Inequality and poverty intensity as drivers of deprivation in Eastern Indonesia

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Abstract

Poverty in Eastern Indonesia remains a persistent challenge that continues to hinder regional development. This study examines the influence of income inequality and poverty depth on the proportion of poor people across sixteen provinces during the 2024–2025 period. Drawing on panel data, the findings provide strong evidence that disparities in income distribution and the severity of poverty are closely linked to poverty dynamics in the region. The results indicate that an increase in the Gini Index contributes to a higher poverty rate, while a rise in the Poverty Depth Index also significantly adds to the number of poor individuals. Taken together, these factors serve as important and valid explanations for variations in poverty levels. The study highlights that poverty is not solely determined by economic growth, but is also shaped by uneven distribution of development outcomes and the vulnerability of low-income households. Therefore, effective poverty reduction strategies in Eastern Indonesia should combine policies promoting fairer income distribution with well-targeted social protection programs aimed at alleviating the burden on the most vulnerable groups.

Keywords: Poverty Rate, Gini Index, Poverty Depth Index, Eastern Indonesia.

Abstrak

Kemiskinan di Wilayah Indonesia Timur masih menjadi persoalan serius yang menghambat pembangunan. Penelitian ini mengkaji pengaruh ketimpangan pendapatan dan kedalaman kemiskinan terhadap persentase penduduk miskin di enam belas provinsi sepanjang periode 2024–2025. Dengan menggunakan data panel, penelitian ini menemukan bukti kuat bahwa distribusi pendapatan dan tingkat kerentanan masyarakat miskin memiliki hubungan erat dengan dinamika kemiskinan di kawasan Indonesia Timur. Hasil analisis menunjukkan bahwa peningkatan pada Indeks Gini berdampak pada naiknya angka kemiskinan, sedangkan kenaikan pada Indeks Kedalaman Kemiskinan juga berkontribusi signifikan terhadap bertambahnya jumlah penduduk miskin. Secara keseluruhan, kedua faktor ini terbukti relevan dalam menjelaskan variasi tingkat kemiskinan. Temuan ini menggarisbawahi bahwa persoalan kemiskinan tidak hanya dipengaruhi oleh pertumbuhan ekonomi, tetapi juga oleh ketidakmerataan distribusi hasil pembangunan serta intensitas kemiskinan yang dialami rumah tangga rentan. Oleh sebab itu, strategi penanggulangan kemiskinan di Indonesia Timur perlu diarahkan pada dua jalur, yaitu memperkuat pemerataan pendapatan dan memperluas program perlindungan sosial yang tepat sasaran untuk mengurangi tekanan pada kelompok paling miskin.

Kata kunci: Persentase Penduduk Miskin, Indeks Gini, Indeks Kedalaman Kemiskinan, Indonesia Timur.

1. Introduction

Poverty remains one of the most pressing development challenges in Indonesia, reflecting complex interactions between economic structures, institutional capacities, and social vulnerabilities that demand comprehensive and coordinated policy responses. Development success is traditionally measured not only by economic growth but also by improvements in human development indicators, which encompass longevity, education, and living standards (Priambodo, 2021). The persistence of poverty stems from multiple systemic failures, including inadequate targeting mechanisms, weak implementation frameworks, and insufficient coordination among social protection initiatives (Kuntjorowati et al., 2024). Nugroho et al. (2021) observe that these challenges are further compounded by the fragmented nature of existing assistance programs, ranging from food subsidies and energy support to conditional cash transfers and health insurance schemes, all of which struggle with targeting precision and program synergy. Moreover, the analytical complexity surrounding poverty measurement has led to divergent conclusions about the relative prevalence of chronic versus transient poverty, underscoring the difficulties inherent in designing effective intervention strategies (Purwono et al., 2021).

The dynamics of poverty in Indonesia are profoundly shaped by institutional quality and regional heterogeneity. Community-based initiatives, local governance capacity, and spatial inequalities collectively determine poverty outcomes, necessitating context-sensitive and inclusive development approaches (Smas et al., 2025). Beyond the conventional focus on economic growth and physical infrastructure, Hardi et al. (2025) emphasize that sustainable poverty reduction requires structural transformations that address distributional equity and enhance overall social welfare. Evidence suggests that chronic poverty dominates transient poverty across various demographic dimensions, including provincial boundaries, religious affiliations, and educational attainment levels (Mai & Mahadevan, 2016). This pattern indicates that narrowing the poverty gap among vulnerable households is essential for achieving lasting poverty alleviation in the future.

Fiscal policy effectiveness plays a critical role in poverty reduction trajectories. The quality of public expenditure, characterized by strategic prioritization, efficient allocation, timely execution, transparent accountability, and measurable effectiveness, significantly influences both poverty rates and human development outcomes (Masduki et al., 2022). However, Siburian (2022) finds that the impact of fiscal decentralization on poverty reduction remains uneven, as disparities in local government capacity and resource distribution create substantial variations in policy effectiveness across regions. Nevertheless, longitudinal evidence indicates that poverty in Indonesia does not exhibit self-perpetuating characteristics over extended periods (Osinibi & Olomola, 2020). This suggests that sustained economic expansion, combined with robust social programs, can gradually disrupt intergenerational poverty cycles.

Regional disparities constitute a defining feature of Indonesia's poverty landscape. Rural areas have experienced more substantial poverty reduction compared to urban centers, highlighting the crucial role of regional characteristics in determining the success of anti-poverty interventions (Yokota et al., 2025). Infrastructure gaps between rural and urban zones continue to shape poverty patterns, emphasizing the necessity for equitable infrastructure development that supports inclusive economic growth (Wiratama et al., 2023). Interestingly, the expansion of secondary urban centers is more strongly associated with poverty reduction than the growth of major metropolitan areas (Gibson et al., 2023). This finding suggests that balanced urbanization strategies can yield significant poverty alleviation benefits for the poor.

Sectoral factors introduce additional dimensions to Indonesia's poverty challenges. Constrained access to modern energy services reveals persistent obstacles related to affordability, infrastructure deficits, and financial exclusion, underscoring the need for integrated policies that promote economic empowerment alongside sustainable development (Widyastuti et al., 2023). Rizal et al. (2024) further elaborate that the unequal distribution of modern energy access, particularly concerning cooking technologies and household energy affordability, continues to deepen multidimensional poverty, especially among low-income and rural populations. In the agricultural sector, the transformation marked by shifts from low-value food crops toward high-value agricultural products and the expansion of non-farm rural employment has contributed meaningfully to rural income growth and poverty reduction, although the magnitude of these effects varies considerably across different regions (Sudaryanto et al., 2023).

Structural imbalances within Indonesia's economy present fundamental obstacles to its equitable development. According to Lucas et al. (2024), the unequal value distribution in export-oriented industries perpetuates structural inequities that constrain inclusive income growth and sustainable development pathways. The complexity of poverty dynamics is further illustrated by the interplay between poverty, unemployment, and other socioeconomic factors such as crime, which collectively shape regional development outcomes (Priambodo, 2024). Nguyen (2019) demonstrates that extreme poverty undermines the crime-deterrent effects of education by restricting opportunities, heightening vulnerability to criminal victimization, and diminishing education's protective capacity against property crimes. Evidence from Hermawan et al. (2024) further indicates that road traffic accidents impose significant poverty impacts through medical expenditures, productivity loss, and the death of primary income earners. This highlights the importance of enhanced traffic infrastructure and preventive interventions as part of comprehensive strategies for poverty reduction.

Eastern Indonesia presents a particularly acute manifestation of these poverty challenges. Despite the implementation of various government social assistance and subsidy programs, poverty persists in this region due to low financial inclusion rates, unequal economic access, and inefficiencies in implementation (Erlando et al., 2020). Lumbantoruan et al. (2023) employ spatial analysis using Geographically Weighted Regression techniques in Papua, revealing that poverty is strongly influenced by

agricultural employment patterns, housing quality, and access to safe water infrastructure. These findings underscore the necessity of location-specific and spatially adaptive policy interventions tailored to local contexts.

Provincial-level analyses across Eastern Indonesia reveal considerable heterogeneity in poverty characteristics and their drivers. Aba et al. (2015) show that Nusa Tenggara Timur remains among Indonesia's poorest provinces, where sluggish economic growth, limited productivity gains, and weak institutional capacity have hindered income improvements and sustained poverty reduction over the past two decades. Sari et al. (2022) find that West Papua continues to face severe poverty challenges, with limited livelihood opportunities, resource competition, and inadequate fisheries governance perpetuating poverty among coastal communities dependent on small-scale fishing activities. These provincial variations highlight the need for differentiated policy approaches that recognize local economic structures and resource endowments.

The Sulawesi region exhibits distinct cultural and structural dimensions of poverty. In South Sulawesi, low-income families confront limited economic opportunities, reliance on informal employment, and short-term survival strategies that impede long-term quality-of-life improvements (Tamsah et al., 2020). Poor households in Bone, South Sulawesi, employ various coping mechanisms, including income source diversification, family labor mobilization, consumption adjustments, and community solidarity networks, yet face persistent constraints from limited education, environmental challenges, and cultural practices (Wekke & Cahaya, 2015). West Sulawesi's widespread poverty intensifies children's vulnerability to adverse experiences by limiting educational access, increasing early marriage and child labor, and weakening family resilience (Baumont et al., 2020). These structural barriers perpetuate intergenerational poverty transmission and require multidimensional intervention strategies.

Accurate poverty measurements and effective targeting mechanisms are essential for policy success in Eastern Indonesia. The precise estimation of household per-capita expenditure in Sulawesi is crucial for capturing regional poverty depth, with log-normal regression providing superior measurement precision by effectively addressing severe data skewness and heteroscedasticity commonly observed in poverty indicators (Roosyidah et al., 2024). Tohari et al. (2019) show that Indonesia's Unified Targeting System has demonstrated significant effectiveness in improving household welfare, as participation in multiple complementary programs increases per capita expenditure and reduces poverty vulnerability. This evidence underscores the importance of integrated program design and implementation in maximizing the impact of poverty reduction.

Sector-specific interventions offer potential pathways for poverty reduction in Eastern Indonesia, although their impacts remain uneven. Tourism has been recognized as a development catalyst that can enhance economic growth and improve living standards across Indonesian regions (Priambodo et al., 2022). Tourism

development in West Papua can contribute to poverty alleviation by enhancing the income of lower-income households, particularly through the fisheries, agriculture, and food service sectors (Tiku et al., 2022). However, the distribution of benefits remains inequitable, necessitating targeted policies to improve the livelihoods of the poorest communities. Wulandari et al. (2025) investigated socioeconomic disparities that significantly influence primary healthcare utilization patterns across eastern regions, with higher socioeconomic groups showing lower utilization rates than the poorest populations. This demonstrates the effectiveness of the National Health Insurance and Contribution Assistance policies for low-income segments, while also highlighting the ongoing challenges in achieving universal health coverage.

Figure 1. Eastern Indonesia Region (Excluding Bali).

Note: The map illustrates the geographical coverage of Eastern Indonesia, encompassing the regions of Sulawesi, Maluku, Nusa Tenggara, and Papua. This study focuses on sixteen provinces within these regions to examine the relationship between inequality, poverty intensity, and poverty incidence. (Source: Adapted from Map of Eastern Indonesia, by Amadhannn, 2023, Wikimedia Commons, https://id.wikipedia.org/wiki/Berkas:Map_of_Eastern_Indonesia.png. Licensed under CC BY-SA 4.0.)

Despite the extensive literature on poverty in Indonesia, significant research gaps remain, particularly concerning Eastern Indonesia. While previous studies have identified various determinants of poverty, including infrastructure deficits, energy access, fiscal policy, and sectoral factors, limited attention has been paid to the simultaneous effects of income inequality and poverty intensity on poverty incidence in Eastern Indonesia. Most existing research either focuses on national-level patterns or examines single provinces, lacking a comprehensive regional analysis that accounts for the spatial heterogeneity characteristic of Eastern Indonesia (Mai & Mahadevan, 2016; Siburian, 2022). Furthermore, few studies have employed recent panel data that capture contemporary poverty dynamics in this region, where poverty rates remain persistently higher than the national average.

This study addresses these gaps by examining the influence of income inequality, measured using the Gini Index, and poverty intensity, captured by the Poverty Depth

Index, on poverty incidence across 16 provinces in Eastern Indonesia during the 2024-2025 period. The primary objective is to quantify the extent to which distributional inequalities and the severity of deprivation among the poor contribute to the overall poverty rates in this region. Employing a fixed effects panel data model, this study accounts for unobserved province-specific characteristics that may influence poverty dynamics (Lumbantoruan et al., 2023; Roosyidah et al., 2024). This approach provides more robust estimates than cross-sectional or pooled analyses, particularly in contexts with significant spatial heterogeneity.

The novelty of this study lies in its three key contributions. First, it provides contemporary empirical evidence on poverty determinants in Eastern Indonesia using the most recent available data from March 2024 to March 2025, capturing the current economic conditions and poverty dynamics in the region. Second, unlike previous studies that examine either inequality or poverty depth in isolation, this study simultaneously analyzes both distributional inequality and poverty intensity as drivers of poverty incidence (Erlando et al., 2020; Tohari et al., 2019). This dual focus offers a more nuanced understanding of poverty dynamics than approaches that concentrate solely on economic growth or single poverty dimensions. Third, by covering the entire Eastern Indonesia region with its diverse geographical, economic, and social characteristics, this study generates insights that can inform region-specific poverty reduction strategies tailored to local contexts while identifying common patterns that suggest broader policy implications (Aba et al., 2015; Sari et al., 2022; Tamsah et al., 2020).

2. Research Method

This research adopts a quantitative approach using a balanced panel data design. The dataset covers 16 provinces in Eastern Indonesia, which serve as the cross-sectional units of the study. These provinces are grouped by region as follows: Sulawesi (North Sulawesi, Central Sulawesi, South Sulawesi, Southeast Sulawesi, Gorontalo, West Sulawesi), Maluku (Maluku, North Maluku), Nusa Tenggara (West Nusa Tenggara, East Nusa Tenggara), and Papua (Papua, West Papua, Central Papua, Highland Papua, South Papua, Southwest Papua).

It is important to note that the selection of the 2024–2025 period is dictated by data availability following the recent administrative proliferation in the Papua region. The new provinces (Central Papua, Highland Papua, South Papua, and Southwest Papua) began publishing independent statistical data in 2024. Consequently, extending the panel data backward is not feasible without losing the specific granularity of these new autonomous regions.

The time dimension consists of two observation periods: March 2024 and March 2025. Combining the provincial units with the two time points produces 32 balanced observations (16 provinces × 2 periods), which form the basis of the econometric estimation. Given the sample size constraints resulting from the recent administrative restructuring (N=32), this study prioritizes a parsimonious model specification. While additional control variables such as HDI or GDP are theoretically relevant, their

inclusion would significantly reduce the degrees of freedom and increase the risk of overfitting. Therefore, the analysis focuses strictly on the sensitivity of Poverty Rates to Inequality and Depth within this specific administrative landscape.

All variables in this study are transformed into their natural logarithm (ln) forms. The dependent variable is LNP0, which represents the natural logarithm of the percentage of poor population (P0). This indicator, also known as the poverty headcount index, measures the proportion of individuals whose per capita expenditure falls below the official national poverty line and therefore reflects the incidence of poverty. The independent variables consist of LNGINI and LNP1. The variable LNGINI is the natural logarithm of the Gini Index, which is widely used to measure income distribution inequality, with higher values indicating greater inequality within a population. Meanwhile, LNP1 represents the natural logarithm of the Poverty Depth Index (P1). This index measures the average distance of the poor from the poverty line and therefore captures the intensity of poverty rather than its incidence alone.

The empirical analysis is based on a panel data regression model designed to evaluate the impact of inequality and poverty depth on poverty incidence. The estimation procedure is carried out in three stages: specification of the regression model, determination of the appropriate estimator through model selection tests, and diagnostic validation to ensure compliance with classical assumptions. The econometric specification is expressed as follows:

$$LNP0_{it} = \beta_0 + \beta_1 LNGINI_{it} + \beta_2 LNP1_{it} + \alpha_i + \varepsilon_{it}\ldots\ldots\ldots(1)$$

Where i denotes province, t represents time period, α captures unobserved province-specific effects that are constant over time, and ε_{it} is the error term.

Model selection was carried out using two specification tests. The Chow test (F-test) was applied to compare the Common Effect Model (CEM) and the Fixed Effect Model (FEM). The rejection of the null hypothesis in this test indicates that the FEM provides a better fit than the CEM. Subsequently, the Hausman test was employed to choose between the FEM and the Random Effect Model (REM). A significant result from this test suggests that FEM is the most consistent and appropriate estimator for the analysis.

To ensure the robustness of the selected model, several diagnostic tests were conducted to examine the classical assumptions. Multicollinearity was evaluated using the Variance Inflation Factor (VIF), where a value below 10 indicates no serious multicollinearity. Heteroskedasticity was tested with the Breusch-Pagan-Godfrey test, under the null hypothesis of constant variance of the residuals. Autocorrelation was examined using the Breusch-Godfrey LM test, with the null hypothesis assuming no serial correlation. Finally, the Jarque-Bera test was employed to assess the normality of residuals, where the null hypothesis assumes that the residuals follow a normal distribution.

3. Results and Discussion

3.1. Results

Table 1. Descriptive Analysis

	LNGINI	LNP0	LNP1
Mean	-1.052861	2.651979	0.974889
Median	-1.020264	2.706016	1.069798
Maximum	-0.881889	3.495598	1.826161
Minimum	-1.276543	1.759581	-0.116534
Std. Dev.	0.108584	0.470354	0.565124
Skewness	-0.405739	-0.130844	-0.301501
Kurtosis	2.329294	2.272900	2.013835

Source: Badan Pusat Statistik 2024-2025.

Table 1 provides a summary of the core characteristics of the research variables, drawn from the Central Bureau of Statistics (Badan Pusat Statistik/BPS) for the 2024-2025 period. The Poverty Rate (LNP0) shows an average value of 2.65, spanning a considerable range from a minimum of 1.76 to a maximum of 3.50, which indicates significant socioeconomic disparities among the provinces studied. Similarly, the Gini Index (LNGINI) and the Poverty Depth Index (LNP1) also exhibit meaningful variation, reflecting differing levels of income inequality and poverty intensity across the region. Regarding the data's distribution, all three variables display negative skewness, suggesting that a majority of observations are concentrated above the mean values. Furthermore, the kurtosis values for all variables are below three, indicating a platykurtic distribution that is flatter than a normal curve. These distributional characteristics provide a solid foundation for the subsequent econometric analysis.

Table 2. Multicollinearity Test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.036995	117.3237	NA
LNGINI	0.029498	104.7676	1.068495
LNP1	0.001089	4.350838	1.068495

Table 2 presents the results of the multicollinearity diagnostic, which was conducted to assess the potential for high correlation among the independent variables. The analysis reveals Centered Variance Inflation Factor (VIF) values of 1.068 for both the Gini Index (LNGINI) and the Poverty Depth Index (LNP1). As these values are substantially below the commonly accepted critical threshold of 10, it provides strong evidence that multicollinearity does not pose a concern for the model specification. This outcome confirms the stability of the parameter estimates, ensuring that the individual effects of each explanatory variable can be reliably distinguished in the regression analysis.

Table 3. Autocorrelation Test

F-statistic	2.835262	Prob. F(2,27)	0.0763
Obs*R-squared	5.554143	Prob. Chi-Square(2)	0.0622

Table 3 presents the findings from the Breusch-Godfrey LM test, which was performed to detect the presence of serial correlation in the model's residuals. The

analysis focuses on the Chi-Square statistic, derived from the Obs*R-squared value, which yields a probability of 0.0622. Since this p-value is greater than the conventional 0.05 significance level, the null hypothesis of no serial correlation cannot be rejected. This result indicates that the model is free from significant autocorrelation, thereby ensuring the reliability of the standard errors and the validity of the subsequent hypothesis tests.

Table 4. Heteroskedasticity Test

F-statistic	1.368221	Prob. F(2,29)	0.2705
Obs*R-squared	2.759167	Prob. Chi-Square(2)	0.2517
Scaled explained SS	1.592780	Prob. Chi-Square(2)	0.4510

The model was further subjected to a diagnostic for heteroskedasticity using the Breusch-Pagan-Godfrey test, with the findings detailed in Table 4. The test's primary statistic, the Obs*R-squared, yields a Chi-Square probability of 0.2517. As this p-value is well above the 0.05 threshold for statistical significance, the null hypothesis of homoskedasticity is not rejected. This result confirms that the variance of the error terms is constant across observations, a crucial condition that validates the reliability of the model's standard errors and the resulting hypothesis tests.

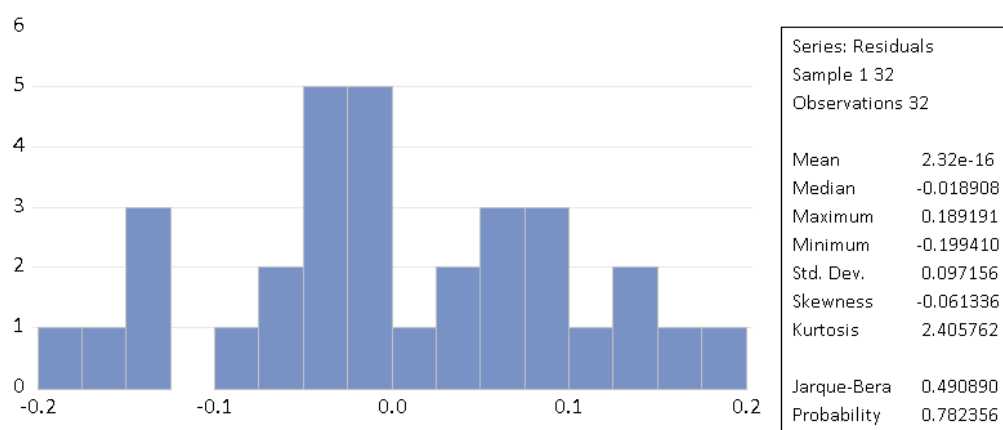| Series: Residuals	
Sample 1 32	
Observations 32	
Mean	2.32e-16
Median	-0.018908
Maximum	0.189191
Minimum	-0.199410
Std. Dev.	0.097156
Skewness	-0.061336
Kurtosis	2.405762
Jarque-Bera	0.490890
Probability	0.782356

Figure 2. Normality Test. Source: Author Calculation

The final diagnostic check assessed the normality of the model's residuals using the Jarque-Bera test, visually complemented by the histogram of the residuals. The test produced a Jarque-Bera statistic with a corresponding probability of 0.782. As this p-value is substantially greater than the conventional 0.05 significance level, the null hypothesis that the residuals are normally distributed cannot be rejected. This finding provides strong evidence that the normality assumption is satisfied, which is crucial for validating the reliability of the t-statistics and F-statistics used for hypothesis testing throughout the analysis.

Table 5. Chow Test

Effect Test	Statistic	d.f	Prob.
Cross-section F	13.066858	(15,14)	0.0000
Cross-section Chi-square	86.658044	15	0.0000

The results of the Chow test, as detailed in Table 5, were examined to formally select between the Common Effect and Fixed Effect model specifications. The test

yielded a highly significant Cross-section F-statistic of 13.07 and a corresponding Chi-square statistic of 86.66, with both producing a probability value of 0.0000. As these p-values are decisively below the standard 0.05 significance threshold, the null hypothesis favoring the Common Effect model is strongly rejected. This outcome provides robust statistical evidence for the presence of significant province-specific effects, thereby confirming that the Fixed Effect Model is the more appropriate and valid choice for this panel data analysis.

Table 6. Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	26.981428	2	0.0000

Following the initial model selection, the Hausman test was conducted to make the final determination between the Fixed Effect (FEM) and Random Effect (REM) specifications. The test produced a Chi-Square statistic of 26.98 with a corresponding probability value of 0.0000. As this p-value is decisively below the 0.05 significance threshold, the null hypothesis favoring the Random Effect model is rejected. This outcome indicates that the unobserved province-specific effects are correlated with the regressors, thereby confirming the Fixed Effect Model as the most consistent and appropriate specification for this analysis.

Table 7. Fixed Effects Model Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.856154	0.267760	10.66683	0.0000
LNGINI	0.458827	0.215053	2.133551	0.0511
LNP1	0.286091	0.095390	2.999162	0.0096
R-squared	0.997156			
Adjusted R-squared	0.993702			
F-statistic	288.6995			
Prob(F-statistic)	0.000000			

Table 7 details the results of the t-test, which assesses the partial significance of each independent variable within the model. The analysis indicates that the Gini Index (LNGINI) has a positive coefficient of 0.458827, an effect that is statistically significant at the 10% level with a p-value of 0.0511. The Poverty Depth Index (LNP1) also exhibits a positive relationship with the poverty rate, showing a coefficient of 0.286091. This impact is highly significant at the 1% level, as confirmed by its p-value of 0.0096. These findings collectively suggest that both rising income inequality and greater poverty depth are significant factors contributing to the overall poverty rate in the studied region.

The overall goodness of fit for the regression model is summarized in Table 7. In a multiple regression context, the Adjusted R-squared is the most pertinent metric for assessing the model's explanatory power. The analysis reveals an exceptionally strong fit, with an Adjusted R-squared value of 0.993702, which indicates that approximately 99.37% of the variance in the poverty rate is explained by the model after accounting for the number of predictors. This robust result is further supported by the high standard

R-squared value of 0.997156. The model's overall statistical validity is also confirmed by a highly significant F-statistic, which has a probability value of 0.000000.

In essence, this section's empirical results establish a statistically sound framework for analyzing poverty in the region. The final estimation reveals that income inequality (LNGINI) is a significant and positive predictor of the poverty rate, with the effect being statistically significant at the 10% level. Moreover, poverty depth (LNP1) is also a significant positive predictor, with its impact confirmed at the 1% significance level. The credibility of these findings is supported by a rigorous methodological procedure, where the Fixed Effect Model was systematically selected over other specifications through the Chow and Hausman tests. The model's robustness was further verified by its compliance with all classical assumptions, guaranteeing the reliability of the resulting estimates. These empirically validated results form the foundation for the subsequent discussion of their policy and theoretical implications.

4.2. Discussion

The empirical findings of this study reveal two critical drivers of poverty incidence in Eastern Indonesia: income inequality, measured by the Gini Index, and poverty intensity, captured by the Poverty Depth Index. Both variables demonstrate statistically significant positive relationships with the percentage of the poor population, though with different magnitudes and policy implications. This section discusses each relationship in detail, drawing connections to the existing literature and contextualizing the findings within the socioeconomic landscape of Eastern Indonesia.

Gini Index and Percentage of Poor Population

The Gini Index exerts a positive and statistically significant effect on poverty incidence. This confirms that distributional inequalities are a fundamental driver of poverty dynamics in Eastern Indonesia. This result validates Mai and Mahadevan (2016), who argued that reducing inequality in the poverty gap is essential for alleviating persistent poverty in Indonesia. The current study quantifies this relationship specifically for Eastern Indonesia, revealing that inequality operates as a structural constraint on poverty-reduction efforts. Lucas et al. (2024) identified unequal value distribution in export-oriented industries as perpetuating structural imbalances, and the current findings suggest that these inequalities aggregate into regional patterns that elevate poverty rates. Despite the diverse provincial conditions documented by Aba et al. (2015) in Nusa Tenggara Timur and Sari et al. (2022) in West Papua, the consistently positive effect of inequality across all provinces suggests that it operates as a fundamental poverty determinant, regardless of local economic structures.

Fiscal policy implications emerge when considered alongside those of Masduki et al. (2022) and Siburian (2022), who showed that the effects of quality public expenditure and fiscal decentralization vary by local government capacity. Regarding fiscal policy, while the literature confirms that fiscal decentralization offers significant efficiency gains in public service delivery, its effectiveness in achieving distributive equity and economic stabilization remains debated. In the context of Eastern Indonesia, reliance on local government capacity alone may not suffice to correct income

disparities. Therefore, fiscal transfers must be accompanied by strong central government guidelines that explicitly mandate the allocation of funds toward structural poverty reduction programs, ensuring that efficiency gains translate into tangible improvements in distribution.

Infrastructure development provides a concrete illustration of how inequality affects poverty. Wiratama et al. (2023) documented rural-urban infrastructure disparities, while Gibson et al. (2023) found secondary towns more effective than major cities for poverty reduction. The findings suggest that infrastructure investments yield greater poverty reduction when accompanied by mechanisms that ensure equitable access and benefit distribution. Sectoral patterns from Widyastuti et al. (2023) and Rizal et al. (2024) on unequal energy access further demonstrate how distributional problems in specific domains aggregate into region-wide inequality, driving poverty incidence.

Poverty Depth Index and Percentage of Poor Population

The Poverty Depth Index exhibits a stronger statistical relationship with poverty incidence. This indicates that provinces where poor households fall further below the poverty line also experience higher overall poverty. The intensity of poverty matters because it reflects the vulnerability and household capacity to escape deprivation. This finding is significant when examined alongside Erlando et al. (2020), who attributed Eastern Indonesia's persistent poverty to low financial inclusion, unequal economic access, and implementation inefficiencies. The current results suggest that these factors deepen poverty among those already below the poverty line, creating a feedback loop in which poverty depth reinforces poverty incidence.

The cultural and structural poverty dimensions documented in Sulawesi explain how poverty depth translates into a higher incidence. Tamsah et al. (2020) described reliance on short-term survival strategies in South Sulawesi, while Wekke and Cahaya (2015) documented coping mechanisms constrained by limited education levels. Baumont et al. (2020) revealed how West Sulawesi's poverty intensifies children's vulnerability. These conditions not only maintain households in poverty but also intensify their deprivation by preventing human capital investment.

Measurement precision, as emphasized by Roosyidah et al. (2024), is of critical importance given the significant effect of poverty depth. Their evidence of superior household expenditure estimation has direct implications for understanding poverty. Tohari et al. (2019) showed that Indonesia's Unified Targeting System improves welfare through complementary programs, suggesting well-designed interventions can simultaneously reduce poverty depth and prevent new poverty creation.

Spatial considerations from Lumbantoruan et al. (2023) in Papua revealed the links between poverty and agricultural employment, housing, and water access. Agricultural transformation documented by Sudaryanto et al. (2023) provides a sectoral context, suggesting that economic opportunities differentially affect poverty depth depending on household access. Tiku et al. (2022) analyzed the tourism sector in West Papua and revealed uneven benefit distribution, illustrating how development can reduce incidence for some while maintaining severe deprivation for others.

An important policy implication is monitoring beyond headcount ratios. The significant poverty depth effect implies that policymakers should track the severity of deprivation among the poor. Programs that successfully move households from extreme to moderate poverty reduce poverty depth and thereby contribute to lowering the overall incidence over time.

Furthermore, addressing poverty depth requires a clear distinction between universal assistance and welfare-specific interventions. Consensus-aimed policies, such as the Free Nutritious Meal Program, provide essential universal support that buffers vulnerable households from economic shocks. However, for households trapped deep below the poverty line (high poverty depth), universal programs alone are insufficient. These groups require targeted welfare devices focused on human capital accumulation—such as specialized vocational training and specific health interventions—to bridge the severe gap between their current condition and the poverty line. Policy synergy must therefore combine broad-based safety nets with precision-targeted instruments to effectively fight both unemployment and underemployment among the poorest strata.

Gini Index and Poverty Depth Index and Percentage of Poor Population
The F-statistic test demonstrates that the Gini Index and Poverty Depth Index jointly exert a highly significant influence on poverty incidence. The model's exceptionally high Adjusted R-squared of 0.9937 indicates that approximately 99.37% of the variance in poverty rates can be explained by these two factors. This remarkably strong explanatory power confirms that inequality and poverty depth capture the fundamental dimensions of poverty dynamics in Eastern Indonesia.

The simultaneous significance validates the multidimensional perspective emphasized by Smas et al. (2025), who argued that poverty is shaped by multiple interacting factors, including institutional strengths and regional inequalities. This aligns with Hardi et al. (2025), who emphasized that poverty reduction requires structural transformations addressing inequality and overall welfare rather than relying solely on economic growth. The high Adjusted R-squared when including both inequality and poverty depth, but no direct measure of economic growth, empirically supports their argument.

The complementary roles of inequality and poverty depth gain context from Kuntjorowati et al. (2024), who highlighted the need for improved governance and multisectoral collaboration in social protection. The simultaneous significance suggests that effective social protection must address distributional equity through progressive transfers while targeting the most deprived households with intensive support. Nugroho et al. (2021) identified targeting accuracy and program complementarity as persistent challenges, and the current findings imply that program design must simultaneously improve distributional outcomes and reach those in deepest poverty.

The high explanatory power relates to Purwono et al. (2021), who noted that different analytical approaches reveal varying proportions of chronic and transient

poverty in Indonesia. The current focus on inequality and poverty depth may capture dimensions particularly relevant for chronic poverty, which Mai and Mahadevan (2016) found to dominate in Indonesia's poverty. Inequality creates structural barriers to escaping poverty, while poverty depth reflects the entrenchment of deprivation, characterizing chronic rather than transient poverty.

The policy implication is clear: effective poverty reduction strategies in Eastern Indonesia require integrated approaches that address both distributional equity and poverty intensity. Policies promoting fairer income distribution through progressive taxation, equitable public service delivery, and inclusive economic opportunities must be combined with well-targeted social protection programs that provide intensive support to the most vulnerable groups. The model's explanatory power also suggests that monitoring frameworks should track both inequality indicators and poverty depth measures, alongside traditional poverty headcount ratios.

4. Conclusion

This study provides robust empirical evidence on the drivers of poverty incidence in Eastern Indonesia by examining 16 provinces from March 2024 to March 2025. Employing a fixed effects panel data model, the analysis reveals that both income inequality and poverty intensity serve as fundamental determinants of poverty dynamics in the region. The Gini Index demonstrates a positive and statistically significant relationship with poverty incidence. The Poverty Depth Index exhibits an even stronger effect, confirming that provinces where poor households fall further below the poverty line also experience higher poverty rates.

The simultaneous analysis yields particularly compelling results, with both variables jointly explaining approximately 99.37% of the variance in poverty rates across the examined provinces. This exceptionally high explanatory power confirms that inequality and poverty intensity capture the core mechanisms through which socioeconomic conditions translate into poverty outcomes in Eastern Indonesia. The findings underscore a critical insight: poverty in this region is not solely a function of inadequate economic growth but fundamentally reflects how development gains are distributed and how severely the poor are deprived of them.

These results have profound implications for poverty reduction strategies in Eastern Indonesia. First, policies must move beyond aggregate economic indicators and explicitly target distributional equity through progressive fiscal instruments, equitable public service delivery and inclusive economic opportunities. Second, social protection programs must reach the most vulnerable households with sufficient intensity to meaningfully reduce deprivation severity and not merely provide minimal assistance. Third, monitoring and evaluation frameworks should incorporate inequality measures and poverty depth indicators, alongside traditional headcount ratios, to capture the multidimensional nature of poverty dynamics.

This study contributes to the literature by providing contemporary empirical evidence using recent panel data, simultaneously analyzing both distributional inequality and

poverty intensity as drivers of poverty incidence, and covering the entire Eastern Indonesia region with its diverse geographical, economic, and social characteristics. By accounting for unobserved province-specific effects through the Fixed Effect specification, the analysis generates insights applicable across different local contexts while identifying common patterns that inform broader policy implications.

The persistence of significant effects from both inequality and poverty depth, despite various policy interventions implemented in recent years, indicates that addressing these fundamental drivers remains a priority for regional development. Effective poverty alleviation in Eastern Indonesia requires integrated strategies that combine efforts to ensure fairer income distribution with well-targeted social protection programs aimed at alleviating the burden on the most vulnerable groups. Only through such comprehensive approaches can the region achieve sustainable and inclusive poverty reduction that transforms the lives of millions currently trapped in poverty.

Future research should examine the specific mechanisms through which inequality and poverty depth operate in different sectoral and spatial contexts within Eastern Indonesia, explore the effectiveness of particular policy interventions in addressing these dimensions simultaneously, and investigate the dynamic interactions between inequality, poverty depth, and poverty incidence over longer periods to better understand poverty persistence and mobility patterns in the region.

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