

## ANALYSIS OF THE EFFECT OF HDI, UNEMPLOYMENT, AND ECONOMIC GROWTH ON POVERTY LEVELS IN BANTEN PROVINCE 2010-2024

Imas Masiroh<sup>1\*</sup>, Cep Jandi Anwar<sup>1</sup> & Agus salim<sup>1</sup>

Magister Economic and Business, University of Sultan Ageng Tirtayasa

**Corresponding Author:** Imas Masiroh (imasfie1@gmail.com)

Magister Economic and business, University of Sultan Ageng Tirtayasa.

### Article History

Received: 14 / 04 / 2026

Accepted: 21 / 05 / 2026

Published: 03 / 06 / 2026

**Abstract:** This study aims to analyze the effect of average years of schooling, minimum wage, life expectancy, economic growth, and the open unemployment rate on poverty in districts/cities in Banten Province for the period 2010–2024. The method used is panel data regression analysis with the Fixed Effect Model (FEM) approach, as well as further analysis using spatial models and Panel Vector Autoregression (PVAR). The data used are secondary data from the Central Statistics Agency (BPS). The results show that average years of schooling and life expectancy have a negative effect on poverty, while the open unemployment rate has a positive and significant effect. Meanwhile, the minimum wage and economic growth show inconsistent effects on poverty. Spatial analysis indicates spillover effects between regions, and PVAR analysis indicates that education and unemployment are the most dominant factors explaining variations in poverty. Overall, the research findings confirm that poverty alleviation requires improving the quality of human resources, creating jobs, and more inclusive and equitable development policies across regions.

**Keywords:** Banten Province; Economic Growth; Education; Poverty; Unemployment.

**How to Cite in APA format:** Masiroh, I., Anwar, C. J. & Salim, A. (2026). ANALYSIS OF THE EFFECT OF HDI, UNEMPLOYMENT, AND ECONOMIC GROWTH ON POVERTY LEVELS IN BANTEN PROVINCE 2010-2024. *IRASS Journal of Economics and Business Management*. 3(6), 1-4.

### Introduction

Poverty is an indicator of the success of a region's economic development, related not only to low income but also to limited access to education, employment, and other economic resources. Therefore, poverty is a crucial issue in national and regional economic development (Boari et al., 2024). Poverty levels reflect the role of social and economic factors such as education, unemployment, economic growth, and population growth in a region (Boari et al., 2024).

Education plays a role in improving the quality of human resources, labor productivity, and improving job opportunities, thereby reducing poverty (Boari et al., 2024). Furthermore, unemployment is also a crucial factor because high unemployment rates indicate low incomes among the working-age population, which leads to increased poverty (Guampe et al., 2022). Economic growth can theoretically improve welfare through job creation, but its impact on poverty depends on equitable income distribution (Guampe et al., 2022).

Other factors influencing poverty include the minimum wage, human development index, population growth, and population density. The Human Development Index (HDI) describes a community's quality of life in terms of education, health, and standard of living. High scores indicate potential for poverty reduction (Boari et al., 2024).

Previous research has shown that education, unemployment, and economic growth influence poverty levels (Sari & Falianto, 2020), and that education has a negative effect on poverty (Guampe et al., 2022). However, previous research findings show inconsistencies across regions, necessitating further studies in more specific regional contexts. Banten Province is experiencing rapid economic growth, but poverty disparities persist between

districts/cities. Differences in socioeconomic conditions contribute to variations in poverty levels across regions, necessitating research to analyze the factors influencing poverty in Banten Province

### Methods

#### 1. Research Location and Period

This study was conducted in Banten Province, Indonesia, covering eight regencies/cities, namely Pandeglang Regency, Lebak Regency, Tangerang Regency, Serang Regency, Tangerang City, Cilegon City, Serang City, and South Tangerang City. The study period spans from 2010 to 2024.

#### 2. Population and Sample

The population consists of all regencies and cities in Banten Province. Since the study uses complete secondary data from all regions during 2010–2024, a census method was applied. The unit of analysis is district/city-year observations, resulting in 120 panel data observations.

#### 3. Research Variables

The dependent variable is poverty (POV). The independent variables are Average Years of Schooling (RLS), Minimum Wage (MW), Life Expectancy (LE), Economic Growth (EG), and Open Unemployment Rate (OUR).

#### 4. Data Collection

This study uses secondary data obtained from the Badan Pusat Statistik (BPS) publications and databases. The data include poverty, education, health, employment, wages, and economic growth indicators at the district/city level in Banten Province.

5. Data Analysis

a. Panel Data Regression Model

A panel data regression model was used to analyze the influence of Average Years of Schooling, Minimum Wage, Life Expectancy, Economic Growth, and Open Unemployment Rate on poverty in Banten Province. This method was chosen because it combines cross-sectional and time series data and accommodates differences in characteristics between regions (Gujarati, 2003). The basic panel data regression model used is as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \epsilon_{it} \quad (1)$$

b. Dynamic Panel Model (GMM)

This model is used to address potential endogeneity and poverty dynamics using a dynamic panel model with lag variables as follows:

$$\ln POV_{it} = \alpha \ln POV_{it-1} + \beta X_{it} + \mu_i + \epsilon_{it} \quad (2)$$

Estimation using the Generalized Method of Moments (GMM) by Arellano & Bond (1991), which is capable of producing consistent estimates under endogeneity conditions. (Baltagi, 2021).

c. Panel Spatial Model

A panel spatial model is used to capture the effects of spatial dependence and spillovers between regions. The model used is as follows:

$$Y = \rho WY + X\beta + WX\theta + \epsilon \quad (3)$$

d. Panel Vector Autoregression (PVAR)

The PVAR model is used to analyze the dynamic relationships between variables in a regional economic system, with all variables treated as endogenous (Abrigo & Love, 2016). The general PVAR model is:

$$Y_{it} = A_1 Y_{it-1} + A_2 Y_{it-2} + \dots + A_p Y_{it-p} + \mu_i + \epsilon_{it} \quad (4)$$

Results and Discussions

Results and Discussions contain results obtained by author during the research activities. The results of the research submitted in advanced as whole which continues by doing the discussion. The discussions are presented systematically from general to the specific. The data can be presented with tables or figures. Results and discussions must also interconnect with theory that used. Avoid excessive use of citations and discussion of published literature

The results of this study indicate variations in poverty rates across districts/cities in Banten Province, influenced by differences in social and economic conditions in each region. In general, changes in poverty rates during the study period were inseparable from the dynamics of education, health, wages, economic growth, and labor market conditions. The relationships between these variables were analyzed to determine the extent to

which these factors contribute to empirically explaining changes in poverty rates.

The descriptive analysis results indicate that poverty rates and explanatory variables in districts/cities in Banten Province experienced fluctuating dynamics during the 2010–2024 period, as shown in Figure 1.

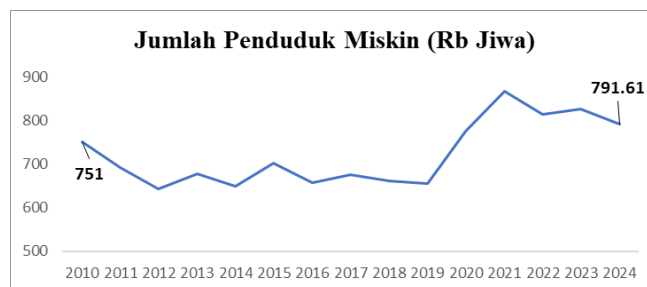


Figure 1. Number of Poor People

Average years of schooling and life expectancy tended to increase over time, reflecting improvements in the quality of human resources. However, the open unemployment rate and the number of poor people still exhibited significant fluctuations, in line with changes in regional economic conditions. This indicates that improvements in human quality have not been fully accompanied by the availability of adequate job opportunities.

Table 1. Chow Test Result

Effect Test	Statistic	d.f	Prob
Cross-section f	1.851237	(14,100)	0.0412
Cross-section Chi-square	27.654637	14	0,0158

(Source: Eviews 12 Output)

Table 2. Hausman Test Result

Test Summary	Chi-sq. Statistic	Chi-sq. d.f	Prob
Cross-section random	25.060216	5	0.0001

(Source: Eviews 12 Output)

To determine the best model, the Chow test, the Hausman test, and the Lagrange Multiplier test were conducted. Tables 1 and 2 show that the Fixed Effect Model (FEM) is the most appropriate model for this study. The selection of FEM indicates that there are specific characteristics in each district/city that influence poverty levels, so differences between regions need to be controlled in the model. This is in accordance with the view of Damodar N. Gujarati (2015) that FEM is able to capture unobserved heterogeneity in panel data.

Table 3. Panel Data Regression Estimation Results

Variabel	Coefficient	T-hitung	T-tabel	p-value
Ln_RLS	-0.386095	-2.167259	-1.980992	0.0326
Ln_UM	-2.094585	-4.030837	-1.980992	0.0001
Ln_UHH	8.678630	3.354000	1.980992	0.0011
PDRB	-0.222329	-3.260776	-1.980992	0.0015
TPT	0.062958	1.309339	-1.980992	0.1934

(Source: Eviews 12 Output)

Table 3 shows the estimation results. Panel data regression results show that average years of schooling have a negative and significant effect on poverty rates. This means that increasing a community's education level directly contributes to reducing the number of poor people. The higher the level of

education, the greater the individual's chance of obtaining a job with a better salary. This finding is consistent with the human capital theory proposed by Gary S. Becker (2016), which states that education is an investment that increases individual productivity and income.

The minimum wage variable shows a negative effect on poverty rates, but its significance is inconsistent across models. This suggests that while wage increases can increase people's purchasing power, their impact on poverty reduction is not always significant. This condition may be caused by an imbalance between wage increases and labor productivity or limited employment in the formal sector. These results align with research by Rinaldi et al. (2025), which states that the effectiveness of minimum wage policies depends on labor market conditions.

Furthermore, life expectancy has a negative effect on poverty rates, indicating that improving public health contributes to poverty reduction. People with better health tend to have higher productivity and broader employment opportunities. These findings support the human capital theory, which places health as a crucial factor in improving well-being (S. Becker, 2016).

Economic growth in this study showed an insignificant effect on poverty. This indicates that increased economic output is not necessarily accompanied by income equality. In other words, economic growth is not fully inclusive. This finding aligns with the opinion of Michael P. Todaro and Stephen C. Smith (2015), who stated that uneven economic growth can increase inequality and limit its impact on poverty reduction.

On the other hand, the open unemployment rate has a positive and significant effect on the poverty rate. This suggests that increasing unemployment will increase the number of poor people due to reduced sources of income. Community empowerment. This finding is consistent with research by Sari et al. (2024), which states that unemployment is a major determinant of poverty.

In further analysis using a spatial approach, the results of the Spillover Effect test indicated significant spatial autocorrelation. This means that poverty levels in a region do not stand alone but are influenced by conditions in surrounding areas. Therefore, a spatial regression model was used to capture interregional dependencies. The estimation results indicate a spatial spillover effect, where changes in economic conditions in one region can affect other surrounding regions.

	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
d_ln_pov						
d_ln_pov						
L1.	.8334724	15.02465	0.06	0.956	-28.6143	30.28124
d_ln_rls						
L1.	.0962711	1.538098	0.06	0.950	-2.918345	3.110887
d_ln_um						
L1.	3.639603	48.06782	0.08	0.940	-90.57158	97.85079
d_ln_uhh						
L1.	353.3193	4485.526	0.08	0.937	-8438.15	9144.789
d_pdrb						
L1.	-.0107133	.0601705	-0.18	0.859	-.1286452	.1072186
d_tpt						
L1.	-.0917603	1.202809	-0.08	0.939	-2.449222	2.265701

Figure 2. PVAR Model Test Results

(Source: STATA Output)

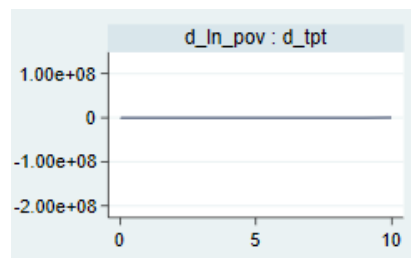


Figure 3. Response of the Number of Poor People to the Open Unemployment Rate Shock

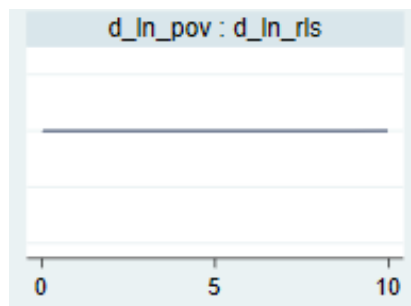


Figure 4. Response of the Number of Poor People to the Average Year of Schooling Shock

Response variable and Forecast horizon	Impulse variable					
	d_ln_pov	d_ln_rls	d_ln_um	d_ln_uhh	d_pdrb	d_tpt
d_ln_pov						
0	0	0	0	0	0	0
1	1	0	0	0	0	0
2	.6455469	.0039867	.0028975	.3210234	.001916	.0246295
3	.9508991	.0282239	.0023364	.015505	.0018618	.0011737
4	.8308069	.0207375	.0056881	.1292583	.0024256	.0110836
5	.8797208	.0291672	.0017068	.0777053	.0052497	.0064502
6	.9233608	.0250866	.0046615	.042671	.0004906	.0037295
7	.64235	.0228925	.0018447	.2949864	.0130783	.0248481
8	.9550741	.0275615	.0037228	.0121064	.000467	.0010684
9	.5672197	.0141555	.0056848	.3700932	.0113336	.0315132
10	.9519886	.0291102	.0028054	.0134011	.0015911	.0011036

Figure 5. Forecast-Error Variance Decomposition (FEVD) Test Result

Furthermore, using the Panel Vector Autoregression (PVAR) approach, shown in Figure 2, a dynamic relationship between variables was found over a specific time period. The Impulse Response Function (IRF) results in Figures 3 and 4 indicate that shocks to the education and unemployment variables significantly impact changes in poverty levels over the next few periods (see Figure IRF). Meanwhile, the Variance Decomposition results indicate that unemployment and education variables contribute the most to explaining variations in poverty compared to other variables. Furthermore, using the Panel Vector Autoregression (PVAR) approach, Table 4 reveals a dynamic relationship between variables in the regional economic system. The analysis shows that changes in education and unemployment rates significantly impact poverty levels over the next several periods. This indicates that the impact of these variables is not only immediate but also persists over time.

Furthermore, the analysis of variable contributions indicates that the unemployment rate and average years of schooling are the most dominant factors explaining variations in poverty levels compared to other variables. This confirms that improving the quality of human resources and labor absorption are

key aspects of poverty alleviation efforts, not only in the short term but also in the long term.

Overall, the research findings indicate that education, health, and labor market conditions play a significant role in influencing poverty levels in districts/cities in Banten Province. Average years of schooling and life expectancy have been shown to contribute to poverty reduction, while open unemployment actually increases the number of poor people. Furthermore, the effects of minimum wages and economic growth tend to be inconsistent, indicating that improving public welfare depends not only on economic growth but also on the equity and quality of development. Furthermore, the spatial and dynamic analysis results indicate that poverty is interconnected across regions and is influenced by conditions in previous periods. Thus, poverty alleviation efforts require a comprehensive approach, not only through increased economic growth but also through strengthening the quality of human resources, creating jobs, and policies that reduce inter-regional disparities.

## Conclusions

The results of this study indicate that poverty levels in districts/cities in Banten Province are influenced by factors such as education, health, wages, economic growth, and labor market conditions. Average years of schooling and life expectancy have a negative effect on poverty, while the open unemployment rate has a positive and significant effect. Meanwhile, minimum wages and economic growth show inconsistent effects on poverty. Spatial and dynamic analyses also indicate a spillover effect between regions and the dominant role of education and unemployment in explaining variations in poverty. Overall, poverty alleviation requires improving the quality of human resources, expanding employment opportunities, and implementing more inclusive and equitable policies across regions.

## References

1. Abrigo, M. R. M., & Love, I. (2016). Estimation of panel vector autoregression in Stata. *Stata Journal*, 16(3), 778–804. <https://doi.org/10.1177/1536867x1601600314>
2. Baltagi, B. H. (2021). *Econometric Analysis of Panel Data (Springer Texts in Business and Economics) - Sixth Edition*. In Springer.
3. Boari, Y., Syofya, H., Agustina, I., Rohman, M. F., & Irawaty, R. (2024). Pengaruh Pertumbuhan Ekonomi, Tingkat Pendidikan, Dan Pertumbuhan Penduduk Terhadap Tingkat Kemiskinan Di Indonesia. *Edunomika*, 08(02), 1–13.
4. BPS Indonesia. (2015). *Indeks Pembangunan manusia (Metode Baru)*. Badan Pusat Statistik Indonesia, 2015(9), 90.
5. Guampe, F. A., Walenta, A. S., & Kawani, F. B. (2022). Pengaruh Pertumbuhan Ekonomi Dan Pengangguran

- Terbuka Terhadap Kemiskinan Di Indonesia Tahun 2001-2021. *Jurnal Pendidikan Ekonomi Dan Kewirausahaan*, 6(1), 92–102. <https://doi.org/10.29408/jpek.v6i1.5536>
6. Gujarati, D. N. (2003). *Introduction Basic Econometrics*.
7. Kurnia, K., Srinata, S., & Ernawati, E. (2024). How do Poverty , Education , and Health Budgets Impact Life Expectancy? The Mediating Role of Sanitation. *Frontiers In Business and Economics*, 3(August), 95–104. <https://doi.org/10.56225/finbe.v3i2.319>
8. Mankiw, N. G. (2018). *Principles of economics (8th ed.)*. Cengage Learning.
9. Merdikawati, N., & Izzati, R. Al. (2025). Minimum Wage Policy and Poverty in Indonesia. *The World Bank Economic Review*, 39(1), 191–210. <https://doi.org/10.1093/wber/lhae022>
10. Nasirudin, A., & Haviz, M. (2025). Pengaruh Tingkat Pendidikan , Pengangguran Terbuka , dan PDRB terhadap Tingkat Kemiskinan di Indonesia. *Jurnal Riset Ilmu Ekonomi Dan Bisnis*, 5(1), 21–28.
11. Rinaldi, M., Safira, V., Ramadhani, M. R., Pratama, V. D., & Afifah, Z. (2025). The Influence of Minimum Wages and Unemployment Rates on Poverty in Indonesia for the Period 2015-2025. *International Journal For Advance Research*, 2(3), 125–132.
12. Rozaini, N., et al. (2024). The relationship between economic growth and poverty: Evidence from Indonesia. *Journal of Economic Development Studies*.
13. S Becker, G. (2016). *Human Capital. Understanding Modern Warfare: Second Edition*, March, 1–16. <https://doi.org/10.3138/9781487513016-002>
14. Sari, H. F., Mubyarto, N., & Safitri, Y. (2024). Pengaruh Pendidikan , Pengangguran dan Pertumbuhan Ekonomi Terhadap Tingkat Kemiskinan di Provinsi Jambi Tahun 2018-2022 Program Studi Ekonomi Syariah , Universitas Islam Negeri Sulthan Thaha. *Jurnal Pendidikan Tambusai*, 8(1), 11715–11723.
15. Sari, Y., & Falianto, A. (2020). Pengaruh Pertumbuhan Ekonomi, Pendidikan Dan Pengangguran Terhadap Kemiskinan Di Provinsi Jambi. *Jurnal Development*, 8(2), 103–113.
16. Sihotang, S. M., & Hermanto, B. A. (2025). The Impact of Minimum Wage , Economic Growth , and Unemployment on Poverty Levels in Sumatera. *Formosa Journal of Science and Technology*, 4(1), 113–124.
17. Todaro, M. P., & Smith, S. C. (2015). *Economic development (12th ed.)*. Pearson.
18. Weeks, W. B., Chang, J. E., Pagán, J. A., & Adamson, E. (2024). The Ecology of Economic Distress and Life Expectancy. *International Journal of Public Health*, 69(July), 1–7. <https://doi.org/10.3389/ijph.2024.1607295>