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**THE IMPACT OF EDUCATION, INCOME INEQUALITY, AND
POPULATION GROWTH ON POVERTY IN EASTERN INDONESIA**

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Abstract:

Poverty is still a major challenge for development in Indonesia, especially in the eastern part of the country where poverty rates are higher than the national average. This study looks at how education levels, income inequality, and population growth affect poverty across 13 provinces in Eastern Indonesia. Using a quantitative method, this research analyzes panel data from 2019 to 2025 collected by the Central Bureau of Statistics (Badan Pusat Statistik Indonesia). The data was tested using a panel data regression method called the Random Effect Model (REM), chosen after specific statistical tests including Chow, Hausman, and Lagrange Multiplier. The results show that higher education, measured by the average years of schooling, significantly reduces poverty ($p = 0.0003$). On the other hand, income inequality, measured by the Gini Ratio, significantly increases poverty ($p = 0.0019$). Meanwhile, population growth increases poverty slightly, but this effect is not statistically significant ($p = 0.0575$). Together, these three factors explain 32.09% of the poverty rates, meaning other factors outside this study cause the remaining 67.91%. In conclusion, improving education is key to reducing poverty, while a widening income gap makes life harder for the poor.

Keywords:

Poverty, Education Level, Income Inequality, Population Growth, Eastern Indonesia.

BACKGROUND

Improving people's well-being is a main goal for any country, and reducing poverty is a clear sign of success. In Indonesia, poverty is not spread evenly, and the eastern provinces face much higher poverty levels (Badan Pusat Statistik, 2025). Even though Indonesia's national poverty rate dropped to 8.73% in 2025, provinces like West Papua (19.58%), Papua (17.82%), and East Nusa Tenggara (17.50%) still struggle with very high poverty rates (Badan Pusat Statistik Indonesia, 2026). This lack of progress in Eastern Indonesia is a serious issue that needs attention.

Several factors cause this ongoing poverty. First, the quality of human resources is low because of poor education. Data from 2019 to 2025 shows that people in several eastern provinces go to school for less than nine years on average, which is far below the government's 12-year compulsory education target (Badan Pusat Statistik Indonesia, 2026). Second, income inequality makes things worse by keeping wealth in the hands of a few people, leaving the rest behind (Todaro & Smith, 2015). Third, population growth can also add stress to the economy if there are not enough jobs or schools (Adioetomo & Mujahid, 2021). Because past studies show mixed results for instance, Rasyid (2023) found inequality worsens poverty, while Dianti & Sishadiyati (2024) found it insignificant this study aims to provide clearer answers.



Therefore, this research explores how education, income inequality, and population changes affect poverty in Eastern Indonesia to help the government make better policies

THEORETICAL FRAMEWORK

Education Level (Average Years of Schooling)

The link between education and poverty is explained by the Human Capital Theory, developed by Gary Becker (1964). This theory says that education is an investment in people (Becker, 1964). When people spend more years in school, they gain better thinking skills and practical knowledge. This makes them better workers who can compete for good jobs. As a result, higher education helps people earn more money and break the cycle of poverty (Becker, 1964).

Income Inequality (Gini Ratio)

How unequal wealth affects poverty is explained by the Structural Poverty theory and Simon Kuznets' ideas. Income inequality is measured by the Gini Ratio, which shows the gap between the rich and the poor (Saleh & Rizkina, 2021). When inequality is high, poor people cannot easily access good schools, healthcare, or business capital, which traps them in poverty (Todaro & Smith, 2012). Also, Kuznets suggested that when a developing area starts to grow its industries, inequality usually rises at first because only a few people benefit from the new wealth, leaving the poor more vulnerable (Oktaviani et al., 2022).

Population Growth

The effect of a growing population is based on the classical ideas of Thomas Malthus and David Ricardo (Syafri, 2019). Malthus warned that if the population grows much faster than food and resources, it will lead to shortages and poverty (Sari & Sa'roni, 2020). Ricardo added that too many people mean too many workers, which pushes wages down to the bare minimum (Syafri, 2019). However, modern ideas suggest a "Demographic Dividend," meaning that a growing population can actually help the economy grow, but only if these people are educated and can find jobs (Adioetomo & Mujahid, 2021).

Research Hypotheses

- H1: Educational attainment has a significant negative effect on poverty in Eastern Indonesia.
- H2: Income inequality has a significant positive effect on poverty in Eastern Indonesia.
- H3: Population growth has a significant positive effect on poverty in Eastern Indonesia.

METHOD

This study uses a quantitative method based on existing secondary data (Sugiyono, 2016). The research focuses on 13 provinces in Eastern Indonesia: Bali, West Nusa Tenggara, East Nusa Tenggara, North Sulawesi, Gorontalo, Central Sulawesi, West Sulawesi, South Sulawesi, Southeast Sulawesi, North Maluku, Maluku, Papua, and West Papua. The purposive sampling technique was applied to ensure the data was consistent (Sugiyono, 2016). All numbers were



taken from the Central Bureau of Statistics for the years 2019 to 2025 (Badan Pusat Statistik Indonesia, 2026). The main focus (dependent variable) is the poverty rate, measured by the percentage of poor people. The factors that might affect it (independent variables) are education (measured by average years of schooling), income inequality (measured by the Gini ratio), and the population growth rate. The data was analyzed using Eviews 14 software with a panel data regression method. After running several tests Chow, Hausman, and Lagrange Multiplier the Random Effect Model (REM) was chosen as the best tool for this analysis. The data also passed standard statistical checks (normality, multicollinearity, and heteroskedasticity) to make sure the results are reliable and accurate (Gujarati, 2014).

RESULT

After testing the data, the Random Effect Model (REM) was confirmed as the right choice. The data proved to be normal and free from common statistical errors. The results of how each factor affects poverty are shown in Table 1 below:

Table 1. Partial Test Results (t-Test) using Random Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C (Constant)	2.852346	0.361025	7.900692	0.0000
Education Level	-0.106657	0.028346	-3.762743	0.0003
Income Inequality (Gini Ratio)	1.465875	0.457297	3.205521	0.0019
Population Growth	0.041350	0.021480	1.925039	0.0575

Based on Table 1, the mathematical equation for this study is:

$$\text{Ln(Poverty)} = 2.852346 - 0.106657(\text{Education Level}) + 1.465875(\text{Gini Ratio}) + 0.041350(\text{Population Growth})$$

The constant value of 2.852346 means that if all independent variables are zero, the natural log of poverty is 2.85, which equals an actual poverty rate of 17.33%. Additionally, the study found an Adjusted R-Squared value of 0.320873. This means that education, income inequality, and population growth together explain 32.09% of the poverty in Eastern Indonesia. The other 67.91% is caused by different factors that were not included in this study.

DISCUSSION

The findings show that poverty in Eastern Indonesia is a complex issue. While the three factors we tested are important, other issues like inflation or a lack of basic infrastructure also play a big role in explaining the remaining 67.91%. Here is a detailed look at how each specific factor impacts poverty based on the regression results:



The Effect of Education Level on Poverty

The first hypothesis (H1) proposed that educational level has a significant negative effect on poverty in Eastern Indonesia from 2019 to 2025. The results show that education (Average Years of Schooling) has a negative coefficient (-0.106657) and a very low probability value (0.0003), which means it significantly reduces poverty. Therefore, H1 is accepted. In simple terms, for every extra year people spend in school, the poverty rate drops by 10.67%.

This proves that the Human Capital Theory is correct: education is a powerful tool for improving lives (Becker, 1964). However, the reality in Eastern Indonesia is difficult. People in provinces like Papua and East Nusa Tenggara only go to school for about 7 to 8 years, which is just up to junior high (Badan Pusat Statistik, 2025). The problem is not that people do not want to learn, but that many live in remote areas with bad roads and poor school facilities. At the same time, big mining companies are coming to these regions (Wibisono & Putra, 2025). Because local people do not have enough education or skills, they cannot get these new, well-paying jobs (Pratama & Widodo, 2022). Instead, they are left working in traditional farming with very low income, which keeps them poor.

The Effect of Income Inequality on Poverty

The second hypothesis (H2) assumed that income inequality has a significant positive effect on poverty in Eastern Indonesia. The results indicate that income inequality (Gini Ratio) shows a positive coefficient (1.465875) and a low probability value (0.0019), meaning it significantly increases poverty. Thus, H2 is accepted. Mathematically, if the inequality score goes up by 0.1, poverty shoots up by 14.66%.

This supports the idea of Structural Poverty. In Eastern Indonesia, the wealth created by big industries, like mining in Maluku and Sulawesi, is not shared equally (Kurniawan & Fitriani, 2024). The profits mostly go to large companies and skilled workers from outside the region (Kurniawan & Fitriani, 2024). Meanwhile, local people do not have the money or support to join this modern economy. As a result, the gap between the rich and the poor gets wider (Yusuf & Sumner, 2022). This shows that just growing the economy is not enough; if the wealth is not shared fairly, the poor will only suffer more.

The Effect of Population Growth on Poverty

The third hypothesis (H3) stated that population growth has a significant positive effect on poverty in Eastern Indonesia. The analysis shows that population growth has a positive coefficient (0.041350), meaning it can increase poverty. Specifically, a 1% increase in population growth leads to a 4.14% increase in poverty, but its probability value is 0.0575, which means this effect is not statistically significant at the 5% level. Therefore, H3 is rejected.

This is an interesting finding because it goes against the old fear that more people will automatically lead to starvation and poverty, as suggested by the Malthusian theory (Sari & Sa'roni, 2020). Unlike the crowded island of Java, Eastern Indonesia has plenty of empty land (Badan Pusat Statistik, 2025). Having more people there does not immediately cause a crisis over space or food (Rahayu & Pangaribuan, 2021). In fact, this finding suggests that a growing population can actually be good for the region. More people mean more workers and more people to buy local goods, which can help businesses grow. This also shows that the government's family planning programs are working well by focusing on raising healthy, capable children rather than just stopping births (Adioetomo & Mujahid, 2021). As long as



these new people get good education and jobs, population growth will not cause poverty (Haryanto & Wulandari, 2024).

Explaining the Variance: Structural and Macroeconomic Challenges of Poverty

The regression analysis reveals an Adjusted R-Squared value of 0.320873. This statistical result indicates that the combination of educational attainment, income inequality, and population growth explains exactly 32.09% of the variance in poverty levels across Eastern Indonesia. Consequently, a substantial majority of the poverty dynamics 67.91% is driven by other external variables not included in this estimation model.

While an explanatory power of 32.09% might appear moderate, it accurately reflects the highly complex and multidimensional nature of poverty in this specific region. The unexplained 67.91% points heavily to severe geospatial and structural barriers. Eastern Indonesia consists of many remote, underdeveloped, and outermost areas (often referred to as 3T regions) that face extreme geographical challenges. A profound lack of basic infrastructure, such as difficult transportation access, inadequate electricity, and poor public facilities, directly hinders economic progress. These physical limitations keep poverty rates high, independent of local education or population metrics.

Furthermore, the unexplained variance captures the reality of a mismatched labor market in the region. Even when individuals successfully increase their years of schooling, the lack of broad industrial expansion means many graduates cannot find suitable jobs. This situation either creates educated unemployment or forces the workforce to return to traditional, low-wage subsistence farming. Additionally, the presence of large-scale mining investments often creates "enclave economies" in the eastern provinces. In these areas, massive wealth circulates only among large corporations and skilled migrant workers, which drastically skews the income inequality data without actually lifting the local indigenous population out of poverty.

Lastly, the time frame analyzed in this study (2019-2025) includes massive macroeconomic shocks, most notably the COVID-19 pandemic. The pandemic caused sudden, unpredictable economic disruptions and job losses that heavily influenced poverty rates during those years. Other significant macroeconomic factors like regional inflation which dictates the price of daily basic goods and general unemployment rates were also not included in the model but play a massive role in daily poverty. Therefore, the 32.09% value is a realistic reflection of the situation; it highlights that while improving education and income equality are essential steps, solving poverty in Eastern Indonesia requires a much broader approach that tackles infrastructure deficits and macroeconomic stability.



CONCLUSION

This study concludes that educational attainment and income distribution are critical determinants of poverty in Eastern Indonesia. Higher education significantly reduces poverty, proving that extending the years of schooling is a powerful tool to break the intergenerational poverty cycle. Conversely, income inequality significantly worsens poverty, highlighting how unequal wealth distribution—often stemming from exclusive economic booms—marginalizes local communities. Meanwhile, population growth does not significantly impact poverty and can actually be leveraged as a demographic dividend if managed properly.

Importantly, the findings reveal that these three variables explain 32.09% of the poverty variance, meaning that the remaining 67.91% is driven by broader structural and macroeconomic challenges. This emphasizes the highly complex and multidimensional nature of poverty in the region. Poverty in Eastern Indonesia is not only about a lack of education or wealth gaps; it is also heavily influenced by severe infrastructure deficits in remote areas, mismatched labor markets that leave locals out of new industrial jobs, and external economic shocks like the COVID-19 pandemic.

Therefore, policymakers must adopt a more comprehensive approach. Beyond just improving educational facilities and ensuring equitable economic policies, the government must also prioritize building basic infrastructure (such as roads and electricity) in isolated regions and aligning job training with local industrial needs. Because a large portion of poverty triggers remains outside this model, future research is strongly encouraged to include other vital macroeconomic variables, such as regional inflation and unemployment rates, and to utilize district-level data to capture a more detailed picture of these spatial challenges.

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