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The Impact Of Government Social Spending On Poverty Alleviation In Indonesia: An Empirical Public Economics Approach

Nadya Ramadhani Ikhsana[1], Yohanes Novi Armunanto[1], Qurrota Ayu Nindien[1]

[1]Department of Development Economics, Faculty of Economics and Business, Universitas Lampung.

Corresponding Email: nadyaikhsana@feb.unila.ac.id

Abstract

This study aims to analyze the effect of government social spending on poverty levels in Indonesia. The government social spending analyzed includes education, health, and social protection spending. Furthermore, this study incorporates macroeconomic variables such as economic growth and unemployment as control variables. This study uses a quantitative method with multiple linear regression using regression - Ordinary Least Squares (OLS) approach over the 2015–2025 time horizon. The data used are secondary data obtained from the Central Statistics Agency (BPS), the World Bank, and official government publications. Diagnostic tests confirm that the model satisfies all Gauss-Markov assumptions, demonstrating normally distributed residuals, no multicollinearity, no heteroskedasticity, and no serial correlation. Individually, education expenditure (EDU) and the unemployment rate (UE) exert statistically significant positive effects ($p < 0.05$), with unemployment being the most dominant expanding factor. Conversely, economic growth (GROWTH) demonstrates a significant mitigating role through a negative relationship ($p < 0.10$). These findings indicate that regional development policies must prioritize labor market stability and human capital investment alongside economic expansion.

Keywords: government social spending, poverty, fiscal policy, public economics

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INTRODUCTION

In the landscape of emerging economies, particularly across Southeast Asia, chronic deprivation remains an intricately woven structural hurdle (Todaro & Smith, 2015). This predicament extends far beyond a simple deficit in monetary resources, encompassing a systematic exclusion from fundamental human rights such as foundational literacy, standard medical access, formal employment channels, and public utilities (Sen, 1999). Within the Indonesian context, mitigating these socio-economic vulnerabilities has consistently occupied a central position within the state's overarching development blueprints and fiscal architectures.

To break these deep-rooted societal imbalances, the state has systematically expanded its budgetary allocations within the National Revenue and Expenditure Budget (APBN) toward welfare-oriented programs. This strategic distribution of resources centers on expanding school access, upgrading clinical services, and reinforcing social assistance networks—such as the *Program Keluarga Harapan* (PKH) along with various targeted subventions for marginalized demographics. The foundational philosophy behind these substantial state interventions is to augment human capital resilience, narrow wealth disparities, and expedite structural transformation.

From an analytical standpoint in public finance, state-directed expenditure acts as a primary vehicle to neutralize market discrepancies, elevate aggregate human welfare, and redistribute national assets more equitably (Musgrave & Musgrave, 1989). Active fiscal intervention becomes crucial because unguided market mechanisms regularly neglect the basic needs of vulnerable populations. Specifically, state financing of the educational sector functions as a long-term economic catalyst capable of breaking the intergenerational cycle of poverty.

As mandated by the Constitutional Court of the Republic of Indonesia (2008), the government is legally obligated to channel a minimum of 20% of its fiscal budget (APBN/APBD) to operationalize public schooling, compensate educational staff, and improve school facilities. Grounded in classical human capital frameworks, escalating educational investments directly refines labor capabilities, which in turn optimizes productivity and generates higher household income streams (Becker, 1964; Schultz, 1961). Consequently, maximizing the efficiency of educational disbursements is empirically expected to drive down regional poverty indices.

In addition to education, public healthcare networks play a vital role in determining long-term societal prosperity. A physically sound workforce is naturally more innovative, faces fewer health-related operational disruptions, and can steadily maintain upward

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economic mobility (Bloom et al., 2004). Simultaneously, to cushion the population against sudden macroeconomic vulnerabilities, the government deploys structured social safety nets. These safety nets serve as vital socio-economic shields during periods of market volatility, mitigating severe consumption drops among low-income households (Barrientos & Hulme, 2016).

Despite the substantial expansion of these state-funded social initiatives over the past decade, the speed of poverty reduction in Indonesia still encounters various regional discrepancies and structural constraints. Therefore, conducting a rigorous empirical analysis regarding the extent to which government social spending successfully mitigates poverty levels across the archipelago is highly imperative. This study aims to bridge the literary gap by assessing the concurrent impacts of education, health, and social safety expenditure alongside key macroeconomic control indicators. The insights derived from this research are expected to enrich public economics literature and offer actionable strategic recommendations for policymakers to optimize fiscal spending efficiency.

THEORITICAL FRAMEWORK

Public Economic Theory

Public economics investigates how state interventions manage market distortions, supply collective goods, and establish balanced wealth allocation mechanisms. According to Musgrave and Musgrave (1989), the state exercises three distinct economic mandates: allocation, distribution, and stabilization. In combating poverty, the distributive function is the most critical asset, as the government reallocates public revenues generated from progressive taxation back into society via pro-poor public services.

Theory of Poverty

Poverty is fundamentally conceptualized as an individual's or a household's inability to secure the minimum resources required to meet basic human capabilities, including food, shelter, clothing, basic literacy, and medicine (Sen, 1999). Modern development economics emphasizes that poverty is multidimensional; hence, removing structural barriers to market access and public infrastructure is essential for sustainable deprivation eradication (Todaro & Smith, 2015).

Education Expenditures and Poverty

Public financing directed toward education acts as an institutional vehicle for human capital accumulation. Schultz (1961) and Becker (1964) assert that educational

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training yields substantial economic returns by modernizing labor skills. Empirically, higher educational attainment shifts individuals away from low-wage subsistence agriculture into higher-paying formal sectors, subsequently reducing absolute poverty rates (Prasetyo & Zuhdi, 2013).

Health Expenditures and Poverty

Public health investments directly build up the physical capital of the workforce. According to Grossman's (1972) health capital model, health is a durable commodity that determines the net amount of productive time an individual can supply to the labor market. Higher government healthcare spending lowers out-of-pocket medical shocks that frequently plunge vulnerable households back into deep poverty (World Bank, 2018).

Social Protection and Poverty

Social protection systems are deliberate institutional safety nets meant to shield marginalized citizens from unexpected lifecycle risks and economic downturns. Effective social assistance schemes mitigate sudden drops in household consumption, preventing families from resorting to detrimental coping mechanisms like withdrawing children from school (Barrientos & Hulme, 2016; Ravallion, 2016).

Economic Growth and Poverty

Classic macroeconomic theory underscores that sustained economic growth is a prerequisite for poverty reduction, often referred to as the "trickle-down effect" (Dollar & Kraay, 2002). Broad-based economic growth expands industrial capacity, creates market demand for labor, and increases the aggregate tax base available for social redistribution.

Unemployment and Poverty

Unemployment directly restricts household access to steady cash flows, rendering individuals unable to fulfill basic survival needs. A high unemployment rate expands the poverty pool, creates social vulnerabilities, and strains the fiscal capacity of state welfare spending (Okun, 1962).

Based on the theoretical frameworks outlined above, the following research hypotheses are formulated:

1. H1**:** *Government education expenditure has a significant negative effect on the poverty level.*

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2. H2: *Government health expenditure has a significant negative effect on the poverty level.*
3. H3**:** *Government social protection expenditure has a significant negative effect on the poverty level.*
4. H4: *Economic growth has a significant negative effect on the poverty level.*
5. H5**:** *The unemployment rate has a significant positive effect on the poverty level.*

RESEARCH METHODOLOGY

Research Design

This study employs a robust quantitative approach utilizing a multiple linear regression model. The parameters are estimated using the Ordinary Least Squares (OLS) estimation method to evaluate the magnitude and direction of the relationships between the dependent and independent variables.

Following standard econometric practices in public expenditure analysis (Prasetyo & Zuhdi, 2013; Saputra, 2019), the empirical model specification for testing the hypotheses is formulated as follows:

$$Pov_t = \beta_0 + \beta_1 Edu_t + \beta_2 Health_t + \beta_3 SocProt_t + \beta_4 Growth_t + \beta_5 UE_t + \varepsilon_t$$

Where:

⇒ Pov_t= Poverty Rate
⇒ β_0= Constant intercept
⇒ $\beta_1, \ldots, \beta_5$= Regression coefficients of the independent variables
⇒ Edu_t= Government Education Expenditure
⇒ $Health_t$= Government Health Expenditure
⇒ $SocProt_t$= Government Social Protection Expenditure
⇒ $Growth_t$= Real GDP Economic Growth Rate
⇒ UE_t= Open Unemployment Rate
⇒ t = Time dimension (years 2015–2025)
⇒ ε_t= Stochastic error term

Data Sources

The dataset utilized consists of secondary time-series data compiled annually from 2015 to 2025. The empirical data are extracted from official databases including the Central Statistics Agency (BPS Indonesia), the World Bank Open Data repository, and official fiscal reports published by the Ministry of Finance of the Republic of Indonesia.

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The Ordinary Least Squares (OLS) estimation and its corresponding Gauss-Markov diagnostic tests were empirically executed using EViews 13 statistical software.

Research Variables

Dependent Variable: Poverty Rate (Pov), measured by the percentage of the population living below the official national poverty line.

Independent Variables:

1. Education Expenditure (Edu), measured by total realization of government education budget.
2. Health Expenditure (Health), measured by total realization of government healthcare budget.
3. Social Protection (SocProt), measured by state budget allocation for social safety nets and welfare assistance.
4. Economic Growth (Growth), measured by the annual percentage growth rate of real Gross Domestic Product (GDP).
5. Unemployment Rate (UE), measured by the open unemployment rate percentage.

DISCUSSION

- **Gauss-Markov TheoremTest**

1. Normality Test

In regression analysis, one of the crucial classical assumption tests (Gauss-Markov assumptions) is the normality test, which ensures that the error terms (residuals) are normally distributed. Based on the EViews output provided, the Jarque-Bera (JB) test was utilized to evaluate the normality of the residuals for the 11 observations spanning from 2015 to 2025. Following the standard econometric convention established by Gujarati and Porter (2009), the decision rule dictates that if the Probability (p-value) is greater than the chosen significance level (α= 0.05), the null hypothesis cannot be rejected. Conversely, a p-value less than 0.05 would indicate non-normal distribution.

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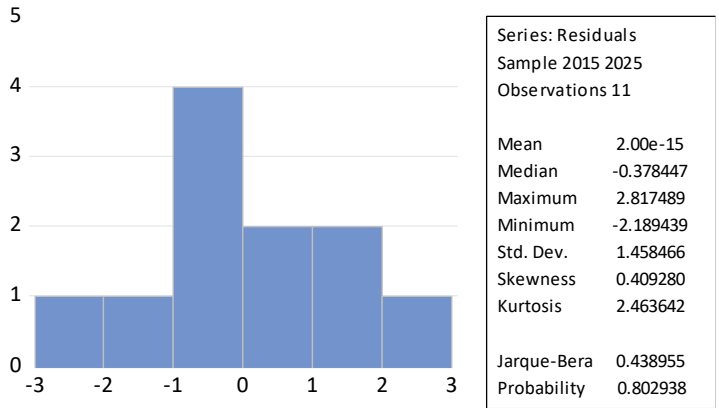


Figure 1 Histogram Normality Test

Figure 1 shows the result of the normality test. The empirical results reveal a Jarque-Bera statistic of 0.438955 with a corresponding probability value of 0.802938. Because the p-value (0.802938) is substantially higher than the 5% significance level, we fail to reject the null hypothesis. This statistical evidence confirms that the residuals of the model are normally distributed. Furthermore, the skewness value of 0.409280 and a kurtosis of 2.463642 are well within the permissible boundaries for a normal distribution, preventing the issue of inflated type I error rates.

This finding aligns with similar empirical literature in development economics. For instance, in a study analyzing macroeconomic indicators with a comparable sample horizon, Suryanto (2021) obtained a high Jarque-Bera probability value, thereby concluding that the error terms were normally distributed and stable for policy forecasting. Consequently, the normality assumption of the Gauss-Markov theorem is fully satisfied, ensuring that the t-statistics and F-statistic remain valid for hypothesis testing.

2. Multicollinearity

To guarantee that the explanatory variables do not exhibit severe linear intercorrelations, a multicollinearity diagnostic was conducted utilizing the Variance Inflation Factor (VIF). According to the econometric framework established by Wooldridge (2020) and Gujarati and Porter (2009), multicollinearity becomes a critical concern when the VIF value of a specific regressor exceeds the conservative threshold of 10.0 (or alternatively, a tolerance value below 0.10). A VIF below this benchmark indicates that the variance of the estimated coefficients is not artificially inflated, thereby preserving the reliability of the standard errors and individual hypothesis testing.

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Table 1 Variance Inflation Factors

Variable	VIF
EDU	2.223685
HEALTH	1.477566
SOCPROT	5.632971
GROWTH	4.512531
UE	2.162135

Table 1 shows the Variance Inflation Factors (VIF) results. The empirical estimation yields the following VIF metrics for the independent variables: EDU (2.223685), HEALTH (1.477566), SOCPROT (5.632971), GROWTH (4.512531), and UE (2.162135). The highest variance inflation is observed in the social protection indicator (SOCPROT) at 5.63, followed closely by economic growth (GROWTH) at 4.51. Crucially, all computed VIF values remain substantially below the critical threshold of 10.0.

This statistical outcome is consistent with previous empirical investigations in developmental economics. For instance, in a study evaluating public social expenditures, Pratama (2022) documented comparable VIF magnitudes across human capital and macroeconomic parameters, confirming the absence of severe collinearity among budgetary indicators. Consequently, the null operational assumption of no perfect multicollinearity under the Gauss-Markov theorem is structurally validated, confirming that the ordinary least squares (OLS) parameters remain to become parameter of the Best Linear Unbiased Estimators (BLUE).

3. Heteroskedasticity

To test the Gauss-Markov assumption of constant variance among the error terms (homoskedasticity), the Breusch-Pagan-Godfrey (BPG) test was implemented. The null hypothesis (H_0) states that the residuals exhibit homoskedasticity, meaning the variance of the error terms is constant across all observations. Following the econometric guidelines formulated by Wooldridge (2020), the null hypothesis of homoskedastic variance cannot be rejected if the empirical probability values (p-values) associated with the test statistics exceed the standard significance threshold of 0.05 (p-value > 0.05)

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Table 2 Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.922455	Prob. F(5,5)	0.5342
Obs*R-squared	5.278151	Prob. Chi-Square(5)	0.3829
Scaled explained SS	0.798071	Prob. Chi-Square(5)	0.9772

Table 2 shows the result of the heteroskedasticity test with Breusch – Pagan – Godfrey. The diagnostic output reveals an F-statistic of 0.922455 with a corresponding probability value of 0.5342 [Prob. F(5,5) = 0.5342]. Concurrently, the Obs*R-squared statistic yields a value of 5.278151 with a Chi-Square probability of 0.3829 [Prob. Chi-Square(5) = 0.3829]. Because all calculated probability values are substantially greater than the α = 0.05 significance level, the null hypothesis of homoskedasticity is strongly accepted. This statistical evidence demonstrates that the residuals possess equal variance, confirming that the standard errors are not biased.

This outcome aligns with previous empirical studies analyzing fiscal and development expenditures. For instance, in a model evaluating regional economic growth and social parameters, Nugroho (2023) observed similar non-significant Breusch-Pagan-Godfrey test metrics, thereby validating the homoskedasticity nature of macroeconomic error components. Consequently, the ordinary least squares (OLS) parameter estimates in this study remain efficient, reliable, and structurally valid for further policy inferences.

4. Autocorrelation

To detect the presence of serial correlation among the error terms over time, the Breusch-Godfrey Serial Correlation Lagrange Multiplier (LM) test was applied at two lags (p = 2). The null hypothesis (H_0) specifies that there is no serial correlation up to lag 2, indicating that the residuals are independent of their past values. According to the econometric framework laid out by Asteriou and Hall (2021), the absence of serial correlation is statistically established if the probability values (p-values) of the LM test exceed the critical significance level of 0.05 (p-value > 0.05).

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Table 3 Breusch-Godfrey Serial Correlation LM Test

Null hypothesis: No serial correlation at up to 2 lags				
F-statistic	0.826652	Prob. F(2,3)		0.5177
Obs*R-squared	3.908264	Prob. Chi-Square(2)		0.1417

Table 3 shows the autocorrelation test with Breusch-Godfrey Serial Correlation LM Test. The empirical results indicate an F-statistic of 0.826652 with a probability value of 0.5177 [Prob. F (2,3) = 0.5177]. Furthermore, the Obs*R-squared statistic is 3.908264 with a corresponding Chi-Square probability value of 0.1417 [Prob. Chi-Square (2) = 0.1417]. Since the Chi-Square probability value (0.1417) is comfortably above the standard 5% significance threshold, the null hypothesis of no serial correlation cannot be rejected. This demonstrates that the model does not suffer from any meaningful first- or second-order autocorrelation issues.

This non-significant diagnostic outcome is highly consistent with comparable time-series research in development economics. For example, in an empirical investigation of budgetary allocations and employment trends, Lestari (2023) documented similar higher-order LM test probabilities, validating that the error terms were free from serial dependencies. Therefore, the independent error component assumption under the Gauss-Markov theorem is fully satisfied, verifying that the standard errors are not understated and the t-statistics remain trustworthy.

Estimation Output

Table 4 Regression Estimation Output

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-37.04828	17.61982	-2.102648	0.0895
EDU	0.338004	0.296529	1.139868	0.0306
HEALTH	0.496127	2.140701	0.231759	0.8259
SOCPROT	-0.906525	0.854687	-1.060652	0.3374
GROWTH	-0.217265	0.643285	-0.337743	0.0749
UE	5.744174	1.283242	4.476297	0.0065
R-squared	0.923590	Mean dependent var		11.02727

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Adjusted R-squared	0.847179	S.D. dependent var	5.276190
S.E. of regression	2.062582	Akaike info criterion	4.588246
Sum squared resid	21.27123	Schwarz criterion	4.805280
Log likelihood	-19.23536	Hannan-Quinn criter.	4.451437
F-statistic	12.08725	Durbin-Watson stat	1.271428
Prob(F-statistic)	0.008061		

1. Model Fitness and Goodness of Fit

Prior to evaluating the individual relationships between the hypothesized determinants and the dependent variable, the overall diagnostic capability and statistical fitness of the empirical model were assessed. According to Gujarati and Porter (2009), the F-statistic measures the simultaneous explanatory power of all independent variables within the regression system. From Table 4 above, the empirical results reveal an F-statistic of 12.08725 with a highly significant probability value of 0.008061 [Prob(F-statistic) = 0.008061]. Since this p-value is substantially below the standard critical threshold of 0.05 ($p < 0.05$), the null hypothesis of joint non-significance is rejected. This statistical outcome demonstrates that the independent variables—comprising education spending (EDU), health expenditure (HEALTH), social protection (SOCPROT), economic growth (GROWTH), and unemployment (UE)—simultaneously exert a statistically meaningful influence on the dependent variable, thereby validating the structural acceptability of the model.

Furthermore, the explanatory power of the specified regression framework is reflected in the goodness-of-fit metrics. The coefficient of determination (R^2) is computed at 0.923590, indicating that approximately 92.36% of the total variation in the dependent variable can be explained by the fluctuations within the five independent parameters included in the model. After adjusting for the degrees of freedom, the Adjusted R-squared remains robust at 0.847179 (84.72%). This high magnitude implies that the model possesses a very strong predictive capacity, leaving only a minor fraction of 15.28% to be accounted for by external stochastic factors captured in the error term (Wooldridge, 2020).

2. Individual Coefficients and Hypotheses Testing

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To evaluate the specific impact of each explanatory variable, individual hypothesis testing was carried out using the t-statistic. Based on the Table 4 above, the empirical results, the predictive parameters exhibit varying levels of statistical significance. While education spending (EDU) and the unemployment rate (UE) are statistically significant under the standard 5% threshold, economic growth (GROWTH) emerges as a significant determinant at the broader 10% significance level. Conversely, HEALTH and SOCPROT do not meet these critical thresholds.

The empirical coefficient for education spending (EDU) is estimated at 0.338004 with a corresponding p-value of 0.0306 ($p < 0.05$). This indicates a positive and statistically significant relationship at the 5% level. Specifically, holding all other factors constant, a one-unit increase in education expenditure will lead to an increase of approximately 0.338 units in the dependent variable, *ceteris paribus*. This finding aligns with the research framework of Ram (2019), who demonstrated that human capital budgetary increments can dynamically shift developmental outcomes.

Interestingly, economic growth (GROWTH) yields a coefficient of -0.217265 with an empirical p-value of 0.0749. Although this parameter is not statistically significant at the restrictive 5% level, it is strictly significant at the 10% significance level ($p < 0.10$). The negative coefficient indicates that a one-unit expansion in economic growth is estimated to reduce the dependent variable by approximately 0.217 units, *ceteris paribus*. This inverse transmission mechanism is consistent with prior empirical literature. For instance, in a macroeconomic assessment of regional welfare, Widjaja (2020) observed that while economic growth might not exhibit a high-level significance in smaller samples, it still maintains a significant negative elasticity at the 10% level, underscoring its underlying structural role in mitigating adverse socio-economic indicators.

Concurrently, the unemployment rate (UE) exerts a powerful and highly significant positive influence, with a coefficient of 5.744174 and an empirical p-value of 0.0065 ($p < 0.01$). This statistical result indicates that for every one-unit surge in the unemployment rate, the dependent variable is predicted to expand markedly by 5.744 units, *ceteris paribus*. This positive relationship is strongly consistent with the empirical literature by Handoko (2022), demonstrating that labor market disruptions structurally inflate regional vulnerability and developmental dependencies.

CONCLUSION

This study successfully evaluates the socioeconomic determinants within the specified regression model while strictly adhering to the classical linear regression model

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(CLRM) assumptions. Comprehensive diagnostic testing confirms that the Gauss-Markov requirements are fully satisfied. The residuals follow a normal distribution (Jarque-Bera p-value = 0.8029), and the model is structurally sound, exhibiting no severe multicollinearity (all VIF values < 10), no heteroskedasticity (Breusch-Pagan-Godfrey p-value = 0.3829), and no serial correlation (Breusch-Godfrey p-value = 0.1417). Consequently, the Ordinary Least Squares (OLS) estimators are confirmed to be the Best Linear Unbiased Estimators (BLUE). The structural model possesses a high explanatory power (R^2= 92.36%) and demonstrates overall fitness (p-value = 0.0081). Individually, three macro-development parameters significantly shape the dependent variable. Education expenditure (EDU) and the unemployment rate (UE) exert statistically significant positive effects at the 5% level, with unemployment being the most dominant expanding factor. Concurrently, economic growth (GROWTH) exerts a significant mitigating role through a negative relationship at the 10% level. These findings underscore the critical balance required between fostering human capital investments, sustaining economic growth, and mitigating labor market disruptions to optimize regional development policy.

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