

ANALYSIS OF CONVERGENCE BETWEEN PROVINCES IN INDONESIA

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ABSTRACT

Indonesia is one of the developing countries that is always trying to increase its economic growth. Indonesia has a large number of people with various ethnic backgrounds and diverse customs, so this situation has given rise to disparities between regions. This study aims to determine whether or not sigma convergence, to find out whether absolute and conditional convergence occurs or not, and to determine the speed of convergence. This study uses secondary data, namely Gross Regional Domestic Product (GRDP) per capita, poverty, and inequality for each province in Indonesia from 2017-2021. The method used in this study is panel data with a fixed effect approach. The results of the analysis using the sigma convergence (σ) approach show the occurrence of convergence. The results of the absolute convergence analysis explain the divergence of GRDP per capita in Indonesia with a divergence speed of 13.76% per year. The results of the conditional convergence analysis show that there is a divergence of GRDP per capita in Indonesia with a divergence speed of 13.62% per year.

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1. INTRODUCTION

Indonesia is a country with great diversity in terms of society, culture, human services, education, social and economic relations which very easily causes political unrest in the country. To be able to maintain political stability in the country, the central government as the highest authority who determines national policy implements a centralization policy. The benchmark for the success of a country's economic development is also seen from economic growth, income disparities between residents, and the economic structure between districts/cities and between provinces themselves. Disparity between regions cannot be avoided because we know that each region has its own natural resource potential which can help the economic growth and development of each region, so this is the biggest factor in income disparities between regions themselves. Even though Indonesia has experienced relatively large and stable economic growth in recent decades, the problem of economic inequality remains (Sugiharti et al., 2022).

Based on the assumption that developed countries will face the situation steady state, where countries whose income levels cannot increase further because capital bonuses do not increase a country's income. Meanwhile, developed countries that have stopped growing, developing countries that have good growth will catch up so they can compete with developed or developing countries. catching up effect (Gama, 2012).

The two convergence models found in the analysis of economic development between countries and between regions are Beta Convergence and Sigma Convergence (Garcia & Soelistianingsih, 1998). First, the beta convergence plan is the economic development of poor countries or regions that is faster than the economic development of other countries or regions, so that poor countries or regions tend to catch up with other regions. Second, sigma convergence is the formation of a reduction in the diversity of income per person over time (Kharisma & Saleh, 2013). What this means is that convergence is characterized by the presence of dispersion which is measured through standard deviation numbers and coefficients of variation over time. If a country's income dispersion shrinks, it can be said that regional disparities are narrowing or convergence has occurred (Yulisningrum & Setyastuti, 2014).

Design of the sigma convergence concept is the level of evaluation of the convergence situation through the dispersion of GRDP per capita, whereas in beta convergence the level of measurement can be done absolutely or conditionally, in absolute measurement it will measure the trend level of economic development (GRDP) in neglected areas faster than the level of economic development (GRDP) in developed regions (Atmasari et al., 2020). Apart from that, through measuring convergence, it will be known what the direction of economic development is in an area and what the inequality situation is in the region (Zega et al., 2022). Convergence occurs when the economic situation in neglected regions tends to grow faster than developed regions, the presence of integrated interventions through convergence can force poor regions to catch up with the per capita income gap with developed regions so that the regional development mission becomes more efficient (Wahyunadi, 2019).

Research from Resosudarmo & Vidyattama (2006) which analyzed the income gap per person between provinces in Indonesia in the period 1971-2002 revealed that the income gap per person in Indonesia's provinces was relatively large, especially between Java and outside Java. Accumulation of physical capital (physical capital), the level of continuity of trade, the position of oil and gas are factors that tend to influence the development of income per person in Indonesia. However, Resosudarmo & Vidyattama (2006) shows that due to the level of infrastructure development and community movement, there is an incentive to increase income per person in various provinces. Next, there is a need for convergence in development per person in Indonesia, where poorer provinces have a greater level of development than provinces with more.

Research conducted by Akita (2002) proves that the gap in per capita income between provinces in Indonesia increased in the period before the crisis (1993-1997), but then decreased after the crisis. The gap in national per capita income in Indonesia is more due to disparities in provinces and disparities within provinces. The results of research analysis by Tadjoeuddin et al. (2001) prove that uneven development between regions leads to an increase in the threat of disintegration which continues to peak in Indonesia, which is a vertical conflict between the center and the regions, especially provinces that are rich in resources.

Jawaid & Raza (2012) conducted research on the impact of foreign investment, developments in the perception of convergence in 129 countries divided into countries with small, medium and large income. The results explain that foreign investment has a positive influence on economic growth in countries with small and medium growth. Das et al. (2013) research on divergence with the title "Remoteness and Unbalanced Growth: Understanding Divergence Across Indian District" in the period 2001-2011, the research results showed that there was no convergence or divergence between provinces in India.

Wibisono (2003) explains that the province has human capital large ones can grow faster. Other research conducted explains that provinces that have a large density actually have a negative relationship with the level of economic development, while provinces that have a large net export have a positive correlation with the level of development in Indonesia (Sodik & Iskandar, 2007). Studied the dependence of convergence on economic development in East Java Province and concluded that there was no sigma convergence situation in the research area. Concluded that there was no convergence situation using sigma and beta in large cities in East Java Province, economic development was influenced by the level of the Human Development Index (HDI) and gross fixed capital formation (Zainuri et al., 2022).

The income gap between regions is a topic that needs to be studied taking into account several reasons. The main reason why this is interesting to research is because inequality is something that can hinder regional development, especially national development in Indonesia, which has 34 provinces with relatively different regional potential. Symptoms of disparities in income per capita between provinces in Indonesia can be seen using the GRDP per capita indicator based on constant prices from 2017-2021 (Prasasti, 2006).

2. RESEARCH METHODS

The research concept used in this research uses quantitative descriptive data from the results of processing the information that has been obtained. The information used in this research is quantitative descriptive in panel form from 2017-2021 in the form of GDP per capita on the basis of constant prices, poverty and inequality in each province. Meanwhile, this research uses convergence analysis to see whether there is convergence between provinces in Indonesia.

The data analysis technique uses convergence analysis. Convergence theory reports that the level of prosperity felt by developed countries and developing countries will eventually converge (meet at one point). To analyze convergence according to Barro & Sala-i-Martin (1990) the following measures are Gross convergence or Sigma (σ) and Beta Convergence (β).

Gross convergence or Sigma (σ) convergence measures the level of dispersion of GDP per capita. Gross convergence or sigma (σ) can be measured using a measure of dispersion, in this case the coefficient of variation and standard deviation of the logarithm value of GRDP per capita at constant prices. Beta Convergence (β) can be known from the predicted factors that determine the level of convergence. According the formula for calculating beta (β) convergence are as follows (De Silva & Sumarto, 2014):

$$\beta = \frac{[\ln \ln (b + 1)]}{T}$$

Where as:

- β = Beta convergence
- b = Coefficient of predictor variable
- T = Length of time period

The procedure that must be carried out to test beta convergence is to first find out whether there is absolute convergence, and test conditional convergence. The model specifications used for absolute convergence are as follows:

$$\text{Log (Y)} = a + b \text{Log (Y}_{t-1}) + u_{it}$$

Where as:

- Y = Provincial GDP per capita during 2017-2021
- Y_{t-1} = GDP per capita of the province in the previous year
- u_{it} = Component error th individuali at time t

On the other hand, conditional convergence considers the advantages of panel data, so in this research a panel data regression technique is used to identify which variables are predicted to trigger the convergence of GRDP per capita between provinces. The detailed form of panel information to be used is interpreted in the following equation:

$$Y_{it} = \alpha + \beta_1 \text{GDP}_{t-1it} + \beta_2 \text{PO}_{it} + \beta_3 \text{giniratio}_{it} + u_{it}$$

Where as:

- Y = GRDP
- α = Constant
- GDP_{t-1} = GDP per capita year
- PO = Poverty Percentage
- Gini ratio = Inequality
- $\beta_{1,2,3,4}$ = Independent variable coefficient
- i = Unit cross-section in Indonesia
- t = Unit time series 2017- 2021

3. RESULTS AND DISCUSSION

Gross Convergence or Sigma (σ) Convergence

Sigma convergence occurs when there is a decrease in the dispersion of the natural logarithm of GDP per capita between regions throughout the year. The results obtained from calculating the coefficient of variation and standard deviation explain that there is a dispersion in the logarithm value of GRDP per capita for 34 provinces in Indonesia which tends to decrease during the observation period. Based on the results presented, it can be seen that the standard deviation and coefficient of variation of the logarithm of GRDP per capita decreased from 2017 to 2019 (Silva & Sumarto, 2014), but again showed an increase in 2020 and decreased again in 2021. This is presented in following table:

Table 1. Standard Deviation and Coefficient of Variation of GDP Per Capita Between Provinces 2017-2021

Year	Standar Deviasi (SD)	Coefficient Variation (CV)
2017	0,5649	0,0539
2018	0,5524	0,0527
2019	0,5481	0,0523
2020	0,5530	0,0528
2021	0,5273	0,0503

Source: Processed data, 2022

This reduction in the digression standard indicates that the development of GDP per capita in Indonesia has experienced instability from year to year within the observation period, so we can know that the development of real GDP per capita is not normal between provinces in Indonesia, in other words, if there is uneven development between provinces in Indonesia. The results using graph are present in the following figure.

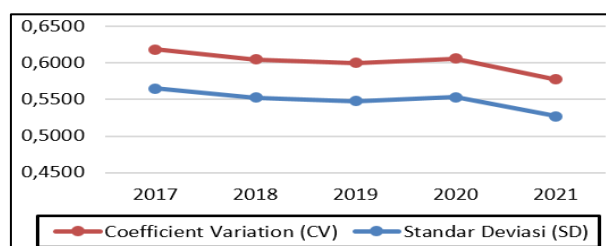


Figure 1. Sigma Convergence

Source: Processed Data, 2022

Beta Convergence (β)

Beta convergence analysis is carried out by including factors that influence and see whether absolute convergence and conditional convergence between provinces in Indonesia occurs or not. Absolute convergence analysis was carried out using the current equation of the estimated GDP per capita of 34 provinces in Indonesia with the GDP per capita of 34 provinces in Indonesia the previous year (Distributed Lag). The research results are explained in the following table:

Table 2. Absolut Convergence

Fixed Effect	
Lnpdrb_lag1	0.993*** (0.006)
_cons	0.094 (0.064)
Observation	169

Values in parentheses are standard error/robust standard error.

(*) (**) (***) explains the significance level (10) (5) (1) percent.

Source: Processed data, 2022

Based on the results above, the GDP coefficient per capita of 34 provinces in Indonesia in the previous year (Lnpdrb_lag1) using the research model fixed effect is 0.993, the research model above explains a positive relationship, this reflects the occurrence of divergence or a tendency for increasing inequality between provinces in Indonesia. The coefficient of Lnpdrb_lag1 is used to calculate the speed at which divergence occurs. The results of research and calculations explain that the divergence value between provinces in Indonesia is 13.76%.

Analysis with conditional convergence can see the factors that cause inter-provincial growth in Indonesia. The research results use the model fixed effect explained in the following table:

Table 3. Conditional Convergence Result

Fixed Effect	
Lnpdrb_lag1	0.982*** (0.006)
Poverty	-0.002* (0.001)
Inequality	0.023 (0.078)
_cons	0.222 (0.080)
Observation	169

Values in parentheses are standard error/robust standard error.

(*) (**) (***) explains the significance level (10) (5) (1) percent.

Source: Processed data, 2022

Based on the results above, the GDP per capita coefficient of 34 provinces in Indonesia in the previous year (Lnpdrb_lag1) was 0.982 and had a positive relationship, this reflects the occurrence of divergence or a tendency for increasing inequality between provinces in Indonesia. The coefficient of Lnpdrb_lag1 is used to calculate how fast the divergence speed occurs. The conditional convergence results explain the divergence speed of 13.62%.

So it can be concluded that using both absolute convergence and conditional convergence also explains that there is divergence between provinces in Indonesia. The results of research using both sigma convergence and beta convergence explain the same results as previous research conducted which explains that sigma convergence has fluctuating results and beta convergence explains the occurrence of divergence between provinces in Indonesia (Ningrum, 2020).

4. CONCLUSION

The results of research using sigma convergence explain that from 2017 to 2019 growth between provinces in Indonesia experienced convergence, but increased again in 2020, which means that there is again divergence between provinces in Indonesia. The results of other research explain that there is divergence between provinces in Indonesia using both absolute convergence and conditional convergence, where the results explain that the speed of divergence between provinces in Indonesia is 13.76% and 13.62% respectively. So it can be concluded that using both absolute convergence and conditional convergence also explains that there is divergence between provinces in Indonesia. Sigma convergence has fluctuating results and beta convergence explains the occurrence of divergence between provinces in Indonesia.

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