Income Inequality and Convergence in Central Java under Regional Autonomy

DARYONO SOEBAGYO[a], MOHD FAHMY-ABDULLAH[b], LAI WEI SIENG[c*] AND JIHAD LUKIS PANJAWA[d]

[a]*Economic Development Study Program, Universitas Muhammadiyah Surakarta, Indonesia*
[b]*Faculty of Technology Management and Business, Universiti Tun Hussein Onn, Malaysia*
[c]*Faculty of Economics and Management, Universiti Kebangsaan Malaysia, Malaysia*
[d]*Faculty of Economics, Tidar University, Magelang, Indonesia*

ABSTRACT

Development cannot be assessed merely based on the economic growth rate, but it entails the aspects of equitable development. Regional inequality becomes a universal problem. The approach that emphasizes macroeconomic growth is inclined to neglect the noticeable gap in inter-regional development. Indonesia had been under a centralized national government for more than three decades. New policy of regional autonomy was then implemented in 2001. The enactment of the Regional Autonomy as adopted from Law No. 21/1999 with the latest revision of Law No. 23/2014 is perceived as an effort to address inequality and injustice between regional developments. This study aims at analyzing regional income inequality and convergence in Central Java under regional autonomy and identifying regencies which are left behind. The analytical tools were Williamson Index, β Absolute Convergence and Klassen Typology. The findings reveal that inter-regional income inequality in Central Java in the period 2000-2004 was high, but it declined in the period 2005-2014. This condition demonstrates the fulfillment of Kuznet's inverted U-hypothesis. Income inequality between regions in Central Java was relatively high and absolute convergence did not occur during the regional autonomy era. The authority need to focus on development in underdeveloped regions to reduce the inequality.

JEL Classification: E24, H23

Keywords: Regional inequality; Convergence; Economic growth

* Corresponding author: Email: laiws@ukm.edu.my

INTRODUCTION

The process of development entails not only an economic phenomenon. It is not necessarily assessed based on the achievement of national economic growth, but it has a broader perspective than merely an economic aspect. In fact, the social dimension - which is often neglected in the economic growth approach - actually has a strategic position in the development process. In this process, in addition to the growth-equity considerations in economics, it also considers the impact of economic activities on the social life of the society. Furthermore, this process involves attempts aimed at changing the economic structure in a better direction. Arsyad (2010) suggested national economic development cannot be detached from regional economic development. The success of regional economic development is estimated from the poverty level, income distribution, and unemployment rate. Regional inequality is a universal problem. The disparity becomes an issue of unequal inter-regional development throughout the world regardless of size and level of development. Unequal economic development has given rise to many social, economic and political issues. The approach that emphasizes macroeconomic growth has a propensity to overlook the gap in inter-regional development (Rustiadi, 2011).

Regional economic growth is the growth of community income that occurs in the region, namely the increase in the added value of a region. The increase in income is calculated in real value or expressed in constant prices. It also indicates the compensation of production factors operating in a region (land, capital, labor, and technology), implying it can generally describe the prosperity level of a region. The level is determined not only by the amount of added value but also by the extent of the transfer payments, namely the share of revenue flowing out of a region or obtaining revenues from other regions. The economic basic theory bases its view on the economic growth rate of a region which is determined by the increase in the export rate of the region. Economic activities are classified into basic activities and nonbasic activities. Nevertheless, only basic activities can support regional economic growth (Tarigan, 2005). Essentially, each region has potential resources to support its economic growth. Development and growth take place due to changes in regional productivity. Regional development is carried out through the regional planning process - which is an attempt to devise and implement a theoretical framework into economic policies and development programs by considering regional aspects and integrating social and environmental aspects towards optimal and sustainable welfare. In addition, location also contributes to regional growth because companies principally minimize costs by looking for locations close to the markets. Other variables that affect the quality of a nearby location are labor costs, energy costs, availability of suppliers, communication, education facilities and training, quality of local government, and sanitation. Regional development is basically focused on economic development through various efforts. However, there is a dilemma between emphasizing economic growth and reducing the income gap. High growth rate does not necessarily ensure low income inequality.

Indonesia had been under a centralized national government for more than three decades. New policy of regional autonomy was then implemented in 2001. The enactment of the Regional Autonomy as adopted from Law No. 21/1999 (Law on Local Government) and Law on Fiscal Balance between the Central and Local Government (1999) which were in effect since 2001, with the latest revision of Law No. 23/2014 is perceived as an effort to address inequality and injustice between regional developments. The decentralization process has given authority from the central government to regional (province, district/city) government. Both revised Laws have given broad authority to the local government at the level of province and district/city in all aspects, except on defense, security, foreign affairs, monetary and fiscal affairs, religion, and justice affairs which remained to be handed by central government (Kis-Katos and Sjahrir, 2014). The urgency of political decentralization and regional autonomy is hoped to create efficiency and effectiveness of government management that leads to public harmony; regional administration that is responsible in various aspects of local community's life; local government that is responsive towards various issues that are encountered by local community; and an increase role of community in democracy administration process. Therefore, political decentralization must be able to enhance the welfare and quality of life of the local community (Andi Yakub, 2018)

Regional autonomy becomes one of the important aspects to reduce the inter-regional gap and to complete the backwash process that has caused explorative inter-regional relations. Report of the National Medium Term Development Plan (RPJMN) 2015-2019 explained that the national economic growth continued to increase and was quite stable ranging from 5.0 - 6.6%% over the past fifteen years. However, the

income inequality widened as reflected in Indonesia's Gini ratio (Gini coefficient) which improves from 0.36 to 0.41 in 2013. It was also followed by regional growth of several regions. Yet inequality still occurred with a portion of the GDP in Java towards the national GDP was relatively high and remained stable from 57.9% in 2008 to 58% in 2013. Likewise, Bappenas (2015) also reported similar results for the evaluation of the RPJMN of 2010 - 2014 from the aspect of development inequality. Based on the high level of income inequality levels between residents (Gini ratio) in 2009 - 2014; the high level of inter-regional development inequality in 2009-2013 (Williamson index); the low per capita GRDP in 2010 – 2014; and the high poverty level in 2009-2013, seven provinces were deemed in serious concern in the issue of development inequality, one of which was Central Java. The Central Java Province covers an area of 32,548.20 km or around 25.04 percent of the total area of Java (1.70 percent of Indonesia's area). Central Java Province is a region with a diverse topography, namely in the form of lowlands, highlands, mountains and coastal areas. About 53.30 percent of the Central Java Province is at an altitude between 0 and 100 meters above sea level. The climate in Central Java includes dry and wet with diverse rainfall, both dry and wet areas ranging from 800 to 8,890 millimeters annually. Administratively in Central Java there are 35 districts / cities, consisting of 29 regencies and 6 cities. Central Java is one of the provinces with abundant natural resources and human resources. The use of natural resources and human resources is sometimes still not optimal, so the results obtained are also not optimal. Local governments are the important role holders in making policies to make a region have high productivity, where with this productivity economic growth can be maintained. By looking at the economic sectors as a benchmark for economic growth, the sector that has the greatest potential as a contributor is the maximum efficiency and utilization of natural resources and human resources.

Since the implementation of regional autonomy is to as an effort to address inequality and injustice between regional developments. After more than a decade, however, the income inequality levels between residents and inter-regional development inequality are still considered high. This study aims at analyzing regional income inequality and convergence in Central Java under regional autonomy in the past decade and identifying regencies which are left behind. This study is essential in two ways: 1) identify the potential of regional autonomy policy in reducing income inequality in future and 2) provide deep insight on left behind - regencies which needs more attention in development plan. The significance to identify problems in the aspect of inequality is bold. It requires regional profiles that contain regional policies in addressing development inequality and its analysis. The structure of this manuscript is as follow: second section of this article discuss the theory behind economic development and income inequality and previous relevant studies; third section explains the methodology and sources of data; fourth section reports the results and discussion on the findings; the last section concludes and provides policy implications.

LITERATURE REVIEW

Inter-regional inequality is a common phenomenon in economic activities. It occurs because of differences in natural resources and demographic conditions of regions. Such differences lead to the various abilities of regions in carrying out the development process. Therefore, in each region, there are usually developed and developing areas. From the perspective of Neo-classics (Sjafrizal, 2012), at the beginning of national development, inter-regional inequality tends to be high. It frequently occurs until it reaches its peak. Subsequently, if the development continues, this inequality will gradually decrease. Based on this hypothesis, inter-regional inequality in developing countries tends to be higher and it will be lower in developed countries. Briefly, the inter-regional inequality curve is in the form of an inverted U letter. Later, this Neo-classical hypothesis was tested by Williamson (1965) through a study of inter-regional development inequality in both developed and developing countries by using time series and cross-section data. The results of this study indicated that this hypothesis—which was formulated based on theories— turned out to be empirically proven. It implies that the national development does not automatically omit inequality between regions, but instead showing an opposite trend at the beginning of the process.

In analyzing the problems related to regional planning and development, the emphasis is on the basic concepts of the region hence various empirical studies of economic activities are approached from the perspective of their spread in various regions (Isnowati, 2007). The relationship between income inequality and economic growth has been explained by Kuznet's inverted U-hypothesis. The hypothesis starts from

economic growth (derived from the assumption that low income is associated with an agrarian society at the initial level), which initially rises at a low-income inequality until a certain growth rate subsequently decreases (Isnowati, 2007). Williamson in Adisasmita (2013) suggested four factors underlying the disparity between regions in the context of regional income, namely: natural resources, labor migration, capital transfer, and government policy. Meanwhile, Subandi (2008) focused on the regional economic development a study, disclosing the inter-regional inequality is caused by four factors, namely: inequality in the industrial sector, low production factor mobility, demographic factor, and inefficient inter-regional trade. Inter-regional inequality is caused by the differences in resources, labor, and technology. As a result, the ability of a region to promote the development process varies hence there is a classification of developed and developing regions.

Economic inequality is commonly decomposed in sub-groups, sources of income, various unit characteristics and the presence of heterogeneity which causes a propensity for inequality between regions and between economic sectors (Kuncoro, 2013). Several studies on economic inequality began from inequality between countries (Aizenman, 2012), between provinces within a country (Yeniwati, 2013), between districts/cities within a province (Mahrizal, 2014) and inter-sub-districts within a district/city (Raswita, 2013). Furthermore, convergence has two inter-related hypotheses. First, according to Barro and Sala-i-Martin in Kuncoro (2013), in the closed economy, the growth rate of per capita income has a negative relationship with the level of output or initial income per capita. Developing countries/regions can have relatively faster economic growth rate than developed countries/regions. Second, Abramovitz in Kuncoro (2013) stated that countries with low productivity have vast potential to achieve high growth rate. Nevertheless, the potential will deteriorate if the level of productivity growth reaches the level of productivity of the country as the reference.

A recent study on Indonesian economic geography by Hill (2009) suggested that Indonesia continued to show great diversity in socio-economic indicators and concentrations of economic activity, particularly in Java and Sumatra. Furthermore, Lewis (2005) unveiled that Indonesia has experienced a significant transformation in many aspects since 2001. These transformations have an impact on the spatial dimension of economic development, namely, regional income disparity. Firdaus (2009) claimed that the convergence process occurs among provinces in Indonesia. Nevertheless, it is relatively very slow compared to other studies in developing countries. Resosudarmo and Vidyattama (2006) reported the findings based on an empirical study of regional income disparities in Indonesia using panel data analysis, in which the income inequality per capita among provinces in Indonesia was found to be high. Moreover, Malik (2014) on a study on convergence among provinces in Indonesia summarized that there was a sigma convergence and beta convergence after the implementation of regional autonomy. Akita (2011) also confirmed that in overall, inequality takes place throughout Indonesia, mostly in the Java-Bali regions. However, Kuncoro and Murbarani (2016) Using panel data of 26 provinces in Indonesia found that the trend of inequality tended to decline over the period of 1994-2012. The inequality trend shows a declining pattern up till 2010 but turns to increase after 2010 and form a cubic rather than a quadratic inverted U curve. Then Akhmad et al. (2018) confirmed that income inequality shows a worsening number characterized by an increasingly widening Gini index wherein 2009 the Gini index was 0.37 while in 2015 the Gini index rose to 0.41. It shows that the growth of development in Indonesia completely lacks in quality (Akhmad et al., 2018). A more recent study by Tri Wahyuningsih et al. (2019) reported that the inequality of income distribution between islands in Indonesia is classified as medium and high inequality. The highest inequality in income distribution is in Java, while the lowest income distribution inequality is in Kalimantan. Meanwhile, provinces with lower levels of inequality in income distribution in Indonesia are the provinces of Riau, Jambi, Bengkulu, Lampung, West Java, Banten, Central Sulawesi, Gorontalo, and West Papua.

Studies on individual province in Indonesia support the findings on Indonesia as a whole. Muhammad Hidayat et al. (2018) studied on inequality of interregional development in Riau using panel data regression approach period 2011-2016 shows shows a decreasing trend of interregional development inequality, and the source of inequality comes from within the development area. Besides, the variable of fiscal decentralization, government expenditure, Human Development Index, and economic growth have negative and significant relation to inequality. Meanwhile, a study focused on a province in Indonesia was carried out by Mahrizal (2014) revealed high inequality and non-convergence in Aceh. Isnowati (2007) conducted an empirical study in testing Kuznet's inverted u-hypothesis about the relationship between economic growth and income

inequality in the Development of Region I in Central Java. The Williamson Index and Theil Index were employed to measure income inequality. The results divulged that income inequality in the Development of Region I in Central Java increased. Kuznet's inverted U-hypothesis is presumed to be effective in examining the Development of Region I in Central Java. A later study done by Muhammad Firdaus et al. (2012) on the dynamics of disparity in economic development among regions in Java Island after the decentralization policy. The study employs the data of 105 districts/cities from 2001 up to 2009. Their result show that the disparity of regional income among districts/cities is still high in Java Island, while the disparity is dominated by the income inequality among the cities. In addition, significant determinants of disparity among regions in Java Island are share of manufacture, level of labor education, health infrastructure, power and water supply. A recent study by Dhiah Utari and Retni Cristina (2015) on inequality in provinces in Indonesia, including Central Java, also proves the existence of inverted U-shaped Kuznets Curve in Indonesia and it may have the turning points when the real GDP per capita in each province reached Rp. 179.41 million/year.

Study on inequality in Indonesia post decentralization were conducted by a number of researchers. Earlier study by Nugrahanto and Muhyiddin (2008) using panel data set from 2001 to 2004 found that fiscal decentralization seems to have failed to improve the regional inequality in Indonesia. However, the results are not adequate to reveal the real relationship between fiscal decentralization and regional inequality as this research only incorporates a limited period of data. A study using a longer period of data done by Abd. Jamal et al. (2015). They analyzed the success of proliferation of districts as political economic policy in Indonesia to reduce economic growth disparities among districts in Aceh Province, and factors affecting these. Cross sectional and time series in periods 2001-2012 data were employed by panel regression analysis model. Their estimation results showed that convergence of economic growth, both σ (sigma) and β (beta) convergence existed significantly. They concluded that regional autonomy have resulted in a decreasing economic growth disparities among districts di Rudy and Baldric Siregar (2015) evaluate the implementation of regional autonomy in improving the welfare by using capital expenditure and growth as an intervening variable and data of 461 counties and cities, the period of 2006-2013. Their empirical evidence shows regional autonomy has positive influence on capital expenditure but negative and significant relationship between regional autonomy and economic growth. Meanwhile, regional autonomy was found to has positive impact on the welfare of society, which measured by Human Development Index (HDI). On the other hand, in terms of income disparities, there are significant Gini index differences before regional autonomy and after regional autonomy in Indonesia, where high-income disparities occurred after regional autonomy compared to the era before regional autonomy (Tri Wahyuningsih et al., 2019).

METHODOLOGY

The present study explicates the income inequality in Central Java during the period 2000-2014. Data sources were obtained from Statistics Indonesia (*Badan Pusat Statistik/BPS*) and previous studies. Kuncoro (2013) argued that the development inequality between regions can be analyzed using Williamson inequality index, Theil Entropy index, and Convergence. Williamson index ranges from 0 to 1, which is increasingly close to one, meaning that the area is increasingly uneven/high inequality. If it is close to zero, the examined study area will be more evenly distributed. The equation of Williamson index is as follows:

$$IW = \frac{1}{\bar{y}}\left[\sum_{i-1}^{n}(y_i - \bar{y})^2 \frac{A_i}{A_{tot}}\right]^{1/2} \tag{1}$$

where IW the Williamson index; Y_i is the Gross Regional Domestic Product (GRDP) per capita of regency/city of i; $\bar{y}$ is the average per capita provincial GRDP; A_i is the number of residents in the regency/city of i; A_{tot} is the total population of the province.

Barro and Sala-i-Martin in Kuncoro (2013) stated that statistically, the reduction of dispersion of a group of data towards a particular value over time is called convergence. It is a derivative concept of the Neo-classical income growth model. Absolute convergence is applicable if the economy is essentially equal; there is no difference in the amount of power of the starting capital. In the case, economically disadvantaged/developing regions have an inclination to grow faster than developed regions. Meanwhile, the

concept of β Absolute convergence for cross-sectional data is used as a nonlinear approach as expressed as follows:

$$\frac{1}{T-t} \cdot log\frac{Y_{iT}}{Y_i} = \alpha - \left(\frac{1-e^{-\beta T}}{T-t}\right) \cdot logY_i + \mu_i \qquad (2)$$

where i is a regional unit, Y is output (income) per capita, α is constant term between economic units of i; t is the initial year of observation, and T is the final year of observation; T-t is observation period. The left side is annual growth between times t and T. In equation 1.4 if it is estimated using the regression equation will be as follows:[1]

$$Y_{i,t,t+T} = a + b \ log \ (y_{i,t})+ u_{i,t} \qquad (3)$$

where: a is intercept; b = -(1-e$^{-\beta T}$)/T (b < 0 and significant) and u$_{i,t}$ shows the convergence rate each year which value ranges from 0 to 1; t+T is an economic i with the annual growth rate of GRDP per capita in between year t and t+T, and log(y$_s$) is log of GRDP per capita of economic i at period t. In order to analyze the classification of economic growth of districts/cities in Central Java, the Klassen Typology analysis was used. It is a tool to determine an overview of the economic growth pattern and structure of each region. Regional typology basically divides regions based on two major indicators, namely regional economic growth and regional income per capita. By determining average economic growth as the vertical axis and per capita income as the horizontal axis, the observed area was divided into four, namely developed and fast-growing quadrant (Quadrant I), developed but lagging quadrant (Quadrant II), fast-growing quadrant (Quadrant III), and developing/underdeveloped quadrant (Quadrant IV). The Classification of Klassen typology is shown in Table 1.

Table 1 Classification of Regional Typology

GRDP contribution (y) Growth rate (r)	yik > yi	yik < yi
rik > ri	High income and high growth	Low income and high growth
rik < ri	High growth and low growth	Low income and low growth

RESULTS AND DISCUSSION

The income inequality between regencies/cities in Central Java in period 2000-2014 is very high. The highest real income per capita is Kudus regency, Semarang city, and Cilacap regency. Meanwhile, other regencies/cities relatively primarily have a low real income per capita. During the observation, there was a significant gap among regencies/cities in Central Java as presented in Figure 1.

---

[1] Barro and Sala-i-Martin (1991), if the real GDP per capita for the cross sectional data of the economy i, then Y$_{i,t,t+T}$=log (y$_{i,t+T}$/y$_{i,t}$)/T.
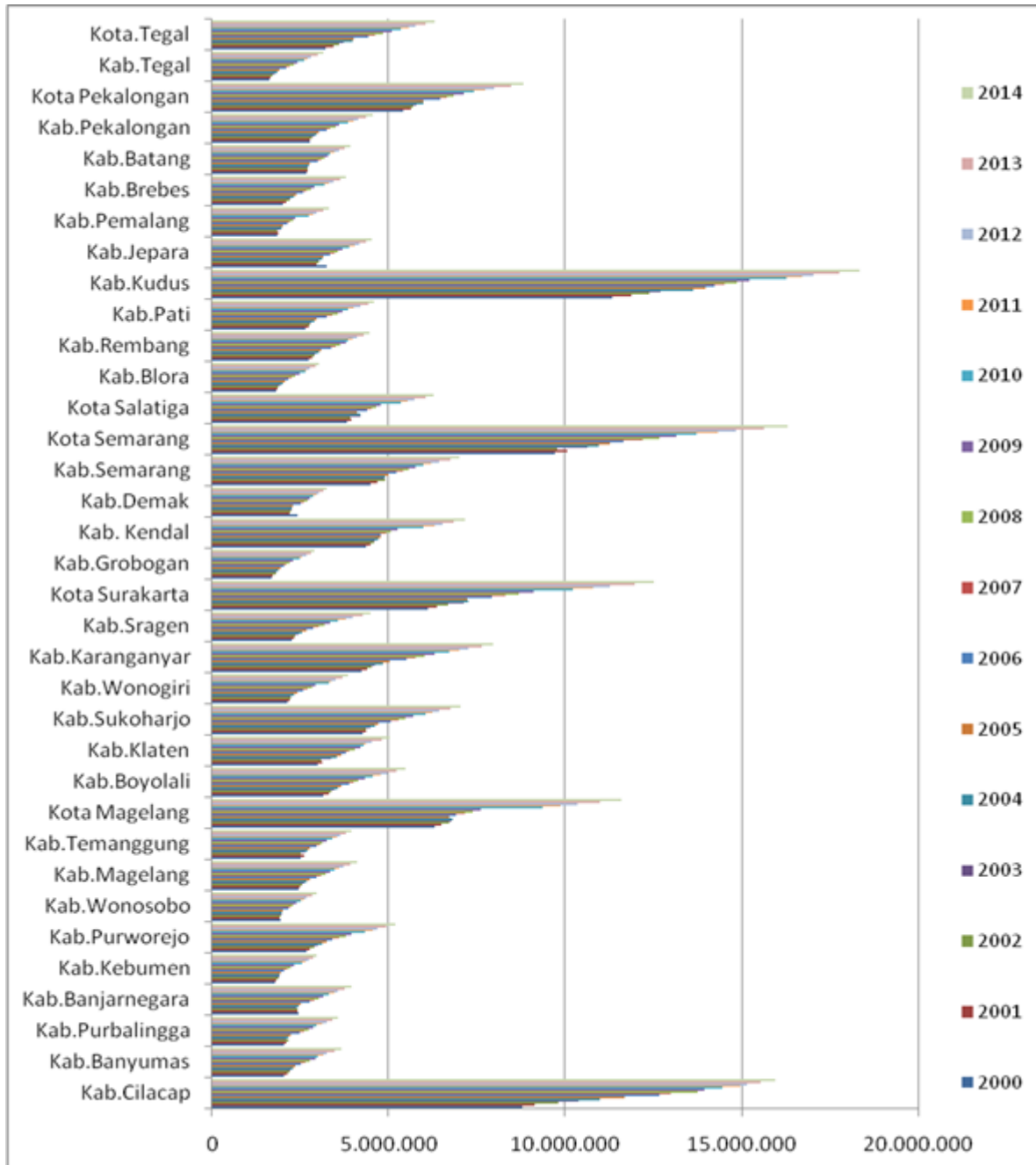
Source: BPS Jawa Tengah, processed data.

Figure 1 Real Income per capita of Regencies/Cities in Central Java

The highest spatial concentration in the period 2000-2014 (15 years) occurred in the Semarang Residency, which is allegedly due to Semarang city which functions as the provincial capital of Central Java and an economic center. The highest share in the GRDP of Central Java was Semarang city, while the lowest was Kedu regency. The share of Semarang city was 24%, followed by Banyumas regency of 20%, Surakarta city of 18%, Pati regency of 16%, Tegal regency of 13% and Kedu regency of 9% as illustrated in Figure 2. The results of the study from the other side by looking at the growth of efficiency and competitiveness of the implications for the sector in the region (Daryono, 2016) shown that, regions with three lagging sectoral specializations are Banyumas, Pekalongan City, Pemalang, Magelang city, Salatiga city, Surakarta city. Regions with the highest three sectoral competitive advantages includes Blora, Banjarnegara, Wonosobo and Wonogiri. Regions with three sectoral specialization and competitive advantages includes Wonogiri, Wonosobo, Banjarnegara and Blora. Regions that have the highest three comparative advantages includes Banyumas, Magelang City, Pekalongan City, Pemalang, Salatiga City and Surakarta City.
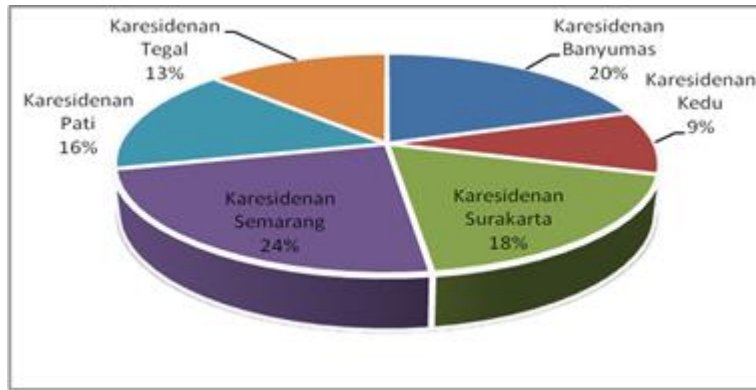
Source: BPS Jawa Tengah, processed data.

Figure 2 The Share of GRDP of Central Java

Inequality reflects the gap between high-income regions and low-income regions. High economic growth does not necessarily describe the decline in inequality between regions. Economic growth in Central Java during the observation period showed fluctuating trend. The highest economic growth occurred in 2012 at 6.34%, while the lowest occurred in 2002 at 3.55% as demonstrated in Figure 3.
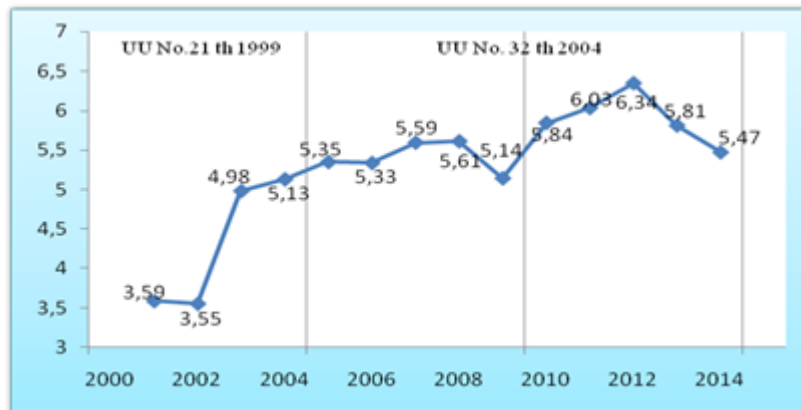
Source: BPS Jawa Tengah, processed data

Figure 3 The Economic growth of regencies/cities in Central Java

The inter-regional income inequality was estimated using the Williamson index, in which it reveals that inequality in Central Java is quite high (>0.6). The highest income inequality was 0.754 in 2005, while the lowest was 0.684 in 2000. It continued to increase from 2000-2005 and later was slightly declined as illustrated in Figure 4.
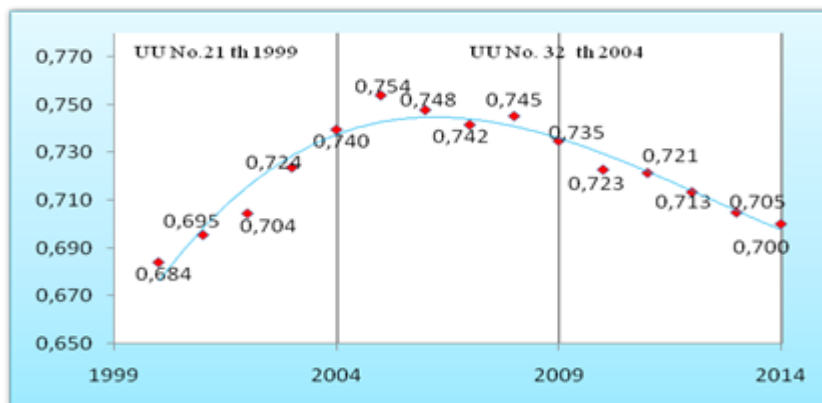
Source: BPS Jawa Tengah, processed data.

Figure 4 The Inter-regional income inequality in Central Java

Figure 3 shows that the implementation of Law No. 21/1999 brought a positive impact on the economic growth in Central Java. Nevertheless, Figure 4 shows that the increase in economic growth was not followed by the reduction of inter-regional income inequality. It has shown that economic growth and inter-regional income inequality has a positive relationship, and thus economic growth does not resolve income inequality. Economic activities in Central Java are concentrated in Cilacap regency, Kudus regency and Semarang city, which also indicate their position as the greatest contributors to GRDP of Central Java. In an effort to accelerate the performance in terms of regional autonomy, Law No. 21/1999 was revised into Law No. 32/2004. The later version was updated with latest developments in administrative system and demand for regional autonomy. During the implementation of the laws, the economic growth in Central Java tended to increase while inter-regional income inequality decreased. Based on Figure 4, the revision successfully reduced income inequality in Central Java. There is a decreasing trend in the magnitude of inequality after 2004. The inter-regional income inequality in Central Java depicts the fulfillment of Kuznet's inversed U-hypothesis. The results of the present study also support Isnowati (2007). According to the Neo-classical view (Sjafrizal, 2012), at the beginning of the development process of a region, inequality between regions tends to increase. Nevertheless, when the process is continued, the inequality will gradually decline. Based on this hypothesis, the inter-regional inequality in developing countries tends to be high, while the level is lower in the developed countries. Briefly, the inter-regional inequality curve is in the form of an inverted U letter. It implies the development of a region does not automatically reduce inter-regional inequality, even contradictive trend occurs at the initial stage.

Convergent economic conditions are opportunities for developing/underdeveloped regions to spur their economic growth. Nevertheless, the low starting income per capita is estimated to trigger a high economic growth rate. The results of absolute convergence analysis are presented in Table 2.

Table 2 Results of Absolute Convergence Regressions

Parameter	Estimation in 2000-2004	Estimation in 2005-2014
Constant	-0.8488	-0.5664
	(-0.1265)***	(0.1397)***
Log(GRDP per capita 2000)	0.0444	-
	(0.0195)**	-
Log(GRDP per capita 2005)	-	-0.0319
	-	(-1.4952)
Normality (Jarque Bera)	2.5043	2.1273
	(0.2859)***	(0.3452)***
Autocorrelation (Breusch Godfrey)	3.6565	1.6047
	(0.3010)***	(0.6583)***
Heteroscedasticity (White)	0.7317	4.5646
	(0.6936)***	(0.1021)***
Specification model (Ramsey RESET)	1.0185	1.3060
	(0.3729)***	(0.2616)***
R-squared	0.1361	0.0635
F-statistic	5.1994	2.2357
	(0.0292)**	0.1444

Note: Description: *** significant at 5% level of significance; ** significant at 5% level of significance.
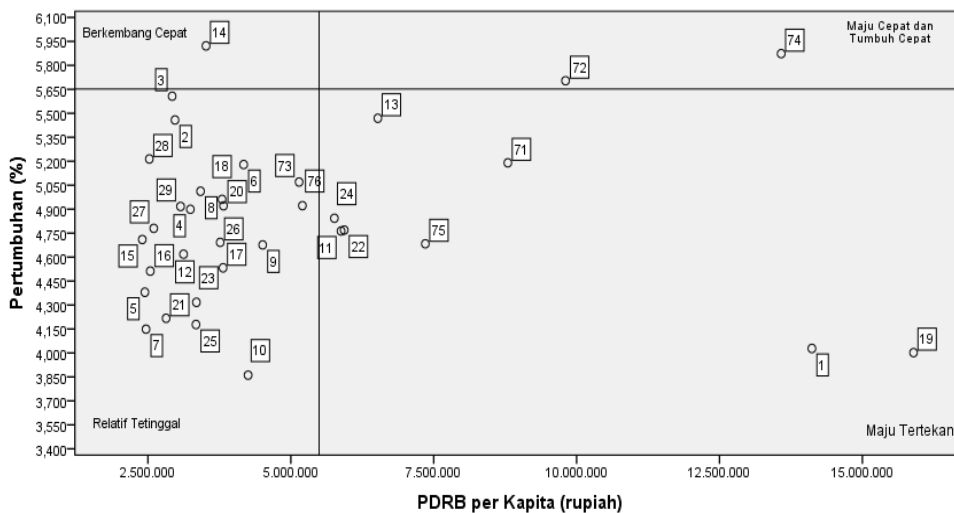
Source: BPS Jawa Tengah, processed data.

Table 2 indicates that in the periods of 2000-2004 and 2005-2014, absolute convergence did not occur in Central Java. The absolute convergence coefficient value is positive in which it reflects the occurrence of divergence or tendency to increase in the distribution of per capita GRDP between regencies/cities in Central Java. Law No. 21/1999 and Law No. 32/2004 had not been able to support the income growth of developing/underdeveloped regencies/cities. They are lagged behind developed regencies/cities. Most of them still have low productivity, implying high interregional income inequality. It is also indicated by the index of greater than 0.6. During the period 2000-2014, the regions with the highest real income per capita included Kudus regency, Semarang city, and Cilacap regency. In addition, the spatial concentration of economic activities is mostly concentrated in Semarang residency. This residency accounts for nearly 25% of GRDP of Central Java for 15 years (2000-2014). It is expected that the revision of the Law on regional autonomy will not only increase economic growth but also promote equity in regional development.
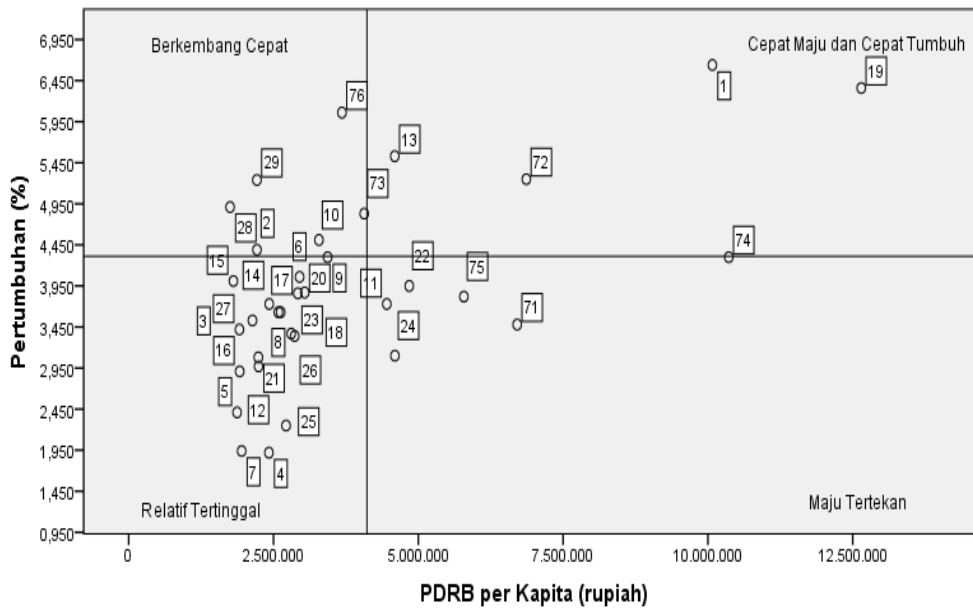
Source: BPS Jawa Tengah, processed data.

Figure 5. The Economic status of regencies/cities of Central Java based on regional typology, 2000-2004.

Source: BPS Jawa Tengah, processed data.

Figure 6 The Economic status of regencies/cities of Central Java based on regional typology, 2005-2014.

Description:

1: Cilacap	8: Magelang	15:Grobogan	22: Semarang	29: Brebes
2: Banyumas	9: Boyolali	16: Blora	23:Temanggung	71:Magelangcity
3:Purbalingga	10: Klaten	17:Rembang	24: Kendal	72: Surakarta city
4:Banjarnegara	11: Sukoharjo	18: Pati	25: Batang	73: Salatiga city
5: Kebumen	12: Wonogiri	19: Kudus	26: Pekalongan	74: Semarang city
6: Purworejo	13:Karanganyar	20: Jepara	27: Pemalang	75: Pekalongancity
7: Wonosobo	14: Sragen	21: Demak	28: Tegal	76: Tegal city

Results of Klassen Typology are reported in Figure 5 and 6. Observation revealed that many regions were included in underdeveloped quadrant in period 2000-2014. Meanwhile, several regencies/cities could be classified as developed and fast-growing regions, namely: Cilacap regency, Karanganyar regency, Kudus regency, Surakarta city and Semarang City in 2000-2004, while only Surakarta city and Semarang city in 2005-2014. Furthermore, in a quadrant of developed but lagging regions, there were Sukoharjo Regency, Semarang regency, Kendal Regency, Magelang city, and Pekalongan city in 2000-2004, and added with Cilacap regency, Karanganyar regency, and Kudus regency in 2005-2014. The quadrant of fast-growing regions in 2000-2004 included Tegal city, Salatiga city, Brebes Regency, Klaten regency, Banyumas regency,

and Tegal regency. In 2005-2014, only Sragen regency was classified in this quadrant. In 2000-2004, the quadrant of developing regions included Purbalingga regency, Banjarnegara regency, Kebumen regency, Purworejo regency, Wonosobo regency, Magelang regency, Boyolali Regency, Wonogiri regency, Sragen regency, Grobogan Regency, Blora regency, Rembang Regency, Pati regency, Jepara regency, Demak regency, Temanggung regency, Batang Regency, Pekalongan regency, and Pemalang regency. Meanwhile, in 2005-2014, regions included in this quadrant were Banyumas regency, Purbalingga regency, Banjarnegara regency, Kebumen regency, Purworejo regency, Wonosobo regency, Magelang regency, Boyolali Regency, Klaten regency, Wonogiri regency, Sragen regency, Grobogan Regency, Blora regency, Rembang Regency, Pati regency, Jepara regency, Demak regency, Temanggung regency, Batang Regency, Pekalongan regency, Tegal Regency, Brebes Regency, Pemalang regency, Salatiga city and Tegal city.

Regions in Central Java which are included in the classification of fast-growing and fast-growing regions are Cilacap Regency, Karanganyar Regency, Kab. Kudus, Surakarta City and Semarang City in 2000-2004, while in 2005-2014 there were only 2 regions, Surakarta City and Semarang City. Then those in the depressed advanced area are Kab. Sukoharjo, Kab. Sarang, Kab. Kendal, City of Magelang and Pekalongan City in 2000-2004, whereas in 2005-2014 the developed regions were depressed, namely Kab. Cilacap, Kab. Karanganyar and Kab. Kudus. Whereas those in the fast developing regions in 2000-2004 were Tegal City, Salatiga City, Berebes Regency, Klaten Regency, Banyumas Regency, and Tegal District. In 2005-2014 there was only one fast developing area, namely Sragen Regency. As well as in 2000-2004 which included relatively underdeveloped areas were Purbalingga Regency, Banjarnegara Regency, Kepumen Regency, Purworejo Regency, Wonosobo Regency, Magelang District, Boyolali Regency, Wonogiri Regency, Sragen Regency, Regency. Grobogan, Kab. Blora, Kab. Rembang, Kab. Pati, Kab. Jepara, Kab. Demak, Temanggung Regency, Batang Regency, Pekalongan Regency, and Kab. Pemalang, while in 2005-2014 are Kab. Banyumas District, Purbalingga Regency, Banjarnegara Regency, Kepumen Regency, Purworejo Regency, Wonosobo Regency, Magelang Regency, Boyolali Regency, Klaten Regency, Wonogiri Regency, Sragen Regency, Grobogan Regency, Blora Regency, Blora Regency, Kab. Rembang, Kab. Pari, Kab. Jepara, Demak Regency, Temanggung Regency, Batang Regency, Pekalongan Regency, Tegal Regency, Brebes Regency, Pemalang Regency, Salatiga City and Tegal City.

CONCLUSION

This study aims to analyzing regional income inequality and convergence in Central Java in the regional autonomy era. Based on the analysis and discussion, several points can be drawn as clarified as follows: First, based on the analysis of Williamson index in the period 2000-2004, income inequality increased and it decreased in the period 2005-2014. It reveals that the income inequality of regencies/cities in Central Java is relatively high. Second, the inter-regional income inequality in Central Java indicates the inversed U-hypothesis as proposed by the Neo-classics has not been fulfilled. This hypothesis presumes that at the beginning of national development, development inequality between regions tends to be high. This process will occur until it reaches its peak. Subsequently, the continuous process will gradually deteriorate the development of inequality between regions. Third, both in the period 2000-2004 and 2005-2014, absolute convergence did not occur in Central Java. It implies that developing/under-developed regencies/cities have not been able to equalize their pace of economic growth with developed regencies/cities. During the observation, many regencies/cities could be classified in developing/under-developed quadrant. the main purpose of economic development besides creating economic growth as high, should also to remove and reduce the level of poverty, inequality and the unemployment rate. Therefore government in Central Java should pay more attention on planning and selecting appropriate development policies in underdeveloped regencies in order to reduce the inequality. The study, however, has a limitation. It is difficult to have access the data and modification need to done. This has caused difficulties in obtaining extensive data which is valuable for this study. Based on the limitations that have been encountered in this study, further research is recommended to adopt more accurate data and focus on identifying others variable for this disparities convergence.

REFERENCES

Nugrahanto, AS & Muhyiddin 2008, 'Fiscal Decentralization and Regional Inequality in Indonesia 2001-2004', *The Indonesian Journal of Development Planning*, vol. 1, pp. 1-19.

Abd. Jamal, Said Muhammad, Raja Masbar & Aliasuddin 2015, 'Did Indonesian Political Economic ReformReduce Economic Growth Disparities Among Regions?', *Business & Economics Review*, vol. 25, pp. 81-94

Adisasmita, R 2013, *Teori-teori pembangunan ekonomi*, Yogyakarta: Graha Ilmu.

Aizenman, JM 2012, November, 'The relationship between structural change and inequality: A conceptual overview with special reference to developing Asia', *ADBI Working Paper Series*, vol. 396, pp. 1-22.

Akhmad, Alyas & Amir 2018, 'The Effect Of Economic Growth And Income Inequality on Poverty In Indonesia', *Journal of Economics and Finance*, vol. 9, pp. 20-26.

Akita, TP 2011, 'Structural change and regional income equality in Indonesia: A bidimensional decomposition analysis, *Asian Economic Journal*, vol. 38 no. 2, pp. 201-222.

Andi Yakub, Ahmad Bashawir, AG & Mohammad Syafi'i Anwar 2018, 'Urgency of Political Decentralization and Regional Autonomy in Indonesia: Local Perspectives', *Journal of International Studies*, vol. 14, pp. 141-150.

Arsyad, L 2010, 'Ekonomi pembangunan', Yogyakarta: STIM YKPN.

Badan Pusat Statistik various years, *Produk domestik regional bruto dan jumlah penduduk menurut kabupate/kota*, Jawa Tengah: Badan Pusat Statistik.

Bappenas 2015, *Kementerian PPN/Bappenas gelar rakor evaluasi RPJMN 2010-2014 dari sisi ketimpangan pembangunan*, viewed 20 February 2017, <http://www.bappenas.go.id/id/berita-dan-siaran-pers/kementerian-ppnbappenas-gelar-rakor-evaluasi-rpjmn-2010-2014-dari-sisi-ketimpangan-pembangunan/>.

Bappenas 2015-2019, *Rencana pembangunan jangka menengah nasional.* Jakarta: Badan Perencanaan Pembangunan Nasional.

Barro, R & Sala-i-Martin, X 1991, 'Convergence across State and Regions', *Brookings Paper on Economic Activity*, vol. 1, pp. 107-182.

Daryono MR 2016, Paleoseismology tropis Indonesia (dengan studi kasus di Sesar Sumatra, Sesar Palukoro-Matano, dan Sesar Lembang). Institut Teknologi Bandung (in Indonesian).

Emilia & Imelia 2006, *Modul Ekonomi Regional*, Jambi: Jurusan Ilmu Ekonomi FE Universitas Jambi.

Firdaus, MD 2009, 'Dynamic Analysis of Regional Convergence in Indonesia', *International Journal of Economics and Management*, vol. 3, no. 1, pp. 73-86.

Dhiah Utari, GA & Retni Cristina 2015, 'Growth and Inequality in Indonesia: Does Kuznets Curve Hold?', *Journal of Modern Accounting and Auditing*, vol. 11, pp. 93-111.

Hill, HE 2009, 'Economic Geography of Indonesia: Location, Connectivity and Resources. (d. Y. (Eds)', *Reshaping Economic Geography In East Asia*, pp. 115-134.

Isnowati, S 2007, 'Pengujian Hipotesis Kuznet di Wilayah Pembangunan I Jawa Tengah', *Jurnal Bisnis dan Ekonomi*, vol. 14, no. 1, pp. 1-14.

Iswanto, D 2015, 'Ketimpangan Pendapatan Antar Kabupaten/Kota dan Pertumbuhan Ekonomi Di Propvinsi Jawa Timur', *Signifikan*, vol. 4, no. 1, pp. 41-66.

Kis-Katos, K & Sjahrir, BS 2014, 'The impact of fiscal and political decentralization on local public investments in Indonesia', IZA Discussion Paper No. 7884.

Kuncoro, M & Murbarani, N 2016, 'Regional inequality in Indonesia, 1994-2012', *The Business and Management Review*, vol. 8, pp. 38-52.

Kuncoro, M 2013, *Mudah Memahami dan Menganalisis Indikator Ekonomi*, Yogyakarta: UPP STIM YKPN Yogyakarta.

Lewis, B 2005, 'Indonesian Local Government Spending, Taxing and Saving: An Explanation of Pre-and Post-Decentralization Fiscal Outcomes', *Asian Economic Journal*, vol. 19, no. 3, pp. 291-317.

Mahrizal, AH 2014, 'Analisis Kesenjangan Pendapatan Antar Kabupaten/Kota dalam Provinsi Aceh', *Jurnal Ilmu Ekonomi*, vol. 2, no. 2, pp. 91-100.

Malik, AS 2014, 'Analisis Konvergensi Antar Provinsi di Indonesia Setelah Pelaksanaan Otonomi Daerah Tahun 2001-2012', *Journal of Economic and Policy*, vol. 7, no. 1, pp. 92-101.

Muhammad Firdaus, Krismanti & Wiwiek Rindayati 2012, 'The Dynamics of Regional Disparity in Java Island After Fiscal Decentralization', *International Journal of Economics and Management*, vol. 6, no. 1, pp. 150-166.

Muhammad Hidayat, Ranti, D & Fikry, HM 2018, 'Inequality of Interregional Development in Riau Indonesia; Panel Data Regression Approach', *International Journal of Economics and Financial Issues*, vol. 8, no. 5, pp. 184-189.

Myrdal, G 1957, *Economic Theory and Under-development Regions*, London: G. Duckwort.

Raswita, NP 2013, 'Analisis Pertumbuhan Ekonomi dan Ketimpangan Pendapatan Antar Kecamatan di Kabupaten Gianyar', *E-Jurnal EP Unud*, vol. 2, no. 3, pp. 119-128.

Resosudarmo, B. & Vidyattama, Y. 2006, 'Regional Income Disparity in Indonesia: A Panel Data Analysis', *ASEAN Economic Bulletin*, vol. 23, no. 1. pp. 31-44.

Richardson, HW 1978, *Urban Economics*, Hinsdale, Illinois: The Dresden Press.

Rudy Badrudin & Baldric Siregar 2015, 'The evaluation of the implementation of regional autonomy in Indonesia', *Economic Journal of Emerging Markets*, vol. 7, pp. 1-11.

Rustiadi, EE 2011, Perencanan dan Pengembangan Wilayah, Jakarta: Yayasan Pustaka Obor Indonesia.

Sjafrizal 2012, *Ekonomi Wilayah dan Perkotaan*, Jakarta: PT RajaGrafindo Persada.

Subandi 2008, *Sistem Ekonomi Indonesia*, Bandung: Alfabeta.

Tarigan, R 2005, *Ekonomi Regional: Teori dan Aplikasi*, Jakarta: Bumi Aksara.

Tri Wahyuningsih, Mohammad Bugis & Saidna Zulfiqar Bin-Tahir 2019, 'Analysis of the Inequality on Inter-regional and Inter-time Income Distribution in Indonesia', *The Journal of Social Sciences Research*, vol. 5, no. 1, pp. 1-8.

Williamson, J.G. 1965, Regional Inequality And The Process Of National Development: A Description Of The Patterns, *Economic Development and Cultural Change,* vol. 13, pp. 3–83

Yeniwati 2013, 'Ketimpangan Ekonomi Antar Privinsi DI Sumatera', *Jurnal Kajian Ekonomi*, vol. 2, no. 3, pp. 1-21.