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Author : Nely Desiliyani Hutabarat, and Arif Rahman
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Regional Analysis Of Income Distribution Inequality In Indonesia

Nely Desiliyani Hutabarat, Arif Rahman

Departement of Development Economics, Faculty of Economics and Business, Universitas Sumatera Utara
Tri Dharma Street No. 9, Padang Bulan, Medan Baru District, Medan City, North Sumatra 20222

nely.desiliyani.hutabarat@students.usu.ac.id, arifrahman8747@gmail.com

Abstract

This study aims to analyze the differences in the performance of per capita GRDP and inequality across 34 provinces before and after COVID-19, and to examine the influence of per capita income, education, and unemployment on income distribution inequality in Indonesia during the 2015–2024 period. The variables used are income inequality (Gini Ratio), per capita income (Log PDRB per capita), education (average years of schooling), and unemployment (open unemployment rate). This research is quantitative and uses secondary panel data, combining cross-section data for 34 provinces with time series from 2015 to 2024. The analysis techniques include panel data regression, supported by Eviews 12, and Importance-Performance Analysis (IPA) for quadrant mapping. The results indicate that per capita income has a negative and significant effect on income distribution inequality, while education also has a negative and significant effect. Conversely, the unemployment rate does not show a statistically significant effect. The IPA quadrant analysis reveals shifts in provincial positions pre- and post-COVID-19, reflecting the regional dynamics of inequality and economic performance, with some provinces like Central Sulawesi successfully achieving the "Ideal Inclusive Growth" quadrant.*Keywords: Economic Growth; Investment; Urbanisation; Employment Opportunity.*

Keywords: *Income Inequality; Per Capita Income; Education; Unemployment; Provincial Performance*

1. Introduction

Development is a multifaceted process involving significant changes in social structure, attitudes, mental frameworks, and institutions, encompassing economic growth rates, inequality reduction, and poverty alleviation. Inclusive economic growth is a primary focus, ensuring all societal segments, especially marginalized groups, can participate and benefit from such growth. Income inequality is inextricably linked to poverty, posing a major challenge for developing countries like Indonesia. Economic disparities or income inequality between high- and low-income groups, along with poverty levels, represent a substantial issue. These disparities necessitate efforts in economic development to achieve inclusive growth, and to eliminate or reduce poverty, income inequality, and unemployment.

As an archipelago with over 17,000 islands and 34 provinces, Indonesia exhibits high regional diversity in geography and economy. This diversity presents significant challenges for equitable economic development. Economically, inter-regional disparities are stark. Provinces in Western Indonesia, such as Java and Sumatra, typically have higher per capita incomes due to better access to infrastructure, investment, and industry. Conversely, Eastern Indonesian provinces like Papua and Nusa Tenggara often lag in economic development and public welfare. This situation indicates significant economic inequality between Western and Eastern Indonesia.

According to Todaro (2004), inequality has both positive and negative impacts. Positive impacts include motivating less developed regions to compete and enhance their growth for improved welfare. Negative impacts of extreme inequality include economic inefficiency, weakened social stability and solidarity, and a general perception of injustice concerning public welfare.

The study of income inequality was first introduced by Professor Kuznets in 1955, using the Gini coefficient and Lorenz curve as measurement tools. Simon Kuznets, in "Economic Growth and Income Inequality" (1955), proposed the Kuznets Curve theory, stating that income inequality increases in the early stages of economic development but then declines with increasing welfare and equity. However, the relevance of this theory is questioned in modern economies, particularly in developing countries like Indonesia, where inequality persists or even grows despite economic growth. [1]

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According to Badan Pusat Statistik (BPS) data, Indonesia's Gini Index has fluctuated recently, indicating significant imbalance between low- and high-income groups. This inequality is more pronounced between Western and Eastern Indonesia, with the East lagging in infrastructure, education access, and healthcare. The COVID-19 pandemic underscored that non-inclusive economic growth leaves vulnerable groups in a more precarious state. A World Bank report (2022) highlights that extreme poverty often hinders long-term sustainable economic growth. Therefore, Indonesia must prioritize the quality of growth, not just its figures, to alleviate poverty and narrow inequality. [2]

For long-term development, Indonesia aims to be among the world's top five economies by 2045, coinciding with its 100th independence anniversary. Achieving this vision requires an economic growth strategy focused not only on GDP figures but also on equitable development outcomes. With abundant resources and a large population, Indonesia must leverage economic growth as a tool to address poverty sustainably. The success of poverty alleviation programs is evident in the general decline of Indonesia's poverty percentage over the last decade.

2. Literature Review

2.1 Inequality

Inequality refers to a condition where there are significant disparities in the distribution of income, wealth, or access to economic and social resources among individuals, groups, or specific regions. High inequality can impede long-term economic growth by reducing the capacity of poor communities to invest in education and health. In economics, income distribution inequality is often measured using indicators such as the Gini Coefficient, Palma Ratio, and Theil Index. The Gini Coefficient, introduced by Corrado Gini in 1912, is a statistical measure of income inequality ranging from 0 (perfect equality) to 1 (perfect inequality). These three indicators are frequently used in economic development studies to understand the extent of inequality within a country or region. [3]

2.2 Income Distribution Inequality

Income distribution inequality refers to a situation where income generated within an economy is not evenly distributed among individuals, groups, or specific regions. According to Todaro and Smith (2020), this type of inequality arises from significant differences in access to factors of production such as labor, capital, and land. Consequently, groups with better access to economic resources tend to earn higher incomes compared to those with limited access. [4]

One common way to measure income distribution inequality is through the Lorenz Curve and the Gini Coefficient. The Lorenz Curve provides a clear visualization of income inequality; the further the curve is from the diagonal line (line of equality), the greater the inequality in income distribution. The Gini Coefficient, derived from the Lorenz Curve, ranges from 0 (all individuals have the same income) to 1 (one individual controls all income).

2.3 Per Capita Income on Inequality

Per capita income is a key economic indicator used to measure the welfare of a country or region, calculated by dividing total national or regional income by the population. According to Todaro and Smith (2003, per capita income is often used to assess economic growth and societal welfare, though it may not reflect equitable income distribution within a nation. Kuznets (1955), in his "Kuznets Curve" hypothesis, stated that in the early stages of economic development, inequality tends to increase with rising per capita income. However, beyond a certain point, inequality begins to decline due to factors such as income redistribution, progressive taxation policies, and improved access to education and healthcare. [5]

2.4 Education on Inequality

Education is a primary determinant of individual income levels and income distribution within a country. According to Becker (2017), education enhances labor skills and productivity, ultimately contributing to increased individual income. In Indonesia, disparities in access to quality education are a significant factor contributing to income distribution inequality. Unequal education leads to disparities in workforce quality, with highly educated individuals generally securing better-paying jobs than those with lower education, thus widening the income gap. [6]

2.5 Unemployment on Inequality

Unemployment describes a condition where individuals within the labor force are without work but actively seeking employment. This phenomenon not only affects individual welfare but also has broad consequences for the social and economic

structure of society. One of its main impacts is increased inequality, both in terms of income and access to economic opportunities. The dualistic economy theory by W. Arthur Lewis (1954) helps explain this dynamic, particularly in developing countries. [7]

3. Research Method

This study employs a quantitative research approach. The research utilizes secondary data, which is information obtained from existing sources such as reports, publications, or documents. Specifically, this study uses panel data, a combination of time series and cross-sectional data. The time series data spans 10 years, from 2015 to 2024 , while the cross-sectional data covers 34 provinces in Indonesia.[8]

The dependent variable in this research is income inequality, measured by the Gini Ratio (Y). The independent variables are per capita income (X1), education (X2), and unemployment (X3). The analytical technique used is panel data regression, which combines cross-section and time series data. The model equation for panel data regression is as follows:

$$\mathbf{Gini_{it} = \alpha + \beta_1 PDRBpp_{it} + \beta_2 Edu_{it} + \beta_3 Unemp_{it} + \varepsilon_{it}}$$

Gini	: Income distribution inequality index (ranging from 0 to 1) i
	: Province order (i = Aceh, Sumut, Sumbar,…, Papua)
t	: Year order (t = 2015,2016,2017…2024)
α	: Constant *(intercept)*
PDRBpp	: Gross Regional Domestic Product per capita
Edu	: Education level measured by average years of schooling
Unemp	: Open unemployment rate (percentage)
β1, β2, β3	: Coefficients of independent variables
ε	: Disturbance variable (error term)

This study also employs Importance-Performance Analysis (IPA) to map and evaluate the relationship between PDRB per capita (as an indicator of regional economic performance) and the Gini Ratio (as an indicator of income inequality). This method helps identify areas requiring specific attention to reduce income inequality. IPA will be used to analyze the differences in PDRB per capita performance and inequality across 34 provinces before (2015-2019) and after (2020-2024) the COVID-19 pandemic

4. Results and Discussion

4.1 General Overview of Research Object

Indonesia, an archipelago rich in natural resources and sociocultural diversity, faces significant challenges in achieving equitable inter-regional development. Income distribution inequality remains a fundamental issue for many developing nations, including Indonesia. Despite positive national economic growth trends in recent decades, the distribution of development outcomes has not been fully equitable across regions. This inequality is reflected in significant welfare disparities among Indonesian provinces. The Gini Ratio serves as the primary analytical tool to measure this inequality. According to data from the Central Statistics Agency (BPS), the Gini Ratio in Indonesia has fluctuated annually, with the highest figures recorded in urban areas such as DKI Jakarta and DI Yogyakarta.

4.2 Panel Data Model Test

To determine the most appropriate model for panel data regression (Common Effect Model, Fixed Effect Model, or Random Effect Model), three tests are conducted: the Chow Test, the Hausman Test, and the Lagrange Multiplier (LM) Test.

a. Chow test

This test is used to select between the Common Effect Model and the Fixed Effect Model. The null hypothesis (H0) is that the Common Effect Model is appropriate, while the alternative hypothesis (H1) favors the Fixed Effect Model.

Table 1. Chow Test

Cross-Section F	0.0000
Cross-sectionChi-square	0.0000

Source: Data processed by the researcher using E-Views 12.

The test results show a Cross-Section F probability of 0.0000 and a Cross-Section Chi-square probability of 0.0000. Since both values are less than 0.05, the null hypothesis (H0) is rejected, indicating that the Fixed Effect Model is the more appropriate choice

b. Hausman Test

This test distinguishes between the Fixed Effect Model and the Random Effect Model. The null hypothesis (H0) states that the Random Effect Model is suitable, while the alternative hypothesis (H1) supports the Fixed Effect Model.

Table 2. Hausman Test

	Chi-Sq. Statistic	Prob
Cross-Section F	7,007228	0,0000

Source: Data processed by the researcher using E-Views 12.

The Hausman test results show a Chi-Sq. Statistic probability for Cross-section random of 0.0717. Since this value (0.0717) is greater than 0.05, the null hypothesis (H0) is accepted, meaning the Random Effect Model is the preferred choice.

c. Lagrange Multiplier Test

This test is used to compare the Random Effect Model with the Common Effect Model. The null hypothesis (H0) is for the Common Effect Model, and the alternative hypothesis (H1) is for the Random Effect Model

Table 3. Lagrange Multiplier Test

	Cross-section	Prob
Breusch-Pagan	1189,075	0,0000

Source: Data processed by the researcher using E-Views 12.

The results from Table 4.3 show a Breusch-Pagan probability of 0.0000. As this value is less than 0.05, the null hypothesis (H0) is rejected, leading to the conclusion that the Random Effect Model is the chosen model.

Based on the sequential application of these tests, the Random Effect Model (REM) is consistently chosen as the most appropriate model for this panel data analysis.

4.3 Regression Analysis Results

The regression results using the Random Effect Model (REM) are as follows:

Table 4. Panel estimation results of REM

	Coefficient	Std. Error	t-Statistic	Prob.
C	0,545802	0,017537	31,12246	0,0000
LOGPDRB	-0,025174	0,005427	-4,638773	0,0000
EDU	-0,010616	0,002998	-3,541326	0,0005
UNEMP	0,000365	0,000973	0,375287	0,7077

Source: Data processed by the researcher using E-Views 12.

Based on table 3, the form of the ARDL equation estimation obtained is as follows:

$$\mathbf{Gini_{it} = \alpha + \beta_1 LogPDRBpp_{it} + \beta_2 Edu_{it} + \beta_3 Unemp_{it} + \varepsilon_{it}}$$

$$\mathbf{Y = 0{,}545802 - 0{,}025174\ LogPDRBpp - 0{,}010616\ Edu + 0{,}000365\ Unemp + \varepsilon_{it}}$$

From this equation:

- Constant (C): The constant value is 0.545802. This indicates that if all independent variables (LogPDRBpp, Edu, Unemp)

are zero, the average Gini Ratio would be 0.545802.

- Per Capita Income (LogPDRBpp): The coefficient for LogPDRBpp is -0.025174, with a probability of 0.0000. Since 0.0000 < 0.05, per capita income has a negative and significant effect on income inequality in Indonesia. This means that an increase in per capita income leads to a decrease in the Gini Index, suggesting that higher per capita income is associated with lower income inequality. This supports Hypothesis H1.
- Education (Edu): The coefficient for Edu is -0.010616, with a probability of 0.0005. Since 0.0005 < 0.05, education has had a negative and significant effect on income inequality in Indonesia. This indicates that an increase in average years of schooling contributes to reducing income inequality, as better education can improve skills and productivity, thereby increasing individual incomes. This supports Hypothesis H2.
- Unemployment (Unemp): The coefficient for Unemp is 0.000365, with a probability of 0.7077. Since 0.7077 > 0.05, unemployment does not have a statistically significant effect on income inequality in Indonesia. Despite the positive coefficient, indicating that higher unemployment *tends* to increase inequality, this relationship is not significant within the statistical parameters of this study. Thus, Hypothesis H3 is rejected.

4.4 Coefficient of Determination (R^2) Test

Tabel 5. R^2 Test

R-squared	0,919778
Adjusted R-squared	0,910246

Source: Data processed by the researcher using E-Views 12.

The coefficient of determination (R2) measures how well the regression model explains the variation in the dependent variable. The Adjusted R-squared value obtained is 0.910246. This means that approximately 91% of the variation in income inequality (Gini Ratio) can be explained by per capita income, education, and unemployment, while the remaining 9% is accounted for by other variables not included in this model. [9]

4.5 Individual Effect Test

The cross-section effects show the unique influence of each province's characteristics on income inequality, beyond the independent variables in the model.

- Positive Cross-Section Effect: Provinces with a positive effect, such as Bangka Belitung (0.022016), Banten (0.118482), DKI Jakarta (0.050216), Jawa Tengah (0.081172), DI Yogyakarta (0.024484), Jawa Timur (0.020806), Bali (0.023014), Sulawesi Utara (0.026899), Sulawesi Tengah (0.038565), Sulawesi Selatan (0.039539), Gorontalo (0.042677), Papua Barat (0.054048), Papua (0.024544), and Kalimantan Timur (0.010113), indicate that their unique characteristics tend to increase income inequality.
- Negative Cross-Section Effect: Provinces with a negative effect, including Aceh (-0.03958), Sumatera Utara (-0.02806), Sumatera Selatan (-0.04401), Sumatera Barat (-0.00447), Bengkulu (-0.01676), Riau (-0.01005), Kepulauan Riau (-0.0145), Jambi (-0.02993), Lampung (-0.09357), NTB (-0.00676), NTT (-0.04358), Kalimantan Barat (-0.04583), Kalimantan Selatan (-0.02443), Kalimantan Tengah (-0.028), Kalimantan Utara (-0.03723), Sulawesi Tenggara (-0.00786), Sulawesi Barat (-0.00992), Maluku Utara (-0.03815), and Maluku (-0.0538), show that their unique characteristics help reduce income inequality compared to model predictions.
- Near-Zero Cross-Section Effect: Jawa Barat (-0.00011) falls into this category. This suggests that local factors in Jawa Barat do not significantly worsen or improve inequality compared to what is explained by the independent variables in the model.

4.6 Importance-Performance Analysis (IPA) Quadrant Analysis

4.6.1 Pre-COVID-19 Period (2015-2019)

The IPA quadrant mapping for the pre-COVID-19 period (2015-2019) provides insights into the initial economic performance and inequality conditions across 34 Indonesian provinces:

- Quadrant I (Structural Inequality): Provinces in this quadrant exhibit low PDRB per capita but high Gini Ratios. These

include Bengkulu, Banten, Jawa Barat, Jawa Tengah, DI Yogyakarta, Jawa Timur, Bali, NTB, Sulawesi Utara, Sulawesi Tenggara, Sulawesi Selatan, Gorontalo, Sulawesi Barat, and Papua. These regions face significant challenges in achieving inclusive economic growth.

- Quadrant II (Exclusive Growth): This quadrant represents provinces with high PDRB per capita but also high inequality. Papua Barat and DKI Jakarta fall into this category, indicating strong economic activity but an uneven distribution of development benefits.
- Quadrant III (Limited Economy with Equity): The majority of Indonesian provinces are in this quadrant, characterized by low PDRB per capita but also low inequality. This group includes Aceh, Sumatera Utara, Sumatera Barat, Sumatera Selatan, Jambi, Lampung, Kepulauan Bangka Belitung, NTT, Kalimantan Barat, Kalimantan Tengah, Kalimantan Selatan, Sulawesi Tengah, Maluku, and Maluku Utara. These areas generally have less developed economies but a relatively more equitable distribution of income.
- Quadrant IV (Ideal Inclusive Growth): This ideal quadrant features high PDRB per capita and low inequality. During this period, Kepulauan Riau, Kalimantan Timur, Riau, and Kalimantan Utara were in this category, showing a good balance of strong economic performance and equitable income distribution. [10]

4.6.2 Post-COVID-19 Period (2020-2024)

The IPA quadrant mapping for the post-COVID-19 period (2020-2024) reveals shifts in provincial positions, reflecting regional economic and inequality dynamics after the global shock:

- Quadrant I (Structural Inequality): The number of provinces in this quadrant decreased, but it still includes provinces facing dual challenges: Banten, Jawa Barat, Jawa Tengah, DI Yogyakarta, Jawa Timur, Bali, NTB, Sulawesi Utara, Sulawesi Selatan, Sulawesi Tenggara, Gorontalo, Sulawesi Barat, and Papua. This suggests improved income distribution in some previously Quadrant I areas, even if economic performance has not surged.
- Quadrant II (Exclusive Growth): DKI Jakarta and Papua Barat remain in this quadrant, indicating that despite significant economic power, inclusive development remains a major challenge.
- Quadrant III (Limited Economy with Equity): This quadrant continues to house most Indonesian provinces, reflecting the continued dominance of regions with low PDRB per capita but low inequality. However, the number of provinces here slightly decreased from the pre-pandemic period, indicating some vertical mobility in economic performance. Bengkulu moved from Quadrant I to this quadrant.
- Quadrant IV (Ideal Inclusive Growth): This quadrant saw an increase in members. Central Sulawesi moved from Quadrant III to Quadrant IV. Riau, Kepulauan Riau, Kalimantan Timur, and Kalimantan Utara continued to maintain equitable income distribution amidst increasing economic output. Central Sulawesi's progress is largely attributed to nickel downstream industrial activities, which created significant employment.

4.6.3 Quadrant Movement Analysis (Provincial Position Changes)

Analysis of provincial movements between IPA quadrants from before (2015-2019) to after (2020-2024) the pandemic highlights the impact of COVID-19 on regional economic and inequality dynamics. Two provinces experienced quadrant shifts:

1. Bengkulu: Shifted from Quadrant I (low PDRB per capita - high Gini) to Quadrant III (low PDRB per capita - low Gini) in the post-pandemic period. This indicates that while Bengkulu's economic growth was not significant, income distribution improved. This improvement may be linked to increased social interventions during the pandemic, such as social assistance programs and direct cash transfers, which were more equitably distributed to low-income groups.
2. Central Sulawesi: Showed a significant shift from Quadrant III (low PDRB - low Gini) to Quadrant IV (high PDRB - low Gini) in the post-pandemic period. This reflects a substantial increase in economic performance (PDRB per capita) maintained with consistently low inequality. This rapid growth was primarily driven by the intensification of nickel downstream industrial activities, creating significant direct and indirect employment.

5. Conclusions

Based on the research findings on regional income distribution inequality in Indonesia, it is concluded that per capita income (PDRB per capita) and education both have negative and significant effects in reducing income inequality, supporting the notion that inclusive economic growth and improved education contribute to more equitable income distribution, in line with Kuznets' hypothesis. Conversely, unemployment shows a positive but insignificant relationship with inequality, indicating it was not a major determinant during the study period. Furthermore, the IPA quadrant mapping reveals dynamic shifts in regional economic

performance, where before the pandemic (2015–2019) most provinces were in Quadrant III (low income, relatively equal distribution), while after the pandemic (2020–2024), several provinces—such as Central Sulawesi— transitioned to Quadrant IV (high income, low inequality), highlighting how the pandemic became a critical turning point in regional development and inequality dynamics across Indonesia.

References

[1] Kuznets, S. (1955). "Economic growth and income inequality." *American Economic Review*, *45*(1), 1–28.
[2] World Bank. (2022). "*World Bank: Poverty and Shared Prosperity 2022": Correcting Course.* https://www.worldbank.org/en/publication/poverty-and-shared-prosperity
[3] Cobham, A., & Sumner, A. (2013). "Putting the new economy into perspective: The case for a Palma ratio". *New Political Economy, 18*(4), 635–653. https://doi.org/10.1080/13563467.2013.768598
[4] Todaro, M. P., & Smith, S. C. (2020)."*Economic development (13th ed.)"*. Pearson.
[5] Todaro, M. P., & Smith, S. C. (2003). "Economic development (8th ed.)". Addison Wesley.
[6] Becker, G. S. (1993). "*Human capital: A theoretical and empirical analysis, with special reference to education"*.University of Chicago Press.
[7] Lewis, W. A. (1954). "Economic development with unlimited supplies of labour". *The Manchester School*, *22*(2), 139 191.https://doi.org/10.1111/j.1467-9957.1954.tb00021.x.
[8] Gujarati, D. N., & Porter, D. C. (2009). "*Basic econometrics (5th ed.)"*. McGraw-Hill.
[9] Ghozali, I. (2018). "Aplikasi analisis multivariate dengan program IBM SPSS 25". Badan Penerbit Universitas Diponegoro.
[10] Martilla, J. A., & James, J. C. (1977)." Importance-performance analysis". Journal of Marketing, 41(1), 77-83.