

THE IMPACT OF ECONOMIC GROWTH, EDUCATION AND OPEN UNEMPLOYMENT ON POVERTY IN INDONESIA

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ARTICLE INFORMATION

ABSTRACT

Keywords:

Economic Growth,
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This study aims to determine the effect of economic growth, education, and open unemployment on poverty in Indonesia from 1990 to 2024. The data used in this study is secondary data in the form of annual time series from 1990 to 2024 obtained from the Indonesian Central Statistics Agency. The analysis method used is Autoregressive Distributed Lag (ARDL) regression analysis with a quantitative approach using the Eviews 12 program. The results show that the economic growth variable in the short and long term has a negative and significant effect on poverty in Indonesia. The education variable (RLS) in the short term does not have a significant effect on poverty in Indonesia, but in the long term, economic growth has a negative and significant effect on poverty. The open unemployment variable in the short term has a negative and significant effect on poverty, but in the long term, open unemployment has a positive and significant effect on poverty in Indonesia.

1. INTRODUCTION

The government continues to intensify various development programs in both urban and rural areas as a strategic effort to improve people's welfare and reduce poverty rates. Development is carried out in various sectors, ranging from infrastructure and education to local economic development. However, reality shows that the problem of poverty has not been fully resolved. Although there has been a decline in poverty rates in recent years, millions of Indonesians still live below the poverty line. Poverty can be defined as the inability of a person to meet basic needs such as clothing, food, shelter, and health care. As a developing country.

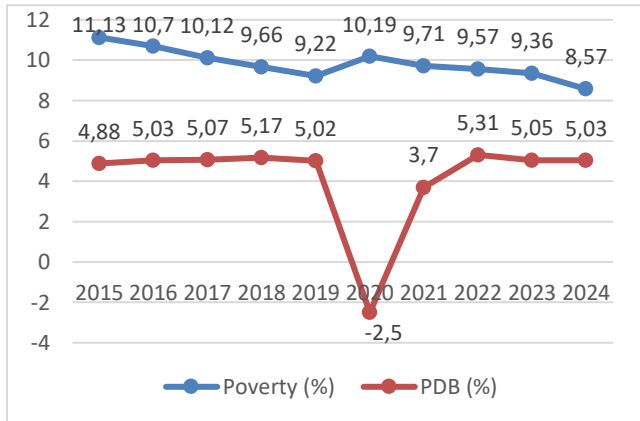
Indonesia certainly faces this problem. Poverty is an issue that deserves attention because it is implicitly a problem that must be addressed in order to achieve one of the national development goals of creating material and spiritual justice and

prosperity for the community. Poverty can give rise to other social problems such as an increase in slums, commercial sex workers, street children who are mostly school dropouts, crime rates, and so on. Therefore, poverty is one of the development targets that needs to be evaluated periodically (Tri Darmawanto, 2023).

Many factors can influence poverty, one of which is economic growth. High economic growth accompanied by economic growth across all business sectors is needed in order to reduce poverty rates. Therefore, in order to accelerate the reduction of poverty rates, economic growth must be increased.

In general, economic growth is one of the most important indicators in analyzing economic development in a country. Economic growth shows the extent to which economic activity will generate

additional income for the community in a given period. Many factors can influence economic growth, such as people's purchasing power, government spending, inflation, and so on (Munandar,2017).



Source: Indonesian Central Statistics Agency, 2025

Figure 1.2 Percentage of Gross Domestic Product (GDP) at Constant Prices against Poverty in Indonesia from 2015-2024

A country's economic growth can be measured by looking at the Gross Domestic Product (GDP) at constant prices. Based on Figure 1.2, it can be seen that Indonesia's economic growth experienced a relatively stable trend in the 2015 to 2019 period, ranging from 4.88% to 5.17%. During the same period, the poverty rate also declined, from 11.13% in 2015 to 9.22% in 2019. This decline in poverty reflects that increased national economic activity has had a positive impact on people's welfare.

However, in 2020, there was a sharp decline in economic growth to only -2.5%, caused by the COVID-19 pandemic. The impact of this economic slowdown was very significant on people's welfare, as indicated by an increase in the poverty rate to 10.19%. This emphasizes that low economic growth can increase people's vulnerability to poverty, especially in times of crisis.

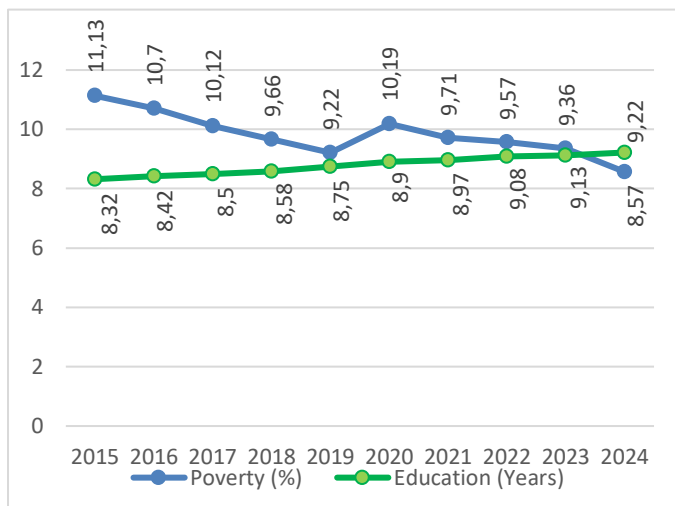
From 2021 to 2024, economic growth showed a recovery trend. In 2022, economic growth reached its

highest level in the period, at 5.31%. In line with this recovery, the poverty rate gradually declined from 10.19% (2020) to 8.57% in 2024. This decline indicates that the post-pandemic economic recovery has contributed to improving the socioeconomic conditions of the community, especially vulnerable groups.

In addition to economic growth, education levels also play a role in influencing poverty status. People with higher education usually have a lower chance of becoming poor. Education indicators are considered an investment in human resources because educated individuals have enormous benefits throughout their lives. Although investors cannot currently enjoy the direct benefits of education, education can help create high-quality and competitive human resources. Human resource development is expected to have a positive impact on economic performance, one way to observe this is through the perspective of the 12-year compulsory education program (Arina, 2024).

Education in this study is viewed from the average length of schooling. The average length of schooling (ALS) is an indicator that describes the average number of years spent by residents in formal education. Formal education includes primary school to university levels.

In measuring ALE, years spent repeating grades due to failing to advance to the next grade are not counted. In general, the value of this indicator shows the skill and competency level of the population in a region, which can be seen as a proxy for the quantitative and qualitative aspects of human resources. A relatively high value indicates that the average adult population in a region has achieved a higher level of education. A higher RLS achievement also reflects a well-performing education system.



Source: Indonesian Central Statistics Agency, 2025

Figure 1.3 Average Percentage of Schooling Duration in Relation to Poverty in Indonesia 2015-2024

Figure 1.3 shows that the average length of schooling indicates how long, in years, people aged 15 and above have received formal education. The average length of schooling has generally increased from year to year, despite slight fluctuations. The poverty rate measures the percentage of the population living below the poverty line. During the 2015-2024 period, poverty rates showed a downward trend. Average length of schooling reflects educational attainment for those aged 15 years and above. In 2015, it increased from 8.32 years to 9.22 years in 2024, which shows an increase of almost 1 year in the last decade. This means that more Indonesians are pursuing education up to junior high school level, which previously may have ended at elementary school level. The most significant increase occurred after 2019, indicating an acceleration in equal access to education. Despite the pandemic in 2020, the average length of schooling continued to increase, indicating the resilience of the education system.

The poverty rate shows a downward trend from 11.13% in 2015 to 8.57% in 2024. This means that more than 2.5 million people have been lifted out of poverty during this period. However, there was a significant increase in 2020 to 10.19% as a direct impact of COVID-19. This is the only turning point in the downward trend. After 2020, the poverty trend resumed its decline with stable consistency.

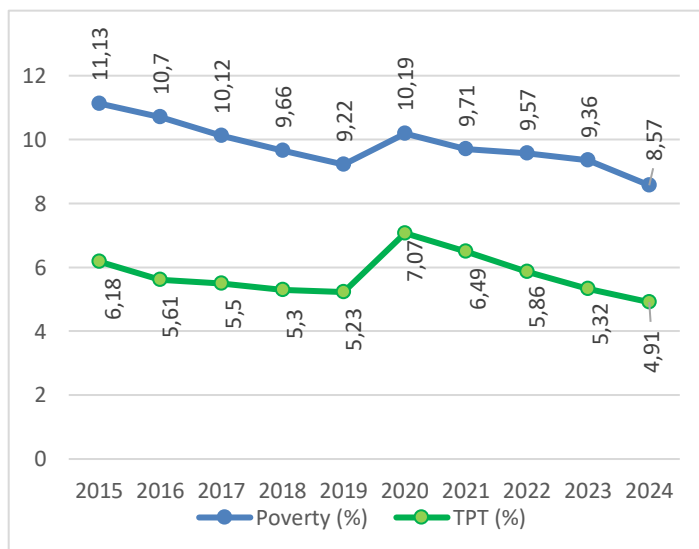
This shows that an increase of 0.9 years in average length of schooling is accompanied by a 2.56% decrease in poverty. In other words, every 0.1 year increase in education can contribute to a gradual reduction in poverty.

The link between poverty and education is very strong because education provides the ability to develop through the mastery of knowledge and skills. Education also instills an awareness of the importance of human dignity. Educating and imparting knowledge means reaching for the future. This should be the spirit to continue efforts to educate the nation (Ramdass, 2010).

In addition, another factor contributing to the number of poor people is the level of unemployment in a particular region. Unemployment is often experienced by a country's and can lead to social problems such as crime and economic problems. Unemployment can be caused by an increase in the new workforce each year, while the absorption of labor does not increase. The problem of unemployment is becoming more serious due to rapid population growth and large numbers.

Unemployment is a complex and crucial problem in Indonesia. High unemployment rates can reduce people's welfare, worsen socio-economic conditions, and threaten political stability and national progress.

There are several types of unemployment, one of which is open unemployment. Open unemployment refers to individuals who do not have a job but are actively seeking employment, preparing to start a business, or have been accepted for a job but have not yet started working (Ramadhan *et al.*, 2025). According to Andini (2024), the Open Unemployment Rate (OUR) is also a potential factor contributing to poverty. Peak income can be achieved when employment conditions reach *full employment*. A significant increase in the labor force that is not matched by adequate job growth can exacerbate unemployment problems in a region. High unemployment rates can reflect the failure of a country's development.



Source: Indonesian Central Statistics Agency, 2025

Figure 1.4 Percentage of Open Unemployment Rate (TPT) against Poverty in Indonesia 2015-2024

The data presented in Figure 1.4 illustrates the 10-year trend of the poverty ratio (percentage of the population below the poverty line) and the open unemployment rate (OUR) in Indonesia. In general, both indicators show a downward trend, as 2020 was an exceptional year due to the Covid-19 pandemic.

Poverty in 2015 fell from 11.13% to 9.22% in 2019, while the OUR in 2015 fell from 6.18% to

5.23% in 2019. Then in 2020, the pandemic shock caused the UMR to jump to 7.07% and poverty to rise to 10.19%. Mobility restriction policies led to layoffs and mass terminations. In 2024, economic recovery reduced the UMR to 4.91%. Poverty declined more slowly to 8.57%. The decline in the unemployment rate was faster because sectors that absorb many workers, such as manufacturing and trade, recovered quickly after the pandemic, allowing many unemployed people to return to work immediately. However, improvements in poverty were hampered by food inflation in 2022 and the global slowdown in 2023.

The high open unemployment rate reflects the large number of people who are not working at all and have no income. This widens the gap between those who have income and those who do not. This condition can create income inequality. Therefore, the open unemployment rate must be addressed so that income inequality can be reduced (Nurdini *et al.*, 2023).

2. LITERATURE REVIEW

Poverty

According to *the World Bank* (2022), poverty is a form of deprivation that encompasses many dimensions, including low income and the inability to obtain the basic goods and services necessary to live with dignity. Thus, poverty is not only understood as a lack of income, but also as a condition of powerlessness in accessing the basic services needed to live a decent life.

The concept of ability in meeting basic needs (*basic needs approach*) is an approach based on basic needs. Poverty is seen as an individual's economic inability to meet basic needs such as food and non-food items, which is measured based on the poverty line. An individual is considered poor if

their average per capita expenditure per month is below the poverty line (Indonesian Central Statistics Agency, 2021).

Economic Growth

Economic growth is a process of continuous change in a country's economic conditions towards a better state over a certain period of time. The economy can be said to have experienced a change in its growth if the level of economic activity is higher than what was previously achieved (Gwijangge *et al.*, 2018).

According to (Amsari *et al.*, 2024), economic growth is assessed based on the increase in Gross Domestic Product (GDP). Gross Domestic Product is the aggregate value of economic activity in a specific period. Gross Domestic Product calculations are carried out to obtain an overview of economic growth, the value of output produced, and the composition of aggregate learning. This economic growth is an important indicator in assessing a country's economic progress. If the economy grows, it means that there is an increase in economic activity, such as production, consumption, and investment, which can lead to an increase in people's welfare.

Education

According to Simmons, education is also a primary goal in fundamental development, as it plays a crucial role in shaping a country's ability to absorb modern technology and develop the necessary capacity to create sustainable growth and development (Hanushek & Woessmann, 2023).

Education is a very important and strategic aspect of human life. It plays a dominant role in equipping people to face a better future. Education

plays an important role in determining the quality of human resources. To strive for the expansion and equal distribution of opportunities to obtain quality education, the state has implemented a compulsory education program for basic education (Wahed, 2023). The education used in this study is measured by the average length of schooling.

Average Length of Schooling (ALS) according to the Indonesian Central Statistics Agency (2024) is an indicator that shows the average number of years spent by people aged 15 years and above in formal education at all levels. The ALE calculation assumes that individuals who have completed primary school education have attended school for 6 years, junior high school for 9 years, and senior high school for 12 years, without considering grade repetition.

Unemployment

Unemployment is a situation in which a person who is able and willing to work cannot find a job for various reasons, such as a lack of job opportunities, a mismatch of skills, or economic barriers. Unemployment does not only mean not working, but also indicates a person's inability to adequately meet their basic needs. This problem not only affects the individuals who experience it, but also causes various social and economic problems at the community level as a whole (Setyawan *et al.*, 2021).

According to (Doni *et al.*, 2023), unemployment is a major social problem because it causes great suffering for workers who do not have jobs, who must struggle to cope with decreasing incomes. The economic impact of unemployment is clearly visible, but no monetary figure can accurately describe the psychological suffering and impact on people when they do not have jobs.

Conceptual Framework

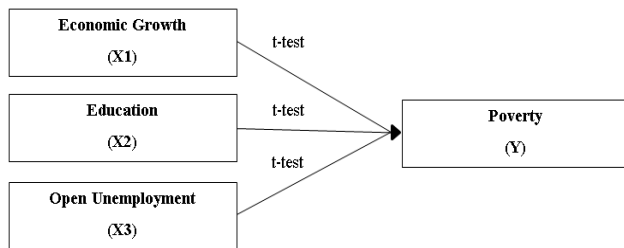


Figure 1. Conceptual Framework

Hypothesis

A hypothesis is a prediction or tentative explanation of the relationship between two variables or s in a study. Hypotheses are developed based on theory, preliminary observations, and the conceptual framework that guides the research. The purpose is to provide direction for the research and form the basis for statistical testing to be conducted by the researcher (Creswell, 2018).

This study uses a two-tailed hypothesis. According to (Sugiyono, 2017), a two-tailed hypothesis is a statement that indicates a difference or influence, but does not specify whether the difference or influence is one-tailed or two-tailed.

H0₁: It is hypothesized that there is no significant influence significant influence between economic growth and poverty levels in Indonesia.

H1₁: It is suspected that there is a significant effect between economic growth and poverty levels in Indonesia.

H0₂: It is suspected that there is no significant effect between education level and poverty level in Indonesia.

H1₂: It is suspected that there is a significant effect between education levels and poverty levels in Indonesia.

H0₃: It is suspected that there is no significant effect between the level of unemployment rate on

poverty levels in Indonesia.

H1₃: It is suspected that there is a significant influence between the open unemployment rate on poverty levels in Indonesia.

H0₄: It is suspected that there is no significant simultaneous effect between economic growth, education, and open unemployment on poverty levels in Indonesia.

H1₄: It is suspected that there is a simultaneous significant effect between economic growth, education, and open unemployment on poverty levels in Indonesia.

3. RESEARCH METHOD

Type and Source of Data

This study focuses on poverty as the dependent variable, with economic growth, education, and open unemployment as the independent variables. The location of the study is Indonesia. Secondary data is data obtained from other sources and can usually be used directly. The data used comes from the Central Statistics Agency (BPS) and consists of economic data.

Data Collection

The data collection techniques used in this study were *library search* and *computerized search*, so sampling and questionnaires were not necessary. Data collection in a study is intended to obtain relevant and accurate materials. To support this study, reference books, national and international journals were used, and searches were conducted on the Central Statistics Agency (BPS) *website* related to issues of economic growth, education, open unemployment, and poverty.

Data Analysis Method

This study uses quantitative analysis methods, namely time series data. By using ARDL quantitative data analysis methods in processing

data, it is possible to determine how independent variables (free variables) can influence dependent variables (bound variables). The Autoregressive Distributed Lag (ARDL) model is a combination of the AR (AutoRegressive) and DL (Distributedlag) models (Gujarati, 2012).

ARDL Model Estimation

This study uses the Autoregressive Distributed Lag (ARDL) model specification. The general model of ARDL is as follows (Hill et al.,2012):

$$\Delta Y_t = \beta_0 + \sum_{i=1}^n \beta_1 \Delta Y_{t-1} + \sum_{i=1}^n \delta_1 \Delta X_{t-1} + \varphi_1 Y_{t-1} + \varphi_2 X_{t-1} + \mu_t$$

β_1, δ_1 : Short-term coefficients

φ_1, φ_2 : Long-term coefficients

μ_t : *Disturbance error (white noise)*

Based on the general ARDL model above, the model in this study is:

$$\Delta KMS_t = \beta_0 + \sum_{i=1}^n \beta_1 \Delta KMS_{t-1} + \sum_{i=0}^n \delta_1 \Delta PE_{t-1} + \sum_{i=0}^n \delta_2 \Delta RLS_{t-1} + \sum_{i=0}^n \delta_3 \Delta TPT_{t-1} + \varphi_1 KMS_{t-1} + \varphi_2 PE_{t-1} + \varphi_3 RLS_{t-1} + \varphi_4 TPT_{t-1} + \mu_t$$

Description:

Δ = *First difference*

KMS = Poverty

PE = Economic Growth

RLS = Average Length of Schooling

TPT = Open Unemployment Rate

$\beta_1, \delta_1, \delta_2, \delta_3$ = Short-Term Coefficients

φ_1, φ_3 = Long-Term Coefficient

μ_t = *Disturbance error (whitenoise)*

4. RESULTS AND DISCUSSION

Data Stationarity Test

Tabel. 1
Data Stationarity Results

Variable	Unit Root	ADF T-Statistic	Critical Value (5 persen)	Prob ADF	Information
Poverty	Level	-1.57488	-2.95711	0.4835	Non-Stationary
	<i>1st Difference</i>	-5.112899	-2.957110	0,0002	Stationary
Economic Growth	Level	-4.294832	-2.951125	0.0018	Stationary
	<i>1st Difference</i>	-6.046144	-2.957110	0,0000	Stationary
Education	Level	0.406234	-2.963972	0.9799	Non-Stationary
	<i>1st Difference</i>	-4.184762	-2.963972	0,0028	Stationary
Open Unemployment	Level	-1.713608	-2.951125	0.4156	Non-Stationary
	<i>1st Difference</i>	-4.734447	-2.954021	0.0006	Stationary

Source: Research Results, 2025 (processed data)

Based on the stationarity test results using Augmented Dickey-Fuller (ADF) in Table 1, it was found that not all variables were stationary at the level. The poverty variable at the level has an ADF *t*-statistic value of -1.57488, which is greater than the critical value of 5%, namely -2.95711, with a probability of $0.4835 > 0.05$. This indicates that the poverty variable is not stationary at the level. However, after applying *the first difference*, the ADF *t*-statistic value becomes - 5.112899, which is smaller than the critical value of - 2.957110, with a probability of $0.0002 < 0.05$. Therefore, it can be concluded that the poverty variable is stationary at the first order or I(1).

The economic growth variable shows different results. At the level, the ADF *t*-statistic value of -4.294832 is smaller than the critical value of -2.951125, with a probability of $0.0018 < 0.05$. This result indicates that the economic growth variable is stationary at the level or I(0). Although at *the first difference* the ADF *t*-statistic value of -6.046144 with a probability of 0.0000 also indicates stationarity, because it already meets the criteria at the level, this variable is considered integrated at I(0).

Furthermore, the education variable, measured by the average length of schooling (RLS) at the level, has an ADF *t*-statistic value of 0.406234, which is

greater than the critical value of -2.963972 , with a probability of $0.9799 > 0.05$. This result indicates that the education variable is not stationary at the level. After *first difference* (), the ADF *t-statistic* value drops to -4.184762 , which is smaller than the critical value of -2.963972 , with a probability of $0.0028 < 0.05$, so that the education variable is stationary at the first degree or $I(1)$.

The last variable, open unemployment at the level, has an ADF *t-statistic* value of -1.713608 , which is greater than the critical value of -2.951125 , with a probability of $0.4156 > 0.05$, so this variable is not stationary at the level. However, after applying *the first difference*, the ADF *t-statistic* value becomes -4.734447 , which is smaller than the critical value of -2.954021 , with a probability of $0.0006 < 0.05$, so it can be said that open unemployment is stationary at $I(1)$.

The stationarity test results show that the research variables have different integration properties. The economic growth variable is stationary at the level, so it can be said to be integrated at degree zero or $I(0)$. Meanwhile, the poverty, education (RLS), and open unemployment variables only become stationary after *first difference*, so they are integrated at the first degree or $I(1)$. These results confirm that the research data are not entirely stationary at the level, but also that no variables are integrated at the second degree $I(2)$. If there are variables integrated at the second degree $I(2)$, the ARDL method cannot be used because it can produce invalid estimation results. However, because in this study the variables are only integrated at $I(0)$ and $I(1)$, the ARDL method can be applied appropriately. The advantage of ARDL over other methods is its ability to accommodate *time series* data with different levels of integration, namely a mixture

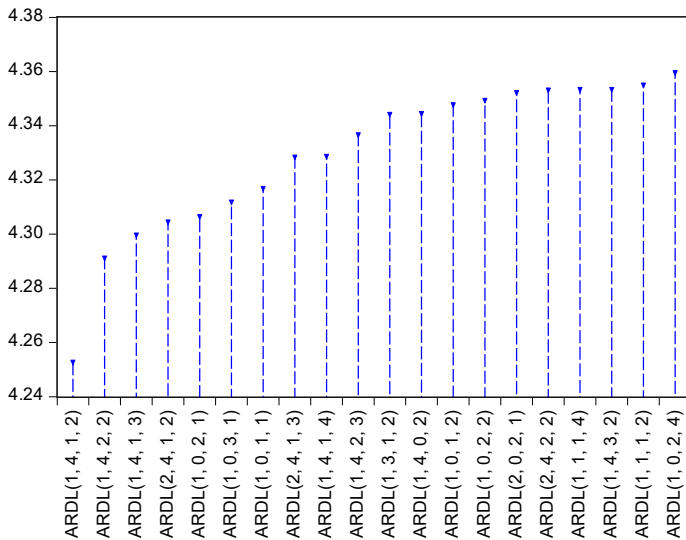
of $I(0)$ and $I(1)$, without requiring all variables to be at the first degree of integration.

The ARDL method also allows researchers to analyze both short-term and long-term relationships simultaneously. Short-term relationships reflect the immediate influence of one variable on another, while long-term relationships indicate the equilibrium that will be achieved between the variables after a certain period of time. In other words, even though some variables are stationary from the outset and some only become stationary after differentiation, the ARDL model can still provide consistent and reliable estimates. Therefore, based on the stationarity test results showing a combination of $I(0)$ and $I(1)$ variables and the absence of $I(2)$ variables, it can be concluded that the ARDL model is the most appropriate method to use in this study to analyze the effects of economic growth, education, and open unemployment on poverty in Indonesia in both the short and long term.

Determination of Optimum Lag

Selecting the appropriate lag length is an important step in *time series* analysis so that the model used can accurately capture the dynamics of the relationship between variables. The criteria in the optimum test consist of *the Akaike Information Criterion* (AIC), *Schwarz Criterion* (SC), or *Hannan-Quinn* (HQ). The optimum lag is selected at the point where the information criterion reaches its lowest value. Thus, the selected lag ensures that the ARDL model used is more stable and capable of representing both short-term and long-term relationships well. In this study, the lag length can be seen from *the Akaike Information Criterion* (AIC) based on the graph. The appropriate model is the following (1,4,1,2) graph:

Akaike Information Criteria (top 20 models)



Source : Research Results, 2025 (Processed data)

Figure 2. Optimum Lag Test Results

Based on the optimum lag test results in Figure 2, there are 20 best model combinations based on information criteria. Of all these combinations, the ARDL (1,4,1,2) model can be concluded in the Akaike Information Criteria (AIC) that lag 1 can be set as the optimum lag to be used in the general ARDL equation.

Cointegration Test

The cointegration test (*Bounds Test*) using the ARDL approach aims to determine whether the variables in the model have a long-term relationship. The testing process is carried out by comparing the *F-statistic* value resulting from the model estimation with the *critical value bounds* at a certain significance level. If the *F-statistic* value is higher than I(1), then the null hypothesis stating that there is no long-term relationship can be rejected.

**Table 2
Cointegration Test Results**

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
Asymptotic: n=1000				
F-statistic	4.875601	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66
Finite Sample: n=35				
Actual Sample Size	31	10%	2.618	3.532
		5%	3.164	4.194
		1%	4.428	5.816
Finite Sample: n=30				
		10%	2.676	3.586
		5%	3.272	4.306
		1%	4.614	5.966

Source: Research Results, 2025 (processed data).

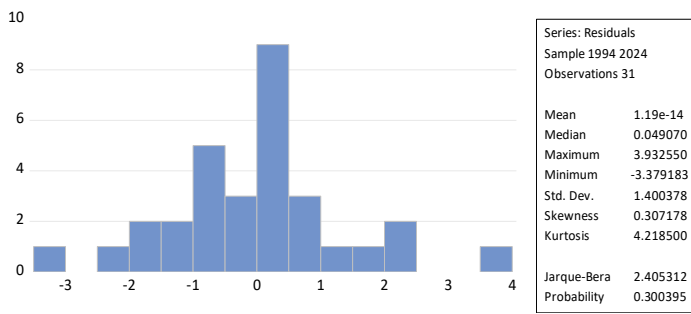
The test results in Table 2 show that the *F-statistic* value is 4.875601 with the number of independent variables (k) = 3 and a sample size of 31. Based on a *finite sample* ($n=30$), at a significance level of 5%, the *critical value bounds* for I(0) are 3.272, while for I(1) they are 4.306. Because the *F-statistic* value (4.875601) is greater than the upper limit of I(1) (4.306), it can be concluded that there is a cointegration relationship between the variables of poverty, economic growth, education (RLS), and open unemployment.

The cointegration test results show that the ARDL model used in this study is valid for analyzing both short-term and long-term relationships between variables. This also confirms that the independent variables collectively have a strong relationship with the dependent variable in the long term.

**Classical Assumption
Test Normality Test**

The normality test is part of the classical assumption test used to determine whether the data used in the regression model has a normal distribution or not. One formal way to test normality is the *Jarque– Bera* (JB) test. If the probability

value of the JB test is > 0.05 , then the residuals are considered to be normally distributed.



Source: Research Results, 2025

Figure 3. Normality Test

Based on Figure 3, it is known that the *Jarque-Bera* probability value is $0.300395 > 0.05$, so it can be concluded that the data is normally distributed.

Autocorrelation Test

Autocorrelation is the relationship between one observation and another in *time series* data. This causes regression parameter estimation to be inefficient, because the standard error value becomes biased (Widarjono, 2018).

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.130367	Prob. F(2,17)	0.8786
Obs*R-squared	0.468275	Prob. Chi-Square(2)	0.7913

Source: Research Results, 2025 (processed data)

Based on Table 3, it is known that the Probability *Obs*R-squared* value is $0.468275 > 0.05$. Therefore, it can be concluded that the data has passed or is free from autocorrelation.

Heteroscedasticity Test

Heteroscedasticity is used to examine whether there is variance instability in the residuals that are not constant in the regression model, thus allowing for adjustments to the analysis method or data transformation if necessary (Widarjono, 2018).

Table 4. Heteroscedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	2.797293	Prob. F(11,19)	0.0237
Obs*R-squared	19.16561	Prob. Chi-Square(11)	0.0582
Scaled explained SS	11.58591	Prob. Chi-Square(11)	0.3956

Source: Research Results, 2025 (processed data)

Based on the results of the heteroscedasticity test in Table 4 using the *Breusch Pagan Godfrey* method, the *Prob. Chi-Square(11)* value is 0.0582, and the *Prob. Scaled Explained SS* is 0.3956. All of these probability values are greater than the significance level (>0.05), so it can be concluded that $H(0)$ is accepted and there are no signs of heteroscedasticity in the regression model. Thus, the residual variance in this model is constant (homoscedasticity), so the classical assumptions related to the heteroscedasticity test have been met and the regression model can be used for further analysis.

Model Estimation (ARDL)

The ARDL model estimation results are divided into two types, namely in the short term and long term, as follows:

Table 5. Short-Term ARDL Estimation Results

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(PE)	-1.179916	0.140215	-8.415040	0.0000
D(PE(-1))	0.563167	0.211800	2.658952	0.0155
D(PE(-2))	0.404984	0.120022	3.374250	0.0032
D(PE(-3))	0.210532	0.094419	2.229766	0.0380
D(RLS)	-0.851268	1.711007	-0.497525	0.6245
D(TPT)	-1.580453	0.432932	-3.650577	0.0017
D(TPT(-1))	-1.686601	0.619471	-2.722649	0.0135
CoIntEq(-1)*	-1.098451	0.202206	-5.432331	0.0000

Source: Research Results, 2025 (processed data)

Based on Table 5, the short-term test results using the ARDL model can be formulated as follows:

$$\Delta Y_t = -1.179916\Delta PE_t + 0.563167\Delta PE_{t-1} + 0.404984\Delta PE_{t-2} + 0.210532\Delta PE_{t-3} - 0.851268\Delta RLS_{t-1} - 1.580453\Delta TPT_t - 1.686601\Delta TPT_{t-1} - 1.098451\Delta ECT_{t-1}$$

Based on the above short-term equation, the

interpretation of the results in this study is as follows:

Based on the short-term estimation results using the ARDL model, the economic growth variable (X1) in the current period has a significant negative effect on poverty with a coefficient of -1.1799 and a probability of 0.0000. This indicates that a 1 percent increase in economic growth will reduce poverty by around 1.18 percent in the same period. However, at lags 1 to 3, economic growth has a significant positive effect with coefficients of 0.5631 (p-value 0.0155), 0.4049 (p-value 0.0032), and 0.2105 (p-value 0.0380), respectively. This condition indicates that in the short term, economic growth that occurred in the previous period actually has the potential to increase poverty.

The education variable (X2) with a coefficient of -0.8513 (p-value 0.6245) does not have a significant effect on poverty, so its impact is more long-term.

The open unemployment variable (X3) has a significant negative effect with a coefficient of -1.5804 (p-value 0.0017), and at lag 1 of -1.6866 (p-value 0.0135). These results indicate that a 1 percent increase in unemployment in the short term actually reduces poverty by around 1.58–1.69 percent, which can be explained by the phenomenon of workers shifting to the informal sector and therefore not being recorded as poor.

The ECT or *Cointeq* value is valid if the coefficient is negative with a significant probability at the 1 percent level. In this study, the *CointEq* (-1) value is -1.098451 and significant at the 1 percent level, which means that the ARDL (lag) model has met the validity requirements. Therefore, in this study, it can be concluded that

the model will move towards equilibrium from the short term to the long term at a rate of 1.09 percent per year.

Long-Term Testing

Table 4.1
Long-Term ARDL Estimation Results

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
PE	-2.100068	0.200183	-10.49075	0.0000
RLS	-5.108815	0.448288	-11.39629	0.0000
TPT	1.291110	0.184467	6.999137	0.0000
C	71.80120	4.423627	16.23130	0.0000

EC = KMS - (-2.1001*PE -5.1088*RLS + 1.2911*TPT + 71.8012)

Source: Research Results, 2025 (processed data)

Table 6. The results of the long-term test using the ARDL model in the table can be formulated as follows:

$$\text{KMS} = 71.80 - 2.100\text{PE}_t - 5.108\text{RLS}_t + 1.291\text{TPT}_t$$

Based on the above equation, the long-term results in this study can be interpreted as follows:

The regression coefficient indicates the extent of the influence of an independent variable on the dependent variable. The magnitude of the coefficient changes according to the unit of measurement of the variables used in this study. If the poverty variable is included in the form of lives, then the constant and regression coefficient results will also reflect changes in the unit of lives. The constant or fixed value is 71.80, meaning that if economic growth, education, and unemployment are zero in the long term, poverty in Indonesia will be 71.8 people.

The PE variable coefficient of -2.100 indicates that in the long term, if economic growth increases by 1 percent, poverty will decrease by 2.10 people in the long term, assuming that education and open unemployment remain constant. The probability value in the long term is

0.0000 < 0.05, so it can be concluded that in the long term, economic growth has a negative but significant effect on poverty in Indonesia. This study is in line with the study (Marhaes *et al.*, 2024), which found that the regression coefficient for the economic growth variable is negative, indicating that economic growth is inversely proportional to the poverty rate.

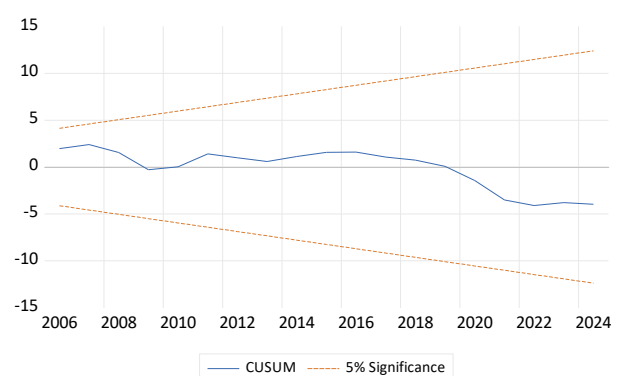
The coefficient of the Education (RLS) variable is -5.108815, indicating that in the long term, if RLS increases by 1 year, poverty will decrease by 5.1 people in the long term, assuming that economic growth and open unemployment remain constant. The long-term probability value is 0.0000 < 0.05, so it can be concluded that in the long term, an increase in RLS has a negative but significant effect on poverty in Indonesia. This study is in line with research conducted by (Todaro & Smith, 2015), which also confirms that education is an important factor in economic development, as increased access to education can increase labor productivity and encourage poverty reduction. Furthermore, a study by (Safitri & Susilo, 2024) on the determinants of poverty in Indonesia also shows that education has a negative and significant effect on poverty, where the higher the average length of schooling, the lower the poverty rate. Thus, these long-term estimation results reinforce previous empirical evidence that education plays a strategic role in reducing poverty through improving the quality of human resources.

The long-term estimation results show that the Open Unemployment variable has a coefficient of 1.291110 with a probability value of 0.0000, which is significant at the 1 percent level. This indicates that TPT has a positive and significant effect on poverty in Indonesia in the long term.

Every 1 percent increase in TPT will increase the number of poor people by 1.29. This is in line with development economics theory, which states that increasing unemployment will worsen poverty because more individuals will not have a steady income, thereby reducing purchasing power and putting pressure on community welfare (Todaro & Smith, 2015). This is also in line with the research (Titin *et al.*, 2024) where the regression coefficient for the Open Unemployment Rate (X1) is positive, indicating that if there is a 1% increase in the Open Unemployment Rate (X1) and other independent variables remain constant, then the Poverty Rate (Y) increases.

ARDL Model Stability Test

In ARDL analysis, after obtaining a significant short-term and long-term model, the next important step is to measure the stability of the model. This test aims to ensure that the short-term and long-term relationships obtained are truly consistent and do not change during the research period.

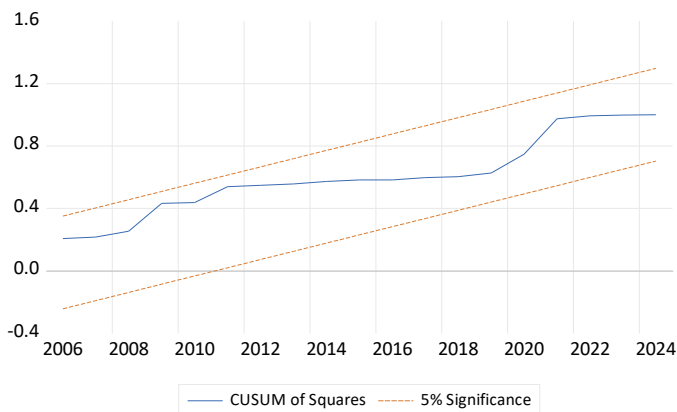


Source: Research Results, 2025 (processed data)

Figure 4. CUSUM Test Results

Parameter stability testing in regression models is performed using CUSUM (*Cumulative Sum*) graphs. From the test results in Figure 4, it can be seen that the CUSUM line remains within the tolerance limit at a significance level of 5%, as

indicated by the dotted line in the graph. This indicates that there were no significant structural changes in the model parameters during the research period. In other words, the regression coefficient values were stable and did not experience systematic shifts over time.



Source: Research Results, 2025 (processed data)

Figure 6 CUSUMQ Test Results

The stability of residual variance in the regression model was tested using the *CUSUM of Squares* (CUSUMSQ) graph. Based on the test results, it can be seen that the CUSUMSQ line is completely within the 5% significance limit, as indicated by the dotted line in the graph. This indicates that there were no significant changes or instability in the residual variance during the study period. In other words, the model error dispersion did not experience drastic changes and remained constant over time. These results reinforce that the regression model used meets the stability assumption, not only in terms of parameters but also in terms of *error* variation, so that the model can be relied upon for future analysis.

5. CONCLUSION

Conclusion

Based on the results of the research conducted, several conclusions can be drawn as follows:

1. The results show that in the short term,

economic growth has a negative and significant effect on poverty. This means that when the economy experiences growth, poverty levels tend to decline. However, in the long term, economic growth has a negative and significant effect on poverty. The higher the sustainable economic growth, the lower the poverty rate in Indonesia. In other words, the benefits of economic growth are only felt significantly in the long term when the results of development can be felt evenly by the community, especially low-income groups.

2. The results of the study show that in the short term, education (Average Length of Schooling) does not have a significant effect on poverty. This means that an increase in the average length of schooling in a short period of time has not been able to have a direct impact on reducing poverty. This is because education takes time to produce benefits, whether in the form of increased skills, productivity, or access to more decent jobs. However, in the long term, education (Average Length of Schooling) has a negative and significant effect on poverty. This can be interpreted to mean that the higher the average length of schooling, the lower the poverty rate.

3. The results of the study show that in the short term, open unemployment has a negative and significant effect on poverty. This means that when the open unemployment rate increases, the poverty rate in the short term actually decreases. However, in the long term, open unemployment has a positive and significant effect on poverty. This means that the higher the open unemployment rate, the greater the number of poor people in Indonesia. High

unemployment in the long term also reflects suboptimal labor absorption and the inability of the economy to provide adequate employment opportunities, thereby further reducing the welfare of the community.

Recommendations

Based on the results of the analysis and conclusions, the author offers the following recommendations:

1. For the Government

The Indonesian government has a strategic role in reducing poverty by ensuring inclusive economic growth, where the benefits of GDP growth can be felt by all levels of society. Improving the quality of education must be a top priority. The government needs to continue expanding access to and the quality of education, particularly by improving compulsory education programs, strengthening vocational education, and providing scholarships for underprivileged families. These efforts are important so that increasing the average length of schooling can truly produce a skilled and competitive workforce that is able to escape the trap of poverty. Additionally, efforts to reduce the Open Unemployment Rate (TPT) must be undertaken through the creation of productive jobs, job training programs that meet industry needs, and the strengthening of the formal sector. This integrated approach is expected to reduce poverty in a sustainable manner, narrow social gaps, and strengthen the foundations for long-term economic growth.

2. For Future Researchers

Future researchers are expected to use this as a reference in conducting further research on poverty. They can also add other variables that

have a greater influence on poverty.

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