PARADIGM: Volume 5 (No. 04), 2026, pp. 898 - 912
e-ISSN: 2828-4184
BHARASUMBA: Jurnal Multidisipliner
https://azramedia-indonesia.azramediaindonesia.com/index.php/bharasumba/index
DOI: https://doi.org/10.62668/bharasumba.v5i04.3000
Email: info@azramediaindonesia.com
Open Access

Determinants of Poverty in Selected Regencies of Southeast Sulawesi and Their Implications for Regional Development Policy

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Article history
Received: S September2026
Revised: 24 September 2026
Accepted: 27 Oktober 2026
Published: 31 Oktober 2026

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Abstract
This study analyzes the relationship of income inequality, unemployment, and population size with poverty in five regencies of Southeast Sulawesi Province, Indonesia: Kolaka, South Konawe, Bombana, North Kolaka, and East Kolaka. The regencies were selected purposively because they form a contiguous mainland cluster with agriculture- and mining-based economies and have complete data for 2016–2025. The study uses secondary panel data (50 observations) from the Central Statistics Agency (BPS) of Southeast Sulawesi Province, analyzed with panel data regression in EViews 12. The Chow and Hausman tests identified the Fixed Effect Model (FEM) as the preferred specification. The coefficients of income inequality, unemployment, and population size are positive but statistically insignificant at the 5 percent level under both conventional and White period robust standard errors; thus, the data do not provide sufficient evidence of a partial relationship between these variables and poverty. The FEM as a whole is significant (Prob. F = 0.000; adjusted R^2 = 0.776), but this explanatory power largely reflects regency fixed effects, and a Wald test shows that the three independent variables are not jointly significant ($F(3, 42) = 0.269$; Prob. = 0.847). Differences in the fixed effects indicate that region-specific characteristics beyond the variables examined are associated with variations in poverty, so poverty alleviation policies should be tailored to the characteristics and needs of each regency.

Keywords: Poverty, Income Inequality, Unemployment, Population, Panel Data Regression

INTRODUCTION

Poverty remains a major development challenge in Indonesia, including in Southeast Sulawesi Province. It is a multidimensional problem because it relates to people's limited ability to earn income and to access education, health services, and economic opportunities (Todaro & Smith, 2020). According to the vicious circle of poverty theory proposed by Nurkse (1953), poverty perpetuates itself through low income, limited investment, low productivity, and narrow employment opportunities. Within this framework, income inequality, unemployment, and population size are interrelated factors that influence the level of poverty. Income inequality restricts access to productive resources, unemployment reduces people's capacity to earn income, and population growth that is not accompanied by improvements in human resource quality can increase the burden of development (Sukirno, 2006).

Previous studies on the effects of income inequality, unemployment, and population size on poverty have produced mixed findings. Several studies report that these three variables

increase poverty (Sari & Sa'roni, 2020; Fathurohman et al., 2022; Maskur et al., 2023), whereas others find negative or insignificant relationships (Nisa et al., 2020; Sembiring et al., 2023; Nasution, 2023). These inconsistencies indicate a research gap regarding the determinants of poverty, particularly at the regency level. International evidence shows that higher inequality raises poverty for a given level of income and weakens the poverty-reducing effect of growth (Ravallion, 2001; Fosu, 2017), while unemployment increases the risk of poverty to an extent that depends on household composition and social safety nets (Saunders, 2002). In Indonesia, the poverty impact of growth differs by sector and location (Suryahadi et al., 2009), and persistently high inequality slowed poverty reduction during the 2010s (Yusuf & Sumner, 2015; Suryahadi & Al Izzati, 2018).

Data from the Central Statistics Agency (BPS) for 2024 reveal differing socioeconomic characteristics across Kolaka, South Konawe, Bombana, North Kolaka, and East Kolaka Regencies. In March 2024, the poverty rate of Southeast Sulawesi Province was 11.21 percent (Badan Pusat Statistik Provinsi Sulawesi Tenggara, 2024b). In the same year, East Kolaka and North Kolaka recorded the highest poverty rates among the five regencies, at 13.71 percent and 13.51 percent, respectively, while Kolaka recorded 11.67 percent; all three exceeded the provincial average (Badan Pusat Statistik, n.d.). Kolaka's poverty rate remained above the provincial average despite relatively low income inequality, with a Gini ratio of 0.286. By contrast, Bombana had a poverty rate of 10.54 percent, below the provincial average, but a Gini ratio of 0.338, indicating persistent inequality in income distribution (Badan Pusat Statistik Provinsi Sulawesi Tenggara, 2024a). Meanwhile, South Konawe had the largest population, at 329,210 people (Badan Pusat Statistik Provinsi Sulawesi Tenggara, 2025a), and 5,625 unemployed persons aged 15 years and over in 2025 (Badan Pusat Statistik Provinsi Sulawesi Tenggara, 2025d).

These differences suggest that poverty is shaped by the interaction of multiple factors rather than by a single variable. The novelty of this study lies in three aspects. First, it focuses on five regencies in Southeast Sulawesi—Kolaka, South Konawe, Bombana, North Kolaka, and East Kolaka—with diverse socioeconomic characteristics and poverty levels. Second, it covers the 2016–2025 period, which includes the pre-pandemic years, the COVID-19 pandemic, and the subsequent recovery, thereby capturing the relationship of income inequality, unemployment, and population size with poverty under different economic conditions. Third, it uses the Fixed Effect Model (FEM) to account for unobserved, time-invariant regional characteristics, so that the relationship of each independent variable with poverty is analyzed while controlling for heterogeneity across regencies. Unlike previous panel studies in Southeast Sulawesi, which cover all regencies and cities and focus on other determinants such as village funds (Halulanga et al., 2024) and mean years of schooling (Astrawan & Meirizki, 2026), and national or inter-provincial studies (Maskur et al., 2023; Agussalim et al., 2024) that cannot capture heterogeneity within the province, this study concentrates on a cluster of regencies with mining and smallholder agricultural economies—a structure that the literature identifies as shaping how strongly growth reduces poverty (Christiaensen et al., 2011). Based on these three aspects, this study aims to analyze the partial and joint relationships of income inequality, unemployment, and population size with poverty as a basis for formulating better-targeted poverty alleviation policies in Southeast Sulawesi.

METHOD

This study adopted a quantitative approach to examine the relationship of income inequality, unemployment, and population size with poverty in selected regencies of Southeast Sulawesi. The study used a balanced secondary panel combining time-series data for 2016–2025 and cross-sectional data for five regencies—Kolaka, South Konawe, Bombana, North Kolaka, and East Kolaka—yielding 50 observations. The five regencies were selected purposively based on three criteria: (1) they form a contiguous mainland cluster in the western and southern part of the province whose economies rely on agriculture, plantations, fisheries, and mining; (2) most of them recorded poverty rates above the provincial average; and (3) complete and methodologically consistent BPS series for all variables are available for every year from 2016 to 2025. Consequently, the findings describe this cluster and should not be generalized to the whole province, particularly to the island regencies and the cities of Kendari and Baubau, whose economic structures differ. The data were collected through documentation from official statistical publications of BPS of Southeast Sulawesi Province and from relevant scientific references.

The dependent variable was poverty (Y), measured as the number of poor people in each regency (thousand persons) (Badan Pusat Statistik Provinsi Sulawesi Tenggara, 2025c). The independent variables were income inequality (X1), measured by the Gini ratio (index, 0–1) (Badan Pusat Statistik Provinsi Sulawesi Tenggara, 2024a); unemployment (X2), measured as the number of unemployed persons aged 15 years and over (persons) based on the National Labor Force Survey (Sakernas) (Badan Pusat Statistik Provinsi Sulawesi Tenggara, 2025d); and population size (X3), measured as the number of residents (persons) based on BPS population estimates (Badan Pusat Statistik Provinsi Sulawesi Tenggara, 2025a). The analysis was conducted using EViews 12. Y, X2, and X3 were transformed into natural logarithms (ln) to reduce differences in scale, whereas X1 was kept in its original form because the Gini ratio is already an index ranging from 0 to 1. The panel data regression model was specified as follows:

$$\ln Y_{it} = \alpha + \beta_1 X1_{it} + \beta_2 \ln X2_{it} + \beta_3 \ln X3_{it} + \mu_i + \varepsilon_{it}$$

where Y_{it} is the number of poor people in regency *i* in year *t*; $X1_{it}$ is the Gini ratio; $X2_{it}$ is the number of unemployed persons; $X3_{it}$ is the population size; α is the constant; β_1, β_2, and β_3 are the regression coefficients; μ_i is the regency fixed effect; and ε_{it} is the error term. Because Y, X2, and X3 are expressed in natural logarithms, β_2 and β_3 are interpreted as elasticities, that is, the percentage change in the number of poor people associated with a 1 percent change in the independent variable, holding the other variables and the regency fixed effect constant. Because X1 is not transformed, β_1 is a semi-elasticity: a 0.01-point increase in the Gini ratio is associated with a change in the number of poor people of approximately ($\beta_1 \times 0.01 \times 100$) percent.

The analytical stages comprised panel model selection through the Chow test, the Hausman test (Hausman, 1978), and, where necessary, the Lagrange Multiplier test; diagnostic tests, namely the Jarque–Bera normality test, a correlation matrix to detect multicollinearity (Gujarati & Porter, 2009), and the Glejser test for heteroskedasticity, in which the absolute FEM residuals are regressed on the independent variables (Glejser, 1969); and hypothesis testing through the F-test, a Wald test of the joint significance of the three coefficients, the t-test, and the coefficient of determination (Baltagi, 2021). All tests were evaluated at a

significance level of α = 0.05. Because the panel is both short (T = 10) and narrow (N = 5), formal tests for serial correlation and cross-sectional dependence have limited power and were not performed (Drukker, 2003; Wooldridge, 2010). Instead, a robustness check was conducted by re-estimating the FEM with the White period covariance method, which yields standard errors robust to heteroskedasticity and to serial correlation within each regency (Wooldridge, 2010; Cameron & Miller, 2015). Cross-sectional dependence was not accommodated and is acknowledged as a limitation (Driscoll & Kraay, 1998; Hoechle, 2007).

RESULTS AND DISCUSSION

Results

Model Selection Tests

The panel data estimation model was selected using the Chow and Hausman tests. The Chow test was used to choose between the *Common Effect Model* (CEM) and the *Fixed Effect Model* (FEM), while the Hausman test was used to choose between the FEM and the *Random Effect Model* (REM).

Table 1. *Chow Test Results*

Effects Test	Statistic	d.f.	Prob.
Cross-section F	5.767624	(4,42)	0.0009
Cross-section Chi-square	21.89008	4	0.0002

Source: Secondary data from BPS of Southeast Sulawesi Province, processed using EViews 12.

The Chow test results in Table 1 show a *cross-section chi-square* probability of 0.0002 < 0.05. Therefore, H_0 is rejected and H_1 is accepted, indicating that the *Fixed Effect Model* (FEM) is more appropriate.

Table 2. *Hausman Test Results*

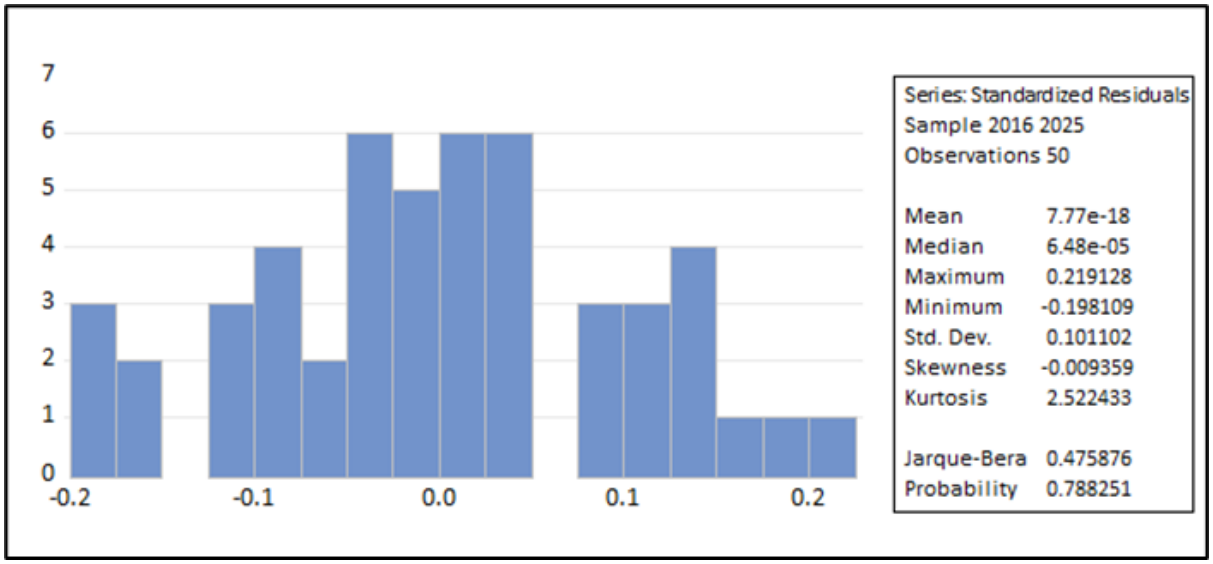
est Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	22.896259	3	0

Source: Secondary data from BPS of Southeast Sulawesi Province, processed using EViews 12.

The Hausman test results in Table 2 show a *cross-section random* probability of 0.0000 < 0.05. Therefore, H_0 is rejected and H_1 is accepted, and the *Fixed Effect Model* (FEM) is selected. Because both tests favor the FEM, the Lagrange Multiplier (LM) test is not required.

Classical Assumption Tests

The normality test examines whether the residuals of the regression model are normally distributed. The test was conducted by examining the Jarque-Bera probability value of the residual histogram at α = 0.05.



Source: Secondary data from BPS of Southeast Sulawesi Province, processed using EViews 12.

Figure 1. *Normality Test Results*

As shown in Figure 1, the Jarque-Bera probability is 0.788251 > 0.05; thus, the null hypothesis that the residuals are normally distributed is not rejected.

The multicollinearity test examines whether the independent variables in the regression model are highly correlated, using the correlation coefficients between independent variables. Following Gujarati and Porter (2009), pairwise correlation coefficients below 0.80 indicate no sign of high multicollinearity.

Table 3. *Multicollinearity Test Results*

Variabel	X1	X2	X3
X1	1	-0.16649	0.008938
X2	-0.166485	1	0.542783
X3	0.008938	0.542783	1

Source: Secondary data from BPS of Southeast Sulawesi Province, processed using EViews 12.

Table 3 shows that the correlation coefficient between X1 and X2 is -0.166485, between X1 and X3 is 0.008938, and between X2 and X3 is 0.542783. All absolute values are below 0.80; therefore, no indication of high multicollinearity among the independent variables was found.

The heteroskedasticity test examines whether the variance of the residuals is constant. The Glejser method was used by regressing the absolute values of the residuals on the independent variables. The decision is based on the probability value of each variable at the 5 percent significance level: if the probability exceeds 0.05, the model shows no indication of heteroskedasticity.

Table 4. *Heteroskedasticity Test Results (Glejser Test)*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.87544	1.99877	-0.9383	0.3535
X1	0.297829	0.239198	1.245115	0.22
X2	0.007349	0.015299	0.480389	0.6334
X3	0.148107	0.162221	0.912996	0.3665

Source: Secondary data from BPS of Southeast Sulawesi Province, processed using EViews 12.

Table 4 shows that the probability values of X1, X2, and X3 are 0.2200, 0.6334, and 0.3665, respectively, all greater than 0.05. Therefore, the Glejser test finds no indication of heteroskedasticity related to the independent variables. However, this test does not examine differences in variance across regencies or serial correlation within regencies; these possibilities are addressed through the robustness check using the White period covariance method.

Panel Data Regression Results

Based on the model selection tests, the *Fixed Effect Model* (FEM) was used as the panel data regression model in this study. The estimation results are presented in Table 5.

Table 5. *Fixed Effect Model (FEM) Estimation Results*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.148846	5.093824	1.59975	0.1172
X1	0.109806	0.609591	0.180131	0.8579
X2	0.03355	0.038989	0.860505	0.3944
X3	0.139177	0.413417	0.336649	0.7381

Source: Secondary data from BPS of Southeast Sulawesi Province, processed using EViews 12.

Y, X2, and X3 are expressed in natural logarithms, whereas X1 is in its original form. Based on Table 5, the estimated regression equation is as follows:

$$\ln\hat{Y}_{it} = 8.148846 + 0.109806\, X1_{it} + 0.033550 \ln X2_{it} + 0.139177 \ln X3_{it} + \hat{\mu_i}$$

The coefficient of income inequality (X1) is 0.109806 and positive. Because the Gini ratio is not log-transformed, this coefficient indicates that a 0.01-point increase in the Gini ratio is associated with an increase of approximately 0.1098 percent in the number of poor people, *ceteris paribus*. However, this relationship is not statistically significant.

The coefficient of unemployment (X2) is 0.033550 and positive, implying that a 1 percent increase in the number of unemployed persons is associated with an increase of approximately 0.034 percent in the number of poor people, *ceteris paribus*. The coefficient of population size (X3) is 0.139177 and positive, implying that a 1 percent increase in population is associated with an increase of approximately 0.139 percent in the number of poor people, *ceteris paribus*. These magnitudes describe the point estimates only; as shown by the partial test below, none of the three coefficients differs significantly from zero, so they should not be read as established effects.

To ensure the consistency of the estimates, a robustness check was conducted by re-estimating the FEM with the White period covariance method. This procedure yields standard errors that are robust to heteroskedasticity and to serial correlation of the residuals within each cross-section unit. The model specification and variables were kept unchanged so that the comparison focuses on the consistency of coefficient signs and statistical significance.

Table 6. *Robustness Check: FEM with White Period Covariance*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.148846	2.486354	3.277428	0.0306
X1	0.109806	0.540104	0.203306	0.8488
X2	0.03355	0.061254	0.547718	0.613
X3	0.139177	0.2402	0.57942	0.5934

Metode: White period (cross-section cluster) standard errors & covariance (d.f. corrected).

Source: Secondary data from BPS of Southeast Sulawesi Province, processed using EViews 12.

Based on Table 6, the coefficients of X1, X2, and X3 remain positive with the same magnitudes, while their probability values are 0.8488, 0.6130, and 0.5934, respectively, all greater than 0.05. The consistency of the coefficient signs and of statistical significance indicates that the findings are relatively robust to the use of a different covariance method.

The EViews output in Table 6 displays a warning that the coefficient covariance matrix is of reduced rank. This warning deserves attention. The White period method is a cluster-robust covariance estimator in which each regency is treated as a cluster. The matrix is formed by summing the residual contributions of each cluster, so its rank can be no higher than the number of clusters. With only five clusters, the rank is smaller than the number of FEM parameters (the constant, three slope coefficients, and the regency fixed effects), so the matrix is not of full rank. This has three consequences. First, the standard error of each coefficient can still be computed, but cluster-robust estimators tend to be biased downward and less reliable when the number of clusters is small (Cameron et al., 2008; Cameron & Miller, 2015). EViews partly corrects for this by computing the t-statistic probabilities with degrees of freedom adjusted for the number of clusters, as noted in the output. Second, this covariance matrix is not suitable for testing several coefficients jointly; therefore, the Wald test in this study uses the conventional FEM covariance. Third, the conclusion of this study—that the three coefficients are not significant—is the same under conventional and robust standard errors, so the warning does not change the conclusion. Conversely, if only the robust estimates had shown significant results, those results would not be reliable. Table 6 is therefore treated as a supporting check. Inference methods better suited to a small number of clusters, such as the wild cluster bootstrap (Cameron et al., 2008), or extending the sample to all regencies and cities in Southeast Sulawesi are recommended for future research.

In the Fixed Effect Model (FEM), each regency has its own intercept, which is the sum of the common constant (C) and the regency fixed effect (C_i). The fixed effects of the regencies are presented in Table 7.

Table 7. *Cross-Section Fixed Effects by Regency*

Regency	Cross Effect (Ci)	C + Ci
Bombana	-0.183768	7.965078
Kolaka	0.073209	8.222055
East Kolaka	-0.023730	8.125116
North Kolaka	-0.110468	8.038378
South Konawe	0.244757	8.393603

Source: Secondary data from BPS of Southeast Sulawesi Province, processed using EViews 12.

The FEM estimates show differences in fixed effects across regencies. South Konawe has the highest fixed effect, at 0.244757, while Bombana has the lowest, at -0.183768. These differences indicate regency-specific characteristics that are associated with variation in poverty beyond income inequality, unemployment, and population size in the model. This finding suggests that poverty alleviation policies need to consider the conditions and characteristics of each region rather than rely on a uniform policy approach.

Hypothesis Testing

The F-test was used to determine the significance of the FEM as a whole, which includes the three independent variables and the regency fixed effects. In addition, a Wald test was used

to examine specifically whether the coefficients of the three independent variables are jointly equal to zero.

Table 8. *Overall F-Test Results of the FEM*

Statistic	Value
F-statistic	25.30198
Prob(F-statistic)	0.000000

Source: Secondary data from BPS of Southeast Sulawesi Province, processed using EViews 12.

Based on Table 8, the Prob(F-statistic) value is 0.000000 < 0.05. In the EViews FEM output, however, this F-statistic tests the null hypothesis that all slope coefficients and all regency fixed effects are jointly zero (Baltagi, 2021). This result therefore shows that the FEM as a whole, including the regency-specific intercepts, is significant in explaining variation in poverty, but it cannot be interpreted as evidence that income inequality, unemployment, and population size jointly affect poverty, because its significance may stem from the regency fixed effects. To test the joint significance of X1–X3 specifically, a Wald test of the null hypothesis $\beta_1 = \beta_2 = \beta_3 = 0$ was performed on the FEM with conventional covariance. The results are presented in Table 9: the F-statistic is 0.269352 with (3, 42) degrees of freedom and a probability of 0.8471 > 0.05 (Chi-square = 0.808055; Prob. = 0.8475). Thus, H_0 cannot be rejected, and income inequality, unemployment, and population size are not jointly significant once regency fixed effects are controlled for. The contrast between the F-test and the Wald test indicates that the variation in poverty captured by the model is mainly attributable to time-invariant differences between regencies, whereas year-to-year changes in the three variables within each regency do not sufficiently explain changes in the number of poor people. This finding also suggests that poverty is a multidimensional phenomenon that may be related to factors outside the model, such as education, health, infrastructure quality, and the effectiveness of regional government spending.

Table 9. *Wald Test Results (β1 = β2 = β3 = 0)*

Wald Test — Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	0.269352	(3, 42)	0.8471
Chi-square	0.808055	3	0.8475

Null Hypothesis: C(2)=0, C(3)=0, C(4)=0

Tabel Normalized Restriction (= 0)

Normalized Restriction	Value	Std. Err.
C(2)	0.109806	0.609591
C(3)	0.03355	0.038989
C(4)	0.139177	0.413417

Restrictions are linear in coefficients.

Source: Secondary data from BPS of Southeast Sulawesi Province, processed using EViews 12.

Furthermore, the partial test (t-test) was used to determine the effect of each independent variable on poverty.

Table 10. *Partial Test Results*

Variable	Coefficient	Prob.	Decision
Constant (C)	8.148846	0.1172	–
Income Inequality (X1)	0.109806	0.8579	Not significant
Unemployment (X2)	0.033550	0.3944	Not significant
Population Size (X3)	0.139177	0.7381	Not significant

Source: Secondary data from BPS of Southeast Sulawesi Province, processed using EViews 12.

Based on Table 10, income inequality (X1) has a coefficient of 0.109806 with a probability of 0.8579 > 0.05. This indicates that the coefficient of income inequality is positive, but there is insufficient statistical evidence to conclude that it has a partial relationship with poverty in the selected regencies of Southeast Sulawesi. Unemployment (X2) has a coefficient of 0.033550 with a probability of 0.3944 > 0.05, indicating a positive coefficient without sufficient statistical evidence of a partial relationship with poverty. Population size (X3) has a coefficient of 0.139177 with a probability of 0.7381 > 0.05, likewise indicating a positive coefficient without sufficient statistical evidence of a partial relationship with poverty.

The coefficient of determination was used to measure the ability of the regression model to explain variation in the dependent variable through the independent variables.

Table 11. *Coefficient of Determination Results*

Statistic	Value
R-squared	0.808319
Adjusted R-squared	0.776372

Source: Secondary data from BPS of Southeast Sulawesi Province, processed using EViews 12.

Based on Table 11, the adjusted R^2 is 0.776372, or 77.64 percent. This value indicates that the FEM, which includes income inequality, unemployment, population size, and the regency fixed effects, explains 77.64 percent of the variation in poverty, while the remaining 22.36 percent is associated with factors outside the model. Hence, the adjusted R^2 cannot be interpreted as the contribution of the three independent variables alone, because the FEM also accounts for fixed effects across regions. The Wald test in Table 9 reinforces this point: because the three independent variables are not jointly significant, most of the model's explanatory power comes from the regency fixed effects.

Discussion

The Effect of Income Inequality on Poverty

The results show that the coefficient of income inequality is positive but statistically insignificant. The positive sign is consistent with the view that higher inequality raises poverty for a given level of income (Ravallion, 2001; Fosu, 2017), but the data do not provide sufficient statistical evidence of such a relationship in the selected regencies during 2016–2025.

One possible explanation, which was not tested directly in the model, is the difference in economic structure across regions. Kolaka Regency is dominated by the mining and quarrying sector, which contributes 35.38 percent of its Gross Regional Domestic Product (GRDP), whereas South Konawe, East Kolaka, North Kolaka, and Bombana are dominated by the agriculture, forestry, and fisheries sector, which contributes approximately 41.26 percent in East Kolaka and 39.44 percent in North Kolaka (Darmawan, 2024; MCNewsUltra, 2025).

These structural differences may weaken the link between income inequality and poverty, because the mining sector tends to be capital-intensive, while the agricultural sector absorbs more labor but has relatively low productivity. This conjecture is consistent with cross-country evidence that growth originating in agriculture reduces poverty more effectively than growth in extractive sectors (Christiaensen et al., 2011) and with Indonesian evidence on the strong poverty-reducing effect of rural agricultural growth (Suryahadi et al., 2009).

The direction of this coefficient is consistent with utility theory, which holds that household welfare is determined by the capacity of income to increase consumption and satisfaction (Fishburn, 1968; Sukirno, 2019). When income is unevenly distributed, low-income groups have limited purchasing power, resulting in low utility and difficulty escaping poverty. The result is also consistent with Aini and Nugroho (2023) and Marhusen et al. (2023), who found that income inequality has a positive but insignificant effect on poverty. At the regional level, Agussalim et al. (2024) likewise find that, in Indonesian provinces outside Java, economic growth and spending on education and health reduced poverty mainly through direct channels rather than through lower income inequality.

The Effect of Unemployment on Poverty

The results show that the coefficient of unemployment is positive but statistically insignificant. Thus, the data do not show a reliable relationship between changes in the number of unemployed persons and changes in the number of poor people in the selected regencies.

Several explanations are possible, although none of them was tested directly in the model. First, most of the study area still depends on primary sectors such as agriculture, plantations, fisheries, and mining. In predominantly rural areas, people who cannot find formal employment usually continue working in agriculture or informal self-employment, so their welfare problem is more closely related to low productivity and underemployment than to open unemployment (La Porta & Shleifer, 2014). Second, unemployed persons do not necessarily live in poor households, because household income also depends on other working members and on transfers (Saunders, 2002). Third, the expansion of social assistance and village fund programs during the observation period may have cushioned the effect of job loss on household welfare (Suryahadi & Al Izzati, 2018; Halulanga et al., 2024). Examining these channels would require regency-level data on informal employment, underemployment, and social assistance coverage.

This result is consistent with the structural unemployment perspective, which holds that the impact of unemployment on welfare depends heavily on the structure of the labor market and the availability of social safety nets in a region. It is also consistent with Marhusen et al. (2023), who found that unemployment has a positive but insignificant effect on poverty.

The Effect of Population Size on Poverty

The results show that the coefficient of population size is positive but statistically insignificant. This indicates that population growth has not been statistically shown to be associated with changes in the number of poor people in the study regencies during the observation period.

According to BPS data, the population of Southeast Sulawesi was approximately 2,836.7 thousand people in 2025, with a population growth rate of 2.09 percent per year (Badan Pusat Statistik Provinsi Sulawesi Tenggara, 2025b). One possible explanation is that economic

activities in the agricultural and informal sectors may absorb part of the additional labor force. However, this possibility was not tested directly in this study and therefore cannot be confirmed as the reason why the relationship between population size and poverty is insignificant. Empirically, this result is consistent with Nasution (2023), who also found a positive but insignificant coefficient of population size on poverty.

CONCLUSION

This study finds that income inequality, unemployment, and population size have positive coefficients but no statistically significant effect on poverty in selected regencies of Southeast Sulawesi. Thus, the three variables have not been shown to have a partial effect on poverty during the study period. On the other hand, the FEM estimates reveal regency-specific characteristics reflected in the fixed effects: South Konawe has the highest fixed effect, at 0.244757, while Bombana has the lowest, at -0.183768. These differences indicate region-specific factors beyond the variables examined that are associated with variation in poverty across regencies. The FEM as a whole is significant, with an adjusted R^2 of 0.776, but this explanatory power largely reflects the regency fixed effects. The Wald test also shows that the three variables are not jointly significant (Prob. = 0.8471). The explanations offered in the discussion—differences in economic structure, labor absorption by the agricultural and informal sectors, and the role of social assistance—are conjectures consistent with the literature, but they were not tested directly and should be examined in future research.

Because the partial coefficients are not significant, the following policy implications are not derived as causal effects of the three variables but from the finding on the importance of regency fixed effects. Regency governments should formulate poverty alleviation policies that take into account the characteristics and needs of each regency. The differences in fixed effects highlight the importance of identifying region-specific factors—such as economic structure, labor productivity, access to education and health services, and basic infrastructure—as aspects that require further study before intervention priorities are set.

Regional governments should also strengthen cross-regional coordination in updating poverty data, aligning development programs, and evaluating policy effectiveness so that budget allocations better match regional needs. This study has several limitations: it covers only five regencies and three independent variables, uses a short panel with too few clusters for reliable robust inference, and does not account for cross-sectional dependence. Future research should add other variables, such as economic growth, the Human Development Index, mean years of schooling, village funds, and regional government spending; extend the coverage to all regencies and cities in Southeast Sulawesi; and use standard errors robust to serial correlation and cross-sectional dependence, such as Driscoll–Kraay standard errors (Driscoll & Kraay, 1998; Hoechle, 2007).

DECLARATIONS

Author Contributions. Dheavivi Ayu Dian Pebrian is the sole author and was responsible for the conceptualization of the study, data collection, data analysis, interpretation of the results, and preparation and revision of the manuscript. The author has read and approved the final version of the manuscript.

Funding. This research did not receive any specific financial support from government agencies, private organizations, or other funding institutions. The research was conducted independently by the author.

Conflict of Interest. The author declares no conflict of interest related to the research, authorship, or publication of this article.

Use of Artificial Intelligence. Generative artificial intelligence was used to a limited extent as a language support tool, particularly for translation, proofreading, and formatting the manuscript according to the journal template. AI was not used to collect or analyze data, determine the research methodology, interpret the statistical results, or draw the study's conclusions. The author remains fully responsible for the accuracy, originality, interpretation, and final content of the manuscript.

Ethical Approval and Informed Consent. This study used aggregate secondary data officially published by the Central Statistics Agency (BPS) and did not directly involve human participants; therefore, ethical approval and informed consent were not required.

Data Availability. The data used in this study were obtained from publicly available publications of BPS of Southeast Sulawesi Province. The processed data are available from the corresponding author upon reasonable request.

Acknowledgments. –

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