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# Determinants of Open Unemployment in Indonesia: The Role of Average Length of Schooling, Minimum Wage, and Economic Growth

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ABSTRACT

Open unemployment remains one of the most persistent socioeconomic challenges in Indonesia, despite continuous improvements in macroeconomic performance and labor market policies. This study investigates the effects of Average Length of Schooling (ALS), Minimum Wage (MW), and Economic Growth (EG) on the Open Unemployment Rate (OUR) in Indonesia over the 2015–2024 period. A descriptive-verificative quantitative approach was employed using annual secondary data obtained from Statistics Indonesia (BPS). The data were analyzed using multiple linear regression with EViews software. Prior to hypothesis testing, the model was evaluated through classical assumption tests, while the significance of the relationships was assessed using the t-test, F-test, and coefficient of determination ($R^2$). The empirical findings indicate that, individually, Average Length of Schooling and Minimum Wage do not have a statistically significant effect on the Open Unemployment Rate. In contrast, Economic Growth has a significant negative effect, indicating that higher economic growth contributes to lower unemployment levels by expanding employment opportunities and stimulating productive economic activities. Simultaneously, the three independent variables significantly influence the Open Unemployment Rate, with an $R^2$ value of 0.82, suggesting that the model explains approximately 82% of the variation in unemployment during the study period. These findings emphasize that sustainable economic growth remains the primary driver of employment creation, whereas education and wage policies require stronger alignment with labor market demands. The study provides empirical evidence for policymakers to formulate integrated, inclusive, and sustainable employment strategies that enhance workforce competitiveness and support long-term economic development.

## 1. Introduction

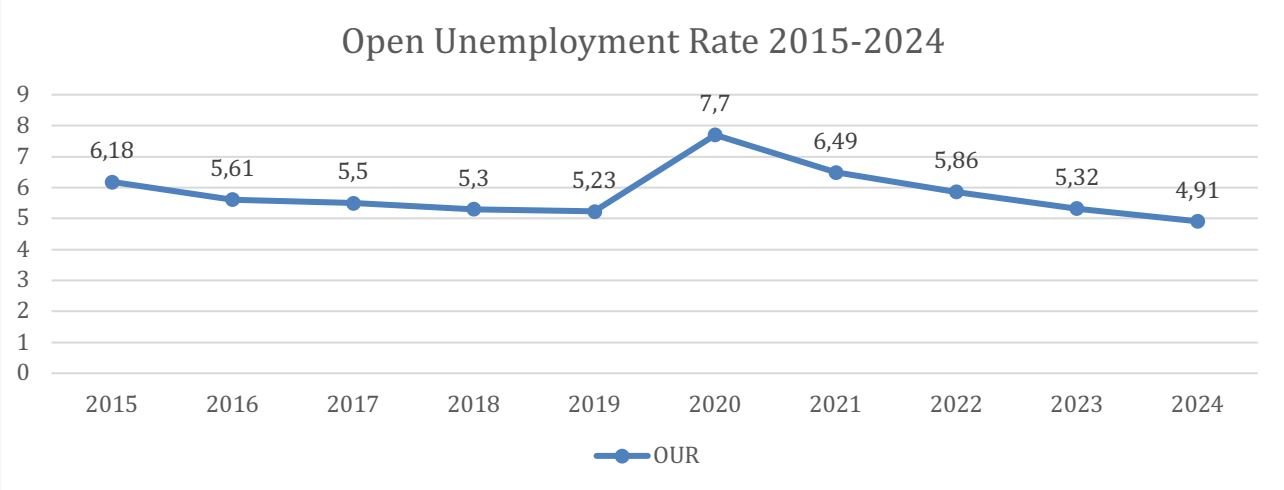
Open unemployment is one of the fundamental problems in the Indonesian economy, which has consistently been a major obstacle to inclusive economic growth. The Open Unemployment Rate (OUR) (Variable Y), which represents the percentage of the labor force that is completely unemployed and actively seeking work, is a crucial indicator in measuring the health of the national labor market. High TPT figures not only reflect a waste of human resources, but also have significant socio-economic impacts, such as increased poverty and potential social unrest, which can ultimately disrupt the stability of the country (Ishak, 2020; BPS, 2021). Therefore, addressing TPT is an urgent policy priority.

The high TPT in Indonesia is influenced by various factors. In general, the main problem lies in the imbalance between the labor supply and the availability of jobs (Sukirno, 2006). In addition, the issue of *skill mismatch* has become

a chronic structural problem. Many job seekers, especially recent graduates, lack the skills or qualifications relevant to the ever-changing demands of industry, exacerbated by the adoption of technology that replaces human roles (*technological unemployment)* (OCBC, 2022). Economic fluctuations and low investment in labor-intensive sectors also contribute to narrowing employment opportunities (Bintang, 2023).

Given the complexity of the factors and the magnitude of the impact, research on the determinants of TPT is very important and relevant. Various studies have linked TPT to other macroeconomic indicators, such as the Human Development Index (HDI) and poverty rates. However, a deeper and more specific understanding of the dominant factors affecting UER is needed, especially in the context of post-pandemic labor market changes and digital acceleration. Thus, this study aims to provide a comprehensive, up-to-date empirical analysis to provide more effective and targeted policy recommendations in efforts to reduce the open unemployment rate in Indonesia.

**Figure 1 Graph of Indonesia's Open Unemployment Rate 2015-2024**




Source: *Central Statistics Agency*

Based on the graph data on Indonesia's Open Unemployment Rate (TPT) from 2015 to 2024 above, it appears that the unemployment rate in Indonesia has experienced significant variations during this period. From 2015 to 2016, the data shows a decline from 6.18% to 5.61%, then from 2017 to 2019, the OUR also showed a decline from 5.5% to around 5.23%. This decline reflects an improvement in economic conditions and an increase in the labor market's ability to absorb new workers. However, in 2020, there was a significant spike, reaching 7.07%. This increase is closely related to the impact of the COVID-19 pandemic, which disrupted economic activity, resulted in mass layoffs, and weakened labor-intensive sectors such as manufacturing, trade, and services. After passing the peak of the crisis, the TPT began to decline to 6.49% in 2021, 5.86% in 2022, 5.32% in 2023, and finally 4.91% in 2024. This decline indicates a process of national economic recovery, in which production activities and employment are gradually returning to normal, although not yet fully back to pre-pandemic conditions.

Overall, the variation in the TPT between 2015 and 2024 shows that the unemployment rate in Indonesia is greatly influenced by the macroeconomic situation. When the economy slows down, the number of unemployed tends to increase; conversely, when the economy begins to strengthen again, the unemployment rate slowly decreases. This is in line with the opinion of Mankiw (2018) in Principles of Economics, which states that economic growth plays a crucial role in reducing

unemployment rates, as increased production will increase the demand for labor. The spike in TPT that occurred in 2020 also shows how external shocks such as pandemics can have a significant impact on the national labor market. According to the Central Statistics Agency (2023), although the unemployment rate in 2024 has decreased compared to previous years, this situation still requires more attention because the labor structure in Indonesia is still dominated by the informal sector and workers with low education, who are vulnerable to economic fluctuations. Therefore, the downward trend in the TPT after 2020 can be interpreted as a positive indication of economic recovery, but it still shows the challenges in consistently reducing the unemployment rate and creating stability in the labor market in Indonesia.

This study aims to analyze and empirically test the partial and simultaneous effects of macroeconomic variables and human resource quality, namely Average Length of Schooling (ALS), Minimum Wage (MW), and Economic Growth (EG), on the Open Unemployment Rate (OUR) in Indonesia. The main objective of this study is to provide a deeper understanding of the relationship between these variables and the open unemployment rate, thereby strengthening relevant economic theories and providing targeted policy recommendations. More specifically, this study aims to: analyze the effect of Average Length of Schooling on the Open Unemployment Rate in Indonesia, analyze the effect of Minimum Wage on the Open Unemployment Rate in Indonesia, analyze the effect of Economic Growth on the Open Unemployment Rate in Indonesia, and analyze the simultaneous effect of Average Length of Schooling, Minimum Wage, and Economic Growth simultaneously on the Open Unemployment Rate in Indonesia.

This study is important because it provides the latest empirical contribution in the field of Human Resource Economics and the Labor Market. Previous studies have shown mixed results regarding the relationship between Average Length of Schooling, Minimum Wage, Economic Growth, and Open Unemployment Rate. Therefore, this study plays a role in confirming or reconfirming the relevance of economic theories such as Human Capital Theory and Okun's Law in the context of the Indonesian labor market. In addition, this study also attempts to bridge the empirical gap by presenting more comprehensive findings related to the interaction of these three variables in determining the dynamics of the national open unemployment rate, unlike previous studies which tended to be regional in nature.

Furthermore, this study is highly relevant as a consideration in the formulation of public policy. First, in employment and education policies, the results of this study can assist relevant ministries or agencies in evaluating the effectiveness of education quality improvement programs, as measured by the average length of schooling, as a long-term strategy to reduce unemployment. Second, in wage policy, the results of this study can provide more accurate information about the impact of minimum wage setting on labor absorption, which is very important for maintaining a balance between worker welfare and industrial competitiveness. Third, in terms of economic development, the results of this study can provide input for the National Development Planning Agency (Bappenas) to ensure that economic growth is inclusive and pro-job creation, so that the rate of economic growth can contribute optimally to reducing unemployment.

## 2. Literature Review

### 2.1 Open Unemployment Rate

The Open Unemployment Rate (OUR) represents the proportion of the labor force that is unemployed but actively seeking employment. As one of the principal labor market indicators, the OUR reflects the ability of an economy to generate productive employment opportunities relative to labor supply (BPS, 2024). According to Mankiw (2021), unemployment arises when labor

supply exceeds labor demand, preventing part of the workforce from participating in productive economic activities. Similarly, Todaro and Smith (2021) argue that unemployment in developing countries is not merely the result of insufficient economic growth but is also driven by structural factors, including labor market mismatch, technological change, and limited investment in labor-intensive sectors.

In Indonesia, fluctuations in the OUR are closely associated with improvements in educational attainment, wage policies, and macroeconomic performance. Human capital development enhances labor productivity and employability, while economic expansion increases labor demand through higher production and investment. Conversely, labor market rigidities and wage distortions may limit employment creation despite favorable economic conditions (ILO, 2023). Consequently, understanding the determinants of unemployment remains essential for designing effective employment policies.

### *2.2 Average Length of Schooling*

Human Capital Theory, proposed by Becker (1993) and Schultz (1961), suggests that education is an investment that enhances workers' knowledge, skills, and productivity, thereby improving employment opportunities. One widely used indicator of educational attainment is the Average Length of Schooling (ALS), which measures the average number of years of formal education completed by individuals aged 25 years and above (BPS, 2024).

Higher educational attainment generally improves workers' competitiveness, facilitates technological adaptation, and reduces structural unemployment. Individuals with longer schooling tend to possess higher levels of cognitive and technical skills, enabling them to access a broader range of employment opportunities (World Bank, 2022). However, the effectiveness of education depends on its alignment with labor market demands. Educational expansion without corresponding job creation may increase graduate unemployment due to skill mismatches.

Empirical evidence largely supports the inverse relationship between education and unemployment. Al Mustakim (2022), Afifah (2023), and Okluanty and Bachtiar (2022) consistently found that average length of schooling significantly reduces the open unemployment rate across several Indonesian provinces. Nevertheless, other studies suggest that educational attainment alone is insufficient when labor demand remains weak or economic growth fails to generate adequate employment opportunities. These mixed findings indicate the need for further investigation at the national level.

### *2.3 Minimum Wage*

The Minimum Wage (MW) is the legally mandated lowest remuneration that employers are required to pay workers. It serves as a labor protection mechanism aimed at ensuring a minimum standard of living and reducing income inequality (ILO, 2022). According to neoclassical labor market theory, raising minimum wages above the market equilibrium may increase labor costs, thereby reducing firms' demand for labor and potentially increasing unemployment (Mankiw, 2021).

However, alternative perspectives, particularly efficiency wage theory, argue that higher wages can improve worker productivity, reduce employee turnover, and stimulate aggregate demand, thereby offsetting potential employment losses. Consequently, the employment effects of minimum wage policies remain inconclusive and depend on labor productivity, industrial structure, and firms' capacity to absorb higher labor costs.

Previous empirical studies also provide inconsistent evidence. Lestari et al. (2023) reported a positive and significant relationship between minimum wages and unemployment in East Java. In contrast, Rizki et al. (2024) found that minimum wages significantly reduced unemployment in West Nusa Tenggara, whereas Nurfardhan et al. (2024) observed no statistically significant relationship in

Semarang City. These contradictory findings suggest that the impact of minimum wage policies is highly context-specific.

### *2.4 Economic Growth*

Economic growth refers to the sustained increase in a country's real output over time and is widely recognized as one of the primary drivers of employment creation (Todaro & Smith, 2021). According to Okun's Law, economic growth is negatively associated with unemployment because expanding production requires additional labor, thereby increasing employment opportunities (Okun, 1962).

Rapid economic growth stimulates investment, industrial expansion, and business development, all of which contribute to labor absorption. Nevertheless, the employment effects of growth depend on whether expansion occurs in labor-intensive or capital-intensive sectors. Growth driven predominantly by capital-intensive industries may generate limited employment despite increasing output.

Empirical findings remain mixed. Firdausi (2024) demonstrated that economic growth significantly reduces unemployment in East Java, supporting Okun's Law. Conversely, Damayanti et al. (2025) found no significant relationship in Tarakan City, arguing that growth was concentrated in capital-intensive sectors with limited job creation. Likewise, Geli et al. (2021) concluded that regional economic growth alone was insufficient to reduce unemployment without complementary labor market policies. These inconsistent results indicate that the relationship between economic growth and unemployment varies across regions and periods.

### *2.5 Research Gap*

Although numerous studies have investigated the determinants of unemployment in Indonesia, previous research has predominantly focused on provincial or district-level analyses, yielding inconsistent findings regarding the effects of education, minimum wages, and economic growth. Moreover, limited studies have simultaneously examined these three variables using recent national-level data following the post-pandemic economic recovery period. Therefore, this study contributes to the literature by providing updated empirical evidence on the determinants of Indonesia's open unemployment rate during 2015–2024, offering a more comprehensive understanding of labor market dynamics.

### *Hypotheses*

Based on the theoretical framework and previous empirical findings, the following hypotheses are proposed:

H1: Average Length of Schooling has a significant effect on the Open Unemployment Rate in Indonesia.

H2: Minimum Wage has a significant effect on the Open Unemployment Rate in Indonesia.

H3: Economic Growth has a significant effect on the Open Unemployment Rate in Indonesia.

H4: Average Length of Schooling, Minimum Wage, and Economic Growth jointly have a significant effect on the Open Unemployment Rate in Indonesia.

## 3. Research Methods

### 3.1 Research Design

This study employed a quantitative explanatory research design to examine the effects of Average Length of Schooling (ALS), Minimum Wage (MW), and Economic Growth (EG) on the Open Unemployment Rate (OUR) in Indonesia. The explanatory approach was selected to identify causal relationships among the variables through statistical analysis. The study utilized annual time-series data covering the period from 2015 to 2024, allowing the analysis of long-term trends in labor market dynamics.

### 3.2 Data Sources

The study relied exclusively on secondary data obtained from official government institutions. Data on the Open Unemployment Rate, Average Length of Schooling, Minimum Wage, and Economic Growth were collected from publications issued

by Statistics Indonesia (Badan Pusat Statistik/BPS) and other relevant government reports. The use of official national statistics ensures data reliability, consistency, and comparability throughout the observation period.

### 3.3 Variables and Measurement

The dependent variable in this study is the Open Unemployment Rate (OUR), measured as the percentage of the labor force that is unemployed but actively seeking employment. The independent variables include:

| Variable | Symbol | Measurement |
|---|---|---|
| Open Unemployment Rate | OUR (Y) | Percentage (%) |
| Average Length of Schooling | ALS ($X_1$) | Years |
| Minimum Wage | MW ($X_2$) | Indonesian Rupiah (IDR) |
| Economic Growth | EG ($X_3$) | Annual GDP Growth (%) |

### 3.4 Data Analysis

The data were analyzed using multiple linear regression analysis with EViews 13 software. Multiple regression was employed to estimate the simultaneous and partial effects of the independent variables on the Open Unemployment Rate. The regression model is specified as follows:

$$OUR_t = \beta_0 + \beta_1 ALS_t + \beta_2 MW_t + \beta_3 EG_t + \varepsilon_t$$

where:

- OUR = Open Unemployment Rate
- ALS = Average Length of Schooling
- MW = Minimum Wage
- EG = Economic Growth
- $\beta_0$ = Intercept
- $\beta_1$–$\beta_3$ = Regression coefficients
- $\varepsilon$ = Error term
- t = Observation period (2015–2024)

Prior to estimating the regression model, several classical assumption tests were conducted to ensure the validity of the Ordinary Least Squares (OLS) estimator. These included:

- Normality Test (Jarque–Bera) to assess whether the residuals follow a normal distribution.
- Multicollinearity Test using the Variance Inflation Factor (VIF) and correlation matrix to examine the degree of correlation among the independent variables.
- Heteroscedasticity Test (Breusch–Pagan or White Test) to determine whether the residual variance is constant.
- Autocorrelation Test (Breusch–Godfrey LM Test or Durbin–Watson Statistic) to detect serial correlation in the residuals.

Hypothesis testing was performed using both partial (t-test) and simultaneous (F-test) significance tests at a 5% significance level ($\alpha$ = 0.05). The coefficient of determination ($R^2$) was calculated to evaluate the explanatory power of the regression model in explaining variations in the Open Unemployment Rate.

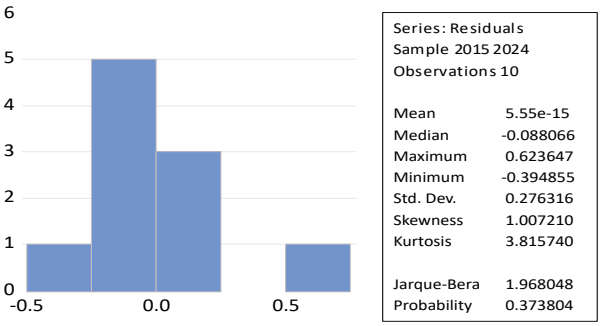
### 3.5 Research Framework

This study is based on the premise that improvements in educational attainment enhance labor productivity and employability, higher minimum wages influence firms' labor demand, and stronger economic growth creates employment opportunities through increased production and investment. Accordingly, Average Length of Schooling, Minimum Wage, and Economic Growth are hypothesized to influence the Open Unemployment Rate in Indonesia both individually and collectively.

## 4. Results and Discussion

### 4.1 Research Results

**Table 1. Normality Test Results**




*Source: Processed Data*

The normality test in this study was conducted to determine whether the residual data from the regression model was normally distributed or not. Based on the test results using the Jarque- Bera method, a Jarque-Bera value of 1.968048 was obtained with a probability value of 0.373804 (0.05). This indicates that the residual data is normally distributed and the regression model meets the normality assumption. This suitability indicates that the regression model used in the study is feasible to proceed to the next testing stage, because the normal distribution of data ensures that the parameter estimation results are unbiased and efficient.

**Table 2. Heteroscedasticity Test Results**

| Heteroskedasticity Test: Breusch-Pagan-Godfrey | | | | |
|---|---|---|---|---|
| Null hypothesis: Homoskedasticity | | | | |
| | | | | |
| F-statistic | 0.015922 | Prob. F(3,6) | | 0.9970 |
| Obs*R-squared | 0.078979 | Prob. Chi-Square(3) | | 0.9942 |
| Scaled explained SS | 0.040029 | Prob. Chi-Square(3) | | 0.9979 |

*Source: Processed Data*

The heteroscedasticity test aims to determine whether there is a difference in residual variance between observations. Based on the test results using the Breusch-Pagan-Godfrey method, the Obs*R-squared value obtained is 0.078979 with a probability of 0.09942 (0.05). Thus, it can be concluded that the model does not exhibit heteroscedasticity, meaning that the residual variance is homogeneous or constant. This indicates that the regression model is stable and the estimation results obtained are reliable because they do not contain bias due to heteroscedasticity.

**Table 3. Multiple Linear Regression Test Results**

| Dependent Variable: TPT | | | | |
|---|---|---|---|---|
| Method: Least Squares | | | | |
| Date: 10/08/25 Time: 21:07 | | | | |
| Sample: 2015 2024 | | | | |
| Included observations: 10 | | | | |
| | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| | | | | |
| C | -20.09778 | 14.96892 | -1.342633 | 0.2280 |
| RLS | 4.490956 | 2.368076 | 1.896458 | 0.1067 |
| UM | -4.09E-06 | 1.95E-06 | -2.096219 | 0.0809 |
| PDB | -0.374764 | 0.055929 | -6.700689 | 0.0005 |
| | | | | |
| R-squared | 0.884640 | Mean dependent var | | 5.810000 |
| Adjusted R-squared | 0.826959 | S.D. dependent var | | 0.813538 |
| S.E. of regression | 0.338417 | Akaike info criterion | | 0.960098 |
| Sum squared resid | 0.687156 | Schwarz criterion | | 1.081132 |
| Log likelihood | -0.800489 | Hannan-Quinn criter. | | 0.827324 |
| F-statistic | 15.33697 | Durbin-Watson stat | | 1.826743 |
| Prob(F-statistic) | 0.003209 | | | |

**T Test (Partial)**

The t-test in this study was conducted to examine the effect of each independent variable on the dependent variable partially. The t-test results for each variable are described as follows:

1) **Average Length of Schooling (X1 ),** Based on the t-test results in the regression output, the Average Length of Schooling variable has a t-statistic value of 1.896458

and a probability value of 0.1067 (>0.05). This means that Average Length of Schooling does not have a significant effect on the Open Unemployment Rate.

2) **Minimum Wage (X2 ),** Based on the t-test results in the regression output, the Minimum Wage variable has a t-statistic value of -2.096219 and a probability value of 0.0809 (>0.05). This means that the minimum wage does not have a significant effect on the TPT.
3) **Economic Growth (X3 ),** Based on the t-test results in the regression output, the Economic Growth variable has a t-statistic value of -6.700689 and a probability value of 0.0005 (<0.05). This indicates that economic growth has a negative and significant effect on the Open Unemployment Rate.

**F Test (Simultaneous)**

The F test in this study was conducted to determine the combined effect of the independent variables on the dependent variable. Based on the test results, the F-count value was 15.33697 with a probability value of 0.003209 (< 0.05). This indicates that the variables of Average Length of Schooling, Minimum Wage, and Economic Growth simultaneously have a significant effect on the Open Unemployment Rate in Indonesia. This means that changes in these three variables together can explain changes in the open unemployment rate. These results confirm that education, wage policy, and economic growth dynamics play an important role in creating stability in the national labor market.

**Coefficient of Determination ($R^2$)**

The coefficient of determination test in this study was conducted to determine the extent to which the independent variables explain the dependent variable. Based on the analysis results, an $R^2$ value of 0.826959 or 82% was obtained. This means that 82% of the variation in the Open Unemployment Rate in Indonesia can be explained by the variables of Average Length of Schooling, Minimum Wage, and Economic Growth. Meanwhile, the remaining 18% is influenced by other factors not included in the model, such as employment policies, demographic conditions, and technological developments. A high $R^2$ value indicates that the model used has a very good level of reliability in explaining the phenomenon of open unemployment in Indonesia.

## 4.2 Research Discussion

The empirical results demonstrate that Average Length of Schooling (ALS) does not have a statistically significant effect on the Open Unemployment Rate (OUR) in Indonesia during the 2015–2024 period ($p = 0.1067 > 0.05$). This finding suggests that increasing educational attainment alone is insufficient to reduce unemployment. Although Human Capital Theory argues that education enhances workers' productivity and employability (Becker, 1993), the Indonesian labor market appears to face structural challenges that weaken this relationship.

The absence of a significant effect may reflect the persistence of skill mismatch, graduate overeducation, and the limited availability of high-quality employment opportunities relative to the increasing number of educated job seekers. Consequently, extending years of schooling without improving educational quality and labor market relevance is unlikely to generate substantial reductions in unemployment. This result supports previous evidence indicating that educational expansion must be accompanied by curriculum reform, vocational training, and stronger collaboration between educational institutions and industry to improve labor market outcomes (Damayanti et al., 2025).

The analysis further indicates that the Minimum Wage (MW) variable does not significantly influence the Open Unemployment Rate ($p = 0.0809 > 0.05$). This result implies that minimum wage adjustments implemented during the observation period neither substantially increased nor reduced unemployment. From the perspective of labor

market theory, the employment effect of minimum wages depends on the balance between labor costs and worker productivity (Mankiw, 2021). In Indonesia, annual wage adjustments are generally determined by inflation, economic growth, and labor productivity, allowing firms to adapt gradually to increasing labor costs. Consequently, moderate wage increases may have limited implications for employment decisions. This finding also suggests that firms may respond to higher wages by improving operational efficiency or productivity rather than reducing employment. Therefore, wage policy should continue to prioritize worker welfare while maintaining firms' competitiveness and employment capacity.

Unlike the previous variables, Economic Growth (EG) exhibits a negative and statistically significant effect on the Open Unemployment Rate ($p = 0.0005 < 0.05$). This finding confirms the validity of Okun's Law, which posits that economic expansion promotes employment creation by increasing aggregate output and labor demand. Higher economic growth stimulates business expansion, investment, and production activities, thereby creating additional employment opportunities and reducing unemployment. Nevertheless, the magnitude of this relationship depends on the composition of economic growth. Growth driven by labor-intensive sectors is expected to generate stronger employment effects than growth concentrated in capital-intensive industries. Therefore, sustaining inclusive and employment-oriented economic growth remains essential for improving labor market performance in Indonesia.

The simultaneous regression results further reveal that Average Length of Schooling, Minimum Wage, and Economic Growth jointly have a significant effect on the Open Unemployment Rate (Prob. $F = 0.0032 < 0.05$). The coefficient of determination ($R^2 = 0.8269$) indicates that approximately 82.69% of the variation in unemployment can be explained by the three explanatory variables included in the model, while the remaining 17.31% is attributable to other factors not incorporated in this study, such as labor force participation, industrial structure, technological change, foreign direct investment, demographic dynamics, and labor market institutions. These findings highlight that unemployment is a multidimensional phenomenon influenced by the interaction between human capital, labor market regulation, and macroeconomic conditions.

From a policy perspective, the findings suggest that reducing unemployment requires a comprehensive strategy rather than relying on a single policy instrument. Improving educational attainment should be accompanied by strengthening workforce competencies, expanding vocational education, and aligning curricula with industry needs. At the same time, minimum wage policies should balance worker welfare with business sustainability, while economic policies should prioritize inclusive growth that encourages labor-intensive investment and productive employment creation. Such an integrated policy approach is expected to enhance labor market resilience and support sustainable economic development in Indonesia.

## 5. Closing

### 5.1 Conclusion

This study examined the effects of Average Length of Schooling (ALS), Minimum Wage (MW), and Economic Growth (EG) on the Open Unemployment Rate (OUR) in Indonesia during the 2015–2024 period using multiple linear regression analysis. The empirical findings indicate that Average Length of Schooling does not significantly affect the Open Unemployment Rate, suggesting that improvements in educational attainment alone are insufficient to reduce unemployment without stronger alignment between educational outcomes and labor market requirements. Similarly, the Minimum Wage variable does not exhibit a statistically significant relationship with unemployment, implying that wage adjustments during the observation period did not substantially

influence labor absorption. In contrast, Economic Growth has a significant negative effect on the Open Unemployment Rate, confirming that sustained economic expansion contributes to employment creation and supports the relevance of Okun's Law in the Indonesian context. Simultaneously, the three explanatory variables significantly affect unemployment, with the model explaining approximately 82.69% of the variation in Indonesia's Open Unemployment Rate.

### 5.2 Theoretical Implications

This study contributes to the literature on labor economics by providing updated empirical evidence on the determinants of unemployment in Indonesia. The findings reinforce Okun's Law, demonstrating that stronger economic growth is associated with lower unemployment. However, the insignificant effects of Average Length of Schooling and Minimum Wage indicate that Human Capital Theory and labor market theories may not fully explain unemployment dynamics when structural issues such as skill mismatch, labor market segmentation, and limited employment opportunities persist. Therefore, this study highlights the importance of integrating macroeconomic and structural perspectives when analyzing unemployment in developing economies.

### 5.3 Practical and Policy Implications

The findings offer several important implications for policymakers. First, education policies should prioritize improving educational quality, vocational training, and curriculum relevance to ensure graduates possess competencies demanded by industry. Second, minimum wage policies should continue balancing worker welfare with firms' productivity and competitiveness to avoid unintended labor market distortions. Third, government economic policies should promote inclusive and labor-intensive economic growth by encouraging productive investment, supporting small and medium-sized enterprises (SMEs), and expanding employment opportunities across strategic sectors. An integrated policy framework combining education reform, adaptive labor regulations, and sustainable economic development is expected to reduce unemployment more effectively.

### 5.4 Limitations of the Study

This study has several limitations that should be acknowledged. First, the analysis is based on annual time-series data covering the period 2015–2024, resulting in a relatively limited number of observations. Second, the model includes only three explanatory variables, whereas unemployment is also influenced by numerous other economic, demographic, institutional, and technological factors. Third, the study relies exclusively on secondary data obtained from official statistics, limiting the ability to capture firm-level or individual-level labor market behavior. Consequently, the findings should be interpreted within the scope of these limitations.

### 5.5 Future Research Directions

Future studies are encouraged to incorporate additional determinants of unemployment, such as foreign direct investment, inflation, labor force participation, technological change, industrial structure, digital transformation, labor productivity, demographic transition, and institutional quality, to obtain a more comprehensive understanding of labor market dynamics. Researchers may also employ panel data, Autoregressive Distributed Lag (ARDL), Vector Error Correction Model (VECM), or Structural Equation Modeling (SEM) to capture long-run relationships and causal mechanisms more effectively. Furthermore, comparative studies across ASEAN countries or provincial-level analyses in Indonesia would provide valuable insights into regional differences in employment dynamics and support the formulation of more targeted labor market policies.

**Bibliography**

Afifah, A. N. (2023). *The effect of average length of schooling, minimum wage and economic growth on open unemployment rate in districts/cities of Banten Province (2013–2022). International Journal of Current Economics & Business Ventures*, 1(3), 411–420. Retrieved from https://scholarsnetwork.org/journal/index.php/ijeb

Ardian, R., Syahputra, M., & Desmawan, D. (2022). Pengaruh pertumbuhan ekonomi terhadap tingkat pengangguran terbuka di Indonesia. *Jurnal Ekonomi, Bisnis dan Manajemen*, 1(3), 190–198.

Badan Pusat Statistik (BPS). (2021). *Statistik Ketenagakerjaan.* Jakarta: BPS.

Badan Pusat Statistik. (2023). *Tingkat Pengangguran Terbuka Provinsi di Indonesia Tahun 2017–2023.* Jakarta: BPS.

Bintang, W. A. (2023). *Analisis Faktor Demografi dan Investasi Terhadap Tingkat Pengangguran Terbuka (TPT) di Indonesia Tahun 2014–2023.* [Skripsi, Universitas Sebelas Maret]. Digilib UNS.

Damayanti, D., Rizki, D. M., & Singandaru, A. B. (2025). Pengaruh upah minimum dan pertumbuhan ekonomi terhadap tingkat pengangguran terbuka di kabupaten/kota Provinsi Nusa Tenggara Barat tahun 2019–2023. *Jurnal Ilmu Ekonomi dan Pembangunan Regional*, 4(1), 56–63.

Dinas Tenaga Kerja Buleleng (Disnaker Buleleng). (2025, September 4). *Kurangi angka pengangguran, Disnaker Buleleng gencarkan pelatihan.* RRI. Diakses dari https://rri.co.id/daerah/1814172/kurangi-angka-pengangguran-disnaker-buleleng-gencarkan-pelatihan

Erlangga, A., Falevi, M. R., Putri, P., & Kurniawan, M. (2024). Pengaruh upah minimum dan angkatan kerja terhadap tingkat pengangguran terbuka di Indonesia tahun 2014–2023. *Kajian Ekonomi dan Akuntansi Terapan (KEAT)*, 1(2), 161–177.

Faritz, M. N., & Soejoto, A. (2020). Pengaruh pertumbuhan ekonomi dan rata-rata lama sekolah terhadap kemiskinan di Provinsi Jawa Tengah. *Jurnal Pendidikan Ekonomi (JUPE)*, 8(1), 15–21.

Firdausi, I. A. (2024). Pengaruh pertumbuhan ekonomi terhadap tingkat pengangguran terbuka di Jawa Timur. *Jurnal Ekonomi Pembangunan STIE Muhammadiyah Palopo*, 8(2), 168–187.

Ishak, K. (2018). Faktor-faktor yang mempengaruhi pengangguran dan implikasinya terhadap indeks pembangunan di Indonesia. *IQTISHADUNA: Jurnal Ilmiah Ekonomi Kita*, 7(1), 22–38. Diakses dari https://ejournal.isnjbengkalis.ac.id/index.php/iqtishaduna/article/view/121

Lestari, D. A., Endang, & Anam, M. S. (2024). Pengaruh angkatan kerja, upah minimum regional, dan pendidikan terhadap tingkat pengangguran terbuka Provinsi Jawa Timur. *Jurnal Progres Ekonomi Pembangunan (JPEP)*, 9(2), 313–322.

Mankiw, N. G. (2012). *Pengantar Ekonomi Makro.* Salemba Empat.

Mankiw, N. G. (2018). *Principles of Economics* (8th ed.). Cengage Learning.

Mankiw, N. G. (2021). *Macroeconomics* (10th ed.). Worth Publishers.

Menteri Tenaga Kerja dan Transmigrasi Republik Indonesia. (2013). *Peraturan Menteri Tenaga Kerja dan Transmigrasi Nomor 7 Tahun 2013 tentang Upah Minimum.* Jakarta: Kementerian Tenaga Kerja dan Transmigrasi Republik Indonesia.

Mustakim, A. (2022). Pengaruh rata-rata lama sekolah terhadap tingkat pengangguran terbuka di Kota Kendari tahun 2010–2021. *Arus Jurnal Sosial dan Humaniora*, 2(3), 209–216.

Nurfardhan, M. R., Firdaus, R. A., Prastiya, Y., Wibowo, R. P., & Farliana, N. (2025). Pengaruh upah minimum terhadap tingkat pengangguran di Kota Semarang tahun 2017–2023. *Jurnal Masharif al-Syariah: Jurnal Ekonomi dan Perbankan Syariah*, 10(2), 1104–1115.

Nuzulaili, D. D. (2022). Analisis pengaruh inflasi, PDRB dan UMP terhadap pengangguran di Jawa 2017–2020. *Jurnal Ilmu Ekonomi (JIE)*, 6(2), 228–238. https://doi.org/10.22219/jie.v6i2.20473

OCBC. (2022, Oktober 31). *Apa itu pengangguran terbuka? Penyebab dan cara mengatasi.* Diakses dari https://www.ocbc.id/id/article/2022/10/31/pengangguran-terbuka

Okluanty, F. N., & Bachtiar, A. (2022). Analisis pengaruh rata-rata lama sekolah, pertumbuhan ekonomi, upah minimum regional, dan gender terhadap tingkat pengangguran terbuka Provinsi Kepulauan Riau. *Gorontalo Development Review.* Gorontalo: Universitas Gorontalo. Retrieved from https://jurnal.unigo.ac.id/index.php/gdrev

Panjawa, J. L., & Soebagiyo, D. (2014). Efek peningkatan upah minimum terhadap tingkat pengangguran. *Jurnal Ekonomi dan Studi Pembangunan*, 15(1), 48–54.

Putri, E. M., & Putri, D. Z. (2021). Pengaruh upah minimum, tingkat pengangguran terbuka, pendidikan dan pengeluaran pemerintah terhadap kemiskinan di Indonesia. *Ecosains: Jurnal Ilmiah Ekonomi dan Pembangunan*, 10(2), 106–114.

Sabrina, R., Manurung, A. I., & Sirait, B. A. (2022). Peningkatan rata-rata lama sekolah (RLS) dari harapan lama sekolah (HLS) di Sumatera Utara. *Jurnal Pendidikan Tambusai*, 6(1), 4784–4792.

Suhadi, F. R., & Setyowati, E. (2022). Analisis pengaruh jumlah penduduk, pendidikan, upah minimum, dan PDRB terhadap tingkat pengangguran terbuka di Provinsi Jawa Barat. *EKOMBIS REVIEW: Jurnal Ilmiah Ekonomi dan Bisnis*, 10(2), 879–888.

Sukirno, S. (2006). *Makroekonomi Modern: Perkembangan Pemikiran dari Klasik Hingga Keynesian Baru.* Jakarta: PT Raja Grafindo Persada.

Todaro, M. P., & Smith, S. C. (2006). *Pembangunan Ekonomi* (Edisi ke-11). Erlangga.

Wahab, A. (2022). Pengaruh pertumbuhan penduduk, upah, dan inflasi terhadap pertumbuhan ekonomi dan tingkat pengangguran terbuka di Sulawesi Selatan. *Jurnal Ekonomi Pembangunan STIE Muhammadiyah Palopo*, 8(2), 168–187.