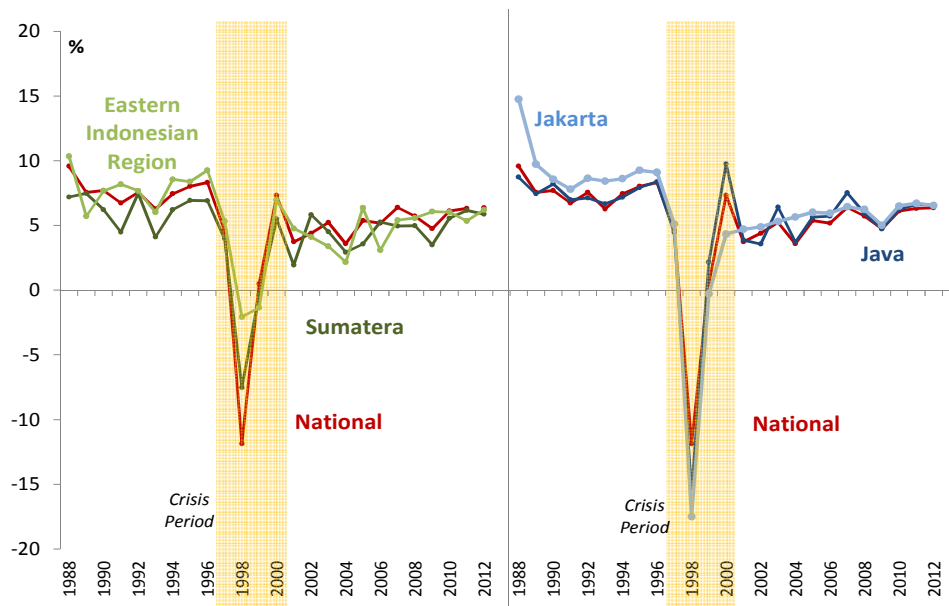
5. Empirical Analysis of Convergence

Much of the research on the 1997 Indonesian financial crisis is focused on growth contraction at the national level. Very few studies are focused at the regional level, let alone a particular region. The purpose of this paper is to analyze the extent of regional inequality and to test the hypothesis that the economic crisis more severely affected rich regions rather than poor regions, allowing for economic convergence to occur. The research is conducted using regional data at the province level[4].

The literature on economic convergence has generated two tests of convergence in per capita incomes across nations or regions. Those two test are known as Beta (β) convergence and Sigma (σ) convergence. Beta convergence typically adopts a form of the neoclassical growth model where growth rate of per capita income across nations or regions and in between two points in time is correlated with the initial level of income. Sigma convergence has a simpler concept in which convergence is measured based on

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[4] With an exception of East Timor who became an independent nation in 2002.

the dispersion of standard deviation of per capita income. Sigma convergence occurs when the dispersion of real per capita income decreases over time.

Following Barro and Sala-i-Martin (1995), beta convergence occurs when the correlation between growth in per capita income over time and its initial level is positive. Beta convergence typically also implies sigma convergence. Hence, there is a possibility that beta convergence is not a sufficient condition for sigma convergence. Sigma divergence accompanied with beta convergence in the event the initially poor regions grow at a significant rate and pass the threshold of those initially rich regions to such an extent that dispersion of per capita income increases.

The specification of Beta (β) convergence following the neoclassical model is:

$$G_{it} = \alpha + \beta \log(Y_{i0}) + \varepsilon \qquad (1)$$

where G is the average growth rate of per capita income in region i for the whole sample period, Y is the initial per capita income expressed in the form of log and ε is the stochastic error term. β represents the rate of convergence or divergence. The coefficients α and β can be estimated by non-linear least squares regression.

5.1. Data Summaries

The data is obtained from the Central Bureau of Statistics of Indonesia (*Badan Pusat Statistik*) and the Central Bank of Indonesia. Several summaries of relevant characteristic of the data are presented below. The real GRDP (*Gross Regional Domestic Product*) of the 26-province is at constant 1993 prices. Other data series collected for the purpose of analysis in this study is data on population, inflation, domestic investment and foreign direct investment (FDI) at the regional (province) level. Table 2 shows the GRDP growth from 1996 – 2000 and per capita GRDP of the Indonesian regions in 1997 as the base year of financial crisis. Regional growth experienced the most contraction in 1998 with double digit negative growth in several regions. Per capita GRDP data in the same table is to show the extent of disparity between leading and lagging regions.

Table 2. Growth & Per Capita GRDP of the Indonesian Regions, 1996-2000

Provinces/States	GRDP Growth (%)			Per Capita GRDP
	1996	1998	2000	1997
DI Aceh	2.47	-9.3	-8.3	2.863,9
North Sumatra	9.01	-10.9	4.8	2.173,0
West Sumatra	7.87	-6.8	3.8	1.749,4
Riau	5.46	-3.9	6.5	4.989,3
Jambi	8.81	-5.4	5.4	1.318,0
South Sumatra	8.03	-6.8	3.3	1.901,7
Bengkulu	5.72	-6.3	3.9	1.173,6
Lampung	7.95	-7.0	3.4	1.048,3
DKI Jakarta	9.1	-17.5	4.3	7.430,8
West Java	9.21	-17.8	4.2	1.755,4
Central Java	7.3	-11.7	3.9	1.421,1
DI Yogyakarta	7.79	-11.2	4.0	1.802,2
East Java	8.26	-16.1	3.3	3.365,1
Bali	8.16	-4.0	3.1	2.540,7
West Nusa Tenggara	8.11	-3.1	8.8	429,8
East Nusa Tenggara	8.22	-2.7	4.2	1.702,6
West Kalimantan	10.75	-4.7	3.0	1.908,2
Central Kalimantan	11.85	-6.9	1.5	1.155,2
South Kalimantan	9.95	-5.5	4.3	1.641,7
East Kalimantan	8.29	-0.8	4.0	12.166,1
North Sulawesi	9.25	-2.4	6.1	1.256,5
Central Sulawesi	8.33	-4.0	4.2	946,9
South Sulawesi	8.31	-5.3	4.9	3.628,3
Southeast Sulawesi	6.01	-5.8	5.3	808,4
Maluku	7.14	-5.9	-2.9	1.432,1
Papua	13.87	12.7	2.2	3.652,4

Source: Central Bureau of Statistics (BPS)

Regions in Java were hit most by double-digit negative growth. Rich regions with abundant natural resources, such as Riau and East Kalimantan also experienced slower growth, but the impact of the crisis was less compared to other regions. Most of the Eastern Indonesian region was also less impacted by the crisis compared to regions in what considered as the western part of Indonesia. Except for Aceh and Maluku, which

were disrupted by conflict and ethnic tensions, most of the Indonesian regions recorded a positive growth in 2000.[5]

All of the regions in Java experienced a negative growth due to extent of the crisis. At the peak of the crisis, the contraction in GRDP growth ranges from -11.2% in the smallest region, Yogyakarta to -17.8 in West Java and -17.5% in the capital city Jakarta. Part of this contraction was attributed to a weakened real sector triggered by the banking crisis. Hyperinflation, a steep increase in interest rate and lack of liquidity has forced many industries and businesses particularly in cities and larger districts in Java to halt production and reduce employment.

Regional disparity between leading and lagging regions was already evident in 1997. The per capita GRDP of the poorest region, Nusa Tenggara Barat was 3.5% of the per capita GRDP of the richest region, East Kalimantan. While the per capita GRDP of the three poorest regions combined represents only 3.3 of the total per capita GRDP for all 26 regions. From the top five poorest regions in Indonesia based on the per capita GRDP, four regions (Nusa Tenggara Barat, Central Kalimantan, South-East Sulawesi and Central Sulawesi) are in the Eastern Indonesian region and one region (Lampung) is in the Sumatera region. Per capita income in Central Sulawesi, South-East Sulawesi and Nusa Tenggara Barat in the eastern part of the country are all under 1 million rupiah (equivalent to $400 with the 1997 exchange rate).

Figure 1 below shows the extent of the disparity of the regional growth rate. Using the mean value of regional growth rate, the graph shows the dispersion from the lowest and highest regional growth rate to their mean value. There is an indication that regional growth disparity increases during the period of financial crisis. Furthermore, for the past 10-year, the disparity of regional growth seems to decrease. Hence, the evidence of convergence has to be analyzed further through a statistical analysis.

[5] The tsunami disaster in Aceh in 2001 has significantly affected the state's economy and many public services were not function properly until the recovery program was started. In addition to Aceh, Maluku and Papua are other regions that experienced a higher degree of instability, due to separatism and social conflict. Public and private capital investments declined significantly as investors concern over the level of instability and uncertainty. Yet, those concerns did not halt energy exploration by foreign companies in Aceh and also in Papua. In fact, larger revenues from profit sharing agreement has increased income per capita in Papua and allowed the region to become the fastest growth region during the crisis period.

Figure 2. Regional Growth Disparity
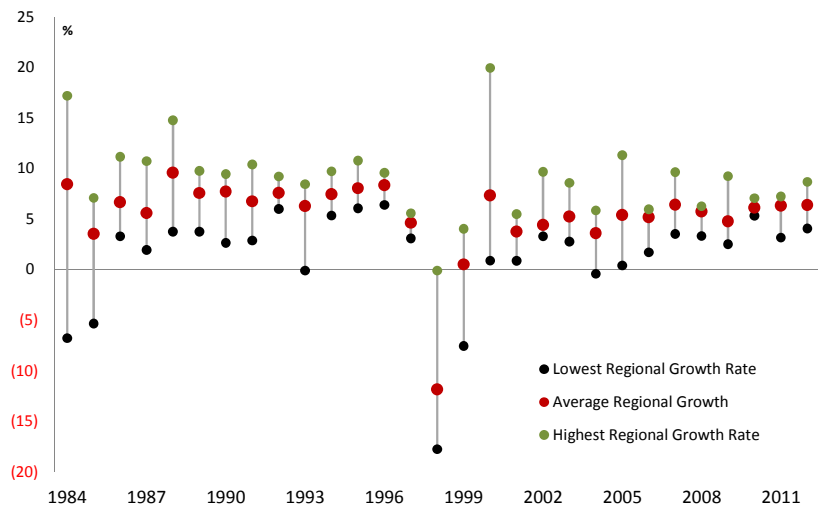
The first step to test regional growth convergence through a statistical method is to generate a scatter plot between the logarithms of GDP per capita in the base year (1997) on the x-axis and the logarithms of the growth of the GDP per capita over the period from 1997 to 2000 on the y-axis. There is no indication on the presence of convergence from the scatter plot since it shows a positive sloped line.

Figure 3. Scatter Plot between the GRDP Percapita in the Base Year (1997) and the Growth of GRDP Percapita from 1997 - 2000
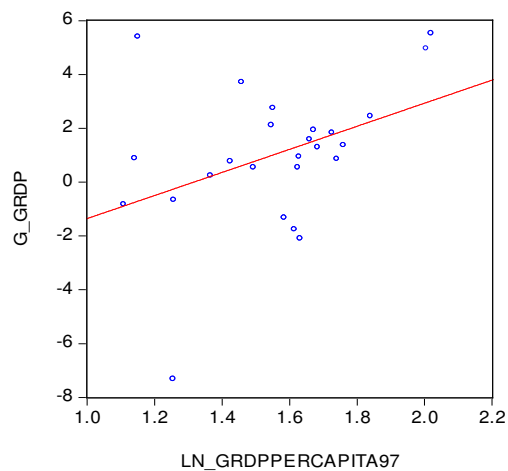
5.2.   Sigma Convergence

Figure 1 below shows the results of the sigma computations for 26 regions in Indonesia during an extended period of observation from 1996 to 2002. Sigma (σ) coefficient is calculated as standard deviation of logarithms of GRDP per capita. The concept of Sigma convergence is to measure the dispersion among those standard deviations. If the dispersion is decreasing, then convergence among the Indonesian regions is confirmed. The computation provides evident that regional convergence did not take place during those period of observation and in reversal to the initial assumption on convergence between poor and rich regions. The large dispersion in regional growth actually took place during the peak of the crisis and moderated during the period of economic recovery and onto the decentralized system. Sigma (σ) or the coefficient of variation is estimated at 0.15 in 1997 and increased up to 0.22 by 2000.

Testing sigma convergence after the implementation of decentralization (post 1997 financial crisis) shows that dispersion in real per capita incomes also increases over the whole 12-year of observation (2001 – 2012). In other word, there is no indication of convergence, despite the assumption that decentralization will accelerate growth of the lagging (poor) regions

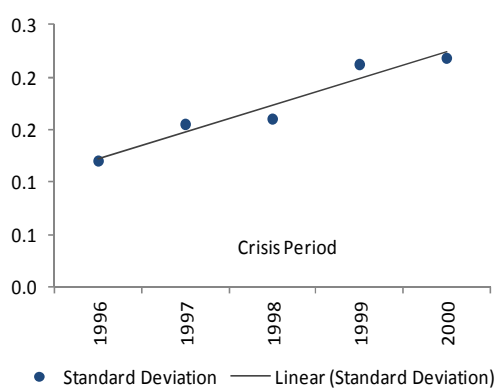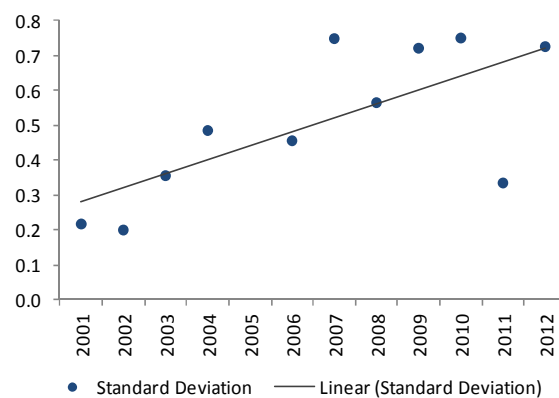Figure 4. Sigma (σ) Convergence Pre-Decentralization (1996 – 2000)

Figure 5. Sigma (σ) Convergence Post-Decentralization (2001 – 2012)

5.3. Beta Convergence

Beta (β) convergence is derived from a regression analysis that estimates the growth of per capita income of a certain period of time on its initial level (base year). The negative sign of the regression coefficients indicate that regions with a lower initial level of per capita income grow more rapidly than regions with a higher initial level of per capita income. Or in other word, those conditions meet the criteria for regional growth convergence, in which growth regions share the similar steady state.

Table 3 provides the result of the regression that measures the coefficient of convergence for the observed samples. During the financial crisis period, the estimate of beta is negative indicating convergence instead of divergence, which is inconsistent with the result of the sigma convergence analysis. The result is statistically significant and supported by the scatter plot between the GRDP per capita in the base year (1997) and the growth of GRDP per capita from 1997 – 2000. (Figure 3). This finding indicates that beta convergence is not a sufficient condition for sigma convergence or in other word, a rapid growth by regions with a lower initial level of per capita income during the period of financial crisis was not necessary to close the gap in the distribution of GRDP or a more equitable income across regions.

Table 3. Unconditional β Convergence of GRDP Per Capita, 1997 – 2000

Dependent Var: N = 26 Obs Independent Var.	Growth of GRDP Per Capita Coefficient	Std. Error	t-Statistic
B	-0.038	0.011	-3.37*
Constant	0.056	0.018	3.16*
Log-Likehood	15.18		
R-squared	0.35		

Note: * The point estimate is significant at the 1% (0.01) level.

Figure 3. Scatter Plot between the GRDP Per Capita in The Base Year (1997) and The Growth of GRDP Per Capita From 1997 - 2000
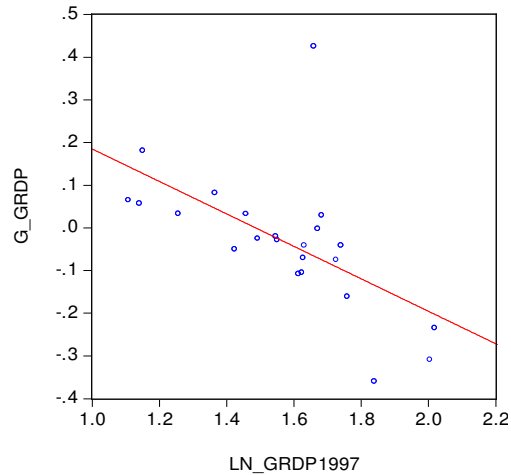
The estimated speed of regional convergence in Indonesia during the period of financial crisis is about 3.8 percent per year, or in other words, the gap in the regional economies is reduced by 3.8 percent each year (Table 3). This means that poor regions need more than 25-year to catch up with regions that have a higher initial level of per capita income (rich regions).

The second test for beta convergence is to seek if the convergence process still holds after the crisis was over. The period from 2001 is also the beginning of the decentralization era where lagging regions are supported to grow faster through the utilization of fiscal resources and development strategies that fit with the needs and give the most benefits for their regions. One of the objectives of decentralization is to overcome a much larger inequality between regions that do not share the same underlying economic structure and development capacity. A more effective governance and development policy at the local and regional level in the decentralized system potentially creates positive incentive structures to stimulate economic growth. Previous study on the relation between fiscal decentralization and regional growth determines

that decentralization generally supports higher growth assuming that there are insignificant imbalances in the growth of labor force (Tirtosuharto 2011)[6].

Unconditional β Convergence of GRDP Per Capita, 2001 – 2012

Dependent Var: N = 26 Obs Independent Var.	Growth of GRDP Per Capita Coefficient	Std. Error	t-Statistic
B	0.014	0.002	7.44*
Constant	-0.024	0.003	-8.54*
Log-Likehood	50.45		
R-squared	0.70		

Note: * The point estimate is significant at the 1% (0.01) level.

The result of the unconditional beta convergence in Table 4 shows a positive coefficient of β, which means that there is no indication of convergence. This finding is in line with the sigma convergence test (Figure 5). It is evident that lagging (poor) regions could not continue to catch-up after the economy recovered from the crisis as growth in the leading regions was accelerated. Thus, decentralization has not helped much in closing the inequality gap between regions in Indonesia.

A number of factors may have affected the process of convergence in the era of decentralization. Decentralization that aims to improve the effectiveness and efficiency of local governments may not effectively support poor regions to grow faster and sustainably. Despite the assumption that decentralization is one of the key determinants of state efficiency, the implementation of decentralization in Indonesia has resulted in a greater unchecked power of state and district governments that is considered as the cause for inefficiency, rent seeking and corruption. Misallocation of fiscal resources through excessive spending over unproductive activities or a mismatch in revenue assignments either intentional or unintentional may lead to negative economic growth.

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[6] The sample data used in the study of fiscal decentralization and regional growth by Tirtosuharto (2011) are divided into 2-period, which is similar to the convergence test in this paper. The pre-decentralization period that includes the financial crisis period is from 1996 to 2000 and the post-decentralization period is from 2001 to 2005.

The issue with the optimization incentive structures from fiscal decentralization is related to the fact that some revenues and expenditures are still administered by the central government, hampering states from capitalizing the full benefits of fiscal decentralization. This issue is particularly critical and sensitive among regions since it affects fiscal resource imbalances. Unequal redistributive policy typically draws dissatisfaction from rich resource regions, because they believe that it is unfair for the central government to exploit their resources to subsidize other regions. Yet, fair and progressive revenue sharing schemes between central and state governments can potentially help to reduce regional disparities.

In relation to the regional inequalities in Indonesia, the study by Tirtosuharto (2011) also determines that the positive effect of fiscal decentralization on economic growth is more apparent in rich regions. Poor regions often fail to reap the benefits of decentralization due to the lack of effectiveness of local governments in strengthening the local economic capacity and resources (capital stock, financial and human capital). A number of those considered as poor regions that have abundant natural resources, also heavily depended on revenues from natural resources and failed to support other local economic factors that have a potential to accelerate and sustain growth. Institutional factors such as leadership and good governance is argued to play a substantial role in transforming the local and regional economy into a more competitive and resilient one.

6.   Conclusion

Statistical evidence shows that convergence did not occur during the 1997 financial crisis despite the fact that the effect of the financial crisis in rich regions was much greater than in poor regions. Regions with a lower initial level of per capita income also grew more rapidly than regions with a higher initial level of per capita income during the financial crisis period as shown in the beta convergence test. There was also no indication of regional convergence either from 2003 to 2012 following the period of economic recovery from the 1997 financial crisis and the beginning of decentralization

era. Thus so far, decentralization has not had a positive impact on the process of regional convergence and in fact, the level of inequality among regions increases over time. Further examination on key determinants of growth in leading and lagging regions is deemed necessary to understand the cause and extent of regional inequality in Indonesia.

Finally, a larger policy framework on economic and social equity needs to be an integral part of decentralization policy in Indonesia. The role of the central government in supporting lagging states may be limited under a decentralized system; however, it is the responsibility of the central government to implement a fair distribution policy as one of the fundamentals of regional competitiveness to help reduce regional disparities and accelerate growth at the regional level.

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