



The Effect of Social Assistance Expenditure Realization, the Open Unemployment Rate, and the Provincial Minimum Wage on the Poverty Rate in Java Island

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Abstract

Poverty remains a persistent development challenge on Java Island despite the implementation of various government policies and social protection programs. This study aims to analyze the effects of social assistance expenditure realization, the open unemployment rate, and the provincial minimum wage on the poverty rate in Java Island during 2020–2024, both partially and simultaneously. The study employs a quantitative associative approach using secondary data from Statistics Indonesia (BPS) covering six provinces, resulting in 30 balanced panel-data observations. The data were analyzed using panel data regression with Stata 14.2, with the Chow and Hausman tests identifying the Fixed Effect Model (FEM) as the most appropriate estimation model. The findings show that social assistance expenditure realization has a positive and significant effect on the poverty rate, while the open unemployment rate has no significant effect. In contrast, the provincial minimum wage has a negative and significant effect on the poverty rate. Simultaneously, the three independent variables significantly affect poverty, with an R^2 of 80.23%, indicating that they explain most of the variation in poverty across the observed provinces and period. The findings provide empirical considerations for developing more targeted, integrated, and evidence-based poverty alleviation policies in Java Island.

Keywords: Minimum Wage, Open Unemployment, Panel Data, Poverty, Social Assistance.



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INTRODUCTION

Poverty remains a central challenge in the pursuit of inclusive economic development and the achievement of the Sustainable Development Goals (SDGs) 2030, particularly because economic progress does not automatically translate into equitable access to income, employment, and essential services. Contemporary poverty analysis increasingly recognizes that deprivation extends beyond insufficient financial resources to encompass the structural conditions that constrain individuals' ability to achieve a dignified standard of living (Safii & Huda, 2025). The distinction between national and international poverty thresholds further illustrates the importance of examining poverty through both domestic policy frameworks and broader measures of economic vulnerability, as Indonesia's classification as an Upper-Middle Income Country (UMIC) has not eliminated substantial disparities in living standards (World Bank, 2025). Statistics Indonesia reported a national poverty rate of 8.57 percent in September 2024, equivalent to 24.06 million people, while the World Bank's revised UMIC poverty line of US\$6.85 purchasing power parity (PPP) per day placed more than 60.3 percent of Indonesia's population, or approximately 171.8 million people, below that threshold (BPS-Statistics Indonesia, 2025). These contrasting estimates indicate that poverty reduction cannot be assessed solely through changes in the national poverty rate, since improvements in aggregate welfare may coexist with persistent vulnerability among households whose incomes remain close to the poverty threshold. The central policy question is therefore not merely whether poverty has declined, but whether the distribution of economic opportunities and the effectiveness of public interventions are sufficient to sustain poverty reduction across regions and socioeconomic groups.

Java Island provides a particularly important setting for examining this question because its dominant contribution to Indonesia's economic output coexists with substantial regional disparities in poverty. The island contributes 57.04 percent of national Gross Domestic Product (GDP), yet its six provinces continue to contain the largest absolute concentration of poor people in Indonesia (Septiana & Utomo, 2025). Although poverty rates declined after the sharp increase associated with the COVID-

19 pandemic in 2020–2021, the pace and extent of recovery have differed considerably across provinces. DI Yogyakarta and Central Java have consistently recorded poverty rates above 10 percent, whereas DKI Jakarta recorded the lowest rate among the six provinces, at 4.3 percent in 2024. Such differences suggest that economic concentration alone does not guarantee uniform poverty reduction, because the relationship between regional economic activity, labour-market absorption, and household welfare is mediated by the distribution of employment opportunities and the reach of social protection. The persistence of these disparities makes Java an analytically relevant regional unit for investigating whether public expenditure and labour-market policies operate consistently across provinces or produce different poverty outcomes under distinct socioeconomic conditions.

Government responses to poverty in Indonesia rely on complementary instruments that address household vulnerability, labour-market exclusion, and income adequacy, although their effectiveness depends on how these mechanisms interact within regional economies. Social assistance expenditure realization is intended to protect vulnerable households and sustain consumption during periods of economic disruption, but its poverty-reducing effect depends on the accuracy of beneficiary identification, the adequacy of transfers, and the continuity of implementation (Agustin & Sumarsono, 2022). Evidence from the implementation of cash assistance during the pandemic indicates that administrative effectiveness and the capacity to reach intended beneficiaries are important conditions for translating budgetary allocation into meaningful social protection outcomes (Fitri Ariska & Untari, 2023). The open unemployment rate (TPT), meanwhile, captures the extent to which the labour market fails to absorb available workers, while the concentration of educated youth unemployment on Java illustrates how the expansion of educational attainment does not necessarily resolve structural mismatches between graduate competencies and industry requirements (Septiana & Utomo, 2025). The Provincial Minimum Wage (UMP) represents a formal wage floor intended to protect workers' purchasing power, yet its poverty implications depend on whether higher wages are accompanied by sufficient employment opportunities and the capacity of firms to absorb labour. This interaction is particularly important because minimum-wage adjustments may improve the earnings of covered workers while producing weaker benefits for informal workers or those excluded from formal employment, making the aggregate poverty effect theoretically ambiguous (Faruddin & Djamaluddin, 2025).

Empirical research has produced important but not entirely consistent evidence regarding the relationship between these policy instruments and poverty, indicating that their effects cannot be interpreted independently of institutional and regional conditions. Studies of social assistance have reported poverty-reducing effects, while other research has emphasized that weaknesses in the Integrated Social Welfare Data can limit targeting accuracy and reduce the effectiveness of expenditure realization (Difayanti & Agustina, 2025; Widyarningsih et al., 2023). Research on unemployment generally supports a positive relationship between labour-market exclusion and poverty, although the magnitude of this relationship varies across geographical settings and socioeconomic groups (Adam et al., 2022; Aini & Islamy, 2021). Evidence from East Java further suggests that unemployment, human development, and poverty are interconnected within a regional socioeconomic structure, rather than operating as isolated macroeconomic indicators (Winata & Musthofa, 2024). Minimum-wage research also reveals contrasting findings, with some studies identifying a significant negative association between provincial minimum wages and poverty, while others report a positive relationship, suggesting that wage policy may generate different outcomes depending on employment structures and the characteristics of workers affected (Resmana & Gunawan, 2025; AC & Rahmawati, 2023). These inconsistencies are not necessarily contradictory, but may reflect differences in research locations, observation periods, model specifications, and the extent to which studies account for the interaction between labour-market conditions and public expenditure.

The limitations of the existing literature become more apparent when the three instruments are considered within a single regional and temporal framework. Much of the available research examines social assistance, unemployment, or minimum wages separately, or focuses on individual provinces and districts, making it difficult to determine whether their observed effects remain robust when the other policy instruments are considered simultaneously. Studies in Sumatera Utara, Sinjai, and East Java illustrate the geographical concentration of existing evidence, while research on Indonesia as a whole may obscure differences in the institutional and economic conditions that shape poverty across provinces (Alfath, 2025; Putri et al., 2025; Mauludi et al., 2021). The literature also provides limited

evidence on whether the poverty effects of these instruments changed during the transition from pandemic disruption to economic recovery, a period in which social assistance requirements, labour-market conditions, and wage-setting policies were undergoing substantial adjustment. A further conceptual limitation concerns the treatment of poverty as a direct outcome of individual policy variables, without sufficiently examining whether expenditure realization, unemployment, and minimum wages operate through complementary or competing mechanisms. The absence of an integrated panel analysis specific to Java Island therefore leaves unresolved whether the three instruments have independent effects on poverty, whether their effects differ across provinces, and whether their combined relationship is consistent throughout the 2020–2024 observation period. Addressing these questions is important because policy effectiveness cannot be inferred from isolated associations when the same regional economy is simultaneously exposed to changes in social protection, employment conditions, and wage regulation.

This study positions itself within the regional poverty and labour-economics literature by examining the simultaneous relationship between social assistance expenditure realization, the open unemployment rate, and the Provincial Minimum Wage with the poverty rate across the six provinces of Java Island during 2020–2024. The study extends existing research by moving beyond isolated policy assessments toward an integrated regional analysis that recognizes poverty as an outcome shaped by both public intervention and labour-market conditions. Its empirical focus is particularly relevant because the observation period encompasses the transition from pandemic-related disruption to economic recovery, allowing the analysis to examine whether the relationship between policy instruments and poverty remains consistent across a changing macroeconomic environment. The study also contributes to the regionalization of poverty research by treating Java Island as a set of economically interconnected but institutionally distinct provinces, rather than assuming that national or single-province findings can be generalized without qualification. Methodologically, the use of panel data provides a framework for examining variation across provinces and over time, while controlling for unobserved regional characteristics that may influence poverty outcomes (Baltagi, 2021). The analysis is therefore intended to provide a more systematic assessment of whether the three policy instruments are associated with poverty reduction when examined within a common regional and temporal framework.

RESEARCH METHODS

This study employs a quantitative, empirical, and associative-causal (explanatory) research design to examine the relationship between social assistance expenditure realization, the open unemployment rate, and the Provincial Minimum Wage and the poverty rate in Java Island (Sugiyono, 2019). The population comprises all six provinces of Java Island, namely DKI Jakarta, West Java, Central Java, DI Yogyakarta, East Java, and Banten, with the entire population selected as the sample through a census approach. Secondary data were collected through documentation of official BPS publications for the 2020–2024 period, including poverty rates based on the National Socioeconomic Survey (SUSENAS), open unemployment rates based on the National Labour Force Survey (SAKERNAS), provincial social assistance expenditure realization, and Provincial Minimum Wage data. The balanced panel consists of six cross-sectional units observed over five years, producing 30 province-year observations, while the use of panel data provides a framework for examining variation across provinces and over time (Baltagi, 2021). The dependent variable is the poverty rate (Y), measured as the percentage of the population living below the national poverty line under the Cost of Basic Needs (CBN) approach, while the independent variables are social assistance expenditure realization (X_1), measured as total realized provincial social assistance expenditure from the APBN and APBD in trillion rupiahs, the open unemployment rate (X_2), measured as the percentage of the labour force that is unemployed and actively seeking work, and the Provincial Minimum Wage (X_3), measured as the nominal monthly minimum wage established by the governor. All variables are transformed into natural logarithms ($\ln$) before estimation to reduce scale differences and support the interpretation of coefficients as elasticities, while the panel structure is retained to account for unobserved heterogeneity across provinces (Gujarati & Porter, 2009).

The analysis is conducted using panel data regression with Stata 14.2, and the model is formulated as follows:

$$Kit = \beta_0i + \beta_1BS1it + \beta_2TPT2it + \beta_3UMP3it + uit$$

Where K denotes the poverty rate, BS denotes social assistance expenditure realization, TPT denotes the open unemployment rate, UMP denotes the Provincial Minimum Wage, i denotes the province, t denotes the year, and u denotes the error term. The estimation procedure compares the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), with the Chow Test used to compare CEM and FEM and the Hausman Test used to compare FEM and REM, while the null hypothesis is rejected when the probability value is below 0.05 (Gujarati & Porter, 2009). The selected model is evaluated through multicollinearity, heteroscedasticity, and autocorrelation tests, using a correlation threshold of 0.8, the Breusch–Pagan/Cook–Weisberg test, and the Wooldridge test, respectively, to assess potential violations of the regression assumptions. Hypothesis testing uses the partial t-test to examine the individual effects of each independent variable and the simultaneous F-test to examine their combined effect, with statistical significance assessed at $\alpha = 0.05$ (Ghozali, 2018). Model adequacy is assessed using the coefficient of determination (R^2), which indicates the proportion of variation in the poverty rate explained by the independent variables. The resulting estimates are interpreted in relation to the theoretical mechanisms linking social protection, labour-market conditions, and wage regulation to poverty, while the empirical findings are used to evaluate the proposed hypotheses and assess the extent to which the three policy instruments jointly explain poverty variation across Java Island during the observation period.

RESULTS AND DISCUSSION

Data Description and Descriptive Statistics

The study examines poverty dynamics across six provinces on Java Island, namely DKI Jakarta, West Java, Central Java, DI Yogyakarta, East Java, and Banten, during the 2020–2024 observation period. The descriptive analysis is presented to identify the distribution and variation of poverty, social assistance expenditure realization, the open unemployment rate, and the Provincial Minimum Wage before the panel regression estimation. Differences in these variables provide an initial representation of the socioeconomic conditions characterizing each province during the study period. Such regional variation is relevant because poverty is influenced by differences in economic opportunities, labour-market structures, household income, and access to basic services (Todaro & Smith, 2020). The six provinces also have different economic capacities and population structures, which may contribute to differences in poverty outcomes. Descriptive statistics therefore serve as an initial basis for understanding the empirical characteristics of the dataset before the relationships among variables are examined through panel regression.

The average poverty rate during 2020–2024 was highest in DI Yogyakarta and Central Java, with average levels generally ranging between 11 and 12 percent. East Java followed with an average poverty rate of approximately 10–11 percent, while West Java and Banten recorded lower average rates of around 6–7 percent. DKI Jakarta had the lowest average poverty rate, at approximately 4 percent, indicating a substantial disparity in poverty conditions across the provinces. The differences suggest that poverty reduction outcomes were not uniform across Java Island despite the provinces being located within the same major economic region. Regional disparities in poverty can be associated with differences in employment opportunities, productivity, human capital, and household access to economic resources (World Bank, 2025). The relatively high poverty rates observed in several provinces also indicate that a large regional economy does not necessarily guarantee an equivalent level of household welfare. This variation makes the provincial panel structure important for identifying whether the explanatory variables are systematically associated with poverty after controlling for differences between provinces.

Social assistance expenditure realization also demonstrated substantial variation across the six provinces. West Java recorded the highest average realization, amounting to approximately Rp7.71 trillion, followed by Central Java at Rp6.59 trillion and East Java at Rp6.09 trillion. Meanwhile, DI Yogyakarta and DKI Jakarta recorded comparatively lower average levels of social assistance expenditure realization. The distribution broadly corresponds to differences in the scale of populations experiencing socioeconomic vulnerability and the fiscal interventions implemented by provincial governments. The descriptive distribution of the research variables is presented in Table 1, which

summarizes the number of observations, mean, standard deviation, minimum, and maximum values after logarithmic transformation.

Table 1. Descriptive Statistics of Research Variables (in Ln)

Variable	Obs	Mean	Std. Dev	Min	Max
lnY (Poverty)	30	2.101	0.335	1.459	2.549
lnX1 (Social Assistance)	30	13.783	1.372	11.024	16.211
lnX2 (Open Unemployment Rate)	30	1.936	0.224	1.514	2.394
lnX3 (Provincial Minimum Wage)	30	14.853	0.286	14.345	15.437

Source: Data processed using Stata 14.2, 2026

The descriptive statistics show that lnX1 has the largest standard deviation among the explanatory variables, at 1.372, indicating considerable variation in social assistance expenditure realization between province-year observations. The minimum value of lnX1 is 11.024, whereas its maximum reaches 16.211, demonstrating a relatively wide distribution of realized social assistance expenditure. This variation is important because social assistance represents a fiscal policy instrument intended to protect vulnerable households and maintain their capacity to meet basic needs. Safii and Huda (2025) explain that social assistance can function as an important component of social protection, particularly for households exposed to economic vulnerability. However, the magnitude of expenditure cannot independently demonstrate the effectiveness of social protection because higher expenditure may also be allocated in response to more severe poverty conditions. The positive or negative relationship between social assistance and poverty therefore requires further examination using an estimation model that controls for provincial characteristics and other determinants. The descriptive pattern provides sufficient variation for such an assessment within the 30 province-year observations.

The open unemployment rate also exhibits meaningful differences across provinces. West Java recorded the highest average open unemployment rate at 8.56 percent, followed by Banten at 8.38 percent and DKI Jakarta at 7.87 percent. In contrast, DI Yogyakarta had the lowest average open unemployment rate, at approximately 4.07 percent, indicating substantial differences in labour-market conditions across Java Island. The statistical distribution of lnX2 shows a mean of 1.936 and a standard deviation of 0.224, with minimum and maximum values of 1.514 and 2.394, respectively. Differences in unemployment may reflect variations in industrial composition, labour absorption, urbanization, and the capacity of regional economies to generate employment (Agustin & Sumarsono, 2022). The relationship between unemployment and poverty is not necessarily immediate because households may rely on other earners, informal activities, savings, or social protection when one member becomes unemployed. This characteristic is particularly relevant in interpreting the subsequent regression results because the open unemployment rate measures labour-market status, whereas poverty reflects household welfare relative to the national poverty line.

The Provincial Minimum Wage presents a comparatively narrower statistical distribution than social assistance expenditure, although considerable differences remain between provinces. DKI Jakarta recorded the highest average Provincial Minimum Wage at approximately Rp4.66 million per month, while Banten followed at around Rp2.56 million and the remaining four provinces recorded average values of approximately Rp1.88–1.95 million. The mean value of lnX3 is 14.853, with a standard deviation of 0.286 and minimum and maximum values of 14.345 and 15.437, respectively. The substantial difference between DKI Jakarta and the other provinces reflects variation in regional economic conditions and wage-setting structures. Provincial minimum wages are relevant to poverty analysis because higher wage standards can potentially increase the earnings and purchasing power of workers covered by formal employment arrangements (Septiana & Utomo, 2025). At the same time, the effect of minimum wages on aggregate poverty depends on the extent of formal-sector coverage and the capacity of firms to absorb labour at higher wage levels. Taken together, the descriptive statistics demonstrate considerable cross-provincial and temporal variation in poverty, social assistance expenditure, unemployment, and minimum wages, providing an empirical basis for the subsequent estimation of their relationships within the fixed-effects panel framework.

Estimation Model Selection and Classical Assumption Tests

The selection of the appropriate panel-data estimation model was conducted before interpreting the regression coefficients to ensure that the specification corresponds to the characteristics of the observed provincial data. Three alternative models were considered, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The CEM assumes that differences between provinces do not require distinct individual intercepts, whereas the FEM allows province-specific characteristics to be controlled through individual effects. The REM treats these individual effects as random components that are assumed to be uncorrelated with the explanatory variables (Gujarati & Porter, 2009). Given the socioeconomic heterogeneity among the six provinces, model selection is important because an inappropriate specification may produce inefficient or inconsistent estimates. The selection procedure was therefore based on the Chow Test and Hausman Test before the classical assumption diagnostics were performed.

The Chow Test was used to determine whether the FEM provided a better specification than the CEM. The test produced an F-statistic of 48.08 with degrees of freedom $F(5,21)$ and a probability value of 0.0000. Since the probability value is lower than the 0.05 significance level, the null hypothesis was rejected, indicating that significant individual effects exist across the six provinces. This finding means that the intercepts cannot be assumed to be identical for all provincial units in the sample. Differences in economic structure, demographic characteristics, fiscal capacity, and labour-market conditions may represent province-specific characteristics that influence poverty outcomes. The statistical evidence therefore supports the FEM over the CEM because the model can accommodate unobserved characteristics that differ systematically across provinces (Baltagi, 2021). The result establishes the FEM as the preferred model at the first stage of the panel-data model selection process.

The Hausman Test was subsequently applied to determine whether the FEM or REM should be used as the final estimation specification. The test generated a chi-square statistic of 19.05 with three degrees of freedom and a probability value of 0.0003. The probability value is below 0.05, leading to rejection of the null hypothesis that the individual effects are uncorrelated with the explanatory variables. This result indicates that the random-effects assumption is not supported by the observed data because province-specific effects are statistically associated with at least one of the explanatory variables. Such an association is economically plausible because the institutional, economic, and labour-market characteristics of a province can simultaneously influence poverty, social assistance expenditure, unemployment, and wage levels. Baltagi (2021) notes that the FEM is appropriate when individual effects are correlated with the explanatory variables because it controls for time-invariant characteristics that may otherwise bias the estimated relationships. The Hausman result consequently confirms the FEM as the preferred model over the REM for the present panel dataset.

The selection of FEM is also consistent with the structure of the research population, which comprises the six provinces located on Java Island rather than a randomly selected subset of provinces. The model controls for province-specific characteristics that remain relatively stable during the 2020–2024 observation period, allowing the analysis to focus on changes occurring within each province over time. This feature is particularly relevant because structural differences between DKI Jakarta, West Java, Central Java, DI Yogyakarta, East Java, and Banten are substantial and may influence poverty independently of the observed explanatory variables. Ignoring such differences could cause the estimated coefficients to capture both the effects of the independent variables and persistent provincial characteristics. Panel-data estimation with fixed effects provides a mechanism for controlling these time-invariant individual differences (Baltagi, 2021). The model-selection results therefore indicate that the subsequent analysis should rely on the FEM estimates rather than the pooled or random-effects specifications. The final model is subsequently subjected to diagnostic tests to assess whether the estimated specification exhibits major statistical problems.

The multicollinearity test was conducted using the correlation matrix among the independent variables. The results show that all correlations among $\ln X_1$, $\ln X_2$, and $\ln X_3$ are below the predetermined threshold of 0.80, with the highest correlation occurring between $\ln X_2$ and $\ln X_3$ at 0.3396. This value indicates a relatively weak-to-moderate linear association between the open unemployment rate and the Provincial Minimum Wage. The correlation between the explanatory variables is sufficiently low to distinguish their individual contributions within the regression specification. High multicollinearity can increase the variance of estimated coefficients and make individual hypothesis testing less reliable, whereas the observed correlation structure does not indicate

such a condition (Gujarati & Porter, 2009). The absence of problematic multicollinearity supports the simultaneous inclusion of social assistance expenditure, unemployment, and minimum wages in the FEM estimation. The coefficient estimates can therefore be interpreted without evidence that excessive linear dependence among the independent variables is substantially distorting the model.

The remaining diagnostic tests examined heteroscedasticity and autocorrelation in the panel regression residuals. The Breusch–Pagan/Cook–Weisberg test produced a chi-square statistic of 0.08 with a probability value of 0.7718, which exceeds 0.05 and indicates no statistically significant evidence of heteroscedasticity. The Wooldridge test for serial correlation generated an F-statistic of 2.709 with $F(1,5)$ and a probability value of 0.1607, which is also greater than the 0.05 significance level. These findings indicate that the residuals do not exhibit statistically detectable non-constant variance or first-order autocorrelation within the estimated specification. The absence of these problems strengthens the reliability of the standard errors used for subsequent coefficient and hypothesis testing. Ghozali (2018) emphasizes that regression inference requires diagnostic evaluation to ensure that violations of the underlying statistical assumptions do not undermine the interpretation of estimated parameters. Taken together with the multicollinearity test, the results indicate that the selected FEM does not exhibit the principal diagnostic problems examined in this study. The FEM estimates can therefore proceed to the regression and hypothesis-testing stage as the basis for evaluating the effects of social assistance expenditure realization, the open unemployment rate, and the Provincial Minimum Wage on poverty.

Panel Data Regression and Hypothesis Testing

The Fixed Effect Model (FEM) selected through the Chow and Hausman tests was subsequently used to estimate the relationship between social assistance expenditure realization, the open unemployment rate, the Provincial Minimum Wage, and the poverty rate. The FEM estimation produces a coefficient of determination of 0.8023, indicating that the independent variables collectively explain 80.23 percent of the variation in poverty across the observed province-year units. The remaining 19.77 percent is attributable to other factors outside the model, including regional inflation, human development, economic growth, and governance conditions. The estimated regression equation is expressed as

$$\ln Y_{it} = 13.504 + 0.021 \ln X1_{it} - 0.012 \ln X2_{it} - 0.817 \ln X3_{it} + \varepsilon_{it}$$

Because all variables are specified in natural logarithms, the slope coefficients can be interpreted as elasticities, indicating the percentage change in poverty associated with a one-percent change in each explanatory variable, *ceteris paribus* (Gujarati & Porter, 2009). The estimation results from the three panel-data specifications are presented in Table 2 to show the differences between CEM, FEM, and REM.

Table 2. Panel Data Regression Estimation Results (CEM, FEM, REM)

Variable	CEM	FEM	REM
lnX1 (Social Assistance)	-0.009 (0.012)	0.021*** (0.007)	-0.002 (0.010)
lnX2 (Open Unemployment Rate)	-0.442*** (0.055)	-0.012 (0.083)	-0.244*** (0.061)
lnX3 (Provincial Minimum Wage)	-0.808*** (0.057)	-0.817*** (0.179)	-0.904*** (0.071)
Constant	15.017*** (1.002)	13.504*** (2.787)	15.847*** (1.127)
Observations	30	30	30
R-squared	0.9436	0.8023	0.9134
F-Statistic	145.00	22.46	174.11

*Note: figures in parentheses are standard errors; *** significant at $\alpha = 1\%$.*

Source: Stata 14.2 output, processed in 2026.

The FEM coefficient for social assistance expenditure realization (lnX1) is 0.021 with a standard error of 0.007 and is statistically significant at the 1 percent level. The positive coefficient indicates that a 1 percent increase in social assistance expenditure realization is associated with a 0.021 percent increase in the poverty rate, holding the other variables constant. The corresponding t-statistic is 3.07, which exceeds the critical value of 2.779 at the 1 percent significance level. The null hypothesis concerning the absence of an effect of social assistance expenditure is therefore rejected, supporting the

first research hypothesis. The estimated coefficient should not be interpreted mechanically as evidence that higher social assistance expenditure directly produces higher poverty because expenditure allocation may increase in provinces or years experiencing greater poverty. This possibility is consistent with the policy-response mechanism in which governments expand social protection expenditure when socioeconomic vulnerability becomes more severe (Safii & Huda, 2025). The positive association may therefore reflect the targeting of fiscal intervention toward areas with greater poverty rather than a failure of social assistance as a poverty-reduction instrument.

The FEM coefficient for the open unemployment rate ($\ln X_2$) is -0.012 with a standard error of 0.083 , indicating a negative but statistically insignificant relationship with poverty. The absolute t -statistic is only 0.15 , substantially below the critical value of 2.056 at the 5 percent significance level. The null hypothesis is therefore not rejected, meaning that the open unemployment rate does not have a statistically significant partial effect on poverty within the estimated model. The negative coefficient suggests that, after controlling for province-specific effects and the other explanatory variables, a 1 percent increase in the open unemployment rate is associated with an estimated 0.012 percent decline in poverty, although this relationship lacks sufficient statistical evidence. This finding indicates that unemployment measured at the aggregate provincial level may not immediately translate into a corresponding increase in the proportion of the population living below the poverty line. Aini and Islamy (2021) similarly reported that unemployment does not necessarily exert a significant effect on poverty, suggesting that the relationship can be influenced by household income sources and labour-market characteristics. The result also highlights the distinction between unemployment as a labour-market indicator and poverty as a household welfare indicator, since unemployed individuals may remain supported by other household members or alternative income-generating activities.

The Provincial Minimum Wage ($\ln X_3$) exhibits the strongest statistically significant relationship with poverty among the three explanatory variables in the FEM specification. Its coefficient is -0.817 with a standard error of 0.179 and is statistically significant at the 1 percent level. The t -statistic of 4.56 exceeds the critical value of 2.779 , leading to rejection of the null hypothesis and acceptance of the third research hypothesis. The coefficient indicates that a 1 percent increase in the Provincial Minimum Wage is associated with a 0.817 percent decrease in the poverty rate, *ceteris paribus*. The magnitude of this elasticity suggests that wage conditions have a relatively substantial association with poverty compared with the estimated coefficient of social assistance expenditure. Resmana and Gunawan (2025) likewise found evidence of a negative relationship between minimum wages and poverty, supporting the proposition that improvements in workers' earnings can contribute to better household welfare. The negative coefficient can also operate through increased purchasing power and household consumption, although its poverty-reducing implications depend on workers' access to formal employment covered by minimum-wage regulation.

The simultaneous significance test further evaluates whether social assistance expenditure realization, the open unemployment rate, and the Provincial Minimum Wage jointly explain variations in poverty. The FEM produces an F -statistic of 22.46 , which exceeds the critical value of 2.98 at the 5 percent significance level with degrees of freedom of 3 and 26. The probability associated with the model is therefore sufficient to reject the joint null hypothesis that the explanatory variables have no combined effect on poverty. The fourth research hypothesis is consequently supported, indicating that the three variables collectively constitute statistically relevant determinants of poverty within the observed provincial panel. The joint significance is consistent with the multidimensional nature of poverty, which can be influenced simultaneously by social protection policies, labour-market conditions, and household earning capacity (Todaro & Smith, 2020). The R -squared value of 0.8023 further indicates that 80.23 percent of poverty variation is explained by the three variables included in the FEM, while 19.77 percent remains associated with other determinants. These remaining factors may include regional inflation, human development, economic growth, demographic characteristics, and institutional or governance conditions that are not explicitly incorporated into the present specification.

The hypothesis-testing results demonstrate that the three explanatory variables do not contribute to poverty in an identical manner. Social assistance expenditure realization has a positive and statistically significant coefficient, the open unemployment rate has a negative but statistically insignificant coefficient, and the Provincial Minimum Wage has a negative and statistically significant coefficient. The contrasting signs and levels of significance indicate that poverty dynamics cannot be understood solely from the perspective of one policy instrument or one labour-market indicator. Social

assistance expenditure may increase as a policy response to existing poverty pressures, while unemployment may be moderated by informal employment and household income-sharing mechanisms. Minimum-wage increases, in contrast, show a stronger statistical association with lower poverty within the observed provinces and period. Similar variation across empirical studies suggests that the relationship between poverty and its determinants is sensitive to regional characteristics, observation periods, and institutional conditions (Rizki et al., 2023). The FEM results therefore provide the statistical basis for a more substantive discussion of the mechanisms underlying each relationship and their implications for poverty-reduction policy in Java Island.

Discussion of the Determinants of Poverty in Java Island

The empirical findings indicate that poverty in Java Island is shaped by a combination of fiscal intervention, labour-market conditions, and wage policy rather than by a single socioeconomic factor. The FEM estimation shows that social assistance expenditure realization has a positive and significant relationship with poverty, while the open unemployment rate has a negative but insignificant relationship and the Provincial Minimum Wage has a negative and significant relationship. These differences indicate that each policy and labour-market instrument operates through distinct socioeconomic mechanisms and should be interpreted within the institutional context of each province. Poverty is a multidimensional condition involving income, employment opportunities, access to basic services, and household capacity to maintain consumption (Todaro & Smith, 2020). The positive coefficient of social assistance should not be interpreted mechanically as evidence that assistance causes poverty, particularly because government expenditure may increase in response to higher poverty or socioeconomic vulnerability. The contrasting coefficient directions therefore provide an important basis for examining the mechanisms underlying poverty dynamics across Java Island.

The positive and significant coefficient of social assistance expenditure realization indicates that a 1 percent increase in expenditure is associated with a 0.021 percent increase in the poverty rate, *ceteris paribus*. This relationship may reflect a policy-response mechanism in which governments increase social assistance when poverty pressures become more severe, producing a positive statistical association between expenditure and poverty. From the perspective of the vicious circle of poverty, social assistance represents an external intervention intended to interrupt persistent deprivation caused by limited income and consumption capacity (Nurkse, 1958). Its effectiveness, however, depends on targeting accuracy, beneficiary identification, transfer adequacy, and implementation quality rather than merely on the nominal amount of expenditure. The finding is consistent with Rizki et al. (2023), who reported a positive and significant relationship, but differs from Alfath et al. (2025), who found a negative and significant effect of social assistance on poverty. These contrasting findings suggest that regional characteristics, implementation quality, targeting mechanisms, and differences in observation periods may influence whether social assistance expenditure translates into measurable poverty reduction. The policy implication is that evaluation should emphasize the quality and precision of social assistance allocation rather than interpreting larger expenditure as automatically reflecting greater effectiveness.

The open unemployment rate has a negative coefficient of -0.012 but is statistically insignificant, indicating that a 1 percent increase in unemployment is associated with an estimated 0.012 percent decrease in poverty, although the relationship lacks sufficient statistical evidence. One explanation is that households may not depend exclusively on the income of an individual classified as unemployed because other household members can provide income or financial support. Informal employment and temporary income-generating activities may also function as adjustment mechanisms when formal employment opportunities decline. This condition helps explain why aggregate unemployment does not necessarily translate proportionally into an increase in the provincial poverty rate. Aini and Islamy (2021) similarly found no significant effect of unemployment on poverty, whereas Adam et al. (2022) identified a positive and significant relationship in another regional context. The contrasting evidence indicates that the relationship between unemployment and poverty can vary according to regional economic structure, informal-sector absorption, household coping strategies, and labour-market characteristics. The finding also highlights the distinction between unemployment and employment quality because employed individuals may remain poor when their income is insufficient to meet basic needs, while unemployed individuals may remain above the poverty line through household support or alternative income sources.

The Provincial Minimum Wage demonstrates the strongest statistically significant poverty-reducing relationship among the explanatory variables, with a coefficient of -0.817 . The coefficient indicates that a 1 percent increase in the Provincial Minimum Wage is associated with a 0.817 percent decrease in the poverty rate, holding the other variables constant. Higher wages can increase disposable income and purchasing power among workers covered by formal wage regulation, potentially improving household capacity to meet basic needs and stimulating consumption within the regional economy. Resmana and Gunawan (2025) similarly identified a negative relationship between minimum wages and poverty, supporting the argument that improvements in labour income can contribute to household welfare. However, the effect of minimum wages depends on the extent of formal-sector coverage and firms' capacity to maintain employment at higher wage levels. The present finding contrasts with Mauludi et al. (2021) and Kasih and Yefriza (2025), demonstrating that the effect of wage regulation may differ according to productivity, labour absorption, economic structure, and the composition of formal and informal employment. Within the six provinces and the 2020–2024 period, the estimated result suggests that the income and purchasing-power mechanism is more strongly reflected in the data than potential adverse employment adjustments.

The simultaneous significance of the three independent variables demonstrates that poverty reduction in Java Island involves interconnected fiscal and labour-market dimensions. The FEM F-statistic of 22.46 confirms that social assistance expenditure realization, the open unemployment rate, and the Provincial Minimum Wage jointly contribute significantly to explaining poverty variation. The R-squared value of 0.8023 indicates that 80.23 percent of the variation in poverty is explained by the three variables, while the remaining 19.77 percent is associated with factors outside the model. These factors may include inflation, human development, economic growth, demographic conditions, and institutional or governance characteristics, which have also been recognized as relevant dimensions of regional welfare and development (Putri et al., 2025; Widyaningsih et al., 2023). The joint significance indicates that poverty cannot be addressed effectively through a single policy instrument because social protection, employment conditions, and wage regulation interact within the regional socioeconomic system. The findings support an integrated policy perspective in which fiscal protection and labour-market interventions are designed as complementary instruments rather than isolated programs. Such integration is particularly important because improvements in household welfare require both protection against economic vulnerability and access to sustainable income-generating opportunities.

At the policy level, the findings emphasize the importance of improving the quality of social protection while strengthening productive employment and wage policies. Social assistance should be directed toward households experiencing the greatest vulnerability through accurate beneficiary identification, appropriate transfer values, and continuous evaluation of program outcomes. Labour-market policy should extend beyond reducing open unemployment by promoting stable, productive, and adequately remunerated employment, particularly because employment status alone does not fully represent household economic welfare. The significant negative relationship between the Provincial Minimum Wage and poverty indicates that wage improvements can support poverty reduction when accompanied by sufficient labour demand and regional productive capacity. Minimum-wage adjustments should therefore consider differences in provincial economic capacity and productivity to balance worker welfare with firms' ability to sustain employment. The broader policy orientation is consistent with the view that sustainable poverty reduction requires both social protection and productive economic participation rather than dependence on short-term transfers alone (World Bank, 2025). A coordinated framework linking targeted social assistance, quality employment creation, and balanced wage-setting can provide a stronger basis for reducing persistent poverty across Java Island.

CONCLUSION

Based on the panel-data regression analysis using the Fixed Effect Model (FEM) for six provinces on Java Island during the 2020–2024 period, the study demonstrates that the determinants of poverty exhibit different patterns of influence across the explanatory variables. Social assistance expenditure realization has a positive and significant effect on the poverty rate, with a coefficient of 0.021. This positive relationship is more appropriately interpreted as an indication that higher social assistance expenditure tends to occur in regions or periods experiencing greater poverty pressures, rather than as evidence that social assistance directly increases poverty. The open unemployment rate has no significant effect on the poverty rate, indicating that changes in aggregate unemployment were

insufficient to explain variations in poverty during the observation period. In contrast, the Provincial Minimum Wage has a negative and significant effect on the poverty rate, with a coefficient of -0.817 , indicating that increases in the minimum wage are associated with reductions in poverty. Simultaneously, social assistance expenditure realization, the open unemployment rate, and the Provincial Minimum Wage significantly affect the poverty rate. The three variables explain 80.23% of the variation in poverty, while the remaining 19.77% is attributable to factors outside the research model.

Based on these findings, poverty-reduction policies in Java Island should focus on strengthening the quality of fiscal interventions and labour-market policies through an integrated approach. The central and provincial governments should improve the targeting accuracy of social assistance through regular updates of beneficiary data so that budget allocation responds more effectively to households facing socioeconomic vulnerability. Provincial minimum-wage policies should consider the economic characteristics, productivity, and labour-absorption capacity of each region so that improvements in worker welfare remain compatible with sustainable employment opportunities. Although the open unemployment rate does not have a significant effect on poverty, improving human-resource quality and aligning workforce competencies with labour-market demands remain important for strengthening income and employment quality. Future research could expand the explanatory variables by incorporating economic growth, inflation, the Human Development Index, and demographic characteristics to obtain a more comprehensive understanding of poverty determinants. The geographical scope could also be extended to the regency/city level or to all provinces in Indonesia to capture greater spatial variation and regional characteristics. Such an approach could provide broader empirical evidence for formulating more targeted and sustainable poverty-reduction policies.

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