

WORKING PAPER 50-e - 2020

REGIONAL INEQUALITY IN INDONESIA: PRE AND POST REGIONAL AUTONOMY ANALYSIS

Sonny Harry B Harmadi
Ardi Adji

DECEMBER 2020

The TNP2K Working Paper Series disseminates the findings of work in progress to encourage discussion and exchange of ideas on poverty, social protection and development issues.

Support to this publication is provided by the Australian Government through the MAHKOTA Program.

The findings, interpretations and conclusions herein are those of the author(s) and do not necessarily reflect the views of the Government of Indonesia or the Government of Australia.

You are free to copy, distribute and transmit this work, for non-commercial purposes.

Suggested citation: Harmadi.S.H.B., Adji.A., Regional Inequality in Indonesia: Pre and Post Regional Autonomy Analysis. TNP2K Working Paper 50-e/2020. Jakarta, Indonesia.

To request copies of this paper or for more information, please contact: info@tnp2k.go.id

The papers are also available at the TNP2K (www.tnp2k.go.id).

THE NATIONAL TEAM FOR THE ACCELERATION OF POVERTY REDUCTION

Office of the Vice President's Secretariat

Jl. Kebon Sirih Raya No.14, Jakarta Pusat, 10110

Regional Inequality in Indonesia: Pre and Post Regional Autonomy Analysis

Sonny Harry B Harmadi, *Department of Development Studies, Institut Teknologi Sepuluh Nopember*, **Ardi Adji**, *TNP2K Vice President Office RI, Statistics Indonesia* (win.djeroh@gmail.com).

ABSTRACT.

The era of reform in Indonesia was initially triggered by the monetary crisis that Indonesia experienced in June 1997, marked by the sharp decline in the value of the Rupiah, Indonesia's national currency. In the year 1999, Law No. 22/1999 on Regional Autonomy and then Law No. 25/1999 on Fiscal Balance between the central and regional governments. Both of these laws would later serve as an "umbrella" for the implementation of fiscal decentralisation in Indonesia. The implementation of regional autonomy in Indonesia was followed by the delegation of a large proportion of the central government's affairs to the regional governments. There are 26 mandatory affairs originally handled by the central government that were delegated to, and are now implemented by, regional governments. The regional autonomy system was enacted formally in 2001. The establishment or delegation of authority to the lower levels of government is one way to improve efficiency and effectiveness in the relationship between the government and the people. The question arises, obviously, will Indonesia, with the fundamental change in the country's political setting, be able to reduce inter-regional inequality? This paper attempts to compare the conditions of inter-regional disparity, that is comparing the conditions before (1995-2001) and after (2002-2017) the implementation of regional autonomy. Based on the results of calculating disparity among the regions related to per capita government expenditures, similar conditions to that of per capita income disparity were found. Nevertheless, one of the positive outcomes of implementing regional autonomy is the decline in educational disparity among regions.

Keywords: Regional Inequality, Regional Autonomy, Regional, Inequality

INTRODUCTION

Indonesia is an archipelagic nation consisting of some 17,504 islands with a total area of 1,904,569 km². Indonesia is the 15th most expansive country in the world. It is estimated that only 6,000 of the islands in Indonesia are occupied. Administratively, the Republic of Indonesia is divided into 34 provinces, 514 regencies/municipalities (98 municipalities and 416 regencies or districts), 7,094 subdistricts, and 83,447 villages. East Java is the province with the largest number of regencies/municipalities, namely 38 while Yogyakarta and West Sulawesi have the least number of regencies/municipalities at 5 each.

The 2010 census indicates that the population of Indonesia has reached 237.6 million, with more than 57 percent of the people living on the island of Java and approximately 21 percent living on the island of Sumatra. Indonesia is the fourth most populous country in the world. Within a period of 80 years (1930 to 2010), the population of Indonesia had risen fourfold. Between the years 2000 to 2010, the average population growth in Indonesia was around 1.49 percent which was higher than the target set by the government of only 1.26 percent per year. It is estimated that there are more than 1,100 ethnic groups in Indonesia.

Regarding the economy, Indonesia's economic growth has been quite stable over the period 2000-08. According to Nugraha and Lewis (2013), Indonesia has experienced significant economic growth in recent years (on average, 5 percent in 2000-08), but many people are still living in poverty. Income inequality, as measured by the official Gini coefficient, has also increased. This paper evaluates household income and income inequality in Indonesia, assessing both market and non-market income to reach a more accurate measure of how actual income affects living standards. We find that if household income considers non-market income, income distribution is significantly more balanced, the coefficient of income inequality falls from 0.41 to 0.21 and the income share of the population's poorest deciles increases more than fivefold. The results suggest that market income alone is a misleading measure of income distribution in Indonesia.

This economic growth in 2007 was the highest since the economic crisis that Indonesia experienced in 1997. In 2008, Indonesia's economic growth faltered a bit, slipping to 6.1 percent. Unfortunately, in 2009, Indonesia's economic performance declined even further and the economic growth rate was only 4.5 percent. This was due to the decline in exports and in the prices of certain major commodities as a result of the global economic crisis. The economic growth rate in 2009 was able to remain positive mainly because of an increase in domestic consumption. The evidence suggests that the general elections of regional heads in that year triggered a high degree of domestic spending to mobilize the national economy. In 2010, the country's economic growth began to rise again, reaching 6.1 percent. The lower 40 percent of Indonesia's population by income experienced lower growth than the national average, with rural areas experiencing worse conditions compared than urban areas.

There are three sectors that are the most dominant in Indonesia's economy, having a 'double digit' contribution to the economy. In 2009, around 26.16 percent of Indonesia's economy was supported by industrial and manufacturing activities, followed by the trade, hotel, and restaurant sectors at 16.90 percent and the agricultural sector at 13.61 percent. In 2010, from approximately 171.02 million people in the working age group (above 15 years old), as many as 116 million were part of the labour force. The majority are males, in a proportion reaching two-thirds of the total labour force. As many as 107.41 million people in the labour force are actively working and about 8.59 million are in open unemployment. This means around 7.41 percent of the labour force are unemployed.

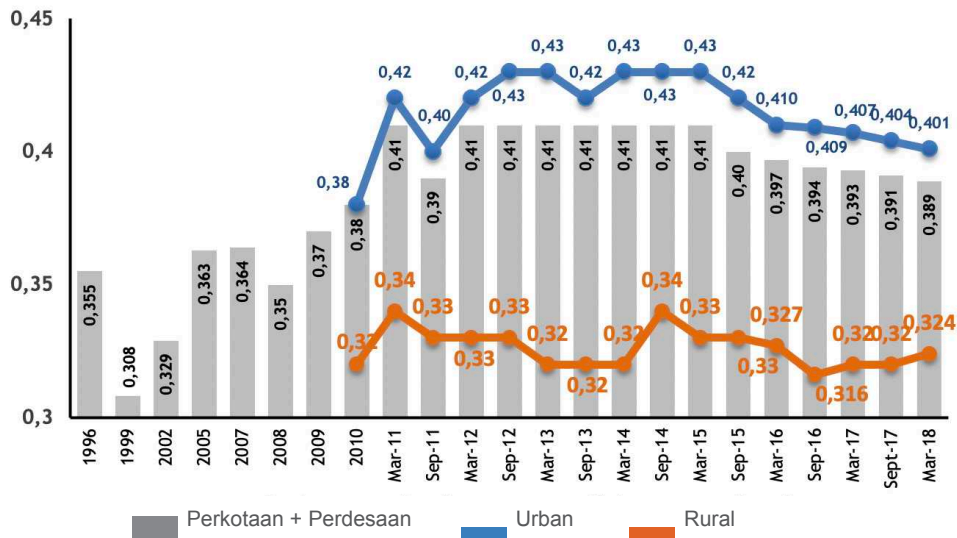
Regionally, during the period of 2002-07, only eight of 33 provinces in Indonesia had economic growth that was above the national average. The provinces of Riau, Jambi, South Sumatra, East Kalimantan, West Sulawesi, Central Sulawesi, Southeast Sulawesi, and West Papua during that specific period experienced a growth that surpassed the national growth rate. This means that the contribution of these eight provinces to the national economy had increased significantly over this period. The implementation of regional autonomy since 2001 has encouraged several regions outside of Java to grow more rapidly. In this case, we must also bear in mind the increased fiscal capacity of each of the regions in financing their own development. Fiscal decentralisation reduces the regional income gap and enables local governments to efficiently provide the public services they need. Finally, decentralisation motivates local politicians to effectively allocate local public goods and services. This is because regional heads are elected through direct elections in Indonesia and they want to be re-elected by serving voters better (Siburian 2019).

Indonesia continues to make serious efforts to improve the quality of life of its people. The human development index for Indonesia in 2010 was still 108 out of 169 countries of the world. Iantatul 2006, uses data from the 1976 Household Expenditure Survey (Susenas) to examine spatial patterns of poverty and inequality in Indonesia. A number of inequality measures are computed for each province (Gini Ratio, Atkinson Index, Theil Index, L-Index) and provincial rankings according to each index are compared. Provinces are also ranked according to a number of poverty indexes, using a poverty line adjusted for differences in price levels between provinces. The correlation between selected measures of poverty and inequality is also investigated and some implications for regional development policy discussed.

Bas 2016 estimated inequality in Indonesia between 1932 and 2008. Inequality increased at the start of this period but declined sharply from the 1960s onwards. The increase was due to a shift from domestic to export agriculture over the period up to the Great Depression. During the 1930s, as the price of export crops declined, the income of rich farmers suffered a blow. This was, however, counterbalanced by an increasing gap between expenditures in the urban and rural sectors, causing an overall rise in inequality. As for the second half of the century, we find that the employment shift towards manufacturing and services—combined with an increase in labour productivity in agriculture—accounts for a fall in inequality. Nevertheless, this period of falling inequality was halted in the 1990s. These inequality trends affected poverty as well, but prior to the 1940s the negative impact of the rise in inequality was offset by an increase in per capita GDP. Between 1950 and 1980 a decline in inequality, combined with increased per capita GDP, rapidly lifted a large proportion of the population above the poverty line.

Since the implementation of regional autonomy in 2002, inequality between regions has continued to increase, from 0.33 in 2002 to become 0.39 in 2017. Since 2011 until 2019 the Gini ratio has ranged from 0.39-0.41 (Figure 1). Miranti et. al. (2014) shows that the effectiveness of growth in alleviating poverty across provinces was greater during decentralisation—that is, between 2002 and 2010—than at any other point since 1984. The growth elasticity of poverty since 2002 is estimated to have been -2.46 , which means that a 10 percent increase in average consumption per capita would have reduced the poverty rate by almost 25 percent. We also find, however, that rising income inequality negated one-quarter to one-third of the 5.7 percentage point reduction in the headcount poverty rate. This increasing inequality has contributed to a lower level of pro-poor growth than that maintained in Indonesia before decentralisation.

Figure 1: National Gini Ratio: Urban and Rural (1996-2018)



Source: Statistics Indonesia (few editions). BPS.

Implementation of Regional Autonomy and Fiscal Decentralisation

Indonesia began the era of reform after the downfall of the Soeharto regime on 21 May 1998. The reform movement was initially triggered by the monetary crisis that Indonesia experienced in June 1997, marked by the sharp decline in the value of the rupiah, Indonesia's national currency. The crisis developed further to become an economic crisis and the people demanded a change in the powers running the government. They also demanded reform in the governmental system and the desire to enforce a decentralisation system in Indonesia grew more intense at this time.

In the year 1999, Law No. 22/1999 on Regional Autonomy was passed, and then Law No 25/1999 on Fiscal Balancing between the central and regional governments. Both of these laws would later serve as an "umbrella" for the implementation of fiscal decentralisation in Indonesia. Law No. 22/1999 basically regulates the running of a regional government that prioritises the principles of decentralisation where the regency/municipality acts as a "motor" while the provincial government acts as coordinator. In further developments, Law No. 32/2004 replaced Law No. 22/1999 as of September 2004. Similarly, Law No. 25/1999 was replaced by Law No. 33/2004 as of September 2004. A second revision was made to both laws as a follow-up measure by the government to harmonise these two "umbrella" laws for regional autonomy with the various other related laws and regulations.

The implementation of regional autonomy in Indonesia was followed by the delegation of a large proportion of the central government's affairs to the regional governments. There are 26 mandatory affairs originally handled by the central government that were delegated to, and are now implemented by, the regional governments. Regional autonomy is linked to the delegation of authority from the central government to the regions. This naturally has implications on the financial relationship between central and regional levels, and consequently the implementation of regional autonomy becomes the application of fiscal decentralisation. The impact of the distribution in the current macroeconomic climate tends to be most difficult for the poor to feel. Indonesia is famous for its record of poverty reduction, but between September 2014 and March 2015

the share of the population in poverty increased despite economic growth approaching 5.0 percent. Slowing growth, rising food prices, falling real wages for farmers, and delaying payment of compensation for fuel prices all had an impact. According to Yusuf and Summer (2015), such impacts could have been reduced in the medium term by reallocating Jokowi's budget to infrastructure, if realised, and expanding social spending. The main objective of decentralisation is to develop the functions of the government to provide better services for the people. Since the people have lived with administrative limitations in the regions, they want to have direct interaction with their local government, a closeness that exceeds that of the central government. The building up, or delegation, of authority to the lower levels of government is one way to improve efficiency and effectiveness in the relationship between the government and the people. In theory, the regional governments will be able to cut the costs of transactions and increase transparency and accountability and this should encourage more and better dominance of the regional requests. Regional development is expected to become more efficient and effective.

The general objective of regional autonomy is to: (a) promote equitable development; (b) raise the prosperity of the people; and (c) improve democratisation through local participation. Whereas in implementing fiscal decentralisation, there was a change in the pattern of financial relations between the central government and the regions. The financial relationship between governments is based on the principle of fair and responsible distribution, paying special attention to inter-regional equality, and financial adequacy or financing should be in accordance with the authority of the decentralised region. In addition to its local own revenues, the regional government also obtains its development funds from transfers made by the central government to the regional governments. The transfer system can be divided into three types of schemes: (i) revenue sharing (tax and natural resources); general transfers (*Dana Alokasi Umum*: DAU); and specific transfers (*Dana Alokasi Khusus*: DAK). This transfer system has seven main targets, namely:

1. To overcome the vertical fiscal disparity between levels of government (DBH,¹ DAU);
2. To equalise the fiscal capacities of the regional governments to provide public services (DAU);
3. To encourage regional expenditures that are the priority of national development (DAK);
4. To achieve the minimum standard in infrastructure (DAK);
5. Compensation for the benefits/costs of spillover effects in the priority regions (DAK);
6. To stimulate regional commitment (DAK); and
7. To stimulate mobilisation of the regional income (DBH, DAU, DAK);

Purpose of this Paper

As demonstrated in many studies on inter-regional inequalities (for example Akita and Alisjahbana 2002), sharp disparity exists between the eastern regions of Indonesia and Java/Bali region. It is widely known that the eastern part of Indonesia was the smallest beneficiary of development during the New Order regime.

The question arises, obviously, will Indonesia, with the fundamental change in the country's political setting, be able to reduce inter-regional inequality? This question cannot be answered immediately. First, decentralisation in Indonesia is still searching for its optimal form. Indonesian decentralisation is a mega project in any term. Within its ten years of implementation, both the central and regional governments had no adequate experience and knowledge about the subject. Prior to the revision, decentralisation implemented at regional level had caused the span of management by the central government to become extremely large. This, then, presented the central government with great challenges to direct the country's progress. The

¹ DBH: Dana Bagi Hasil: Revenue-sharing Funds.

nature of Indonesia itself had helped to amplify the challenge. This country is highly heterogeneous in almost every aspect. So immense is the level of diversity that if decentralisation is something referred to in a variety of preferences, then what occurred during the first three and a half years of implementation can be thought of as performing a full symphony orchestra with only a single musician.

Decentralisation aims at delivering services to a variety of local requirements so that eventually inter-regional disparity can be minimised. Nevertheless, in practice, this has also produced a wide range of programs and treatments to deliver public services. With the various different policies applied by the local governments, the rate of development differs from region to region. Nonetheless, the transfers from the central government to the regional governments will at least lessen the inter-regional fiscal capacity gap, and thus the development capacity should be more equitable.

This paper attempts to compare the conditions of inter-regional disparity, that is comparing the conditions before and after the implementation of regional autonomy. This constitutes an effort to measure the success in implementing regional autonomy and fiscal decentralisation. As already explained, one of the goals of regional autonomy is to promote equitable development in Indonesia. This paper attempts to measure the inter-regional disparity against three variables, namely income per capita, per capita regional fiscal capacity, and years of schooling. Income per capita is used to measure disparity in welfare among the regions. Per capita regional fiscal capacity is used to measure disparity in terms of the capacity to finance public services, while years of schooling is used to compare the performance in providing public services before and after the implementation of regional autonomy in Indonesia.

DATA AND METHODS

1. Data and Sources

The data used for the analysis of inequality between regions included the periods before and after the implementation of the regional autonomy or decentralisation law. The regional autonomy law was given effect in 2001. The data used in the analysis are as follows:

- (1) Per capita GRDP at constant price at the level of Regency/Municipality in 1995, 2000, 2005, 2010 and 2015. The availability of GRDP data had lagged, so the latest data available for analysis was GRDP in 2005. It was difficult to collect regency-level data from about 298 regencies in 1998, a number that had grown to become about 440 regencies in 2008. Data on GRDP and population was collected from various BPS publications.
- (2) Regional Fiscal or Government Revenue at Province and Regency/Municipality in 1995, 2000, 2005, 2010 and 2015. The source of fiscal revenue to finance the public services in a province was sourced from the provincial and regency/municipality government budget. The sum of two sources of budget in a province was used to calculate the inequality indices between provinces. To calculate disparity between regencies/municipalities in a province, we used the regency budget, and neglected the provincial budget. The fiscal data were collected from Directorate General for Financial Balancing, Ministry of Finance, Republic of Indonesia.
- (3) Years of schooling by province and regency/municipality in 1995, 2000, 2005 and 2008. The data was disseminated from the Sakernas (National Survey on Labour Force) database in 1995, 2000, 2005, 2008, 2010-2017 that was conducted by BPS.

2. Methods to Measure Inequality

2.1 Theil Index

Regencies or municipalities are grouped into provinces that are mutually exclusive and collectively exhaustive. Theil indices (TI), as a measure of inequality, are defined as:

$$T = \sum_i \sum_j \left(\frac{Y_{ij}}{Y} \right) \log \left(\frac{Y_{ij}/Y}{n_{ij}/n} \right) \quad (1)$$

where

Y_{ij} = total regional revenue or GRDP in regency j in province I;

Y = the total regional revenue of all regions nationally ($\sum \sum Y_{ij}$);

n_{ij} = the total number of regencies or municipalities in regency j at province I; and

n = total number of regencies or municipalities in Indonesia.

According to Anand (1983), the Theil indices given in equation (1) can be decomposed into within-group and between-group components as follows:

$$T = \sum_i \left(\frac{Y_i}{Y} \right) T_i \sum_i \left(\frac{Y_i}{Y} \right) \log \left(\frac{Y_i/Y}{n_i/n} \right) = T_w + T_B \quad (2)$$

Where

$$T_i = \sum_j \left(\frac{Y_{ij}}{Y_i} \right) \log \left(\frac{Y_{ij}/Y_i}{n_{ij}/n_i} \right)$$

The smaller the TI or the closer to 0, the smaller the regional inequality, or the higher TI the higher the level of regional inequality.

2.2 Williamson Index

The Williamson Index (WI) can be applied as a measure of regional inequality, following the formula:

$$WI = \sqrt{\frac{\sum_i (Y_i - \bar{Y})^2 n_i / n}{\bar{Y}}} \quad (3)$$

where

Y_i = GRDP, revenue per capita, or years of schooling in region I;

Y = GRDP or revenue per capita or years of schooling at national level;

n_i = number of population in region I; and

n = number of population overall regions or at national level.

From the point of view of statistics, WI is merely a coefficient of variations, that is the standard deviation divided by mean. The smaller the WI or the closer to 0, the smaller the level of regional inequality. In other words, the higher the WI, the higher the level of regional inequality.

Table 1: Population and GRDP per capita at Constant Prices 2000 (by Province)

No.	Province	GRDP adhk 2000					Population					GRDP per capita				
		(Billion IDR)					(th person)					(million IDR)				
		1995	2000	2005	2010	2015	1995	2000	2005	2010	2015	1995	2000	2005	2010*	2015
1	Aceh	43,969	35,883	36,288	33,103	38,013	3,848	3,929	4,032	4,523	5,002	11.43	9.13	9	22.5	22.5
2	North Sumatera	62,639	69,154	87,898	118,719	142,537	11,115	11,642	12,451	13,029	13,938	5.64	5.94	7.06	25.4	31.6
3	West Sumatera	20,521	22,890	29,159	38,862	46,640	4,323	4,249	4,566	4,865	5,196	4.75	5.39	6.39	21.6	27.1
4	Riau	82,275	94,758	79,288	97,736	109,073	3,901	4,948	4,579	5,575	6,344	21.09	19.15	17.31	69.7	70.8
5	Jambi	8,247	9,569	12,620	17,472	21,979	2,370	2,407	2,636	3,108	3,402	3.48	3.98	4.79	29.2	36.8
6	South Sumatera	43,002	41,318	49,634	63,859	76,410	7,208	6,211	6,782	7,482	8,052	5.97	6.65	7.32	25.9	31.5
7	Bangka Belitung island		5,761	8,707	8,340	10,052		900	1,043	1,722	1,875		6.4	8.34	16.5	20.3
8	Bengkulu	4,458	4,868	6,239	38,390	46,123	1,409	1,456	1,549	7,634	8,117	3.16	3.34	4.03	19.7	24.6
9	Lampung	20,770	23,265	29,397	10,885	12,905	6,658	6,731	7,116	1,230	1,373	3.12	3.46	4.13	28.9	33.5
10	Riau Island			30,382	41,076	49,667			1,275	1,693	1,973			23.83	65.7	78.6
11	DKI Jakarta	231,568	227,924	295,271	395,622	477,285	9,113	8,361	8,860	9,640	10,178	25.41	27.26	33.32	111.5	142.9
12	West Java	219,777	195,753	242,884	322,224	386,839	39,207	35,724	38,965	43,227	46,710	5.61	5.48	6.23	21.0	25.8
13	Central Java	109,301	114,701	143,051	186,993	223,100	29,653	31,223	31,978	32,444	33,774	3.69	3.67	4.47	19.2	23.9
14	DI Yogyakarta	12,727	13,481	16,911	21,044	24,567	2,917	3,121	3,344	3,468	3,679	4.36	4.32	5.06	18.7	22.7
15	East Java	203,486	202,830	256,375	342,281	419,428	33,844	34,766	36,294	37,566	38,848	6.01	5.83	7.06	26.4	34.3
16	Banten		45,312	58,107	88,552	105,856		8,098	9,029	10,689	11,955		5.6	6.44	25.4	30.8
17	Bali	15,158	17,268	21,072	28,882	34,788	2,896	3,150	3,384	3,907	4,153	5.23	5.48	6.23	24.0	31.1
18	West Nusatenggara	8,226	12,182	15,184	20,073	20,417	3,646	4,009	4,184	4,516	4,835	2.26	3.04	3.63	15.5	18.5
19	East Nusatenggara	6,598	7,851	9,867	12,547	14,746	3,577	3,823	4,260	4,706	5,120	1.84	2.05	2.32	9.3	11.1
20	West Kalimantan	16,101	19,319	23,538	30,329	36,075	3,636	4,016	4,052	4,411	4,790	4.43	4.81	5.81	19.5	23.5
21	Central Kalimantan	9,682	10,981	14,035	18,806	23,000	1,627	1,855	1,915	2,221	2,495	5.95	5.92	7.33	25.5	31.6
22	South Kalimantan	14,516	17,215	23,473	30,675	36,196	2,893	2,984	3,282	3,643	3,990	5.02	5.77	7.15	23.4	27.8
23	East Kalimantan	67,813	82,447	93,938	110,953	121,990	2,314	2,452	2,849	3,576	3,427	29.3	33.63	32.97	116.9	128.6
24	North Kalimantan				-	-				0	642					76.8
25	North Sulawesi	10,733	10,565	12,689	18,377	22,872	2,649	2,001	2,129	2,278	2,412	4.05	5.28	5.96	22.7	29.2
26	Central Sulawesi	7,411	8,649	11,752	17,624	22,979	1,938	2,176	2,295	2,646	2,877	3.82	3.97	5.12	19.6	28.8
27	South Sulawesi	26,670	30,763	36,422	51,200	64,284	7,558	8,051	8,129	8,060	8,520	3.53	3.82	4.48	21.3	29.4
28	South East Sulawesi	5,085	5,775	8,027	11,654	15,041	1,587	1,820	1,963	2,244	2,500	3.2	3.17	4.09	21.6	29.2
29	Gorontalo		1,473	2,028	2,917	3,647		833	922	1,045	1,133		1.77	2.2	14.8	19.5
30	West Sulawesi				4,744	6,113				1,165	1,282				14.8	20.2
31	Maluku	5,939	2,769	3,259	4,251	5,111	2,087	1,166	1,252	1,542	1,686	2.85	2.37	2.6	12.0	14.7
32	North Maluku		1,880	2,237	3,036	3,656		815	884	1,043	1,162		2.31	2.53	14.4	17.5
33	West Papua			5,307	9,361	15,062		530	643	765	872		0	8.25	54.0	60.1
34	Papua	16,390	22,283	22,209	22,400	24,617	1,943	1,684	1,875	2,857	3,149	8.44	13.23	11.84	38.8	41.4
	Total	1,273,063	1,358,887	1,687,248	2,222,987	2,661,071	193,915	205,132	218,518	238,519	255,462	6.57	6.62	7.72	28.8	35.2

Source: Statistics Indonesia, few edition. BPS

The GRDP per capita of Indonesia's eastern region tends to be lower than in the West Indonesia region, so that the Indonesian population tends to cluster on Java and Sumatra. The increase in provincial income per capita in Indonesia from 1995-2015 reached an average of fivefold—the highest in Jambi and Lampung—while the increase in income per capita rose tenfold. The lowest was in Aceh that rose by only 1.97 times over 20 years. Base point 1995 per capita income has been high and there has been a significant decline during the crisis, conflict and tsunami disaster.

The biggest government revenue even outliers are in DKI Jakarta Province, capital city of Indonesia (Table 2). The biggest government revenue per capita are in Aceh Province, West Papua and Papua, this is due to the existence of special autonomy funds for the three regions.

Table 2: Government Revenue per capita at Current Prices 2000 (by Province)

No.	Province	Government Revenue					Government Revenue per capita				
		(Million IDR)					(million IDR)				
		1995	2000	2005	2010	2015	1995	2000	2005	2010	2015
1	Nanggro Aceh Darussalat	503	1,443	7,978	6,968	11,680	0.13	0.37	1.98	3.50	8.10
2	North Sumatera	1,182	2,272	7,949	3,886	8,481	0.11	0.2	0.64	1.52	3.36
3	West Sumatera	521	1,021	4,298	1,921	4,052	0.12	0.24	0.94	2.15	4.76
4	Riau	634	1,888	11,180	4,305	6,911	0.16	0.38	2.44	2.82	4.17
5	Riau Island			1,162	1,858	2,515			0.91	2.24	4.57
6	Jambi	356	663	2,551	1,640	3,130	0.15	0.28	0.97	1.93	4.09
7	South Sumatera	780	1,401	5,935	3,223	5,990	0.11	0.23	0.88	2.92	5.91
8	Bangka Belitung island	211	395	1,064	848	1,887		0.44	1.02	1.24	3.21
9	Bengkulu	522	858	3,740	1,001	2,181	0.37	0.59	2.41	2.89	6.11
10	Lampung			1,200	2,085	4,787			0.17	3.20	5.50
11	DKI Jakarta	2,717		13,477	23,026	44,209	0.3		1.52	2.31	6.06
12	West Java	3,100	5,564	17,967	9,742	24,010	0.08	0.16	0.46	0.86	2.03
13	Banten			5,086	3,139	7,328			0.56	1.02	2.59
14	Central Java	2,371	4,399	17,210	6,626	16,828	0.08	0.14	0.54	1.49	3.61
15	DI Yogyakarta	360	726	2,713	1,374	3,400	0.12	0.23	0.81	1.05	2.67
16	East Java	2,633	4,934	20,423	9,777	22,228	0.08	0.14	0.56	0.86	2.50
17	Bali	550	1,488	3,993	2,238	4,968	0.19	0.47	1.18	1.97	5.36
18	West Nusatenggara	335	856	2,901	1,272	3,449	0.09	0.21	0.69	1.52	3.57
19	East Nusatenggara	482	979	3,439	1,088	3,316	0.13	0.26	0.81	1.87	4.68
20	West Kalimantan	466	1,563	3,543	1,779	4,073	0.13	0.39	0.87	2.02	4.74
21	Central Kalimantan	424	778	3,030	1,555	3,253	0.26	0.42	1.58	4.00	7.32
22	South Kalimantan	473	1,098	3,881	2,280	4,747	0.16	0.37	1.18	2.65	5.27
23	East Kalimantan	714	1,110	12,045	7,041	9,465	0.31	0.45	4.23	5.56	7.43
24	Nort Kalimantan				0	1,444				0.00	10.99
25	North Sulawesi	378	669	1,779	1,159	2,528	0.14	0.33	0.84	2.91	6.37
26	Gorontalo			945	593	1,389			1.02	2.69	6.03
27	Central Sulawesi	367	704	1,314	1,178	2,902	0.19	0.32	0.57	2.42	6.17
28	South Sulawesi	852	1,717	6,983	2,564	6,106	0.11	0.21	0.86	1.77	4.47
29	South East Sulawesi	245	578	1,322	1,055	2,471	0.15	0.32	0.67	2.92	6.35
30	West Sulawesi				0	1,474				2.19	5.41
31	Maluku	328	406	1,958	953	2,133	0.16	0.35	1.56	3.52	7.68
32	North Maluku			1,163	0	1,801			1.32	4.03	9.48
33	West Papua			2,110	3,408	5,840			3.28	11.17	19.27
34	Papua	714	1,755	5,670	5,662	11,806	0.37	1.04	3.02	7.41	14.89
	Total	22,218	39,263	180,008	115,244	242,782	0.11	0.19	0.82	1.69	3.24

Source: www.djpk.kemenkeu.go.id/?p=5412, Few Editions.

National mean years of schooling in the period from 1995 to 2017 has only increased by 1.18 points to 8.1 years (Table 3). Papua has a low base and has a low rate of only 0.47 points in 20 years.

Table 3: Years of Schooling By Province

No.	Province	1995	2000	2005	2008	2010	2015	2017
1	Aceh	7.5	-	-	8.6	8.3	8.8	9.0
2	North Sumatera	8.2	8.2	8.8	8.8	8.5	9.0	9.3
3	West Sumatera	7.8	8.0	8.1	8.6	8.1	8.4	8.7
4	Riau	7.6	7.9	8.3	8.8	8.3	8.5	8.8
5	Jambi	7.0	7.3	7.8	7.9	7.3	8.0	8.2
6	South Sumatera	6.9	7.3	7.9	7.8	7.3	7.8	8.0
7	Bengkulu	7.1	7.4	8.0	8.2	7.8	8.3	8.5
8	Lampung	6.6	6.8	7.2	7.5	7.3	7.6	7.8
9	Bangka Belitung island	-	-	6.9	7.7	7.1	7.5	7.8
10	Riau Island	-	-	9.3	8.3	9.4	9.7	9.8
11	DKI Jakarta	10.3	9.9	10.2	10.3	10.4	10.7	11.0
12	West Java	7.0	7.3	7.6	7.7	7.4	7.9	8.1
13	Central Java	6.2	6.6	6.6	7.1	6.7	7.0	7.3
14	DI Yogyakarta	8.2	7.8	8.6	9.0	8.5	9.0	9.2
15	East Java	6.1	6.6	7.0	7.2	6.7	7.1	7.3
16	Banten			7.9	8.0	7.9	8.3	8.5
17	Bali	6.8	7.4	7.7	8.0	7.7	8.3	8.6
18	West Nusatenggara	5.4	6.0	5.6	6.8	5.7	6.7	6.9
19	East Nusatenggara	5.9	6.0	6.3	6.8	6.5	6.9	7.2
20	West Kalimantan	5.8	6.4	6.9	6.9	6.3	6.9	7.1
21	Central Kalimantan	7.3	7.6	8.0	8.0	7.6	8.0	8.3
22	South Kalimantan	6.8	7.0	7.6	7.8	7.3	7.8	8.0
23	East Kalimantan	8.1	8.1	8.9	8.9	8.6	9.1	9.4
24	Nort Kalimantan						8.4	8.6
25	North Sulawesi	8.2	8.1	9.0	9.0	8.7	8.9	9.1
26	Central Sulawesi	7.4	7.4	7.6	8.1	7.7	8.0	8.3
27	South Sulawesi	6.8	6.9	7.3	7.6	7.3	7.6	8.0
28	South East Sulawesi	7.2	7.5	7.5	8.1	7.6	8.2	8.5
29	Gorontalo					6.9	7.1	7.3
30	West Sulawesi					6.6	6.9	7.3
31	Maluku	7.8	-	8.5	8.8	8.6	9.2	9.4
32	North Maluku	-	-	8.2	8.3	7.9	8.4	8.6
33	West Papua	-	-	-	8.0	6.8	7.0	7.2
34	Papua	5.8	5.6	6.4	6.5	5.6	6.0	6.3
	National	6.9	7.2	7.5	7.8	7.5	7.8	8.1

Source: ipm.bps.go.id, BPS.

RESULT AND ANALYSIS

1. Gross Regional Domestic Product per capita (GRDP)

In this section we shall analyse changes in the disparity index between the regions based on GRDP per capita over a period of 22 years, namely in 1995 and 2017 by using the Williamson Index and Theil Index.

1.1 Williamson Indexes (WI)

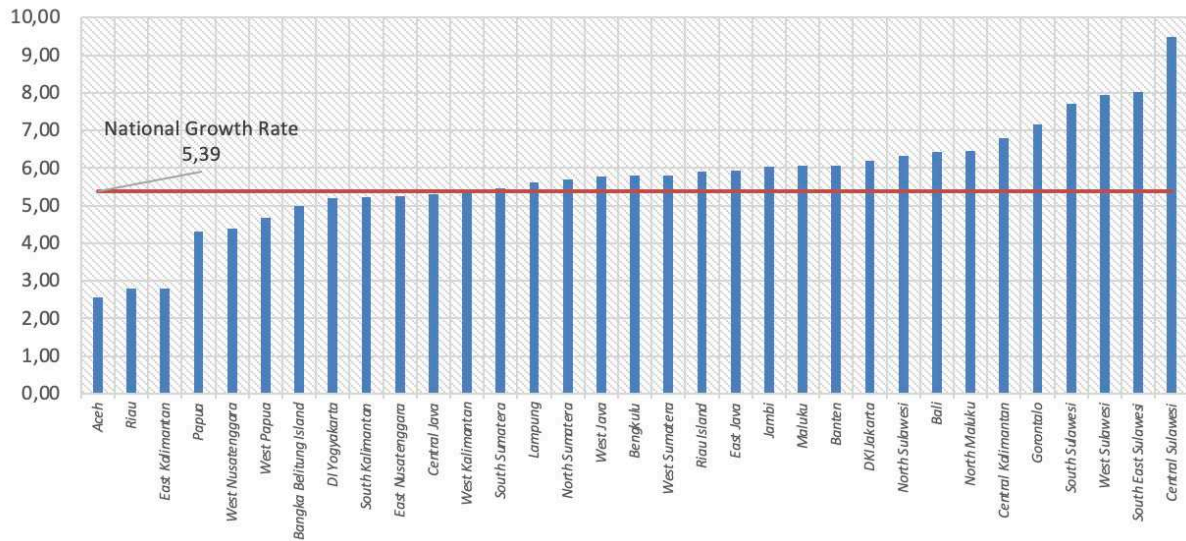
The WI illustrates the regional disparity based on GRDP per capita, namely between the provinces as well as between the regencies/municipalities as presented in Table 1 and Figure 2. The regional disparity between provinces during the period of regional autonomy was, in fact, higher than the WI before regional autonomy was implemented. This means the policies on regional autonomy that had been applied for five years (since 2001) still had not succeeded in reducing the imbalance in revenues between the regions at the provincial level.

The disparity in GDP per capita in the period 2010-17 tends to decline. Unfortunately, the decline in disparity is not due to an improvement in productivity of regions that have a low per capita GRDP in pursuit of regions that have high per capita GRDP. The decline in disparity in this period was, however, caused more by the slowing economic growth of rich regions such as Riau and East Kalimantan as producers of oil and gas.

Economic equality is supposedly an effort to increase the economy of regions with poor economic conditions while still striving for stable growth for regions with large economies. Inequality of GRDP per capita, as indicated by the WI on regional inequality, could increase slightly when the estimated speed of convergence is not significant—mainly due to Jakarta's growth. Conversely, changes in the Human Development Index figures for Indonesia show that regional convergence is taking place, even though its speed is declining. Environmental effects can be significant in both cases but have little influence on the speed of convergence (Vidyattama 2013).

DI Yogyakarta, Central Java, NTB, and NTT provinces that have a low GRDP per capita experienced average growth during the 2010-17 period below national average growth (Figure 2). In contrast, DKI Jakarta, Riau Islands, East Java, South Sumatra, and North Sumatra which have a relatively high GRDP per capita experienced economic growth during the period 2010-17 above the national economic growth average. This phenomenon, if it continues, will certainly widen the disparity between regions.

Figure 2: Growth Rate of GRDP (%) (2010-2017)



Source: Statistics Indonesia, processed by author

Note: blue columns are those provinces with a GRDP above the national average

Similarly, if we look at the WI between regencies, it is evident that the WI during the period of regional autonomy was higher than during the period before implementation of regional autonomy. This means that the disparity in income per capita between regencies/municipalities tended to rise during the period of implementing regional autonomy (2005) compared to the period before regional autonomy (1995).

It can, therefore, be concluded that the inter-regional disparity grew increasingly higher during the period of regional autonomy when compared to earlier periods. Furthermore, the disparity in income per capita between regencies/municipalities was higher than the disparity between provinces.

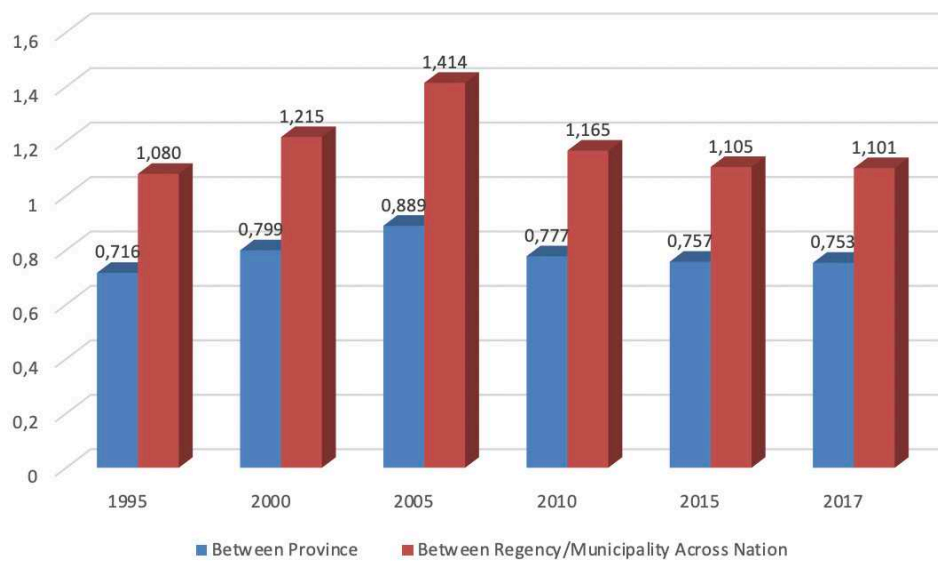
The WI between-regency phenomenon in the period 2010-17 is also the same as the WI between-province phenomenon where the decrease in disparity is caused by the slowing down of regency/city economic growth that has a high GRDP per capita due to the weakening of oil and gas sector production such as in Siak Regency, Bengkalis Regency (Riau Province), Bontang City, and Kutai Kartanegara Regency (East Kalimantan Province) (Table 4).

Table 4: Williamson Index Based on GRDP per capita

	1995	2000	2005	2010	2015	2017
Between Province	0.716	0.799	0.889	0.777	0.757	0.753
Between Regency/Municipality Across Nation	1.080	1.215	1.414	1.165	1.105	1.101

Source: processed by author

Figure 3: Williamson Index Based On GRDP per capita



Source: processed by author

It is worth noting that both before and after implementing regional autonomy, some provinces were split to create several new provinces, for example, Riau Islands was created by splitting the Riau province; Bangka-Belitung Islands was split from the South Sumatra province; Banten was formerly part of the West Java province; Gorontalo was from the North Sulawesi province; North Maluku was from the Maluku province; and West Papua was split from the Papua province. On the other hand, the 27th province, namely Timor Timur, became an independent country, based on the results of a *referendum* held in 1999.

The WI indexes that illustrate the disparity between regencies/municipalities within a province is presented in full in Appendix A1, and similar WI figures are presented in Figure 2. From Figure 3 we can see that the disparity in GRDP per capita between regencies/municipalities in some provinces does not show any significant change. This is the case in most of the provinces, such as in the provinces of North Sumatra, Jambi, Lampung, Central Java, Yogyakarta, East Java, Bali, West Kalimantan, Central Kalimantan, South Kalimantan, North Sulawesi, Central Sulawesi, and Southeast Sulawesi.

Some provinces experienced a significant decline in inequality, such as Aceh, Riau and East Kalimantan that was caused by declining oil and gas production in regencies/cities that were rich in natural resources.

On the other hand, some provinces have indicated a pattern where the disparity between regencies/municipalities experienced an increase from the year 1995 up to 2005. This was the case in the provinces of South Sumatra, DKI Jakarta, West Java, West Nusa Tenggara, South Sulawesi, and Papua. This growing disparity among regions occurred in the provinces with rich mining resources, particularly in Riau, South Sumatra, East Kalimantan, West Nusa Tenggara, South Sulawesi, and Papua.

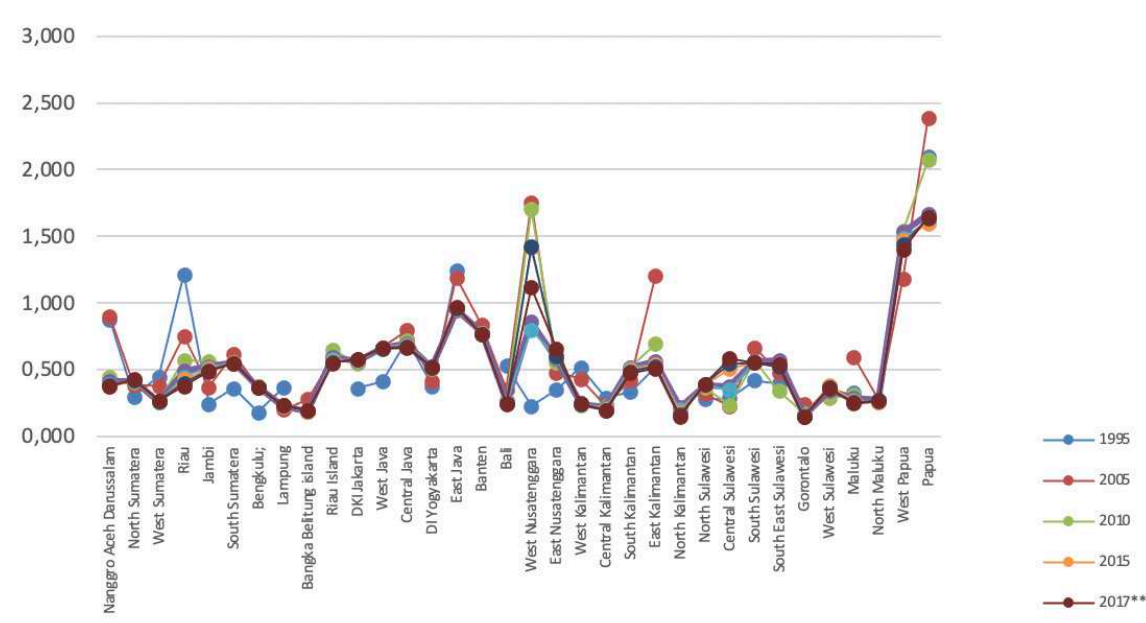
An explanation for the increased disparity between regencies/municipalities could be as follows: prior to regional autonomy in this group of provinces, each regency was quite large. Consequently the income per capita from mining must be distributed to a broader area and a larger population. After the splitting of

provinces, some of the new regencies had mining resources, while others did not. Any regency that was fortunate to have mining resources would receive a much higher GRDP per capita compared to the other regencies/municipalities. This process of splitting and creating a regency is a source of disparity in GRDP per capita between the regencies in this group of provinces

Meanwhile, the rising disparity between the province of DKI Jakarta and West Java is more the result of differences or unequal growth of industries in the regions. A regency/municipality that is the centre of manufacturing industries and a centre of growth will have a higher rate of growth in GRDP which implies a higher GRDP per capita. Whereas in the other regencies/municipalities, the growth of industries and growth of economy are generally lower, therefore, the GRDP per capita will also be much lower.

Further, based on statistical testing using data coupled with the WI of 1995 and 2005 it can be concluded that the WI of 2005 is significantly higher compared to 1995, at the actual rate of 5 percent (Figure 4). The conclusion is that the degree of disparity between regencies viewed in terms of GDRP per capita in 2005 is higher than in 1995. This means the policies on regional autonomy have not succeeded in overcoming regional inequality in terms of GRDP per capita. The fall in disparity in the 2010-17 period was mainly due to the slowing growth of regions rich in natural resources and not due to increased productivity of regions lacking natural resources.

Figure 4: Comparison of Williamson Index between Regencies/Municipalities (1995, 2005 and 2015)



Source: processed by author

As is known, inequality usually occurs because of the concentration of economic activities in the base sector in certain regions so that only a proportion of the regions enjoy the results, as well as differences in natural resources that are owned between regions.

1.2. Theil Indexes (TI)

The advantage of Theil indexes in measuring the disparity between regions is that the TI can differentiate the sources of disparity into two components, that is the disparity between regions and within regions. Between regions is defined here as between province, while within region is the disparity between regencies/municipalities in the province.

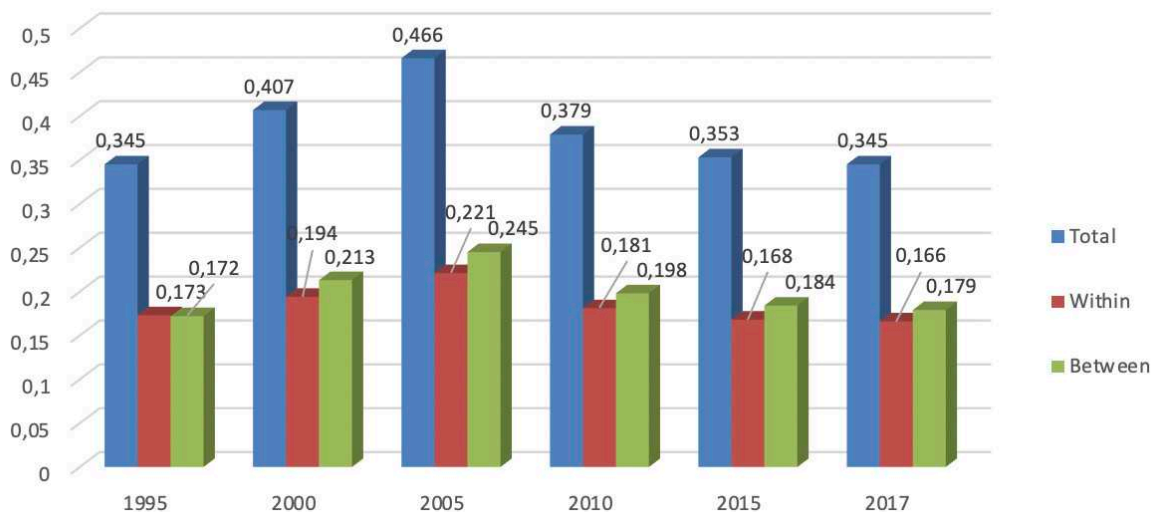
The calculation of TI based on the GRDP per capita of provinces and regencies in the year 1995 (before regional autonomy), in 2000 and in 2005, 2010, 2015, and 2017 (after regional autonomy) shows increasingly higher figures (Table 5 and Figure 5). Both the TI Between and the TI Within have slowly declined since 2005 but the increase in TI Between is higher than TI Within for the period to 20005. This indicates that the disparity between provinces has rose between 1995 and 2005 before slowly falling and such a finding matches the WI Between-Province (Figure 3). Similarly, the disparity between regencies in the province has increased however, it return even though it was insignificant and remained above 1995, and the findings are in line with the WI (Figure 3).

Table 5: Regional Disparity Index (Theil Index)

	1995	2000	2005	2010	2015	2017
Total	0.345	0.407	0.466	0.379	0.353	0.345
Within	0.173	0.194	0.221	0.181	0.168	0.166
Between	0.172	0.213	0.245	0.198	0.184	0.179

Source: processed by author

Figure 5: Theil Index Between and Within Provinces

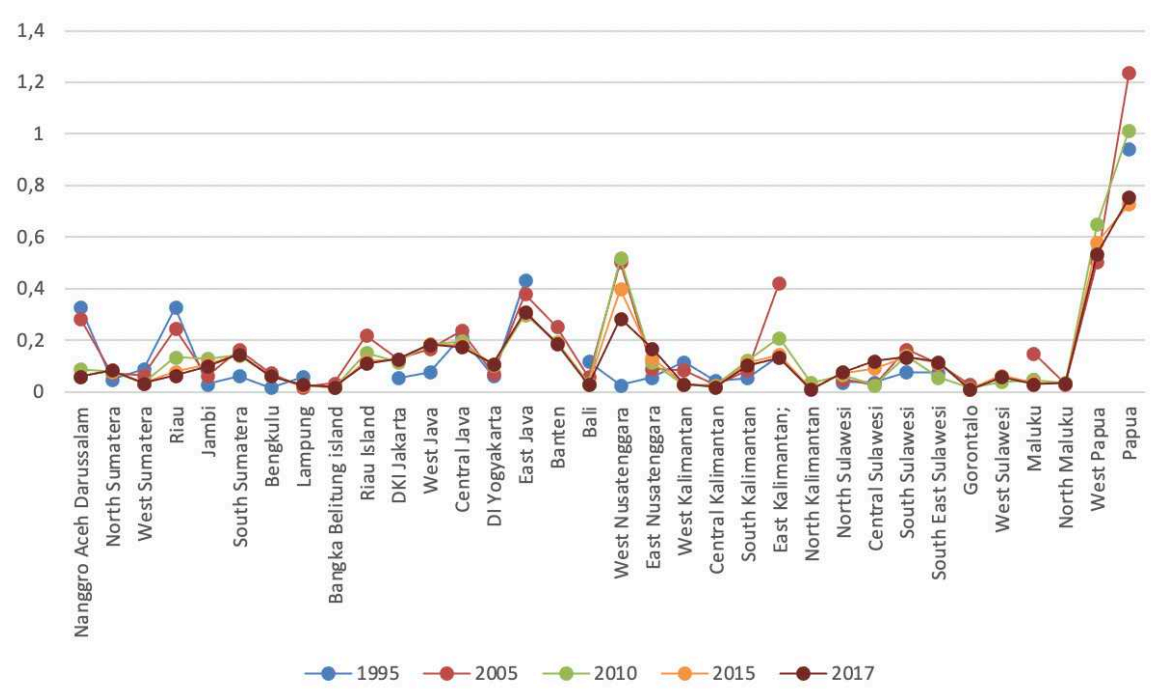


Source: processed by author

Table 6 presents the figures of Theil Indexes between regencies/municipalities in a province, where it can be seen that during the period of 1995 to 2017 the figures tended to rise. Some of the provinces that experienced a rise in TI figures are: South Sumatra, DKI Jakarta, West Java, West Nusa Tenggara, East Kalimantan, South Sulawesi, Maluku, and Papua. In fact, statistically, there was a significant increase of 5 percent in the WI between regencies/municipalities from 1995 up to 2017.

An explanation of the increased disparity in this case is the same as the explanation for increased disparity between provinces, using the WI figures.

Figure 6: Comparison of Disparity Index between Regencies/Municipalities at Province Level



Source: processed by author

2. Disparity of Fiscal Revenue per capita

Before discussing the WI as an indicator of disparity, we shall first present an explanation regarding regional fiscal revenue. The transfer of a larger amount of funds from the central government to the regions during the era of regional autonomy follows the delegation of central government functions to regional governments. The provision of such funds was, in addition to lessening the fiscal-gap of the regional government, an effort to accelerate more equitable development between the regions. These transfers between governments were in the form of DAUs, DAKs, and DBH.

2.1 Williamson Indexes

The results of calculating WI figures are provided in Table 6 and in Figure 7. These indicate that the WI between provinces based on the Total Fiscal Revenue of the regional government have become higher from 1995 up to 2015. This indicates that the application of regional autonomy has not yet been able to improve equitable development between the provinces for the provision of public services. The inequality is apparently caused by the high government revenue per capita in the provinces of Papua, East Kalimantan, and Timor Timur in 1995.

Table 6: Disparity of Fiscal Revenue (Williamson Index)

	1995	2000	2005	2010	2015	2017
Between Province due to Sum of Province & Regency Revenue*)	0.453	0.591	0.830	0.941	0.934	0.345
Between Province due to Sum of Regency's Revenue	0.602	0.529	0.790	0.971	0.957	0.166
Between Regency's Revenue Across National	0.888	0.780	0.998	0.986	0.972	0.179

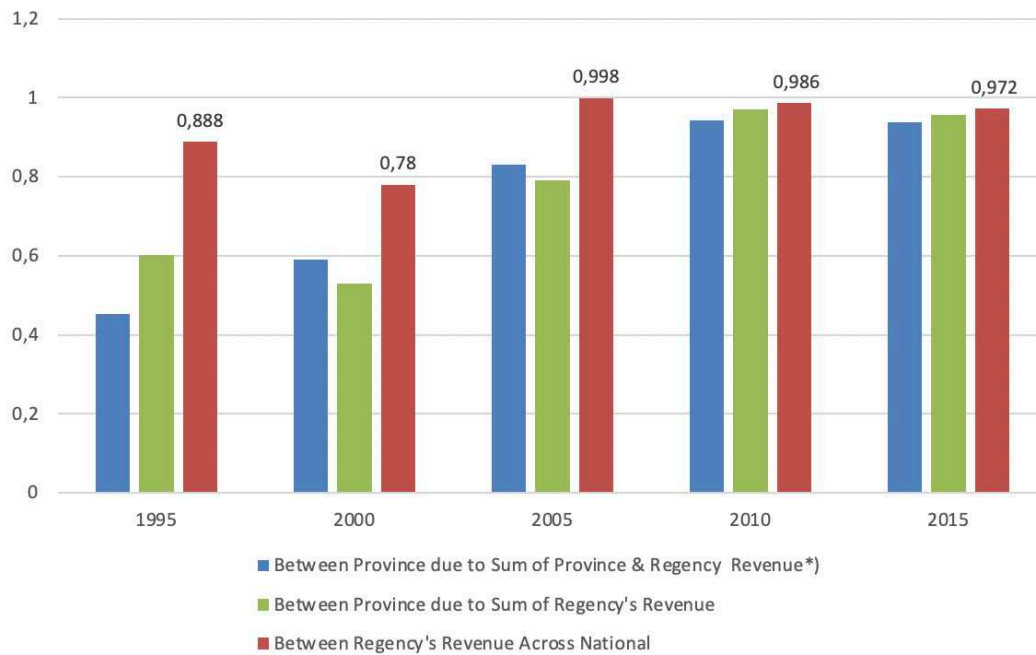
Note: *) Excludes DKI Jakarta (extreme outliers).

Source: processed by author

Meanwhile in 2005—that is, during the era of implementing regional autonomy—the disparity between provinces was due to the extremely high government revenue per capita in the provinces with rich mining resources, such as East Kalimantan, Papua, West Papua, and Riau. In addition, extreme revenue per capita occurred in provinces with a small population but large area, or where the area is geographically a cluster of islands, such as the provinces of Central Kalimantan, Maluku, North Maluku, Riau Islands, Jambi, and Bangka Belitung Islands. Among those having a very high revenue per capita is DKI Jakarta.

On the other hand, disparity also occurred due to low government revenue per capita, as was the case in provinces with a large population that are generally located on the island of Java and in several provinces outside of Java, such as North Sumatra, Lampung, and West Nusa Tenggara.

Figure 7: Disparity of Fiscal Revenue (Williamson Index)



Source: processed by author

Likewise, the disparity in government revenue or budget per capita during the era of regional autonomy (2005, 2010, and 2015) was a bit higher than in the previous era (1995), and this once again indicates that the legal basis for implementation of regional autonomy has not been able to produce more equitable regional revenue.

The inequality between regencies/municipalities within a province has shown some improvement in the period after application of regional autonomy (2005, 2010, and 2015) compared to pre-autonomy periods (Table 7 and Figure 8). The reduction in disparity between regencies within a province is not yet significant, however, and can only be recognised as significant statistically if the level of significance is 8 percent.

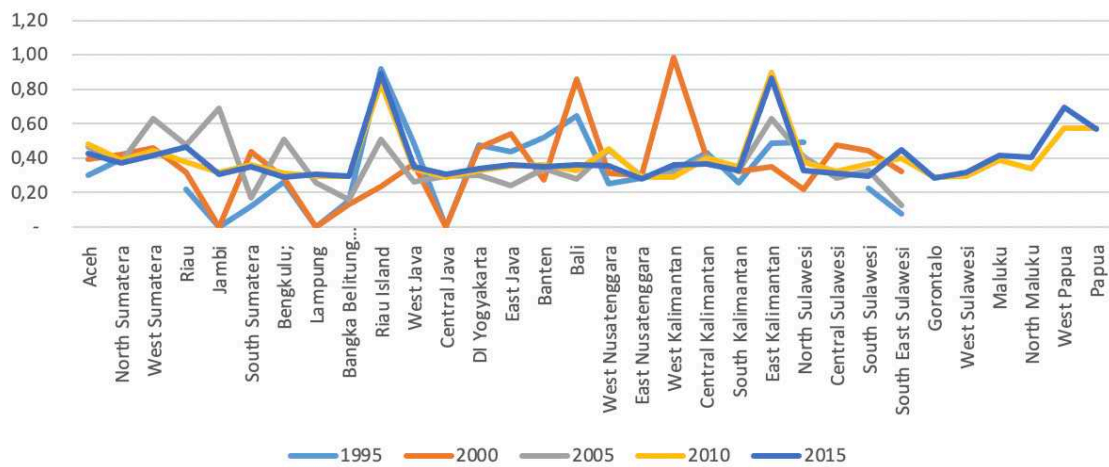
Table 7: Disparity of Fiscal Revenue per capita (Williamson Index)

	1995	2000	2005	2010	2015	2017
Between provinces due to sum of provincial & regency revenue*)	0.453	0.591	0.83	0.724	0.664	0.345
Between provinces due to sum of regency's revenue	0.602	0.529	0.79	0.574	0.566	0.166
Between regency's revenue nationally	0.888	0.78	0.998	0.899	0.802	0.179

Source: processed by author

A lessening or reduction in disparity between regencies in the province from 1995 up to 2015 did not happen equally throughout the province. Instead, in some parts of the province the disparity in fiscal revenue per capita between regencies showed a tendency to rise. At the beginning of autonomy, the increase in WI Between Regency's Revenue Across National was very high even though, after 18 years, it experienced a decline to 0.802. WI Between Province's Regency of Revenue has also increased after autonomy, but in 2015 there was a significant decline, even lower than in 1995. Total revenue increased disparity occurred in Aceh province Riau, South Sumatra, West Nusa Tenggara, East Kalimantan, and South Sulawesi. The disparity was related to the fact that some regencies in the province received revenue as a result of profit-sharing from mining activities in their area. Regencies that receive revenue from profit-sharing will receive a larger proportion than the other surrounding regencies in the province.

Figure 8: Williamson Index as Disparity Measure of APBD per capita Between Regencies/Municipalities



Source: processed by author

2.2 Theil Indexes

The calculation of Theil Indexes uses data on the Realised Regional Budget (APBD) of the regency/municipality and does not include the Realised Regional Budget (APBD) of the province. The exclusion of the province is required in order to meet the technical requirements for calculation of the index. Based on the Theil Indexes total we find that the disparity in revenue of the regional government per capita can be considered unchanged or the same as the conditions in 1995 up to 2015 (Table 8 and Figure 9).

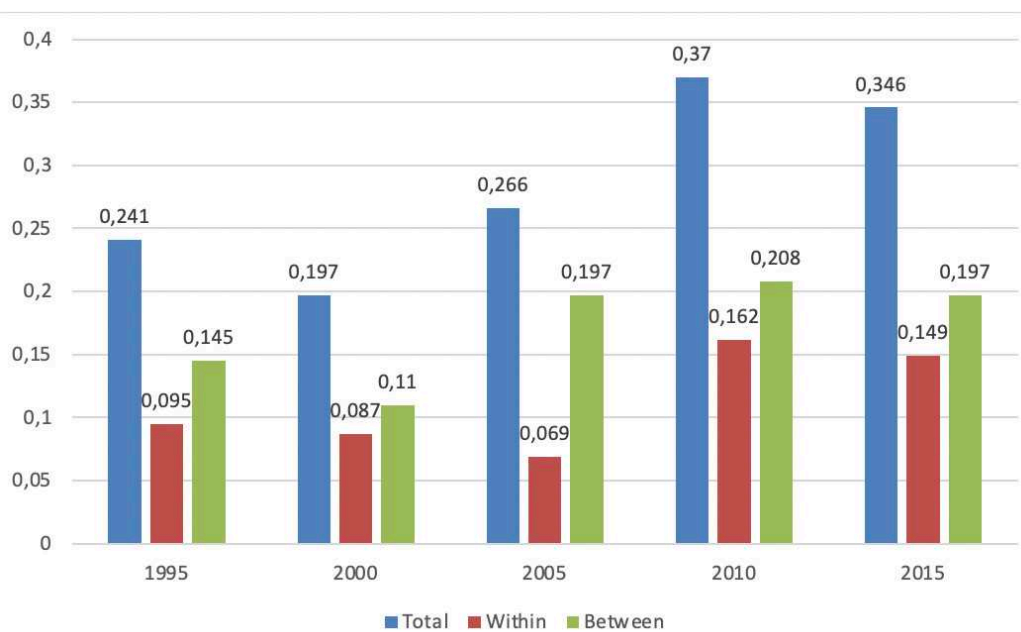
If the Theil Indexes are decomposed into only two components—namely *between-province* and *within-province* we can see a pattern, indicating that the disparity between provinces has increased since the pre-autonomy period (1995) to the post-autonomy period (2005, 2010, and 2015). The meaning of this index is similar to the Williamson Index discussed in the previous section. As explained earlier, the increased disparity is due to fiscal revenue per capita that is much higher in provinces that have rich deposits of mining materials compared to other provinces.

Table 8: Decomposition of Theil Indices Based on APBD per capita

	1995	2000	2005	2010	2015	2017
Between provinces due to sum of provincial & regency revenue*)	0.453	0.591	0.83	0.724	0.664	0.345
Between provinces due to sum of regency's revenue	0.602	0.529	0.79	0.574	0.566	0.166
Between regency's revenue nationally	0.888	0.78	0.998	0.899	0.802	0.179

Source: processed by author

Figure 9: Decomposition of Theil Indices Based on Government Revenue per capita



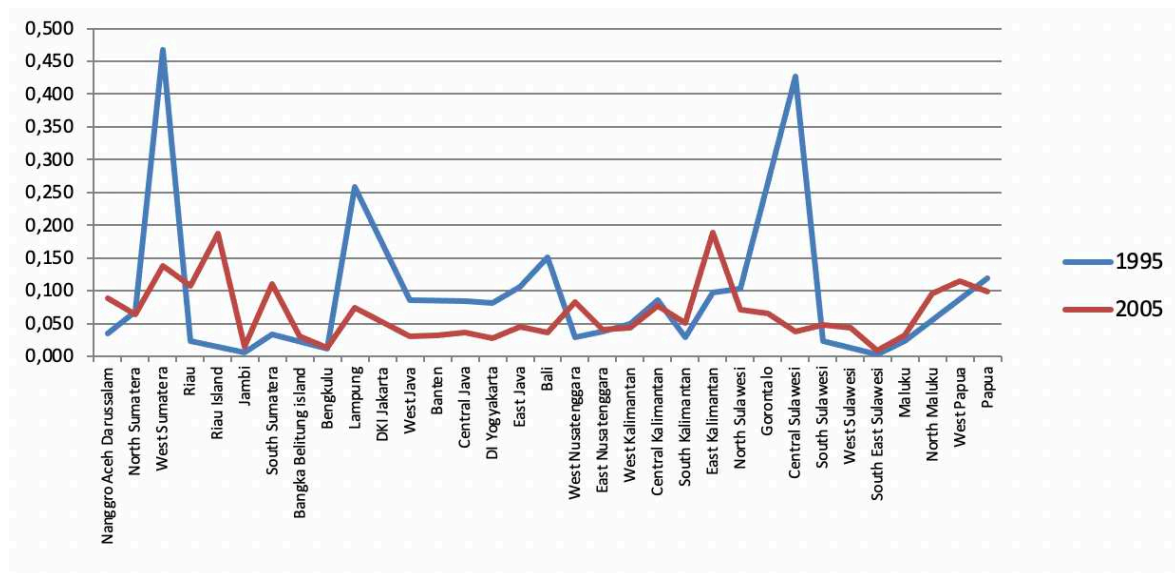
Source: processed by author

Conversely, the disparity *within-province* or disparity between regencies/municipalities in a province shows a declining pattern from the period before regional autonomy (1995) to the period of regional autonomy (2005). The decline in disparity between regencies in a province during the above two periods is, however, not significant statistically at a level of 5 percent and is only significant at alpha 7 percent.

Nevertheless, we still find between-regency fiscal disparity per capita that has grown worse in several provinces, namely the provinces that are rich in mining materials such as in Aceh, Riau, South Sumatra, West Nusa Tenggara, East Kalimantan, and South Sulawesi.

On the other hand, disparity that has improved is indicated by the lower between-regency Theil Indexes (Table 8). The highest cases of reduced disparity occurred in several regions, namely the provinces of West Sumatra, Lampung, Bali, East Java, West Java, DI Yogyakarta and Central Java. These regions are not rich in mining materials (oil, gas, and minerals), their economy is based on agriculture, manufacturing industries, services; and they are more densely populated.

Figure 10: Within-Province Theil Indexes Based on APBD per capita

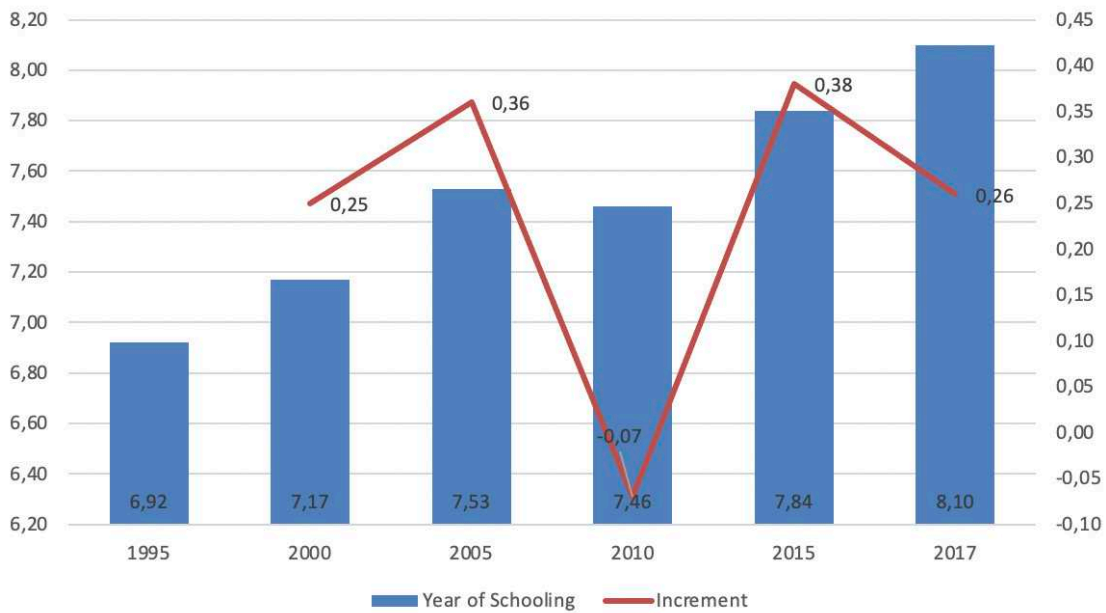


Source: processed by author

3. Years of Schooling

Statistical data indicates that the Mean Years of Schooling (MYS) on a national scale has increased gradually over the period from 1995 to 2017 (Figure 11). The graph shows us the rise in MYS figures becomes larger year by year. During the pre-regional autonomy period (1995 to 2000) the rise in MYS was on average 0.05 per year (0.26/5). At the beginning of the regional autonomy period, from 2000-05, the Years of Schooling (YOS) increased by 0.07 per year (0.36/5) and during 2005-17 it rose higher by up to 0.045 per year (0.57/12). The progressively higher rise in MYS during the period of regional autonomy is an early indication of the increasingly intense efforts to manage school education in the regions. These efforts are in line with the higher amount of fiscal revenue per capita of the regions.

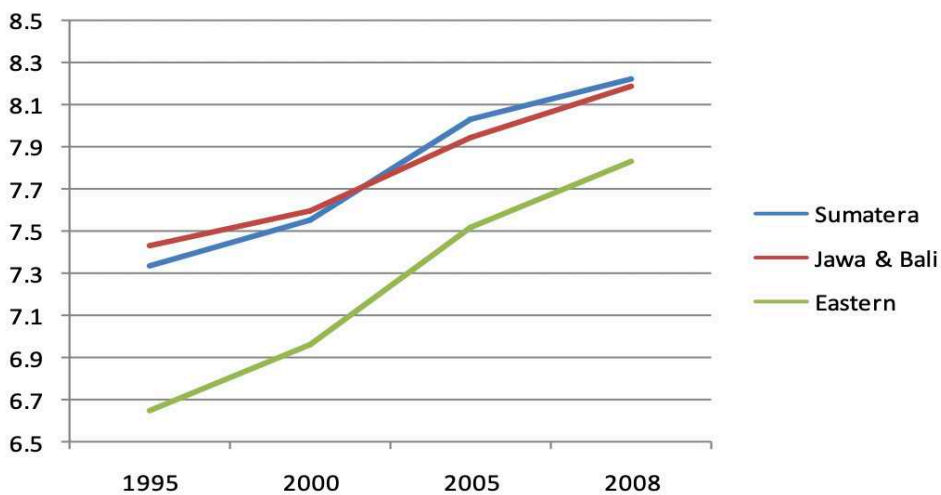
Figure 11: Years of Schooling at National Level



Source: Statistics Indonesia (few edition), BPS

The rise in MYS apparently varied or was not equally distributed between the regions (Figure 12), likewise the level of MYS varied between the regions, due to the different levels of progress of the regions. The highest MYS prior to the era of regional autonomy occurred in Java and Bali, followed by Sumatra, and the lowest MYS was found in Eastern Indonesia (Kalimantan, Sulawesi, Maluku, Papua, and Nusa Tenggara). After implementation of regional autonomy, the MYS in Sumatra became higher than in Java and Bali but Eastern Indonesia remained the lowest. Complete data on MYS can be seen in Appendix A5.

Figure 12: Years of Schooling by Island Group



Source: Statistics Indonesia (few edition), BPS

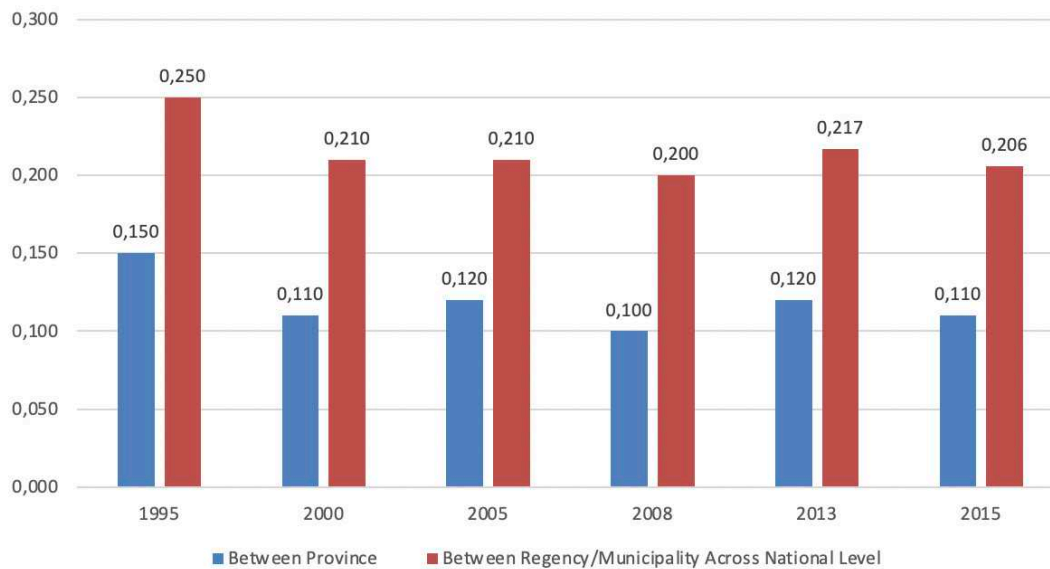
Figure 12 clearly indicates the development and different MYS between the regions, particularly between Eastern Indonesia and the other regions. This disparity continues to decline, however, so that the disparity between regions in 2008 is lower than in previous years. Evidence that the disparity in YOS has fallen is supported by the Williamson Index (Table 9 and Figure 13), namely that the indexes show a declining trend from 1995 through 2008, meaning that the disparity has lessened. The disparity in MYS between provinces is always lower than the disparity between regencies/municipalities on a national scale and the movement of the Williamson Index between provinces runs parallel with the index between regencies/municipalities. It can, therefore, be concluded that the era of regional autonomy has helped to accelerate the decline in disparity in MYS between regions.

Table 9: Williamson Index Between-Province Based on Means Years of Schooling (MYS)

	1995	2000	2005	2008	2013	2015
Between Province	0.15	0.11	0.12	0.10	0.12	0.11
Between Regency/Municipality Across National Level	0.25	0.21	0.21	0.20	0.217	0.206
Between regency's revenue nationally	0.888	0.78	0.998	0.899	0.802	0.179

Source: processed by author

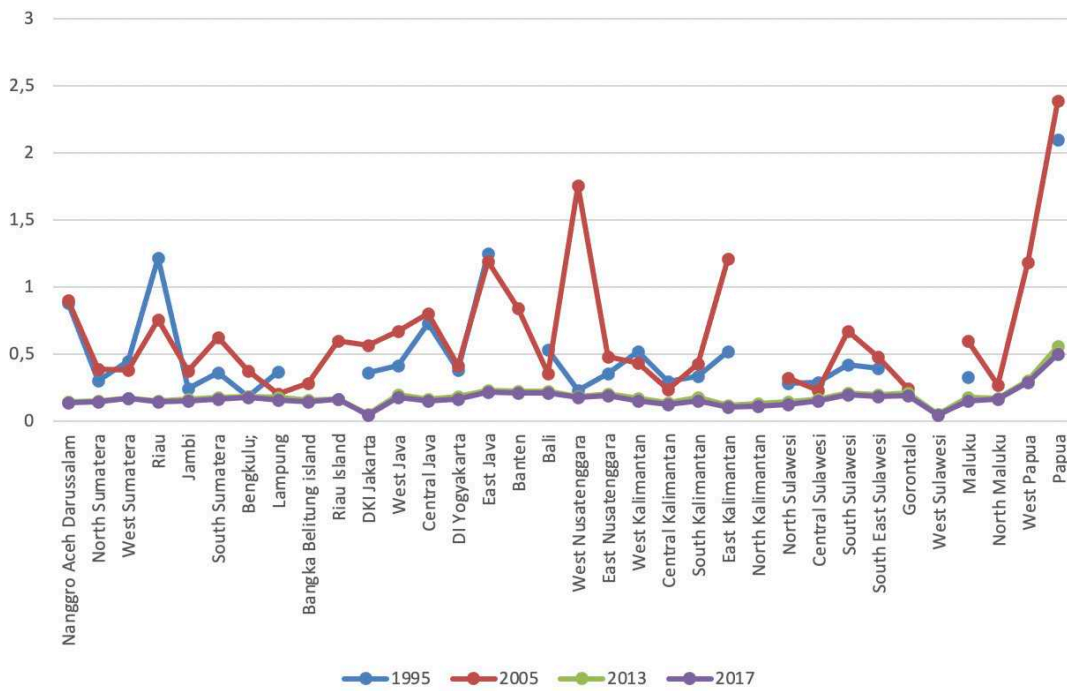
Figure 13: Williamson Index on Mean Years of Schooling (MYS)



Source: processed by author

The Williamson Index that involves all the regencies/municipalities in the country lies in the range of 0.20-0.25 while the indexes that indicate the disparity between regencies as calculated for each province varies from 0.05 to 0.45 (Figure 14). In general, the index of 2008 is lower than the same index in the year 1995. This means that the disparity in YOS between regencies/municipalities in the province had improved or fell during that period of time. The decline in index was not, however, the same for all provinces. In fact, an anomaly occurred in the provinces of Southeast Sulawesi and Papua, where the index in 2008 was higher than in 1995. In other words, both provinces experienced a rise in the disparity in YOS between regencies during that period. On the other hand, a sharp decline in disparity in YOS between regencies occurred in the provinces of Bengkulu and South Sulawesi.

Figure 14: Williamson Index on Means Years of Schooling Across Regencies in Province



Source: processed by author

CONCLUDING REMARK

Through calculation of the Williamson index as well as the Theil Index, it is found that during the period after implementation of regional autonomy, per capita income disparity between provinces became more pronounced. Disparity in income per capita between regencies/municipalities nationwide also increased and even more drastically. This is not surprising if we bear in mind the extremely varied conditions between one regency/municipality and another in Indonesia. Meanwhile the conditions of intra-province per capita income disparity (between regencies/municipalities within a province) are also very varied. There are several provinces that internally suffered a per capita income disparity that grew worse, namely the provinces of South Sumatra, DKI Jakarta, West Java, East Kalimantan, NTB, South Sulawesi, Maluku, and Papua. On the other hand, other provinces such as Riau, Lampung, and Bali experienced a sharp decline in regional income disparity. There are, however, 12 other provinces whose conditions of per capita income disparity remained the same during the period between 1995 (pre-regional autonomy) to 2005 (post-regional autonomy).

Something quite significant after the implementation of regional autonomy was the tendency for per capita income disparity between provinces to play a dominant role in the rise in disparity on a national scale. Whereas disparity within provinces played a smaller role in increasing the per capita income disparity between the regions in Indonesia.

Before the implementation of regional autonomy, there were differences among the regions related to the achievement of development goals. Western Indonesia (including Java, Bali, and Sumatra) experienced a faster rate of economic growth compared to Eastern Indonesia. After application of regional autonomy, each of the regions strived to boost their economic development using different strategies and policies. Consequently, there were some regions that succeeded with the application of a 'perfect' strategy while others failed to achieve any improvement in their welfare. During the period of establishing regional autonomy, many heads of regions had to be imprisoned for cases of corruption. The lavish flow of money transferred by the central government to the regions created many opportunities for corruption. As a result of the differing development conditions between the regions, it is not surprising that the per capita income disparity between regions became sharper.

Based on the results of calculating disparity among the regions related to per capita government expenditures, I find similar conditions to that of per capita income disparity. Regions with abundant natural resources, particularly mining resources, and regions that are a centre for manufacturing industries, will receive the larger proportion in revenue sharing. As a result, the development budget of these regions is plentiful and can be used to accelerate regional economic growth. Based on the data, we know that regions that are rich in mining resources and are industrial centres will tend to experience a higher rate of economic growth than the national average. The different rates of economic growth trigger a rise in the per capita income disparity between the regions.

One of the positive outcomes of implementing regional autonomy is the decline in educational disparity between the regions. This is reflected in the decreasing gap between regions for mean years of schooling (MYS). In the post-autonomy period, both elementary and secondary education were the full responsibility of the regional government. The regional governments tend to use the same strategy to encourage education among the people. In fact, in many areas the regional government provides free education for elementary and secondary school students. In various campaigns for the election of regional heads, each of the candidates would usually present a theme on education and health.

In general, descriptive statistics indicate that the years of schooling has increased more rapidly after the application of regional autonomy. This is one of the indications that improvement has been made in the basic services, particularly in the area of education. Development is no longer "Java-centred". Prior to regional autonomy, the increase in MYS was most rapid in Java and Bali. After regional autonomy, the best MYS was found in Sumatra, and the MYS of the Sumatra population was even better than the MYS in Java and Bali. Whereas for the eastern part of Indonesia (outside Java, Bali, and Sumatra), although the MYS continues to rise, it has not yet been able to catch up with the regions in Western Indonesia. A promising matter is that after regional autonomy there has been a tendency for the MYS disparity between regions to decline. This appears to be a sign that regional autonomy stimulates more equality in the provision of basic services, in particular, education. Whereas the result of calculating MYS disparity between regencies/municipalities within a province also shows us the same tendency. It is only in Southeast Sulawesi and Papua that the MYS disparity between regencies has increased.

Regional autonomy in Indonesia is at the level of regencies/municipalities. Each regency or municipality has acquired more authority in development than before the implementation of regional autonomy. This stimulates each region to formulate its own development policy in accordance with its own characteristics and needs. The different policies and strategies used by each region naturally produce different forms of economic development. From an economic viewpoint, the per capita income disparity between regions tends to rise. This matches the finding that fiscal capacity disparity has also increased. Regional autonomy can still be enjoyed by regions that are rich in natural resources, particularly mining resources. These mining regions will receive the majority of natural resources revenue sharing, while regions with little or no natural resources and have a dense population also tend to have slow economic growth. They require a strategy to overcome this unequal revenue sharing. The DAU that takes into consideration the size of the population and the number of poor people, has evidently not yet been able to create a more balanced fiscal capacity

It has been a decade since the implementation of regional autonomy in Indonesia, however, some regional governments have yet to perform their role satisfactorily. Corruption has spread from the central level to the regions. Many heads of regions have been found to be involved in corruption cases and been imprisoned. Consequently, regional development has never been optimal. It is this fact that leads to the different degrees of success in development among the regions and causes disparity. Nevertheless, the direct election of regional heads gives the people a choice and opportunity to choose the best leaders. If these elected leaders fail in their leadership, they most certainly will not be elected again.

Although Indonesia has experienced drastic changes in the relationship between the central government and the regions, it is a fact that there has never been any major problem to cause political upheaval and aggressive competition between the regions. Regional autonomy has at least succeeded in encouraging equitable development in providing basic services for the people, despite still being unable to create equal economic growth among the regions.

BIBLIOGRAPHY

- Akita, T., R.A. Lukman, Y. Yamada. 1999. "Inequality In The Distribution Of Household Expenditures In Indonesia: A Theil Decomposition Analysis." *The Developing Economies* XXXVII-2 (June 1999): 197-221.
- Akita, T. and A. Alisjahbana. 2002. "Regional Income Inequality in Indonesia and the Initial Impact of the Economic Crisis." *Bulletin of Indonesian Economic Studies* 38 (2): 201-222.
- Anand, Sudhir 1983. *Inequality and Poverty in Malaysia: Measurement and Decomposition..* Oxford University Press, New York
- Islam, I. and H. Khan. 1986. "Spatial Patterns of Inequality and Poverty in Indonesia." *Bulletin of Indonesian Economic Studies*. 22(2): 80-102.
- Kuncoro, M. 2005. *Lecture Notes: Spatial Inequality.* Faculty of Economic and Post Graduate Program, Gajah Mada University.
- Miranti, R., A. Duncan and R. Cassells. 2014. "Revisiting the Impact of Consumption Growth and Inequality on Poverty in Indonesia during Decentralisation," *Bulletin of Indonesian Economic Studies* 50 (3): 461-482.
- Nugraha, K. and P. Lewis. 2013. "Towards a better measure of income inequality in Indonesia." *Bulletin of Indonesian Economic Studies* 49 (1): 103-112.
- Siburian, M.E. 2019. "Fiscal decentralization and regional income inequality: evidence from Indonesia." *Applied Economics Letters*.
- van Leeuwen, B. and P. Földvári. 2016. "The Development of Inequality and Poverty in Indonesia, 1932-2008." *Bulletin of Indonesian Economic Studies* 52 (3): 379-402.
- Vidyattama, Y. 2013. "Regional convergence and the role of the neighbourhood effect in decentralised Indonesia." *Bulletin of Indonesian Economic Studies* 49 (2): 193-211.
- Williamson, J.B. 1977. "Convergence Theory and Spatial Welfare Sector: A Cross-National Analysis." *International Journal of Comparative Sociology* XVIII, 3-4.
- Yusuf, A.A. and A. Sumner. 2015. "Growth, Poverty, and Inequality under Jokowi." *Bulletin of Indonesian Economic Studies* 51 (3): 323-348.

APPENDIXES

Table A1: Williamson Index Between Regencies/Municipalities in Province Based on GRDP per capita

Province Names	1995	2005	2013	2014	2015	2016*	2017**
Aceh	0.878	0.901	0.42	0.39	0.38	0.38	0.38
North Sumatera	0.301	0.388	0.41	0.42	0.42	0.43	0.43
West Sumatera	0.448	0.38	0.26	0.26	0.26	0.27	0.27
Riau	1.216	0.756	0.49	0.45	0.43	0.40	0.38
Jambi	0.246	0.372	0.53	0.52	0.51	0.50	0.49
South Sumatera	0.362	0.623	0.56	0.56	0.56	0.55	0.55
Bengkulu;	0.184	0.374	0.37	0.37	0.37	0.37	0.37
Lampung	0.368	0.202	0.23	0.23	0.23	0.23	0.23
Bangka Belitung island		0.282	0.19	0.19	0.19	0.20	0.20
Riau Island		0.597	0.59	0.58	0.57	0.56	0.55
DKI Jakarta	0.363	0.563	0.56	0.57	0.57	0.58	0.58
West Java	0.414	0.668	0.66	0.67	0.66	0.66	0.66
Central Java	0.728	0.799	0.70	0.69	0.68	0.68	0.66
DI Yogyakarta	0.379	0.414	0.52	0.52	0.52	0.52	0.52
East Java	1.246	1.191	0.95	0.96	0.96	0.97	0.97
Banten		0.842	0.78	0.78	0.77	0.77	0.77
Bali	0.531	0.355	0.26	0.26	0.25	0.25	0.25
West Nusatenggara	0.231	1.754	0.86	0.80	1.41	1.42	1.12
East Nusatenggara	0.352	0.48	0.59	0.59	0.60	0.61	0.66
West Kalimantan	0.518	0.435	0.25	0.25	0.25	0.25	0.25
Central Kalimantan	0.294	0.235	0.22	0.21	0.21	0.20	0.20
South Kalimantan	0.334	0.427	0.52	0.51	0.50	0.49	0.48
East Kalimantan	0.519	1.209	0.57	0.54	0.54	0.53	0.51
North Kalimantan			0.22	0.20	0.18	0.16	0.15
North Sulawesi	0.282	0.32	0.38	0.39	0.39	0.39	0.40
Central Sulawesi	0.289	0.231	0.38	0.35	0.51	0.55	0.59
South Sulawesi	0.423	0.668	0.56	0.56	0.56	0.56	0.56
South East Sulawesi	0.397	0.477	0.58	0.53	0.53	0.52	0.54
Gorontalo		0.244	0.16	0.16	0.15	0.15	0.15
West Sulawesi			0.34	0.38	0.38	0.37	0.36
Maluku	0.329	0.598	0.29	0.28	0.27	0.26	0.25
North Maluku		0.272	0.27	0.26	0.26	0.27	0.27
West Papua		1.185	1.54	1.49	1.47	1.44	1.40
Papua	2.094	2.386	1.67	1.61	1.60	1.63	1.64

Source: GRDP Regency/Municipality, BPS (1995, 2005, 2013-17).

Table A2: Theil Index Between Regencies/Municipalities in Province Based on GRDP per capita

No.	Province Name	1995	2000	2005	2013	2015	2017
1	Aceh	0.327	0.185	0.283	0.077	0.061	0.061
2	North Sumatera	0.049	0.071	0.074	0.082	0.083	0.085
3	West Sumatera	0.088	0.079	0.065	0.033	0.034	0.035
4	Riau	0.328	0.242	0.246	0.102	0.080	0.063
5	Riau Island			0.219	0.116	0.108	0.100
6	Jambi	0.03	0.077	0.063	0.150	0.147	0.147
7	South Sumatera	0.063	0.08	0.163	0.062	0.062	0.062
8	Bangka Belitung island			0.035	0.027	0.028	0.028
9	Bengkulu	0.017	0.068	0.073	0.017	0.018	0.019
10	Lampung	0.059	0.107	0.02	0.130	0.121	0.111
11	DKI Jakarta	0.055	0.113	0.128	0.123	0.126	0.128
12	West Java	0.078	0.154	0.167	0.189	0.186	0.183
13	Banten			0.254	0.186	0.183	0.174
14	Central Java	0.214	0.205	0.239	0.107	0.108	0.108
15	DI Yogyakarta	0.063	0.062	0.071	0.301	0.307	0.310
16	East Java	0.433	0.378	0.38	0.198	0.191	0.188
17	Bali	0.118	0.071	0.059	0.033	0.031	0.029
18	West Nusatenggara	0.026	0.214	0.504	0.192	0.398	0.285
19	East Nusatenggara	0.057	0.063	0.09	0.127	0.131	0.170
20	West Kalimantan	0.117	0.085	0.085	0.030	0.030	0.030
21	Central Kalimantan	0.043	0.056	0.026	0.025	0.022	0.019
22	South Kalimantan	0.055	0.083	0.085	0.122	0.113	0.104
23	East Kalimantan	0.141	0.192	0.424	0.160	0.145	0.133
24	Nort Kalimantan				0.019	0.014	0.009
25	North Sulawesi	0.038	0.221	0.049	0.073	0.074	0.076
26	Central Sulawesi	0.039	0.074	0.029	0.057	0.093	0.119
27	South Sulawesi	0.078	0.081	0.165	0.140	0.137	0.135
28	South East Sulawesi	0.075	0.072	0.109	0.127	0.112	0.116
29	Gorontalo			0.029	0.013	0.011	0.011
30	West Sulawesi				0.053	0.064	0.059
31	Maluku	0.049	0.219	0.15	0.042	0.036	0.031
32	North Maluku			0.03	0.037	0.034	0.034
33	West Papua			0.506	0.631	0.579	0.535
34	Papua	0.943	1.093	1.237	0.771	0.729	0.754

Source: GRDP Regency/Municipality, BPS (1995, 2005, 2013-17).

Table A3: Williamson Index Between Regencies/Municipalities in Province Based on APBD per capita

	1995	2000	2005	2010	2015
Aceh	0.30	0.40	0.47	0.48	0.43
North Sumatera	0.39	0.42	0.38	0.39	0.37
West Sumatera		0.46	0.63	0.44	0.41
Riau	0.22	0.32	0.48	0.38	0.47
Jambi	-	-	0.69	0.32	0.31
South Sumatera	0.12	0.44	0.17	0.36	0.35
Bengkulu;	0.27	0.29	0.51	0.31	0.29
Lampung	-	-	0.26	0.30	0.31
Bangka Belitung island	0.16	0.13	0.16	0.29	0.29
Riau Island	0.92	0.23	0.51	0.83	0.89
DKI Jakarta					
West Java	0.49	0.37	0.26	0.34	0.35
Central Java	-	-	0.29	0.29	0.31
DI Yogyakarta	0.48	0.46	0.30	0.33	0.34
East Java	0.44	0.54	0.24	0.35	0.36
Banten	0.52	0.28	0.34	0.36	0.35
Bali	0.65	0.86	0.28	0.33	0.36
West Nusatenggara	0.25	0.31	0.45	0.45	0.35
East Nusatenggara	0.28	0.30	0.30	0.29	0.28
West Kalimantan	0.33	0.99	0.31	0.29	0.36
Central Kalimantan	0.43	0.41	0.41	0.40	0.37
South Kalimantan	0.26	0.33	0.33	0.35	0.33
East Kalimantan	0.49	0.35	0.63	0.90	0.86
North Kalimantan					
North Sulawesi	0.49	0.22	0.41	0.38	0.33
Central Sulawesi		0.48	0.29	0.32	0.31
South Sulawesi	0.23	0.44	0.33	0.37	0.30
South East Sulawesi	0.08	0.32	0.13	0.40	0.45
Gorontalo				0.29	0.29
West Sulawesi				0.29	0.32
Maluku	0.23	0.80	0.25	0.39	0.42
North Maluku				0.34	0.41
West Papua				0.58	0.70
Papua				0.57	0.57

Table A4: Theil Index Between Regencies/Municipalities in Province Based on APBD per Capita

	1995	2000	2005	2010	2015
Aceh	0.04	0.06	0.09	0.02	0.48
North Sumatera	0.07	0.07	0.07	(0.00)	0.74
West Sumatera	0.47	0.08	0.14	0.01	0.38
Riau	0.02	0.06	0.11	0.02	0.49
Jambi	0.01	0.10	0.02	0.01	0.25
South Sumatera	0.03	0.04	0.11	0.01	0.50
Bengkulu	0.01	0.01	0.01	0.01	0.16
Lampung	0.26	0.03	0.07	(0.01)	0.36
Bangka Belitung island	-	-	0.03	0.00	0.12
Riau Island	-	-	0.19	0.01	0.19
DKI Jakarta	-	-	-	-	-
West Java	0.09	0.06	0.03	(0.06)	1.39
Central Java	0.08	0.10	0.04	(0.04)	1.20
DI Yogyakarta	0.08	0.12	0.03	(0.00)	0.18
East Java	0.11	0.04	0.05	(0.04)	1.54
Banten	-	-	0.03	(0.02)	0.37
Bali	0.15	0.25	0.04	0.00	0.29
West Nusatenggara	0.03	0.05	0.08	(0.00)	0.25
East Nusatenggara	0.04	0.05	0.04	0.01	0.35
West Kalimantan	0.05	0.37	0.04	0.01	0.31
Central Kalimantan	0.09	0.08	0.08	0.02	0.30
South Kalimantan	0.03	0.05	0.05	0.01	0.32
East Kalimantan	0.10	0.06	0.19	0.06	0.61
North Sulawesi	0.10	0.02	0.07	0.02	0.15
Central Sulawesi	0.43	0.09	0.04	0.01	0.23
South Sulawesi	0.02	0.10	0.05	0.01	0.25
West Sulawesi	-	-	0.04	0.01	0.56
South East Sulawesi	0.00	0.05	0.01	0.01	0.25
Gorontalo	-	-	0.07	0.00	0.10
West Sukawesi				0.00	0.10
Maluku	0.02	0.28	0.03	0.01	0.18
North Maluku	-	-	0.10	0.01	0.15
West Papua	-	-	0.12	0.03	0.26
Papua	0.12	0.10	0.10	0.08	0.73

Table A5: Mean Years of Schooling By Province

No.	Province	1995	2000	2005	2008	2010	2015	2017
1	Aceh	7.5	-	-	8.6	8.3	8.8	9.0
2	North Sumatera	8.2	8.2	8.8	8.8	8.5	9.0	9.3
3	West Sumatera	7.8	8.0	8.1	8.6	8.1	8.4	8.7
4	Riau	7.6	7.9	8.3	8.8	8.3	8.5	8.8
5	Jambi	7.0	7.3	7.8	7.9	7.3	8.0	8.2
6	South Sumatera	6.9	7.3	7.9	7.8	7.3	7.8	8.0
7	Bengkulu	7.1	7.4	8.0	8.2	7.8	8.3	8.5
8	Lampung	6.6	6.8	7.2	7.5	7.3	7.6	7.8
9	Bangka Belitung island	-	-	6.9	7.7	7.1	7.5	7.8
10	Riau Island	-	-	9.3	8.3	9.4	9.7	9.8
11	DKI Jakarta	10.3	9.9	10.2	10.3	10.4	10.7	11.0
12	West Java	7.0	7.3	7.6	7.7	7.4	7.9	8.1
13	Central Java	6.2	6.6	6.6	7.1	6.7	7.0	7.3
14	DI Yogyakarta	8.2	7.8	8.6	9.0	8.5	9.0	9.2
15	East Java	6.1	6.6	7.0	7.2	6.7	7.1	7.3
16	Banten			7.9	8.0	7.9	8.3	8.5
17	Bali	6.8	7.4	7.7	8.0	7.7	8.3	8.6
18	West Nusatenggara	5.4	6.0	5.6	6.8	5.7	6.7	6.9
19	East Nusatenggara	5.9	6.0	6.3	6.8	6.5	6.9	7.2
20	West Kalimantan	5.8	6.4	6.9	6.9	6.3	6.9	7.1
21	Central Kalimantan	7.3	7.6	8.0	8.0	7.6	8.0	8.3
22	South Kalimantan	6.8	7.0	7.6	7.8	7.3	7.8	8.0
23	East Kalimantan	8.1	8.1	8.9	8.9	8.6	9.1	9.4
24	Nort Kalimantan						8.4	8.6
25	North Sulawesi	8.2	8.1	9.0	9.0	8.7	8.9	9.1
26	Central Sulawesi	7.4	7.4	7.6	8.1	7.7	8.0	8.3
27	South Sulawesi	6.8	6.9	7.3	7.6	7.3	7.6	8.0
28	South East Sulawesi	7.2	7.5	7.5	8.1	7.6	8.2	8.5
29	Gorontalo					6.9	7.1	7.3
30	West Sulawesi					6.6	6.9	7.3
31	Maluku	7.8	-	8.5	8.8	8.6	9.2	9.4
32	North Maluku	-	-	8.2	8.3	7.9	8.4	8.6
33	West Papua	-	-	-	8.0	6.8	7.0	7.2
34	Papua	5.8	5.6	6.4	6.5	5.6	6.0	6.3
	National	6.9	7.2	7.5	7.8	7.5	7.8	8.1

Table A6: Williamson Index Between Regencies in Province on Years of Schooling

Province Names	1995	2005	2013	2014	2015	2016*	2017
Aceh	0.878	0.901	0.15	0.14	0.14	0.14	0.13
North Sumatra	0.301	0.388	0.16	0.15	0.15	0.15	0.15
West Sumatra	0.448	0.38	0.17	0.17	0.17	0.17	0.17
Riau	1.216	0.756	0.16	0.15	0.15	0.15	0.14
Jambi	0.246	0.372	0.17	0.17	0.16	0.15	0.15
South Sumatra	0.362	0.623	0.19	0.18	0.17	0.17	0.16
Bengkulu	0.184	0.374	0.19	0.18	0.18	0.18	0.18
Lampung	0.368	0.202	0.19	0.18	0.17	0.17	0.16
Bangka Belitung		0.282	0.16	0.16	0.16	0.15	0.14
Riau Island		0.597	0.17	0.16	0.16	0.17	0.16
DKI Jakarta	0.363	0.563	0.05	0.05	0.05	0.05	0.05
West Java	0.414	0.668	0.20	0.19	0.19	0.19	0.18
Central Java	0.728	0.799	0.17	0.17	0.16	0.16	0.15
DI Yogyakarta	0.379	0.414	0.18	0.18	0.18	0.18	0.16
East Java	1.246	1.191	0.24	0.23	0.23	0.23	0.22
Banten		0.842	0.22	0.23	0.22	0.21	0.21
Bali	0.531	0.355	0.22	0.22	0.22	0.22	0.21
West Nusa Tenggara	0.231	1.754	0.19	0.19	0.19	0.19	0.18
East Nusa Tenggara	0.352	0.48	0.21	0.20	0.20	0.19	0.19
West Kalimantan	0.518	0.435	0.17	0.17	0.16	0.15	0.15
Central Kalimantan	0.294	0.235	0.14	0.14	0.13	0.13	0.12
South Kalimantan	0.334	0.427	0.18	0.18	0.17	0.16	0.15
East Kalimantan	0.519	1.209	0.13	0.12	0.11	0.11	0.10
North Kalimantan			0.11	0.13	0.13	0.12	0.11
North Sulawesi	0.282	0.32	0.14	0.14	0.14	0.13	0.13
Central Sulawesi	0.289	0.231	0.17	0.16	0.16	0.16	0.15
South Sulawesi	0.423	0.668	0.21	0.21	0.20	0.21	0.20
Southeast Sulawesi	0.397	0.477	0.38	0.20	0.19	0.19	0.18
Gorontalo		0.244	0.21	0.21	0.21	0.20	0.19
West Sulawesi			0.05	0.05	0.05	0.04	0.05
Maluku	0.329	0.598	0.18	0.17	0.17	0.16	0.15
North Maluku		0.272	0.17	0.17	0.17	0.16	0.16
West Papua		1.185	0.30	0.30	0.30	0.30	0.29
Papua	2.094	2.386	0.54	0.56	0.53	0.52	0.50

THE NATIONAL TEAM FOR THE ACCELERATION OF POVERTY REDUCTION

Office of the Vice President's Secretariat
Jl. Kebon Sirih Raya No.14, Jakarta Pusat, 10110

Telephone : (021) 391 28 12
Facsmili : (021) 391 25 11
Email : info@tnp2k.go.id
Website : www.tnp2k.go.id