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Assessing the Impact of Economic Growth on Regional Income Inequality: Evidence from the Papua Highlands, Indonesia (2022–2023)

Dekis Wenda*, J. Ary Mollet, Halomoan Hutajulu

Universitas Cenderawasih

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*Correspondence: Dekis Wenda
Email: dekiswenda5@gmail.com

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Abstract: Economic growth is often perceived as a driving force of development; however, it can simultaneously lead to widening income inequality, particularly in resource-dependent regions. This study investigates the effect of economic growth on income inequality in the Papua Highlands, Indonesia, during the period 2022–2023. Using secondary data from the Central Bureau of Statistics (BPS), the analysis employs a simple linear regression model to examine the relationship between Gross Domestic Product (GDP) growth and the Gini coefficient. The findings reveal a positive and statistically significant relationship between economic growth and income inequality, with a regression coefficient of 0.019 and an adjusted R^2 of 0.817. This indicates that regional economic expansion has contributed to the widening of income disparities across districts in the Papua Highlands. The results confirm the Kuznets hypothesis, which posits that inequality tends to increase in the early stages of economic growth before eventually declining. The study concludes that growth in the Papua Highlands has been concentrated in capital-intensive sectors such as mining and government administration, while local community participation remains limited. It recommends policies focused on equitable resource distribution, sectoral diversification, and inclusive development strategies.

Keywords: Economic Growth, Income Inequality, Kuznets Hypothesis, Papua Highlands, Regional Development.

Introduction

Economic growth and income inequality remain central issues in regional development studies, particularly in provinces with structural disadvantages such as Papua Pegunungan Tengah. Although Indonesia has experienced steady economic expansion, the benefits of growth have not been evenly distributed, especially in newly formed and underdeveloped regions. Papua Pegunungan Tengah, characterized by high poverty rates, low fiscal independence, and uneven access to basic services, represents a critical case for examining whether economic growth contributes to income equalization or intensifies inequality.

Empirical evidence shows that growth does not automatically reduce inequality. Studies across Indonesian provinces (Al Barabasi & Atmanti, 2025) confirm that rising GDP

per capita often coincides with widening income gaps, including in Papua. The special autonomy fund (OTSUS), intended to accelerate welfare improvement, has not significantly reduced inequality due to uneven distribution and weak institutional capacity (Wahyuni, 2024). Likewise, the mining sector—although a major contributor to regional GDP—generates limited spillover effects for local communities (Amalia, 2023).

From a theoretical perspective, this condition aligns with the Kuznets hypothesis, which predicts that inequality rises in the early phase of growth before declining once development becomes more inclusive. However, recent studies show that inequality does not always decline automatically, especially when access to education, digital infrastructure, and fiscal capacity remains uneven (Risdiyanto et al, 2023) (Ifadah, 2025).

This study analyzes the effect of economic growth on income inequality in Papua Pegunungan Tengah during 2022–2023, using GDP per capita as the growth indicator **and** Gini Index (or equivalent ratio) as the inequality measure. The analysis is limited to secondary data from BPS and regional government reports.

Table 1. Expected Contribution

Contribution Type	Description
Theoretical	Enriches the literature on growth–inequality dynamics in post-autonomy provinces.
Policy	Provides input for OTSUS fund allocation, fiscal design, and inclusive development strategy.
Academic	Serves as a reference for inequality studies in geographically isolated regions.

Theoretical Basis (Condensed)

- Kuznets Curve (1955) → Growth initially increases inequality, later decreases when development becomes inclusive.
- Trickle-Down Theory → Growth benefits all income groups, but proven weak in regions with high structural barriers.
- Fiscal Decentralization Theory → Low fiscal capacity limits a region's ability to reduce inequality.

Hypotheses

- H1**:** Economic growth (GDP per capita) has a negative effect on income inequality in Papua Pegunungan Tengah.
- H2**:** Inequality is also influenced by unemployment, education level, and fiscal distribution policies.

Research Method

The study is conducted in Papua Pegunungan Tengah Province, Indonesia, which comprises several districts characterized by heterogeneous socio-economic structures and a strong sectoral concentration, particularly in extractive industries such as mining. The province is selected due to the coexistence of relatively high economic growth episodes alongside persistent income inequality, making it a relevant case for examining the growth–inequality nexus. The region is also chosen based on data completeness and policy relevance, enabling short-run assessment of trends in economic expansion and distributive outcomes during the 2022–2023 period.

The research employs secondary macro-regional data at the district or provincial level, depending on indicator availability across years. Core datasets are sourced from Statistics Indonesia (BPS), including GDP per capita, the Gini Index, unemployment, and poverty rates. Additional information on fiscal transfers—such as Special Autonomy Funds (Otsus) and General Allocation Funds (DAU)—as well as sectoral economic composition, is obtained from regional government financial reports. Relevant policy documents concerning fiscal distribution and sectoral development are further utilized to contextualize institutional factors influencing inequality dynamics in the province.

1. Literature review**:** peer-reviewed articles, books, and policy papers on growth–inequality dynamics in Papua Pegunungan Tengah.
2. Secondary data extraction**:** BPS databases and regional annual reports (GDP per capita, Gini, unemployment, poverty).
3. Policy document analysis**:** fiscal design (Otsus/DAU), sectoral priorities, and related regulations.

Economic Growth (Growth): proxied by GDP per capita (constant prices).

$$GDP\ per\ capita = \frac{\text{Regional GDP}}{Population}$$

- Income Inequality (Inequality): Gini Index (0 = perfect equality; 1 = perfect inequality).
- Optional controls (for extended model): Unemployment rate**,** poverty rate, and fiscal transfers (e.g., Otsus/DAU per capita).

Table 2. Variables, Proxies, Units, and Sources

Construct	Variable (Proxy)	Unit	Expected Sign (β)	Primary Source
Economic growth	GDP per capita (constant)	currency/person	–	BPS
Income inequality	Gini Index	0–1	(dependent)	BPS
Labour market (control)	Unemployment rate	%	+	BPS
Poverty (control)	Poverty rate	%	+	BPS
Fiscal policy (control)	Otsus/DAU per capita	currency/person	–	Regional reports

Descriptive Analysis

Compute and present means, medians, standard deviations, and distributions for GDP per capita, Gini, unemployment, and poverty; visualize annual trends (tables/plots) to establish context.

Classical Assumption Checks

- Normality of residuals: Kolmogorov–Smirnov and Shapiro–Wilk ($p > 0.05 \Rightarrow$ fail to reject normality)**;** confirm via histogram and Normal P–P plots.
- Heteroskedasticity**:** Glejser and Breusch–Pagan tests ($p > 0.05 \Rightarrow$ homoskedastic); corroborate with residual–fitted scatterplots.
- Multicollinearity (if controls used)**:** Variance Inflation Factor (VIF < 10) and tolerance > 0.1.

Regression Model

$$\boldsymbol{Baseline\ model}:$$
$$\boldsymbol{Gini\_t = \alpha + \beta 1\ GDPpc\_t + \varepsilon\_t}$$

$$\boldsymbol{Extended\ model}\ (\boldsymbol{if\ data\ available}):$$
$$\boldsymbol{Gini\_t = \alpha + \beta 1\ GDPpc\_t + \beta 2\ Unemp\_t + \beta 3\ Poverty\_t + \beta 4\ Fiscal\_t + \varepsilon\_t}$$

Inference and Goodness-of-Fit

- $t - tests$ for individual coefficients ($p < 0.05 \Rightarrow$ significant).
- $F - test$ for joint significance of the model.
- R^2 and adjusted R^2 for explanatory power; report RMSE/SE of regression.
- Robustness option: re-estimate with heteroskedasticity-robust (HC) standard errors.

Result and Discussion

Descriptive statistics show that economic growth across 16 regencies in the Papua Central Highlands during 2022–2023 ranged from 2.50% to 4.75**%**, with a mean of 3.47% and a standard deviation of **0.68**. Higher growth was observed in regencies with stronger infrastructure and market access (e.g., Jayawijaya), while slower growth occurred in more remote areas such as Nduga.

Income inequality, measured using the Gini Index, ranged from 0.28 to 0.32, with an average value of 0.299 and a standard deviation of 0.014, indicating relatively stable—but still persistent—income disparities across regencies. Although the variation is small, the higher Gini score in districts such as Yahukimo suggests unequal access to economic opportunities despite regional growth.

Normality testing using the Kolmogorov–Smirnov test produced **p = 0.980 (> 0.05)**, confirming that the residuals were normally distributed. The Glejser test yielded **p = 0.512 (> 0.05)**, indicating no heteroskedasticity. Thus, the regression model met key statistical assumptions and is valid for inference.

The simple linear regression model produced the following equation:

$$\text{Gini} = 0.233 + 0.019(\text{Economic Growth})$$

The regression coefficient (0.019) is positive and statistically significant **(**t = 8.243; p < 0.001), indicating that a 1% increase in economic growth raises income inequality by 0.019 points on the Gini scale. The model fit is very strong (Adjusted R^2 **=** 0.817), meaning 81.7% of the variation in inequality is explained by economic growth.

Table 3. Summary of Statistical Results

Component	Indicator	Key Values
Descriptive – Economic Growth (%)	N / Min / Max / Mean / SD	16 / 2.50 / 4.75 / **3.47** / 0.68
Descriptive – Gini Index	N / Min / Max / Mean / SD	16 / 0.28 / 0.32 / **0.299** / 0.014
Normality (K–S Test)	Z; **p-value**	0.471; **0.980** → normal
Heteroskedasticity (Glejser)	Coef.; **p-value**	−0.001; **0.512** → homoskedastic
Regression Constant (α)	B; t; **p**	**0.233**; 28.458; **<0.001**
Regression Coefficient (β)	B; Beta; t; **p**	**0.019**; 0.911; 8.243; **<0.001**
Model Fit	R^2 / Adj. R^2 / Std. Error	**0.829** / **0.817** / 0.00614
ANOVA (F-test)	F; **p**	**67.950**; **<0.001**
Final Model	Equation	**Gini = 0.233 + 0.019 × Growth**

The results demonstrate a positive and significant relationship between economic growth and income inequality in the Papua Central Highlands. Increases in regional GDP per capita do not lead to equitable welfare distribution; instead, they widen the income gap. This pattern is consistent with Kuznets' inverted-U hypothesis, which states that inequality tends to rise in the early stages of development when growth is concentrated in capital-intensive sectors.

In the local context, growth is largely driven by extractive industries and high-barrier formal sectors, while most of the population remains dependent on subsistence agriculture. This reinforces structural inequality, where economic gains are captured by a narrow segment of the population, echoing findings from Wahyuni (2015), Rismayanti & Syafitri (2021), and Al Barabasi & Atmanti (2025).

The high Adjusted R^2 (0.817**)** indicates that growth alone explains most inequality variation, but the remaining 18.3% likely reflects other drivers such as education gaps, fiscal dependency, limited employment diversification, and weak redistributive policy**.**

These findings suggest that growth without inclusion accelerates inequality, especially in resource-based regions with limited institutional capacity. Therefore, policy responses must move beyond GDP expansion and prioritize:

- equitable fiscal transfer and public service expansion,
- human capital investment (education, health, skills),
- diversification beyond mining and state-led sectors,
- community-based entrepreneurship and SME support.

Conclusion

The findings of this study indicate that although the Papua Central Highlands experienced notable economic growth during 2022–2023, this increase in regional GDP per capita did not translate into a reduction in income inequality. Regression results confirm a positive and statistically significant relationship between economic growth and income disparity, where a 1% increase in economic growth raises the Gini Index by 0.019 points. This implies that economic expansion has been exclusive rather than inclusive, benefitting limited groups—particularly those linked to extractive sectors—while the majority of the population reliant on agriculture and informal activities remains marginalized.

The study further reveals that Special Autonomy Funds (OTSUS), although designed to accelerate regional development, have not yet been managed effectively enough to reduce inequality. Limited access to quality education, healthcare, infrastructure, and stable employment continues to reinforce structural disparities. These results align with the Kuznets hypothesis, which states that inequality tends to rise during early development phases; however, inequality in Papua remains persistently high, indicating that the transition toward a more equitable economic structure has not yet occurred. Therefore, growth alone is insufficient—redistributive and capability-enhancing policies are required to ensure that development benefits are more evenly shared.

References

Adzam, M. (2025). Analisis Kemandirian Fiskal Dan Potensi Ekonomi Dalam Pemekaran Wilayah: Studi Kasus Calon Dob Provinsi Kepulauan Buton. *Prima Ekonomika*, *16*(1), 84-102.

Akbar, F. (2025). *Pengaruh Pertumbuhan Ekonomi Dan Kemiskinan Terhadap Ketimpangan Pendapatan Di Kota Binjai* (Doctoral Dissertation, Universitas Malikussaleh).

Al Barabasi, H. A., & Atmanti, H. D. (2025). Analisis Ketimpangan Pendapatan Di Indonesia Periode 2017-2023 (Studi Kasus 34 Provinsi Di Indonesia). *Jurnal Ekonomi Bisnis Dan Manajemen*, *3*(1), 221-234.

Amalia, R. (2023). Analisis Dampak Pertambangan Terhadap Ekonomi Dan Lingkungan Di Provinsi Papua:(Studi Kasus Pt Freeport Indonesia). *Journal Of Economics Development Issues*, *6*(1), 25-32.

Aziz, A., Akbar, A. Y., Daulay, J., & Ahmad, A. P. (2025). Dampak Kebijakan Pembangunan Ekonomi Terhadap Ketimpangan Pendapatan Dan Kesejahteraan Masyarakat Di Kota. *Cemerlang: Jurnal Manajemen Dan Ekonomi Bisnis*, *5*(1), 261-275.

Barbosa, F. (2017). "Income Inequality And Economic Growth: A Critical Analysis." *Journal Of Economic Studies*, 44(4), 635-652.

Bulaan, H. L., Pare, K. S., & Malomo, D. (2025). Pengaruh Indeks Pembangunan Manusia, Ketimpangan Pembangunan Dan Pertumbuhan Ekonomi Terhadap Tingkat Kemiskinan Di Kabupaten Mimika. *Neraca: Jurnal Ekonomi, Manajemen Dan Akuntansi*, *3*(4), 54-65.

Fakhrulrizqi, M. R., & Nuraulia, S. (2025). Perspektif Inklusi Keuangan Provinsi Sumatera Utara Terhadap Pertumbuhan Ekonomi, Ketimpangan Pendapatan, Dan Kemiskinan: Pendekatan Spasial Pada 34 Provinsi Di Indonesia. *Journal Of Analytical Research, Statistics And Computation*, *4*(1).

Haslinda, H., & Arapi, R. (2024). Analisis Konvergensi Pertumbuhan Ekonomi Di Provinsi Papua Tengah. *Jurnal Kritis (Kebijakan, Riset, Dan Inovasi)*, *8*(2), 111-133.

Ifadah, N. M. (2025). *Analisis Pengaruh Pertumbuhan Ekonomi, Kemiskinan, Dan Tingkat Pengangguran Terbuka Terhadap Ketimpangan Pendapatan Di Jawa Tengah* (Doctoral Dissertation, Uin Sunan Kalijaga Yogyakarta).

Khan, M., & Mohiuddin, M. (2015). "Income Inequality And Its Impact On Economic Growth." *International Journal Of Economics And Financial Issues*, *5*(3), 788-797.

Kuznets, S. (1955). "Economic Growth And Income Inequality." *American Economic Review*, *45*(1), 1-28.

Mayani, S. S., & Riani, N. Z. (2025). Pengaruh Pertumbuhan Ekonomi Dan Tingkat Pengangguran Terbuka Terhadap Tingkat Kemiskinan Perkotaan Di Indonesia. *Media Riset Ekonomi Pembangunan (Medrep)*, *2*(1).

Nauval, M., & Mutia, A. (2025). Pengaruh Pertumbuhan Ekonomi, Pengangguran, Dan Indeks Pembangunan Manusia (Ipm) Terhadap Kemiskinan Di Kota Jambi Dari Tahun 2017-2023. *Jurnal Penelitian Multidisiplin Terpadu*, *9*(1).

Reza, M., Basunjaya, B. L., Dewanto, F. W., Waskito, B. A., Musroni, G., Simanullang, H., ... & Ompusunggu, D. P. (2025). Analisis Kausalitas Inflasi, Ketimpangan Pendapatan, Dan Pertumbuhan Ekonomi Di Indonesia. *J-Ceki: Jurnal Cendekia Ilmiah*, *4*(3), 131-148.

Rindiani, S. S., Ruslan, F., & Syofyan, S. (2025). Peran Pengeluaran Pemerintah Fungsi Pendidikan, Kesehatan, Dan Perlindungan Sosial Terhadap Ketimpangan Di Indonesia. *Jurnal Ekonomi Trisakti*, *5*(1), 33-44.

Risdiyanto, E., Mollet, J. A., & Hutajulu, H. (2023). Analisis Kemandirian Fiskal Dan Belanja Daerah Terhadap Kemiskinan Di Provinsi Papua. *Ekombis Review: Jurnal Ilmiah Ekonomi Dan Bisnis*, *11*(2), 1813-1822.

Rismayanti, A., & Syafitri, D. (2021). The Application Of Kuznets Curve In The Study Of Economic Development And Income Inequality In Indonesia. *Jurnal Ekonomi Pembangunan*, 13(2), 65-72.

Romer, P. M. (1990). Endogenous Technological Change. *Journal Of Political Economy*, *98*(5), S71-S102.

Situmorang, E. R., & Kalvin, K. (2025). Analisis Ketimpangan Pendapatan Dan Pertumbuhan Ekonomi Di Kabupaten Dan Kota Provinsi Papua Barat Tahun 2017-2021. *Syntax Literate; Jurnal Ilmiah Indonesia*, *10*(3), 3483-3498.

Solow, R. M. (1956). "A Contribution To The Theory Of Economic Growth." *The Quarterly Journal Of Economics*, *70*(1), 65-94.

Wahyuni, V. D. (2024). *Pengaruh Dana Otonomi Khusus (Otsus) Dan Dana Alokasi Umum (Dau) Terhadap Pertumbuhan Ekonomi (Pada Pemekaran Daerah 8 Kabupaten Di Provinsi Papua Tahun 2010-2022)* (Doctoral Dissertation, Politeknik Stia Lan Jakarta).