

Determinant Factors of the Unemployment Rate in Banten Province

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ABSTRACT

Every country strives to minimize the unemployment rate as much as possible. The Open Unemployment Rate in Banten Province, which has consistently been higher than the national average, has become a serious concern. This study aims to examine the influence of the labor force participation rate, economic growth, average years of schooling, and city minimum wage on the open unemployment rate in Banten Province during the 2017-2023 period. This research utilizes Eviews 12 software with a panel data approach, combining cross-sectional and time-series data over seven years, from 2017 to 2023. The method applied in this study is the Fixed Effect Model (FEM). The data analyzed in this study are secondary data obtained from the Central Statistics Agency (BPS) of Banten Province. The research findings indicate that the labor force participation rate, economic growth, and average years of schooling have a negative and significant effect on the open unemployment rate in eight districts/cities in Banten Province from 2017 to 2023. Conversely, the city minimum wage variable has a positive but insignificant effect. Additionally, the independent variables, namely the labor force participation rate, economic growth, average years of schooling, and city minimum wage, simultaneously have a significant effect on the dependent variable, which is the open unemployment rate in Banten Province during the 2017-2023 period, contributing 76.48% to the variation in the open unemployment rate in Banten Province.

Keywords: *Open Unemployment Rate, Labor Force Participation Rate, Economic Growth, Average Length of Schooling, City Minimum Wage, FEM*

ABSTRAK

Setiap negara berusaha untuk meminimalkan tingkat pengangguran sebanyak mungkin. Tingkat Pengangguran Terbuka di Provinsi Banten, yang secara konsisten lebih tinggi dari rata-rata nasional, menjadi perhatian serius. Penelitian ini bertujuan untuk mengkaji pengaruh tingkat partisipasi angkatan kerja, pertumbuhan ekonomi, rata-rata tahun sekolah, dan upah minimum kota terhadap tingkat pengangguran terbuka di Provinsi Banten selama periode 2017-2023. Penelitian ini memanfaatkan *software* Eviews 12 dengan pendekatan data panel, menggabungkan data *cross-sectional* dan *time-series* selama tujuh tahun, dari tahun 2017 hingga 2023. Metode yang diterapkan dalam penelitian ini adalah Fixed Effect Model (FEM). Data yang dianalisis dalam penelitian ini merupakan data sekunder yang diperoleh dari Badan Pusat Statistik (BPS) Provinsi Banten. Temuan penelitian menunjukkan bahwa tingkat partisipasi angkatan kerja, pertumbuhan ekonomi, dan rata-rata tahun sekolah berpengaruh negatif dan signifikan terhadap tingkat pengangguran terbuka di delapan kabupaten/kota di Provinsi Banten dari tahun 2017 hingga 2023. Sebaliknya, variabel upah minimum kota memiliki efek positif tetapi tidak signifikan. Selain itu, variabel independen yaitu tingkat partisipasi angkatan kerja, pertumbuhan ekonomi, rata-rata tahun sekolah, dan upah minimum kota, secara bersamaan berpengaruh signifikan terhadap

variabel dependen, yaitu tingkat pengangguran terbuka di Provinsi Banten selama periode 2017-2023, berkontribusi 76,48% terhadap variasi tingkat pengangguran terbuka di Provinsi Banten.

Kata kunci: Tingkat Pengangguran Terbuka, Tingkat Partisipasi Angkatan Kerja, Pertumbuhan Ekonomi, Lama Rata-rata Sekolah, Upah Minimum Kota, FEM

INTRODUCTION

National development aims to create a prosperous, advanced, and competitive society. One of the major challenges in development that many developing countries, including Indonesia, continue to face is the high unemployment rate. Unemployment is also one of the issues addressed in the 17 Sustainable Development Goals (SDGs), specifically SDG 8, which promotes sustainable growth, employment opportunities, and decent work for all individuals. One of the key targets of SDG 8 is to achieve economic growth through the concept of decent work in all United Nations member countries (Küfeoğlu, 2022). This goal emphasizes the importance of fostering inclusive and sustainable economic growth, creating decent job opportunities, and enhancing labor productivity.

From a macroeconomic perspective, unemployment is an important issue that has a significant impact on economic growth, including in Indonesia. Every country strives to reduce the unemployment rate. However, unemployment remains a challenge that must be addressed. If not managed promptly, it can lead to social vulnerability and increase the risk of rising poverty levels (Badan Pusat Statistik, 2015). This issue directly affects the lives of individuals and is one of the biggest challenges in the economy. This situation causes a loss of potential income and has an impact on the decline in the quality of life and welfare of the individuals concerned. An individual is considered unemployed if they are temporarily not working, actively seeking employment, or waiting for the commencement of a new job (Mankiw, 2000).

The unemployment rate is one indicator that reflects economic development's success. Unemployment can be a factor inhibiting a country's economic growth. One of the indicators used to measure unemployment is the open unemployment rate (TPT), which is the percentage of the number of unemployed compared to the workforce. In Indonesia, the TPT has fluctuated from 2002 to 2023, but since 2007, the unemployment rate has shown a downward trend. However, several provinces still have a higher TPT average than the national level, including Banten Province. Even in 2023, Banten Province was named the province with the highest open unemployment rate in Indonesia. The following is the Open Unemployment Rate (TPT) data in Indonesia by province for the year 2023.

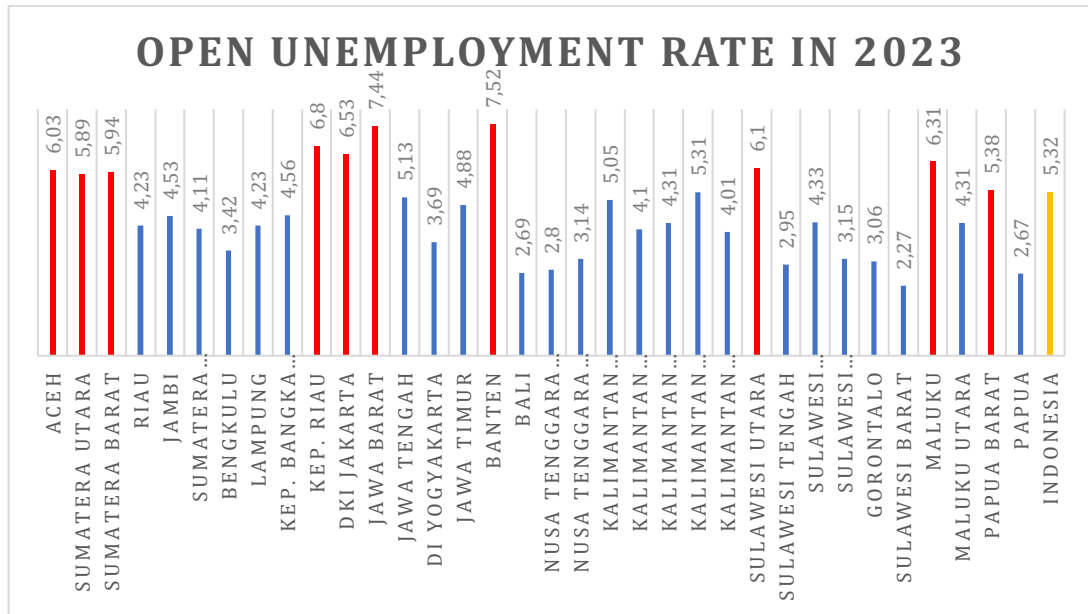


Figure 1. Graph of Open Unemployment Rate (TPT) by Province in 2023

Source: BPS, 2023

Based on the data presented in Figure 1, it is evident that the Open Unemployment Rate (TPT) at the provincial level remains relatively high. In 2023, Indonesia's Open Unemployment Rate index was recorded at 5.32%. Furthermore, there is a gap in unemployment rates between provinces in Indonesia. Specifically, 10 provinces still have an average open unemployment rate higher than the national level. Banten Province recorded the highest unemployment rate, reaching 7.52% in 2023. A visualization of the comparison of the TPT of the Banten Province and the national TPT can be seen in Figure 2.

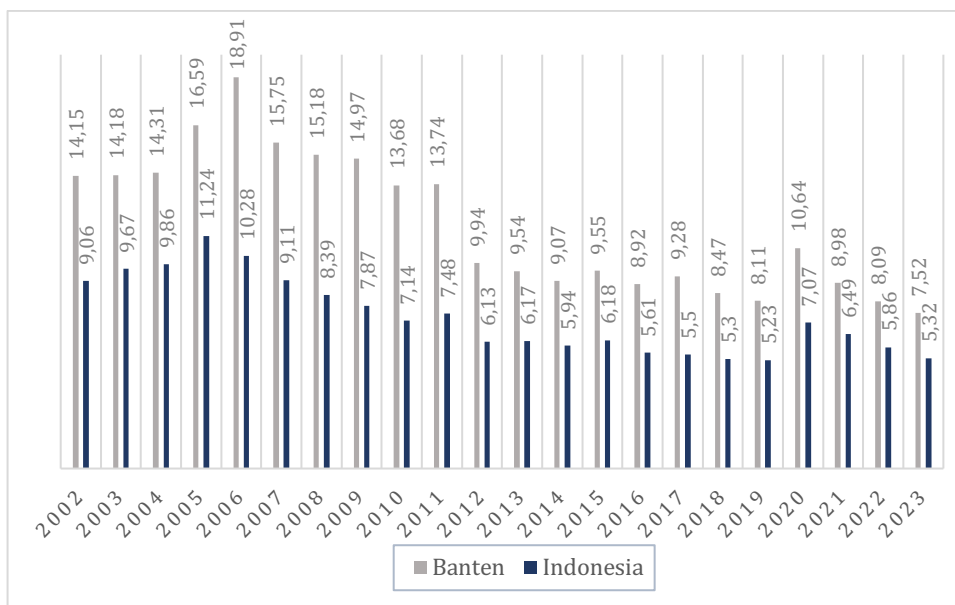


Figure 2. Comparison Chart of TPT for Banten Province and National TPT for the Period 2002 – 2023

Source: BPS, 2023

From 2002 to 2023, the unemployment rate in Banten Province consistently remained higher than the national average. In fact, in 2018, 2019, and 2023, Banten recorded the highest unemployment rate in Indonesia (Filiasari & Setiawan, 2021). Several indicators influencing the unemployment rate include:

The workforce is influenced by population growth, which leads to an increase in the number of workers. The Labor Force Participation Rate (TPAK) is an indicator that measures the proportion of the working-age population actively participating in the labor market, either by working or seeking employment. This indicator provides an overview of the available workforce ready to engage in the production of goods and services. The labor force participation rate (TPAK) is used to determine the percentage of the working-age population engaged in economic activities within a region. This indicator also provides insights into the structure and future conditions of the labor force (Filiasari & Setiawan, 2021).

Economic growth is expected to reduce poverty levels, decrease income inequality, and lower the unemployment rate. Economic growth is a crucial factor in assessing economic performance, particularly in analyzing the outcomes of economic development implemented by a country or region. An economy is considered to be growing when there is an increase in the production of goods and services compared to the previous year. Therefore, economic growth reflects the extent to which economic activities generate additional income or improve societal well-being over a specific period. If the economic growth of a country or region continues to increase, it indicates that the economy is developing positively (Prawira, 2018). The relationship between economic growth and unemployment is explained by Okun's Law, which indicates a significant negative correlation between these two variables. Research findings show that economic growth has a significant impact on the open unemployment rate (Marliana, 2022).

Education is an investment in human resources, the benefits of which will be felt in the future. The modern growth theory emphasizes the importance of human capital development and capacity building to enhance productivity. The fundamental assumption of Human Capital Theory is that individuals can increase their earnings through higher education. Investment in education is expected to improve the quality of human resources, as reflected in the enhancement of individuals' knowledge and skills, thereby contributing to increased work productivity. By enhancing the quality and productivity of individuals, education is expected to create more job opportunities for workers (Sang, 2017). The level of education is one of the factors influencing the unemployment rate. Education serves as a fundamental asset that must be fulfilled to achieve sustainable economic development. The higher the level of education attained by an individual, the greater their working capacity and

productivity in the labor market (Suhendra & Wicaksono, 2020). The level of education plays a significant role in determining an individual's employment status. Higher education attainment increases the likelihood of securing better and more qualified job opportunities. Conversely, individuals with lower educational backgrounds tend to have limited access to decent employment. By obtaining a well-paying job, individuals can earn sufficient income to meet their basic needs while also contributing to the reduction of unemployment rates (Prawira, 2018).

The minimum wage is defined as the lowest monthly salary, which includes wages without allowances or a basic salary with fixed allowances. The City Minimum Wage policy is based on the wage rigidity theory, which states that wages are not always flexible or able to adjust until the equilibrium between labor supply and demand is achieved. Consequently, the City Minimum Wage tends to be higher than the labor market equilibrium, requiring employers to increase production costs to comply with the established regulations (Hajji & Nugroho, 2013).

Based on these problems, it is necessary to study the factors that can affect unemployment in Banten Province. Therefore, this study aims to answer the following research questions: 1) How does the labor force participation rate affect unemployment in Banten Province in 2017-2023? 2) How does economic growth affect unemployment in Banten Province in 2017-2023? 3) How does the average length of school affect unemployment in Banten Province in 2017-2023? 4) How does the city minimum wage affect unemployment in Banten Province in 2017-2023?

RESEARCH METHOD

This study employs a quantitative research approach using panel data, which combines cross-sectional data from four cities and four regencies in Banten Province namely, Pandeglang Regency, Lebak Regency, Tangerang Regency, Serang Regency, Tangerang City, Cilegon City, Serang City, and South Tangerang City with time series data over seven years, from 2017 to 2023. The study utilizes secondary data from official publications of the Central Bureau of Statistics (BPS) of Banten Province. The analysis method is panel data regression, processed using Eviews 12 software. This study examines the relationship between several independent variables, including the labor force participation rate, economic growth, average length of schooling, and city minimum wage, with the open unemployment rate as the dependent variable. Data on the variables applied in this study are listed in Table 1.

Table 1. Measurement of Variables

Variable	Definition	Indicator and the Unit
Unemployment (Y)	An individual who is part of the working-age population or labor force but is not employed during a specific period, is willing to accept a	Open Unemployment Rate (%)

	job, and is actively seeking employment. The open Unemployment rate is the percentage of the number of unemployed compared to the workforce.	
Workforce (X1)	The labor force participation rate (TPAK) is utilized to measure the proportion of the working-age population actively involved in economic activities within a specific area.	Labor Force Participation Rate (%)
Economic Growth Rate (X2)	Gross Regional Domestic Product (GRDP) represents the total added value generated by all business units within a specific region. In this study, the GRDP used is the GRDP of Banten Province based on constant prices.	Economic Growth (%)
Education (X3)	Education is a form of investment in human resources, with returns realized in the future through increased work productivity.	Average Length of Schooling (Year)
Wage (X4)	Wages refer to compensation provided by an employer to an employee as a reward for work or services performed, expressed in monetary terms and determined based on an agreement or legal regulations.	City Minimum Wage (Rupiah)

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Information:

Y	= Open unemployment rate (UNEMPLOYMENT)
α	= Constanta
β	= Regression coefficient
X1	= Labor Force Participation Rate (LABOR)
X2	= Economic Growth (EG)
X3	= Average length of schooling (EDUCATION)
X4	= City Minimum Wage (LOGWAGE)

ε = Error

The model specification test determines the most appropriate model using the Chow Test, Hausman Test, and LM Test (Lagrange Multiplier) based on the chi-squared probability value. After determining the model specification, the next step is the classical assumption test, which includes the normality test, the multicollinearity test, the heteroskedasticity test and the autocorrelation test to assess the validity of the regression model. Subsequently, the analysis continues with the t-test, F-test, and the coefficient of determination, as indicated by the adjusted R-squared value.

RESULTS AND DISCUSSION

The results of the estimation of data processing output regarding the effect of labor force participation rate, economic growth, average length of schooling and city minimum wage on the open unemployment rate. Data analysis uses the panel data regression method, covering the period 2017-2023 with observations from 8 districts/cities in Banten Province. The best model selected in this study is the fixed effect model. The following are the results of the model selection.

Panel Regression Model Selection Results

1. Chow Test

The Chow test is a statistical test used to determine whether the common effect model or the fixed effect model is more appropriate for estimating panel data.

Table 2. Chow Test Results

	Statistic	Prob.
Chi-square	51.452029	0.0000

Source: Author Analysis (Eviews Output 12)

Based on Table 2 of the Chow test results, the probability value is 0.0000. This indicates that the probability value is below 0.05 (5%), meaning that the best and selected model for the next test is the Fixed Effect Model (FEM).

2. Hausman Test

The Hausman test is conducted to compare panel models and determine the most appropriate model between the Fixed Effect Model and the Random Effect Model.

Table 3. Hausman Test Results

	Statistic	Prob.
Chi-square	27.669029	0.0000

Source: Author Analysis (Eviews Output 12)

Referring to Table 3 on the results of the Hausman test, the probability value is 0.0000. This indicates that the probability is below 0.05 (5%), making the Fixed Effect Model (FEM) the most suitable choice for further analysis. Based on the model specification tests presented in Tables 2 and 3, the selected regression model is FEM. Therefore, conducting the Lagrange Multiplier test is no longer necessary.

The next stage after the model specification test is the classical assumption test, which includes the normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test.

The normality test is carried out to determine whether the data is normally distributed or not.

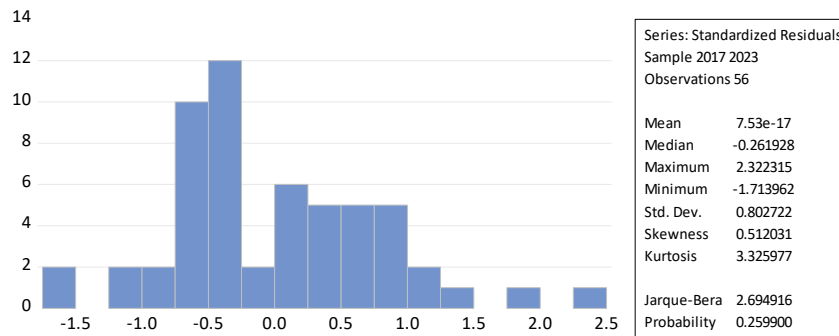


Figure 3. Normality Test Results

Source: Author Analysis (Eviews Output 12)

The results of the normality test show a probability value greater than the significance level of 0.05 ($0.259900 > 0.05$), meaning that the data is normally distributed.

The multicollinearity test is conducted to identify the presence of correlations between independent variables used in this study. If the correlation coefficient between two independent variables exceeds 0.8, it may indicate the presence of multicollinearity. The results of the multicollinearity test are as follows:

Table 4. The Multicollinearity Test Results

	LABOR	EG	EDUCATION	LOGWAGE
LABOR	1.000000	-0.202433	-0.293796	0.013292
EG	-0.202433	1.000000	0.105937	-0.122700
EDUCATION	-0.293796	0.105937	1.000000	0.672057
LOGWAGE	0.013292	-0.122700	0.672057	1.000000

Source: Author Analysis (Eviews Output 12)

Based on the results of the multicollinearity test, no correlation was found between variables exceeding 0.80. This indicates that the regression model used is free from multicollinearity problems.

The heteroskedasticity test is conducted to examine the presence of disturbances in the regression model and to determine whether there is an inequality of variance within the model.

Table 5. The Heteroskedasticity Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.333873	13.13174	0.025425	0.9798
LABOR	0.013864	0.042396	0.327019	0.7452
EG	-0.046965	0.024415	-1.923646	0.0609
EDUCATION	-0.177071	0.562551	-0.314765	0.7544
LOGWAGE	0.079105	1.143176	0.069198	0.9451

Source: Author Analysis (Eviews Output 12)

Based on the results in the table above, the probability values of the independent variables exceed 0.05, indicating that there is no heteroscedasticity problem in the model.

The autocorrelation test aims to identify the relationship between the residuals of one observation and another. One method for detecting autocorrelation is the Durbin-Watson (D-W) test. If the D-W statistic falls within the range of $4 - dU \leq dw \leq 4 - dL$, the model can be considered free from autocorrelation.

Table 6. The Autocorrelation Test Results

N	K	dL	Du	4-dL	4-dU	DW	Conclusion
56	4	1,4201	1,7246	2,5799	2,2754	2,454015	No autocorrelation

Source: Author Analysis (Eviews Output 12)

The table above presents the results of the autocorrelation test using the Durbin-Watson (DW) test, which shows a DW value of 2.454015. Meanwhile, the value of $4 - dU$ is 2,2754, and the value of $4 - dL$ is 2,5799. Based on the predetermined decision criteria, the DW value falls within the range of $4 - dU$ and $4 - dL$, specifically $2,2754 \leq 2.454015 \leq 2,5799$ ($4 - dU \leq dw \leq 4 - dL$). Based on these results, it can be concluded that there is no autocorrelation in the regression model.

The next testing phase is the FEM test, based on the selected model specification. The selection of this model is determined by the results of the Chow test and the Hausman test.

Table 7. The Selected Model Test Results (FEM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	32.46261	26.37111	1.230991	0.2249
LABOR	-0.197413	0.085140	-2.318673	0.0251
EG	-0.263746	0.049030	-5.379306	0.0000
EDUCATION	-2.674774	1.129712	-2.367660	0.0224
LOGWAGE	0.894916	2.295722	0.389819	0.6986

Source: Author Analysis (Eviews Output 12)

Based on the table above, the panel data regression model equation can be explained as follows:

$$\text{UNEMPLOYMENT} = 32.4626118402 - 0.197412611503 \text{ LABOR} - 0.263745508047 \text{ EG} - 2.67477439315 \text{ EDUCATION} + 0.894916470825 \text{ LOGWAGE}$$

The constant coefficient is 32.46261, which means that if the labor force participation rate, economic growth, average years of schooling, and city minimum wage are assumed to be 0, the open unemployment rate will be 32.46261. The regression coefficient for the labor force participation rate is -0.197413, indicating that if the labor force participation rate increases by one unit, the open unemployment rate will decrease by 0.197413. The regression coefficient for economic growth is -0.263746, meaning that if economic growth increases by one unit, the open unemployment rate will decrease by 0.263746. The regression coefficient for the average years of schooling is -2.674774, which means that if the average years of schooling increase by one unit, the open unemployment rate will decrease by 2.674774. The regression coefficient for the city minimum wage is 0.894916, indicating that if the city minimum wage increases by one unit, the open unemployment rate will increase by 0.894916.

The next testing phase includes partial or T-Test and simultaneous tests to analyze the influence of labor force participation rate, economic growth, average years of schooling, and city minimum wage on the open unemployment rate (TPT) in Banten Province. The partial test is conducted to evaluate the impact of each independent variable on the dependent variable individually. Through the partial test, researchers can determine whether each independent variable has a significant effect on the dependent variable when tested separately. The following table presents the results of the partial test in this study.

Table 8. The T-Test Results

Independent Variables	Coefficient	Prob.	Information
LABOR	-0.197413	0.0251	Significant
EG	-0.263746	0.0000	Significant
EDUCATION	-2.674774	0.0224	Significant
LOGWAGE	0.894916	0.389819	Not Significant

Source: Author Analysis (Eviews Output 12)

The table above shows that the labor force participation rate variable has a coefficient value of -0.197413 with a probability of 0.0251. At a 95% confidence level ($\alpha = 0.05$), this indicates that the labor force participation rate has a negative and significant effect on the open unemployment rate (TPT). Economic growth has a coefficient value of -0.263746 with a probability of 0.0000. At a 95% confidence level ($\alpha = 0.05$), this suggests that economic growth has a negative and significant effect on the open unemployment rate. The average years of schooling variable has a coefficient value of -2.674774 with a probability of 0.0224. At a 95% confidence level ($\alpha = 0.05$), this means that the average years of schooling has a negative and significant effect on the open unemployment rate. The city minimum wage variable has a coefficient value of 0.894916 with a probability of 0.389819. At a 95% confidence level ($\alpha = 0.05$), this implies that the city minimum wage has a positive but insignificant effect on the open unemployment rate.

Based on the regression results, the labor force participation rate has a positive and significant impact. This finding is consistent with the study titled *The Influence of Labor Force, Wages, GRDP, and Education on the Unemployment Rate in Banten Province from 2002 to 2019* (Filiyasi & Setiawan, 2021).

The regression results indicate that economic growth has a negative and significant impact on the open unemployment rate. This finding aligns with a study titled *The Influence of Economic Growth Rate, Human Development Index (HDI), and Provincial Minimum Wage on the Open Unemployment Rate in Java Island for the Years 2016-2020 and The Influence of Minimum Wage, Human Development Index and Economic Growth Rate on Open Unemployment*, which also found that economic growth negatively and significantly affects unemployment (Ahmad Sahlan Hadi & Riani, 2022; Muhammad Baihawafi & Asnita Frida Sebayang, 2023).

The regression results indicate that education has a negative and significant impact on the open unemployment rate. This finding is consistent with the study *Analysis of the Influence of Education, Labor Force Participation, and Minimum Wage on Unemployment in Banten Province from 2011 to 2020* (Faizah & Woyanti, 2023).

The regression results indicate that education has a positive and insignificant effect on the open unemployment rate. This finding is consistent with a study titled *The Effect of Minimum Wages and Literacy Rates on Unemployment and Poverty Rates in Bali Province* (Yoga et al., 2022).

F-Test and Regression Coefficient Test (R2)

Table 9. The F-Test & R-squared Results

F-statistic	Prob (F-statistic)	R-squared	Adjusted R-squared	R-squared
17.26093	0.000000	0.811861	0.764827	

Source: Author Analysis (Eviews Output 12)

Statistically, based on the probability value obtained at a significance level (α) of 0.05, the probability value is 0.000, with an F-statistic of 17.26093. This indicates that the independent variables labor force participation rate, economic growth, average years of schooling, and city minimum wage have a significant simultaneous effect on the dependent variable, namely the open unemployment rate.

Referring to the table above, using a significance level (α) of 0.05 and a simplified approach to assess the R-Squared value, a result of 0.764827 is obtained. This suggests that 76.48% of the variations in the open unemployment rate across the eight districts/cities in Banten Province from 2017 to 2023 can be attributed to the variables of labor force participation, economic growth, average years of schooling, and city minimum wage. Meanwhile, the remaining 23.52% is influenced by other factors not included in the model.

CONCLUSION AND SUGGESTIONS

The final analysis in this study concludes that the labor force participation rate, economic growth, and average years of schooling have a negative and significant impact on the open unemployment rate in 8 districts/cities in Banten Province from 2017 to 2023. Meanwhile, the city minimum wage variable has a positive but insignificant effect. Simultaneously, the variables of the labor force participation rate, economic growth, average years of schooling, and the city minimum wage collectively influence the open unemployment rate in Banten Province from 2017 to 2023.

The acceleration of economic growth plays a crucial role in reducing unemployment rates. Therefore, the government is expected to give greater attention to strategic measures aimed at boosting economic growth in Banten Province. Additionally, policies regarding the determination of the City Minimum Wage should be carefully considered to ensure fair benefits for both workers and employers. On the other hand, improving the quality of education must be a top priority, particularly through the strengthening of vocational education, which focuses on the mastery of practical skills. Vocational education should be designed to better prepare individuals for the workforce by emphasizing training and the development of both soft skills and hard skills, which are highly demanded in the industry. Thus, vocational education is expected to contribute to economic growth while reducing the unemployment rate in Banten Province.

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