The Impact of Economic Growth on Unemployment in Indonesia (2013–2024)

Widya Ningrum Rachmawati[a] , Diah Lufti Wijayanti[b]
[a]Universitas Pembangunan Nasional Veteran Yogyakarta, Daerah Istimewa Yogyakarta, Indonesia, widyarachmawati17664@gmail.com
[b]Universitas Pembangunan Nasional Veteran Yogyakarta, Daerah Istimewa Yogyakarta, Indonesia

*Correspondence: widyarachmawati17664@gmail.com

Abstract

This study aims to examine the impact of economic growth on the open unemployment rate across 34 provinces in Indonesia during the period 2013–2024. The analysis employs a quantitative approach using panel data regression and utilizes secondary data obtained from Statistics Indonesia (Badan Pusat Statistik, BPS). Model estimation is conducted using the Fixed Effects Model. The estimation results indicate that economic growth has a negative and statistically significant effect on the open unemployment rate, suggesting that higher economic growth is generally associated with a reduction in unemployment. A one percentage point increase in economic growth reduces the open unemployment rate by approximately 0.043 percentage points. However, the coefficient of determination (R^2) of 2.14 percent suggests that unemployment is influenced by factors beyond economic growth alone. This study recommends that economic growth policies be designed to be more inclusive, targeting diverse sectors and regions to enhance their effectiveness in generating employment opportunities and expanding labor absorption.

1. Introduction

Economic growth is a key macroeconomic indicator that reflects a country's performance in increasing the aggregate production of goods and services. Theoretically, an increase in Gross Domestic Product is expected to create broader employment opportunities and reduce the unemployment rate (Todaro & Smith, 2020). Economic growth serves as an important measure in assessing the success of regional development. A positive growth rate is expected to improve societal welfare through job creation and a reduction in unemployment levels. However, high economic growth is not always accompanied by a decline in unemployment, as its impact is influenced by the economic structure and the quality of the labor force.

Figure 1
Economic Growth (%) of Indonesia 2016-2024

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	5,03	5,07	5,17	5,02	-2,07	3,7	5,31	5,05	5,03
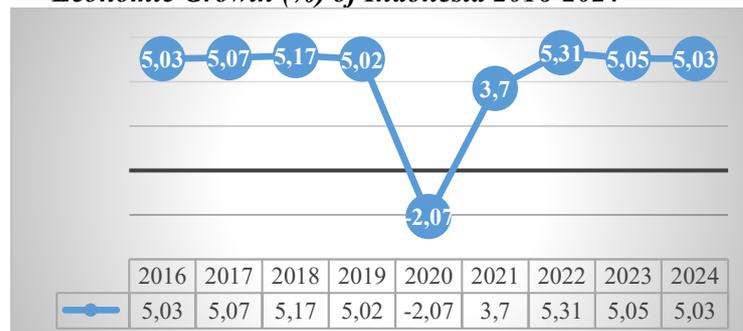
Indonesia's economic growth has generally experienced fluctuations. According to data from Statistics Indonesia, the country recorded a growth rate of 5.02% in 2019, which then declined to -2.07% in 2020 due to global pressures and the COVID-19 pandemic, before rebounding to 5.31% in 2022.

Indonesia has experienced relatively stable economic growth, averaging above 5% per year, although it contracted in 2020 as a result of the pandemic. However, the Open Unemployment Rate has not consistently shown a steady decline.

Table 1
Open Unemployment Rate (%) in Indonesia, 2016–2024

Year	Open Unemployment Rate (%)
2016	5.56
2017	5.42
2018	5.20
2019	5.11
2020	6.01
2021	6.38
2022	5.85
2023	5.39
2024	4.87

In 2020 and 2021, the Open Unemployment Rate rose sharply from 5.11% to 6.01% and 6.38%, before gradually declining following economic recovery. Economic growth and unemployment are macroeconomic issues that have long-term implications for a country's development.

Over time, a country's capacity to produce goods and services tends to increase as a result of growth and improvements in production factors, both in terms of quantity and quality. Among these production factors, human resources play a crucial role, as the quality and productivity of the workforce directly influence national production capacity. The relationship between economic growth and the unemployment rate is a key consideration in formulating economic policies aimed at job creation and improving societal welfare.

An increase in Gross Domestic Product does not always correspond with a reduction in the unemployment rate. This phenomenon, known as jobless growth, occurs when economic growth is not accompanied by an expansion of employment opportunities, particularly in labor-intensive sectors. Regional disparities in job creation also present a serious issue, as more developed provinces such as Jakarta (DKI Jakarta) and West Java tend to have higher levels of labor absorption compared to provinces in Eastern Indonesia.

Economic growth is one of the main indicators used to assess a country's development performance. In macroeconomic theory, economic growth is expected to generate employment opportunities and reduce the unemployment rate through increased productive capacity and labor demand. This relationship is classically explained by Okun's Law, which states that there is a negative relationship between output growth and the unemployment rate. In Indonesia, the relationship between economic growth and unemployment exhibits complex dynamics. Although national economic growth has remained relatively stable over the past decade, the open unemployment rate continues to show considerable variation.

The COVID-19 pandemic constituted a significant temporal shock to Indonesia's economy and labor market. Restrictions on economic activities during this period led to economic contraction and a surge in unemployment across nearly all regions, making it important to include this period in the analysis to obtain a medium-term perspective on the relationship between economic growth and unemployment.

Previous research examining the relationship between economic growth and unemployment in Indonesia has produced inconsistent findings. Several studies focused only on specific regions or employed limited observation periods, making it difficult to provide a comprehensive picture of national conditions. Most prior studies concentrated their analysis on certain provinces, cities, or regional groupings such as ASEAN, Surabaya, Prabumulih, or Java. The majority of these studies relied on relatively short observation periods and simple regression models, which were unable to capture long-term dynamics and structural variations across provinces in Indonesia (Fiona et al., 2023; Anggoro & Soesatyo, 2015; Rahmadina et al., 2023; Fadilah, 2025; Setyaputri, N. A et al.,2025).

Empirical analyses that incorporate other macroeconomic indicators such as the Human Development Index, Foreign Direct Investment, inflation, poverty, or public expenditure rarely examine explicitly the spatial and temporal heterogeneity of the impact of economic growth on unemployment (Fiona et al., 2023; Nurafikatul, 2024). This limitation leaves a gap in understanding how regional contexts shape the responsiveness of unemployment to economic growth. The absence of a comprehensive empirical consensus regarding the strength, consistency, and uniformity of the impact of economic growth on unemployment across all Indonesian provinces.

Findings showing an insignificant relationship between economic growth and unemployment indicate that output expansion does not automatically lead to increased employment opportunities. The methodological limitation of relying solely on time-series or cross-sectional data prevents spatial and temporal variations from being fully captured in the estimation results. A more comprehensive panel data model is required to reflect long-term dynamics and regional heterogeneity.

This study addresses the existing gap by analyzing the relationship between economic growth and unemployment using panel data covering 34 provinces in Indonesia over the 2013–2024 period. The approach extends the scope of analysis to include pre-pandemic, pandemic, and post-pandemic phases, allowing the results to more accurately represent the country's evolving economic dynamics.

2. Method

This study employs a quantitative approach to examine the impact of economic growth on unemployment in Indonesia within a regional development framework. The quantitative method emphasizes theory testing through the measurement of research variables using numerical data and the application of statistical regression techniques.

The independent variable in this study is economic growth, while the dependent variable is unemployment, measured by the Open Unemployment Rate as defined by Statistics Indonesia (Badan Pusat Statistik/BPS). The study relies entirely on secondary data obtained from official BPS publications, covering 34 provinces in Indonesia over the period 2013–2024. This period was selected to capture economic conditions before, during, and after the COVID-19 pandemic, allowing the analysis to reflect medium-term dynamics in the relationship between economic growth and unemployment. The resulting dataset forms a balanced panel consisting of 408 observations, combining both cross-sectional and time-series dimensions.

The data collection process in this study was conducted as follows: (1) Collecting secondary data available in various reports from relevant agencies, particularly Statistics Indonesia (BPS); (2) Complementing the data with supporting information obtained from a literature review, including the study and analysis of data from various economic books and scholarly journals; (3) Gathering additional information from various internet sources and other media outlets.

Panel data regression analysis is employed to capture variations across provinces and over time, providing a more comprehensive understanding of how economic growth affects unemployment at the regional level. This approach allows for better control of unobserved heterogeneity and improves estimation efficiency compared to purely cross-sectional or time-series methods (Gujarati and Porter, 2009).

The estimation of the panel data regression model was carried out using the most appropriate approach among the common effects, fixed effects, and random effects models. These tests ensure that the chosen model best represents the underlying data structure. The empirical relationship between economic growth and unemployment is estimated using regression techniques, with all computations conducted using STATA software.

The formulation is as follows:

$$TPT_{it} = \alpha + \beta PE_{it} + \varepsilon_{it}$$

Where:
TPT_{it} = Open Unemployment Rate (OUR) of province i in year t
PE_{it} = Economic Growth of province i in year t
α = Constant
β = Regression Coefficient
ε_{it} = Error Term

3. Results and Discussion
3.1 Results

To ensure the robustness and validity of the model, a series of preliminary tests were conducted before estimating the regression equation. The analysis begins with the Chow Test, which determines whether the fixed effects model is more appropriate than the pooled least squares model in explaining variations across provinces.

Table 2 Chow Test

F	40,72
Prob > F	0,00000

Based on the estimation results of the Fixed Effects Model (FEM), the F-test value is 40.72 with Prob > F = 0.0000. The probability value is significantly lower than the 5% significance level, indicating that the Fixed Effects Model is more appropriate, as it can capture province-specific effects that are not accounted for in the Pooled Least Squares (PLS) model

Table 3
Hausman Test

Chi2(1)	10.04
Prob > chi2	0.0015

The results of the Hausman test indicate a Chi²(1) = 10.04 with Prob > Chi² = 0.0015, which is below the 5% significance level. This suggests that the Fixed Effects Model is more appropriate than the Random Effects Model.

The model selection tests, including the Chow Test and the Hausman Test, indicate that the most appropriate model for this study is the Fixed Effects Model (FEM). The Chow Test yielded an F-value of 40.72 with a probability of 0.0000, well below the 5% significance level. The Hausman Test further confirmed this choice, with a chi-square value of 10.04 and a probability of 0.0015, also below 5%. The FEM was chosen because it accommodates correlations between individual effects across provinces and the independent variables in this study. The selection of the FEM serves as the basis for parameter estimation and interpretation in subsequent analyses.

The panel regression model was tested using a robust standard error (clustered) approach to address potential violations of classical assumptions, such as heteroskedasticity and autocorrelation.

Table 4
Multicollinearity Test
Dependent variable : TPT

Variable	**VIF**	**1/VIF**
Economic Growth	1.00	1.000000
Mean VIF	1.00	

The result of the multicollinearity test shows a Variance Inflation Factor (VIF) value of 1.00. This value indicates that there is no evidence of multicollinearity within the regression model. A VIF value equal to one suggests that the independent variable is completely uncorrelated with any other explanatory variable.

In this study, since the model includes only a single independent variable (economic growth), multicollinearity is theoretically impossible to occur. The model is considered free from multicollinearity problems, ensuring that the estimated coefficient of the independent variable can be interpreted reliably without bias arising from intercorrelation among explanatory variables.

Table 5
Panel Data Regression Results Using the Fixed Effects Model
Dependent variable : TPT

TPT	Coefficient	Robust std.err.	t	P > | t |
Economic Growth	-.0425809	.0207186	-2.06	0.048
_cons	5.173271	.0997823	51.85	0.000

Referring to the table above, the panel data regression equation in this study is as follows:

$$TPT_{it} = 5.173271 - 0.0425809PE_{it} + e_{it}$$

The results of the panel data regression using the FEM show that the regression coefficient for economic growth is as follows: (a) The constant term (α) is 5.173271, indicating that if economic growth remains unchanged, the Open Unemployment Rate would be 5.173271; (b) The regression coefficient (β) for economic growth is -0.0425809, which means that for every unit increase in economic growth, the Open Unemployment Rate decreases by 0.425809. This indicates a negative relationship between economic growth and the Open Unemployment Rate.

Table 6
t-Statistic Test
Dependent variable : TPT

TPT	Coefficient	t	P > | t |
Economic Growth	-.0425809	-2.06	0.048
_cons	5.173271	51.85	0.000

The critical t-value is 1.9658 at a 0.05 significance level. Economic growth has a calculated t-value of 2.06, which is greater than the critical t-value (1.9658), and the associated probability is 0.048 < 0.05. indicates that economic growth has a significant impact on the Open Unemployment Rate.

Table 8
Coefficient of Determination (R^2) Test

R-squared	0.0214

The R-squared value is 0.0214, or 2.14%. This coefficient of determination indicates that economic growth explains 2.14% of the variation in the Open Unemployment Rate in Indonesia.

3.2 Discussion

Theories of economic growth explain how a country's national output increases over the long term. Adam Smith asserted that economic growth is driven by capital accumulation, specialization, and market expansion (Entaresmen et al., 2025). Todaro and Smith (2020) emphasized that economic growth does not necessarily lead to improved welfare if it is not accompanied by equitable income distribution and the creation of inclusive employment opportunities.

Empirical evidence presented in this study demonstrates that economic growth is associated with reductions in open unemployment across Indonesian provinces over 2013–2024, yet the magnitude of this association remains modest. This finding affirms the basic implication of Okun's framework higher regional output tends to be correlated with improved labor absorption, while simultaneously indicating that growth by itself is an insufficient remedy for persistent unemployment in many provinces (Mankiw, 2020).

This negative relationship is consistent with development economics theory, which explains that an increase in regional output can stimulate the creation of new employment opportunities (Todaro & Smith, 2020). However, the magnitude of this effect remains relatively small, suggesting that economic growth alone is not sufficient to address unemployment disparities across regions. Other factors, such as industrial structure, human capital quality, and local government policies, also play an important role in determining the level of labor absorption (Ardhana et al., 2025). The relatively low coefficient of determination ($R^2 = 2.14\%$) indicates that unemployment is influenced by various other factors beyond economic growth.

Interpretation of this limited magnitude suggests several plausible mechanisms. First, sectoral composition of growth matters: expansions concentrated in capital-intensive, high-productivity sectors or in services with low labor intensity produce limited employment gains (the jobless growth pattern). Automation trends and the persistence of informal employment further weaken the translation of output increases into formal job creation. These dynamics help explain why provinces with stronger manufacturing or diversified industrial bases exhibit greater labor absorption than provinces dominated by primary sectors.

Second, human capital and institutional conditions mediate the growth–employment transmission. Regions with higher Human Development Index (HDI), better vocational training, and stronger linkages between education and local industry convert growth into jobs more effectively. Skill mismatches, weak labor market intermediation, and limited access to finance for small firms reduce the employment elasticity of growth in lagging provinces. This points to a complementarity between quantity of growth and quality of enabling conditions (Fiona et al., 2023; Nurafikatul, 2024).

The COVID-19 pandemic introduced a critical temporal shock affecting the dynamics between growth and unemployment. Economic contraction during 2020–2021 resulted in a sharp rise in unemployment, followed by uneven recovery among provinces. These findings align with Fiona et al. (2023), who emphasized interregional disparities in post-pandemic recovery. Provinces with stronger industrial capacity and adaptive labor markets recovered faster, whereas those dependent on traditional sectors lagged behind.

Economic growth contributes to reducing the unemployment rate in Indonesia. However, transforming this growth into broad-based job creation requires well-targeted and specific policies that take into account sectoral structures, the quality of human capital, and institutional capacity at the regional level. The findings of this study provide an empirical foundation for formulating more effective policies and serve as a reference for future research to explore causal relationships and regional characteristics in greater depth. Future research is encouraged to incorporate these structural determinants to provide a more comprehensive understanding of labor market dynamics in Indonesia.

The study provides an important understanding that while economic growth can help reduce unemployment, it is not sufficient without improvements in workforce quality and supportive local policies. Both central and regional governments need to strengthen labor-intensive sectors, enhance education and vocational training programs, and ensure that economic growth truly creates equitable employment opportunities across all provinces in Indonesia.

4. Conclusion

Based on the panel data regression analysis using the Fixed Effects Model, this study concludes that economic growth has a negative and significant impact on inter-provincial unemployment rates in Indonesia. This indicates that increases in economic growth contribute to a reduction in unemployment, although the effect is relatively small in quantitative terms. These findings are consistent with Okun's Law, which posits a negative relationship between economic growth and unemployment. The low R-squared value suggests that unemployment is influenced by factors beyond economic growth alone.

Other determinants, such as the Human Development Index, quality of education, labor market structure, and local government spending, should also be considered.

This study emphasizes that while economic growth is an important prerequisite for reducing unemployment, it is not sufficient without inclusive, targeted, and region-specific labor-oriented development policies. For future research, it is recommended to include additional independent variables, such as investment levels, local government spending, the Human Development Index (HDI), or major sectoral contributors to GRDP, in order to develop a more comprehensive model for explaining variations in unemployment across provinces.

5. References

Ahmad, U. S. (2024). Dampak pengangguran terhadap pertumbuhan ekonomi di Indonesia. *Brilliant: Journal of Islamic Economics and Finance, 2*(2), 241–256. https://journal.yibri.id/index.php/brijief/article/view/103

Anggoro, M. H., & Soesatyo, Y. (2015). Pengaruh pertumbuhan ekonomi dan pertumbuhan angkatan kerja terhadap tingkat pengangguran di Kota Surabaya. *Jurnal Pendidikan Ekonomi (JUPE), 3*(3), 1–15. https://ejournal.unesa.ac.id/index.php/jupe/article/download/12553/11584/16292

Ardhana, A. Y. A., Syazeedah, H. N. U., Fitriyaningrum, R. I., & Gunawan, A. (2025). Analisis ketidaksesuaian antara pendidikan dengan kebutuhan dunia kerja di Indonesia. *Kompeten: Jurnal Ilmiah Ekonomi dan Bisnis, 3*(4), 1020–1026. https://doi.org/10.57141/kompeten.v3i4.156

BPS. (2024). *Indikator makro ekonomi Indonesia 2013–2024*. Badan Pusat Statistik. https://www.bps.go.id

Entaresmen, R. A., Sumiyarti, S., Esther, A. M., & Hariyanti, D. (2025). *Ekonomika makro pengantar.*

Fauziah, N. (2024). Determinan yang mempengaruhi kemiskinan di Pulau Jawa (Perspektif teori pro-poor growth & human capital). *Journal of Development Economic and Social Studies, 3*(4), 1246–1256. https://doi.org/10.21776/jdess.2024.03.4.21

Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). McGraw-Hill Education.

Hartati, N. (2020). Pengaruh inflasi dan tingkat pengangguran terhadap pertumbuhan ekonomi di Indonesia periode 2010–2016. *Jurnal Ekonomi Syariah Pelita Bangsa, 5*(1), 92–119. https://doi.org/10.37366/jespb.v5i01.86

Isnaini, F. Y. (2025). Analisis pengaruh tingkat pengangguran terhadap kemiskinan kabupaten/kota di Jawa Timur tahun 2023. *MUSYTARI: Neraca Akuntansi Manajemen, Ekonomi, 18*(10), 127–145. https://doi.org/10.8734/musytari.v1i2.365

Jeniko, F., & Trihadmini, N. (2025). Determinasi indikator ekonomi dan pembangunan terhadap pengangguran di ASEAN6: Analisis data panel. *Jurnal Ilmu Ekonomi dan Pembangunan (JIEP), 8*(1), 231–242. https://doi.org/10.20527/jiep.v8i1.2061

Mankiw, N. G. (2020). *Macroeconomics* (10th ed.). Worth Publishers.

Mu'minin, M. A., & Hidayat, W. R. (2017). Pengaruh pertumbuhan ekonomi dan jumlah penduduk terhadap tingkat pengangguran terbuka di kabupaten/kota Provinsi Jawa Timur tahun 2011–2015. *Jurnal Ilmu Ekonomi, 1*(3), 374–384. https://ejournal.umm.ac.id/index.php/jie/article/download/6164/5619/0

Nurrosidah, K., Tania, M., & Sahara, J. R. (2025). Analisis korelasi antara laju inflasi dan tingkat pengangguran akibat PHK massal. *Jurnal Ekonomi, 3*(5), 1–10. https://jeconomics.my.id/index.php/home/article/view/515

Rahmadina Putri, R., Utami, P., & Talia, N. (2023). Pengaruh pertumbuhan ekonomi terhadap tingkat pengangguran terbuka di Kota Prabumulih. *Assyarikah: Journal of Islamic Economic Business, 4*(1), 29–40. https://assyarikahjournal.id

Sadono Sukirno. (2014). *Pengantar teori makro ekonomi*. PT Raja Grafindo Persada.

Setyaputri, N. A., Nurfiana, W., Insani, A. N., Nihayah, D. M., & Nuryana, I. (2025). Pengaruh PDRB, upah minimum, dan jumlah penduduk terhadap pengangguran kabupaten/kota Provinsi Jawa Tengah tahun 2019–2023. *Jurnal Pendidikan Ekonomi (JUPE), 13*(2), 127–137. https://doi.org/10.26740/jupe.v13n2.p127-137

Todaro, M. P., & Smith, S. C. (2020). *Economic development* (12th ed.). Pearson.

Winata, W. P. A., & Choiri, M. (2025). Pengaruh indeks pembangunan manusia dan pertumbuhan ekonomi terhadap tingkat pengangguran di Provinsi Jawa Timur. *Jurnal Cendekia Akuntansi, 6*(1), 79–93. https://doi.org/10.32503/akuntansi.v6i1.7043

Zulkarnain, T., Zulfikar, Z., Putri, Y. T., & Rachman, I. C. (2025). Efektivitas anggaran sektor publik terhadap peningkatan kualitas hidup di Indonesia. *Prosiding Seminar Nasional Politeknik Negeri Lhokseumawe, 8*(1), 123–130. https://e-jurnal.pnl.ac.id/semnaspnl/article/view/6795