

ANALYSIS OF THE DETERMINANTS OF THE OPEN UNEMPLOYMENT RATE IN INDONESIA: THE INFLUENCE OF GDP, INVESTMENT, EDUCATION, PROVINCIAL MINIMUM WAGE, AND LABOR FORCE PARTICIPATION RATE IN 2021–2023

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Abstract

This study aims to analyze the effect of Provincial Minimum Wage (UMP), Gross Domestic Product (GDP), education, investment, and Labor Force Participation Rate (TPAK) on the Open Unemployment Rate (TPT) across 38 provinces in Indonesia during the 2021–2023 period. This study employs a quantitative approach using secondary data obtained from Statistics Indonesia (BPS), Bank Indonesia, and the Ministry of Investment/BKPM. The analytical method used is panel data regression. Based on the Chow and Hausman tests, the Fixed Effect Model (FEM) was selected as the best estimation model. The empirical results indicate that partially, GDP and UMP have a negative and statistically significant effect on the Open Unemployment Rate. This indicates that an increase in economic growth and appropriate minimum wage policies are effective in stimulating aggregate demand and reducing unemployment. Conversely, investment, education, and TPAK do not show statistically significant impacts on the unemployment rate during the observed period. Simultaneously, all independent variables significantly affect the Open Unemployment Rate in Indonesia, with an Adjusted R-Squared value of 94.88%.

Keywords: Open Unemployment Rate, GDP, UMP, Panel Data Regression, Fixed Effect Model.

Introduction

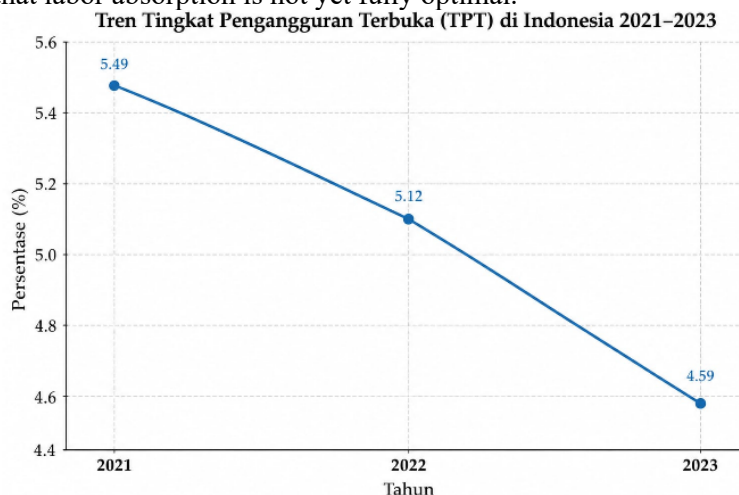
Economic development is a crucial process in improving public welfare and creating national economic stability. The success of economic development can be measured through various macroeconomic indicators, such as economic growth, investment, unemployment rates, human resource quality, and labor force participation rates. In this process, the government plays a role in creating economic conditions that provide broad employment opportunities. If job growth fails to keep pace with the increase in the workforce, unemployment will emerge, impacting public welfare and socioeconomic inequality. The Open Unemployment Rate (TPT) is an indicator used to measure the percentage of unemployed people relative to the total workforce. A high unemployment rate indicates that the economy is not yet optimally utilizing its human resources. Unemployment not only lowers people's incomes but also has the potential to increase poverty, crime, and social inequality. In the context of a developing country like Indonesia, unemployment is a complex problem because it is influenced by population growth, education quality, investment, and the economic sector's ability to absorb labor.

Indonesia experienced significant employment dynamics during the 2021–2023 period. The post-COVID-19 economic recovery has led to changes in various economic sectors, particularly production, investment, and the labor market. Many companies have begun increasing production capacity and recruiting workers after experiencing a decline in economic activity during the pandemic. However, this increase in economic activity has not fully resolved the unemployment problem due to the persistent imbalance between labor force growth and the economic sector's ability to create new jobs. According to data from the Central Statistics Agency (BPS), the unemployment rate in Indonesia has gradually decreased from 5.49% in 2021 to 5.12% in 2022 and then again to 4.59% in 2023. This

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decline indicates an improvement in the national labor market, as economic activity rebounds post-pandemic. However, this also indicates that labor absorption is not yet fully optimal.



**Figure 1. Trend in Open Unemployment Rate (TPT)
(in percentage per year)**

Source: Process by author, 2026

One factor thought to influence the Open Unemployment Rate is Gross Domestic Product (GDP) growth. GDP is the primary indicator used to measure the total value of goods and services produced by a country within a given period. GDP growth reflects increased national economic activity, which is expected to create new jobs. Okun's Law theory explains that economic growth has a negative relationship with the unemployment rate. The higher a country's economic growth, the greater the economic sector's ability to absorb labor, thus tending to decrease the unemployment rate. Indonesia's GDP growth rate increased from 3.91% in 2021 to 5.72% in 2022 and reached 5.50% in 2023. During the same period, the unemployment rate (TPT) gradually declined from 5.49% in 2021 to 5.12% in 2022 and reached 4.59% in 2023. This trend demonstrates a consistent negative relationship between economic growth and the unemployment rate.



**Figure 2. Development of GDP and TPT in Indonesia
(in percentage per year)**

Source: Process by author, 2026

Besides GDP, investment is also a crucial factor influencing the TPT (Open Unemployment Rate). Investment plays a role in increasing production capacity, expanding business activities, and creating new jobs. The higher the investment inflow into a country, the greater the opportunity for productive economic activity that can absorb labor. In Indonesia, investment value increased from IDR 13,583 trillion in 2021 to IDR 16,683 trillion in 2022 and again to IDR 20,407 trillion in 2023. During the same period, the TPT decreased from 5.49% to 4.59%. However, the effectiveness of investment in reducing unemployment is also influenced by the characteristics of the investment, particularly whether it is labor-intensive or capital-intensive.



Figure 3. Development of Investment and TPT in Indonesia (in trillion rupiah for investment and percentage per year for TPT)

Source: Process by author, 2026

Another factor influencing the TPT is the Provincial Minimum Wage (UMP). The UMP is a government policy aimed at improving worker welfare by establishing minimum wage standards. However, increasing the minimum wage can also increase production costs, leading some companies to reduce their workforce to reduce operational costs. Therefore, the relationship between the UMP and unemployment remains a matter of debate in labor economics studies.

In addition to the Provincial Minimum Wage (UMP), education and the Labor Force Participation Rate (TPAK) are also closely related to the unemployment rate. Education is expected to increase productivity and job opportunities, but in practice, educated unemployment persists due to a mismatch between graduate competencies and industry needs. Meanwhile, an increase in the TPAK indicates a growing number of people entering the job market. If this is not matched by adequate job creation, the unemployment rate could rise.

Theoretical Study

Open Unemployment Rate (TPT)

The Open Unemployment Rate (TPT) is an employment indicator used to measure the percentage of the number of unemployed to the total workforce in a certain period and region. According to the Central Statistics Agency, open unemployment is the working age population who do not have a job and are looking for work, preparing a business, or feel it is impossible to get a job. According to Sadono Sukirno, unemployment occurs when the number of available workers exceeds the number of jobs the economy can provide. Generally, open unemployment is divided into several types: frictional, structural, seasonal, and cyclical unemployment.

In this study, the Open Unemployment Rate is used as the dependent variable because it reflects the labor market conditions in Indonesia during the 2021–2023 period. Changes in the Open Unemployment Rate are influenced by various economic and employment factors, such as Gross Domestic Product (GDP), investment, education level, Provincial Minimum Wage (UMP), and Labor Force Participation Rate (TPAK). These variables were chosen because of their theoretical and empirical links to the economy's ability to create jobs and reduce unemployment.

Gross Domestic Product (GDP)

Gross Domestic Product (GDP) is an important indicator used to measure a country's level of economic activity. GDP represents the total value of final goods and services produced by all economic sectors within a specific region during a specific period, usually a year. This indicator is used to assess the state of national economic growth and development. According to Mankiw, GDP reflects a country's ability to generate output through production, consumption, investment, and trade. An increase in GDP indicates increased economic activity, which in turn increases public income and national production capacity. Therefore, GDP is often used as a benchmark for the success of a country's economic development. GDP can be formulated as follows:

$$GDP = C + I + G + (X - M)$$

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Output is the sum of spending categories across households, businesses, governments, and international transactions. Each segment is a source of total demand.

Information:

- C = Household consumption
- I = Investment
- G = Government spending
- X = Export
- M = Import

Okun's Law theory explains that economic growth has an inverse relationship with the unemployment rate. When GDP increases, companies tend to increase the production of goods and services, thereby increasing the demand for labor. This situation encourages increased employment and lowers the unemployment rate. Conversely, a slowdown in economic growth can lead to a decline in production activity, leading to an increase in the unemployment rate. In this study, GDP is used as an independent variable suspected of influencing the Open Unemployment Rate. Higher GDP growth is expected to increase labor absorption, thereby decreasing the unemployment rate.

H1: GDP has a negative and significant effect on the Open Unemployment Rate (TPT) in Indonesia for the 2021–2023 period.

Investment

Investment is the expenditure made to acquire assets or capital goods to increase future production capacity. Investment plays a crucial role in driving economic growth because it can create new economic activity, expand business scale, and open up job opportunities for the community. According to the Harrod-Domar theory, investment is strongly linked to economic growth. The greater the investment, the greater the economy's ability to increase national production capacity. Increased investment will drive output growth and create new job opportunities, thereby reducing unemployment. Keynesian theory also explains that investment is a key component of aggregate demand, influencing increased economic activity. When investment increases, demand for capital goods and labor also increases. This encourages companies to expand their businesses and increase their workforce. Investment can be classified into government investment and private investment. Furthermore, investment is also differentiated into domestic investment and foreign investment. In terms of employment, labor-intensive investments are considered more capable of absorbing workers than capital-intensive investments, which rely more heavily on technology and production machinery. In this study, investment is used as an independent variable suspected of influencing the Open Unemployment Rate. Increased investment is expected to create new jobs, thereby reducing unemployment.

To measure investment growth from year to year, the formula used is:

$$\text{Growth of Investasi}_t = [\ln (\text{Investasi}_t) - \ln (\text{Investasi}_{t-1})] \times 100\%$$

(Source: Gujarati, 2003)

H2: Investment has a negative and significant effect on the Open Unemployment Rate (TPT) in Indonesia for the 2021–2023 period.

Education

Education is a learning process aimed at improving an individual's knowledge, skills, and abilities to navigate social life and the workplace. Education plays a crucial role in improving the quality of human resources and workforce productivity. According to Gary Becker's Human Capital theory, education is a form of investment in human resources that can improve an individual's work abilities. Individuals with higher levels of education generally have better productivity and greater job opportunities than workers with lower levels of education. Education also serves to improve the workforce's ability to adapt to technological developments and changes in economic structures. The higher a person's education, the easier it is for them to adapt to the demands of the modern job market. Therefore, education is a crucial factor in efforts to reduce unemployment.

However, improving education does not always significantly reduce unemployment. The phenomenon of educated unemployment remains common due to a mismatch between graduate competencies and industry needs. Furthermore, the growth in the number of higher education graduates often outpaces the growth in available jobs. In this study, education is used as an independent variable suspected of influencing the Open Unemployment Rate. Improving the quality of education is expected to produce a more competent workforce, thereby increasing employment opportunities.

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H3: Education has a negative and significant effect on the Open Unemployment Rate (TPT) in Indonesia for the 2021–2023 period.

Provincial Minimum Wage (UMP)

The Provincial Minimum Wage (UMP) is a minimum wage standard set by the provincial government to protect workers and ensure they receive a decent income. The UMP policy aims to improve worker welfare while maintaining economic stability. The UMP (minimum wage) in Indonesia is set annually, taking into account several factors, such as inflation, economic growth, and the community's need for a decent standard of living. The policy of increasing the UMP is expected to improve worker welfare and reduce income disparities between social groups. From an economic perspective, the impact of the minimum wage on unemployment has two theoretical perspectives. Classical labor market theory states that excessively high minimum wages can increase company operating costs, stimulate efficiency, and increase unemployment. However, Keynesian theory refutes this, stating that minimum wage increases actually increase purchasing power and aggregate consumption. This increased consumption stimulates economic activity in the real sector, encourages company expansion, and ultimately increases employment. Considering Indonesia's post-pandemic empirical conditions, it is suspected that the UMP adjustment policy acts as a stimulus for public purchasing power.

To measure the growth of the Provincial Minimum Wage (UMP) from year to year, the formula used is:

$$\text{Growth of UMP}_t = [\ln(\text{UMP}_t) - \ln(\text{UMP}_{t-1})] \times 100\%$$

H4: The Provincial Minimum Wage (UMP) has a negative and significant effect on the Open Unemployment Rate (TPT) in Indonesia for the 2021–2023 period.

Labor Force Participation Rate (TPAK)

The Labor Force Participation Rate (TPAK) is the percentage of the labor force relative to the total working-age population. This indicator is used to measure the level of community involvement in economic activities and the labor market. According to the Central Statistics Agency (BPS), the labor force consists of working-age residents who are employed and those seeking work. A higher TPAK indicates a greater proportion of the population is economically active. Labor force participation rates are influenced by various factors, such as education, wage levels, economic conditions, and population structure.

Labor economics theory explains that increasing the workforce can drive economic growth if sufficient jobs are available. However, if labor force growth is not accompanied by increased employment, the unemployment rate has the potential to rise. The TPAK also reflects the quality of human development and the socioeconomic conditions of a community. High labor force participation indicates that people have the motivation and opportunity to engage in productive economic activities. However, the quality of the workforce remains a crucial factor in determining the success of labor absorption in the labor market. In this study, the TPAK is used as an independent variable suspected of influencing the open unemployment rate in Indonesia in the 2021–2023 period. A high labor force needs to be balanced with economic growth and job creation to prevent an increase in the unemployment rate.

H5: The Labor Force Participation Rate (TPAK) has a positive and significant effect on the Open Unemployment Rate (TPT) in Indonesia for the 2021–2023 period.

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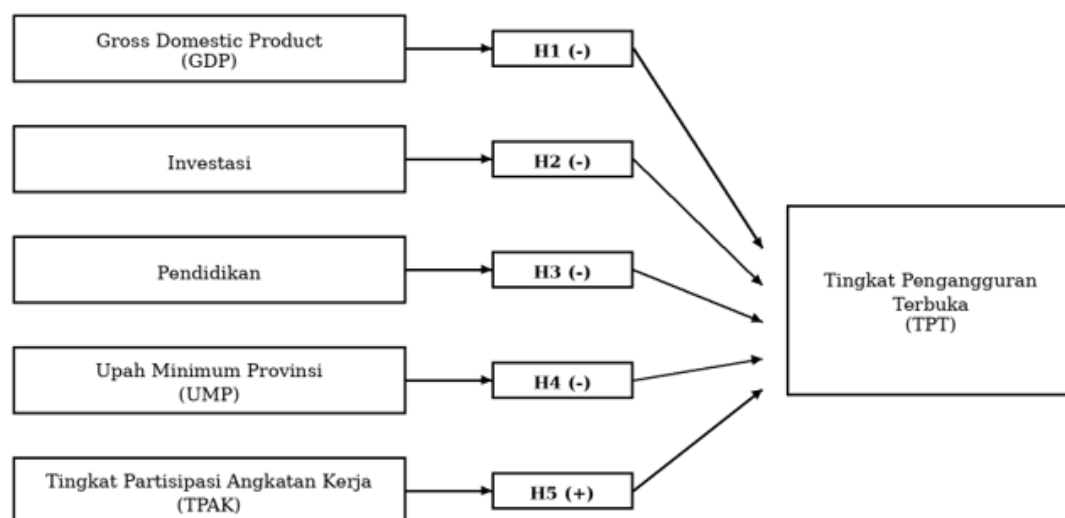


Figure 4. Research Framework

Source: Process by author, 2026

Research methods

This study uses panel data consisting of Gross Domestic Product (GDP), investment, education, Provincial Minimum Wage (UMP), Labor Force Participation Rate (TPAK), and Open Unemployment Rate (TPT) variables in Indonesia for the 2021–2023 period. The data used are secondary data obtained from official publications of the Central Statistics Agency (BPS) and other relevant government agencies. The sampling technique used in this study was purposive sampling, taking into account the availability and completeness of data during the study period. To determine the most appropriate panel data regression model, this study employed model selection tests consisting of the Chow test, the Hausman test, and the Lagrange Multiplier test. Furthermore, classical assumption tests were conducted to ensure that the regression model met the BLUE (Best Linear Unbiased Estimator) criteria. The classical assumption tests used in this study included normality, multicollinearity, heteroscedasticity, and autocorrelation.

The panel data regression model used in this study is formulated as follows:

$$TPT = \alpha + \beta_1 GDP + \beta_2 INVESTMENT + \beta_3 EDUCATION + \beta_4 UMP + \beta_5 TPAK + \varepsilon$$

Information:

- TPT = Open Unemployment Rate
- GDP = Gross Domestic Product
- INVESTMENT = Investment
- EDUCATION = Education
- UMP = Provincial Minimum Wage
- TPAK = Labor Force Participation Rate
- α = Constant
- $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ = Regression coefficients
- ε = Error term or nuisance variable

Research result

This study used panel data from 38 provinces in Indonesia during the 2021–2023 period, resulting in a theoretical total of **114 initial observations**. However, due to incomplete secondary data publications for several new provinces in 2021, the total sample collected was **99**. Furthermore, there was one outlier in the Riau Islands province in 2021 that prevented the model from passing the normality test. Therefore, this outlier was removed, resulting in a final estimated number of **98 observations**. Based on the results of the Chow test in Table 1, the Cross-section Chi-square probability value is 0.0000 or less than 0.05. These results indicate that the Fixed Effect Model (FEM) is more appropriate to use than the Common Effect Model (CEM). Furthermore, the results of the Hausman test show a probability value of 0.0000 or less than 0.05 so that the best model chosen is the Fixed Effect Model (FEM). Meanwhile, the results of the Lagrange Multiplier test show a Breusch-Pagan probability value of 0.0000

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which indicates that the Random Effect Model (REM) is better than the Common Effect Model (CEM). However, because the results of the Hausman test select FEM as the best model, this study uses the Fixed Effect Model (FEM).

Table 1. Model Selection Test Results

Jenis Uji	Metode	Nilai Probabilitas	Keputusan
Uji Chow	Cross-section Chi-square	0.0000	Fixed Effect Model (FEM)
Uji Hausman	Cross-section Random	0.0000	Fixed Effect Model (FEM)
Uji Lagrange Multiplier	Breusch-Pagan	0.0000	Random Effect Model (REM)

Source: EViews output (processed data)

In Table 2, a normality test was performed using the Jarque-Bera method to determine whether the residual data were normally distributed. The test results showed a probability value of 0.065, which is greater than the 0.05 significance level ($0.065 > 0.05$). Therefore, it can be concluded that the residual data in the regression model is normally distributed, thus meeting the assumption of normality. Additionally, a multicollinearity test was conducted using a Correlation Matrix to determine whether there was an excessively strong relationship between the independent variables. The test results showed that all correlation values between the independent variables were below 0.80. Therefore, the regression model did not experience multicollinearity, allowing the independent variables in the study to be used together in the model.

Next, a heteroscedasticity test was performed using the White Test to determine whether there was inequality in the residual variances in the regression model. The test results showed a probability value greater than 0.05 ($\text{Prob.} > 0.05$). This indicates that the regression model does not experience heteroscedasticity, so the residual variance is constant. Additionally, an autocorrelation test was conducted using the Durbin-Watson method to determine whether there was a correlation between residuals from different periods. The test results showed a Durbin-Watson value of 2.158168. This value is close to 2, thus concluding that the regression model does not experience autocorrelation. Based on all the results of the classical assumption tests, it can be concluded that the panel data regression model in this study has met the classical assumptions and is suitable for use for further regression analysis.

Table 2. Results of the Classical Assumption Test

Jenis Uji	Metode	Nilai/Kriteria	Kesimpulan
Uji Normalitas	Jarque-Bera	Prob. 0.065 > 0.05	Data berdistribusi normal
Uji Multikolinearitas	Correlation Matrix	Seluruh korelasi < 0.80	Tidak terjadi multikolinearitas
Uji Heteroskedastisitas	White Test	Prob. > 0.05	Tidak terjadi heteroskedastisitas
Uji Autokorelasi	Durbin-Watson	DW = 2.158168	Tidak terjadi autokorelasi

Source: EViews output (processed data)

Based on the regression results in Table 3, the Provincial Minimum Wage (UMP) variable has a negative and significant effect on the Open Unemployment Rate with a coefficient value of -6.220396 and a probability of 0.0000. The Gross Domestic Product (GDP) variable also shows a negative and significant effect on the Open Unemployment Rate with a coefficient value of -0.100879 and a probability of 0.0018. These results indicate that increasing the UMP and GDP can reduce the unemployment rate in Indonesia. Meanwhile, the investment variable has a negative coefficient of -0.105422 with a probability value of 0.4559, thus having no significant effect on the Open Unemployment Rate. The education variable also shows a negative but insignificant effect with a coefficient value of -0.018813 and a probability value of 0.3899. In addition, the Labor Force Participation Rate (TPAK) variable has a negative coefficient of -0.047219 with a probability value of 0.2290, thus also having no significant effect on the Open Unemployment Rate.

Table 3. Panel Data Regression Results

Variabel	Koefisien	Std. Error	t-Statistic	Probabilitas	Keterangan
C	103.0385	17.79874	5.789089	0.0000	Signifikan
UMP	-6.220396	1.322654	-4.702964	0.0000	Signifikan
GDP	-0.100879	0.030961	-3.258291	0.0018	Signifikan
INVESTASI	-0.105422	0.140464	-0.750526	0.4559	Tidak Signifikan
PENDIDIKAN	-0.018813	0.021720	-0.866146	0.3899	Tidak Signifikan
TPAK	-0.047219	0.038855	-1.215283	0.2290	Tidak Signifikan

Source: EViews output (processed data)

Based on the simultaneous test results in Table 4, the F-statistic value is 49.63210 with a probability value of 0.000000 or less than 0.05. These results indicate that the variables of GDP, investment, education, UMP, and TPAK simultaneously have a significant effect on the Open Unemployment Rate in Indonesia. In addition, the Adjusted R-Squared value of 0.948850 indicates that 94.88% of the variation in the Open Unemployment Rate can be explained by the variables of GDP, investment, education, UMP, and TPAK, while the remaining 5.12% is explained by other variables outside the research model.

Table 4. Simultaneous Test Results and Determination Coefficient

Pengujian	Nilai	Keterangan
F-Statistic	49.63210	Model signifikan secara simultan
Prob(F-Statistic)	0.000000	Signifikan
Adjusted R-Squared	0.948850	Variabel independen menjelaskan 94,88% variasi TPT
Durbin-Watson Stat	2.158168	Tidak terjadi autokorelasi

Source: EViews output (processed data)

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The panel data regression equation in this study is formulated as follows:

$$\text{TPT} = 103.0385 - 6.220396(\text{UMP}) - 0.100879(\text{GDP}) - 0.105422(\text{INVESTMENT}) - 0.018813(\text{EDUCATION}) - 0.047219(\text{TPAK})$$

Discussion

The Effect of Provincial Minimum Wage (UMP) on the Open Unemployment Rate (TPT)

Based on a regression analysis using the Fixed Effect Model (FEM) on panel data, the Provincial Minimum Wage (UMP) variable shows a coefficient of -6.220396 with a probability of 0.0000. This probability value is far below the 0.05 significance limit, indicating that the UMP has a significant negative impact on the Open Unemployment Rate (TPT). This finding suggests that each increase in the UMP is followed by a significant decrease in the unemployment rate in Indonesia during the 2021–2023 period.

These results reject the assumption of classical labor market theory, which states that high wages will always trigger mass layoffs due to high labor costs. Instead, these findings reinforce the Keynesian approach to efficiency wage theory. During the post-pandemic recovery period (2021–2023), the policy of increasing the minimum wage (UMP) successfully acted as a stimulus, increasing the purchasing power and consumption of working households. As public consumption increased, market demand for goods and services also surged. This encouraged businesses to increase production volumes and recruit new workers. Furthermore, decent wages increase worker motivation and productivity, which minimizes labor turnover and optimizes local industrial output.

The Influence of Gross Domestic Product (GDP) on the Open Unemployment Rate (TPT)

The regression analysis results show that the Gross Domestic Product (GDP) variable has a coefficient of -0.100879 with a probability value of 0.0018. This value is smaller than the 0.05 significance level, thus concluding that GDP has a negative and significant impact on the Open Unemployment Rate (TPT). This indicates that economic growth has proven effective as an instrument for reducing unemployment in Indonesia.

The findings of this study align with Okun's Law, which states an inverse relationship between economic growth and unemployment. When national output, or GDP, increases, it reflects a surge in production activity across various economic sectors. To increase output capacity, companies automatically increase their workforce intake. This phenomenon is clearly reflected in the empirical data trend from 2021–2023, where the recovery in economic activity, marked by GDP growth from 3.91% (2021) to 5.50% (2023), successfully reduced the national unemployment rate from 5.49% to 4.59%.

The Effect of Investment on the Open Unemployment Rate (TPT)

The investment variable shows a coefficient of -0.105422 with a probability value of 0.4559. Because this probability value is greater than the 0.05 significance level, it can be concluded that investment has a negative but **insignificant impact** on the Open Unemployment Rate (TPT) in Indonesia during the study period. Theoretically (Harrod-Domar), investment should be the main driver of job expansion. However, this insignificant short-term result occurs because investment in Indonesia in the 2021–2023 period is dominated by capital-intensive investments and high-tech national strategic infrastructure projects. Incoming investment is mostly allocated to the purchase of automation machines, system digitization, and downstream commodity projects that do not require large numbers of unskilled labor. As a result, the surge in investment value from 13,583 trillion rupiah to 20,407 trillion rupiah is not necessarily sensitive to an immediate reduction in the open unemployment rate.

The Influence of Education on the Open Unemployment Rate (TPT)

The regression analysis results show that the education factor has a coefficient of -0.018813 with a probability of 0.3899. This probability is greater than the significance limit of 0.05, indicating that education contributes negatively but **not significantly** to the Open Unemployment Rate (TPT). Improving the average quality of public education has not had a significant impact on reducing the unemployment rate. Although according to Gary Becker's Human Capital theory, education plays a vital role in increasing individual productivity, the reality in the Indonesian labor market shows a mismatch phenomenon. The structure of the formal education curriculum is considered not fully adaptive to the real competencies sought by the modern industrial world today. As a result, the acceleration of the number of new diploma and bachelor's graduates is moving faster than the availability of white-collar jobs. This imbalance gives rise to the phenomenon of educated unemployment, where graduates of higher education institutions tend to choose unemployment in search of prestigious jobs rather than absorbing existing jobs.

The Influence of the Labor Force Participation Rate (TPAK) on the Open Unemployment Rate (TPT)

The Labor Force Participation Rate (TPAK) variable obtained a coefficient value of -0.047219 with a probability value of 0.2290. This figure exceeds the 0.05 significance limit, indicating that TPAK contributes negatively but **not significantly** to the Open Unemployment Rate (TPT). Conceptually, the increase in the TPAK indicates a larger proportion of the working-age population actively offering their services in the labor market. Fluctuations in labor supply have not significantly impacted the stability of the unemployment rate. This suggests that the Indonesian labor market during 2021–2023 was relatively stable in absorbing the incoming workforce, aided by the post-pandemic expansion of the informal sector (such as the gig economy and digital MSMEs), which acted as a safety valve in accommodating the new workforce without triggering shocks to the macro-level TPT indicator.

Conclusion and Suggestions

Based on panel data regression analysis with the selected Fixed Effect Model (FEM) model in 38 provinces in Indonesia for the 2021–2023 period, the following conclusions can be drawn:

1. The Gross Domestic Product (GDP) and Provincial Minimum Wage (UMP) variables were partially proven to have a negative and significant effect on the Open Unemployment Rate (TPT). This demonstrates that the recovery of economic output and strengthening workers' purchasing power through the minimum wage effectively encourages employment. The government is expected to maintain stable economic growth by increasing production activities, productive investment, and developing labor-intensive sectors that can absorb a wide range of workers. Furthermore, the policy of determining the UMP needs to be implemented in a balanced manner, taking into account labor productivity and company capabilities to ensure that workers' welfare remains high without reducing employment.
2. The variables Investment, Education, and Labor Force Participation Rate (TPAK) have a negative but insignificant effect on the TPT. This indicates structural constraints in the form of the dominance of capital-intensive investments and a mismatch between the competencies of educational graduates and the needs of real industry. Therefore, the government needs to improve the quality of investment to be more oriented towards labor-intensive sectors rather than capital-intensive ones. Furthermore, it is necessary to improve the quality of education and job training tailored to industry needs to reduce the mismatch between workforce competencies and the job market. Furthermore, the government also needs to strengthen skills development programs and vocational training for productive-age individuals to ensure the quality of the workforce is more competitive and ready to face technological developments and changes in the economic structure. These efforts are expected to increase labor absorption and reduce the unemployment rate in a sustainable manner.
3. Simultaneously, all independent variables together have a significant influence in explaining the variation in the Open Unemployment Rate in Indonesia of 94.88%.

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