International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

Migration of Foreign Workers to Indonesia: Pull Factors and Their Impact on Unemployment Rate (Study of 34 Provinces in Indonesia)

David Andriansyah[1], Ida Budiarty[2]

[1,2]Jurusan Ekonomi Pembangunan, Fakultas Ekonomi dan Bisnis, Universitas Lampung, Bandar Lampung, Indonesia

Email : andriansyahdavid541@gmail.com, ida.budiarti@feb.unila.ac.id.

Abstract

This study aims to analyze the effects of foreign workers, Foreign Direct Investment (FDI), inflation, unemployment persistence, and the interaction between foreign workers and FDI on the open unemployment rate across 34 provinces in Indonesia during the 2022–2024 period. This study employs panel data regression by selecting the most appropriate model among the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The results indicate that the Common Effect Model is the best estimation model. Partially, unemployment persistence, foreign workers, and the interaction between foreign workers and FDI have a significant effect on the unemployment rate. FDI has a positive effect at the 10% significance level, while GRDP and inflation have no significant effect. These findings suggest that an increase in foreign workers may raise unemployment if it is not accompanied by improvements in the quality of the domestic workforce. However, foreign investment accompanied by technology transfer can mitigate this effect by enhancing local labor competence. Therefore, policies should promote foreign investment while strengthening the quality and competitiveness of Indonesia's human resources.

Keywords: Foreign Workers, Foreign Direct Investment, Inflation, Open Unemployment, Panel Data.

INTRODUCTION

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

Globalization has increased the mobility of the international workforce as trade and investment flows have become more open and technology has advanced. The movement of workers across national borders is one consequence of the growing activities of multinational corporations, which require workers with specific skills to support their business operations. In developing countries, including Indonesia, an increase in foreign direct investment (FDI) is often accompanied by the influx of Foreign Labor serving as experts, managers, or technical staff. This situation makes the presence of Foreign Labor an integral part of the economic development process; however, it also raises concerns about the impact on employment opportunities for the domestic workforce.

Indonesia is one of the foreign investment destination countries in Southeast Asia. The increasing realization of foreign investment in various industrial sectors has driven the demand for skilled labor. The presence of Foreign Labor essentially aims to meet the competency needs that are not yet fully available domestically, accelerate technology transfer, and improve the operational efficiency of companies. However, the increase in the number of Foreign Labor also sparks debate about its influence on the open unemployment rate. On one hand, the presence of Foreign Labor is seen as capable of increasing productivity and encouraging technology transfer to local workers, while on the other hand, their presence is feared to increase competition in the domestic labor market, especially in the formal sector that requires high-skilled labor.

According to the Push-Pull Migration theory proposed by Everett S. Lee, migration occurs due to push factors from the country of origin and pull factors from the destination country (Lee, 2009). In the context of Indonesia, economic growth, increasing foreign investment, and job opportunities in the formal sector become the main pull factors for Foreign Labor. In addition, Becker's Human Capital theory (1992) explains that high-skilled labor can increase productivity through knowledge spillover and technology transfer to local workers (Becker, n.d.). Therefore, the presence of Foreign Labor not only has the potential to increase competition in the labor market but can also improve the quality of human resources if the technology transfer process runs effectively.

The relationship between foreign investment and unemployment still shows diverse empirical results. Research by Tegep (2019) indicates that Foreign Direct Investment does not directly reduce the unemployment rate in Indonesia (Tegep et al., 2019). The influence of FDI on unemployment is more mediated by economic growth and minimum wages because incoming investments tend to be capital-intensive, thus not yet able to optimally absorb labor. On the other hand, Blalock and Gertler (2020)

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

found that foreign investment can increase company productivity through technology transfer and increased demand for skilled labor, thereby having a positive impact on the quality of domestic labor (Blalock and Gertler, 2020).

Nevertheless, various previous studies still show inconsistent results regarding the relationship between Foreign Labor, foreign investment, and the unemployment rate. Some studies find that Foreign Labor and foreign investment can increase company productivity and create job opportunities through increased investment and technology transfer. Conversely, other studies indicate that the increase in Foreign Labor can enlarge competition in the domestic labor market if not balanced with an increase in the quality of local labor. The differences in results indicate that the relationship between Foreign Labor and the unemployment rate is influenced by investment characteristics, the quality of human resources, and labor market conditions in each region.

In addition, most previous research has focused more on the direct influence of Foreign Direct Investment or foreign labor on the unemployment rate. This approach has not fully explained how these two variables interact in influencing the labor market. Theoretically, the entry of foreign investment is generally followed by the use of foreign labor, especially in the early stages of investment to operate technology, supervise projects, and transfer knowledge to local labor. Therefore, the relationship between foreign labor and foreign investment should not be viewed as two standalone factors, but rather as a complementary relationship in the economic development process. Agustina (2023) explains that the unemployment rate in Indonesia is influenced by various macroeconomic factors, so its handling requires comprehensive policies and not just a focus on one economic indicator (Agustina et al., 2023), because according to Amalia (2025), macroeconomic stability is one of the main factors determining the entry of foreign investment into Indonesia, so the government needs to maintain a conducive investment climate (Amalia et al., 2025).

On the other hand, research on unemployment generally uses static panel regression models, thus neglecting the dynamic nature of the unemployment rate. In fact, based on the concept of unemployment persistence, the unemployment condition in one period is greatly influenced by the unemployment condition in the previous period. A high unemployment rate in a region will tend to persist if it is not followed by an increase in labor demand, an improvement in human resource quality, or effective labor market policies. Therefore, the use of lagged unemployment rate variables becomes important to illustrate the gradual adjustment process of the labor market.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

Based on this description, there are still several research gaps that need to be further examined. First, most previous studies analyze the effects of foreign labor and foreign investment separately without considering the interaction relationship between the two. Second, previous research is still dominated by static panel models, thus failing to capture the persistence of unemployment over time. Third, research on the effect of foreign labor on the unemployment rate at the provincial level in Indonesia that combines foreign investment, inflation, unemployment persistence, and the interaction between foreign labor and foreign investment is still relatively limited. This gap indicates that a more comprehensive empirical approach is needed so that the relationship between foreign labor, foreign investment, and the unemployment rate can be explained more fully.

This research has several novelties compared to previous studies. First, this study includes an interaction variable between foreign labor and Foreign Direct Investment to test whether foreign investment can strengthen the benefits of the presence of foreign labor through technology transfer and knowledge spillover mechanisms. Second, this study uses the lagged open unemployment rate variable as a representation of unemployment persistence, thus being able to explain the dynamics of unemployment better than static panel models. Third, this study uses panel data from 34 provinces in Indonesia during the period 2022–2024, thus providing an empirical picture of the labor market characteristics between provinces in Indonesia.

Academically, this research is expected to enrich the literature on labor economics, particularly related to international labor migration, foreign investment, and unemployment dynamics in developing countries. From a practical perspective, the research results are expected to provide input for the government in formulating labor policies that can create a balance between the needs for foreign labor. As a supporter of investment with the improvement of domestic labor quality through education, training, competency certification, and optimization of technology transfer programs. Thus, the benefits of foreign investment are not only reflected in the increase in economic growth but also capable of expanding job opportunities and reducing the unemployment rate sustainably.

Based on empirical phenomena, theoretical foundations, and previous research results that still show differences in findings, this research aims to analyze the influence of foreign labor, Foreign Direct Investment (FDI), inflation, unemployment persistence, and the interaction between foreign labor and Foreign Direct Investment on the open unemployment rate in 34 provinces in Indonesia during the period 2022–2024.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

METHOD

This research uses a quantitative approach with panel data analysis methods to analyze the influence of foreign labor on the open unemployment rate in Indonesia. The data used is secondary data obtained from official publications of the Central Statistics Agency, the Ministry of Manpower of the Republic of Indonesia, and the Ministry of Investment and Downstream/BKPM. The research uses panel data, which is a combination of cross-section data from 34 provinces in Indonesia and time series data during the period 2022–2024, resulting in 102 observations.

This research uses the Partial Adjustment Model (PAM) approach, which is indicated by including the lag variable of the Open Unemployment Rate into the regression model. The PAM approach is used to capture the existence of unemployment persistence, which is a condition when the unemployment rate in a certain period is influenced by the unemployment rate in the previous period. By including the lag variable, the model not only explains the influence of economic factors on the unemployment rate in the current period but also describes the adjustment process that occurs gradually towards a long-term equilibrium condition.

The dependent variable in this research is the Open Unemployment Rate (OUR). The independent variables consist of Foreign Labor (FL), Foreign Direct Investment (FDI), inflation, lag open unemployment rate , and the interaction variable between foreign labor and Foreign Direct Investment (FL×FDI). The FL and FDI variables are transformed into natural logarithm form (Ln) to reduce data heterogeneity, address differences in scale between variables, and facilitate the interpretation of regression coefficients. The interaction variable is formed through the multiplication of FL and FDI to test whether foreign investment strengthens or weakens the influence of foreign labor on the open unemployment rate.

The empirical model used in this research is formulated as follows:

$$TPT_{it} = \beta_0 + \beta_1 OUR_{it-1} + \beta_2 \log(FL)_{it} + \beta_3 \log(FDI)_{it} + \beta_4 IF_{it} + \beta_5 [\log(FL) \times \log(FDI)]_{it} + \varepsilon t$$

Where :
OUR = Unemployment rate(Percent).
FL = Foreign Labour (Person).
FDI = Foreign Direct Investment (Dollar).
IF = Inflation (Percent

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

Data analysis was conducted using EViews 12 software. The analysis stages began with the preparation of descriptive statistics to describe the characteristics of each research variable. Next, panel data regression estimation was performed using three approaches, namely Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The selection of the best model was carried out through the Chow Test, Hausman Test, and Lagrange Multiplier (LM) Test. The selected model was then used as the basis for hypothesis testing.

The use of the lag variable Open Unemployment Rate caused observations in the first year to be unusable in the estimation process. Therefore, although the research data covers the period 2022–2024, the regression analysis used 68 observations from 34 provinces during the estimation period 2023–2024. This adjustment was made so that the lag variable could be formed accurately without reducing the validity of the model.

After obtaining the best model, classical assumption testing was conducted, which included normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test. Hypothesis testing was then conducted through partial test (t test), simultaneous test (F test), and coefficient of determination (R^2). The t test was used to determine the effect of each independent variable on the open unemployment rate, while the F test was used to determine the effect of all independent variables simultaneously. The coefficient of determination (R^2) was used to measure the model's ability to explain the variation in the open unemployment rate.

RESULTS AND DISCUSSION

Descriptive Statistics

Descriptive statistical analysis was conducted to provide an overview of the characteristics of the research data. Descriptive statistics include the mean, maximum value, minimum value, and standard deviation of each research variable. The results of the descriptive statistics are presented in Table 1.

Tabel. 1 Descriptive Statistics Results

Variable	Mean	Maximum	Minimum	Standard Deviation
OUR	4.539706	7.520000	1.790000	1.421669
OUR(-1)	4.790000	8.310000	2.270000	1.399510
FL	3.914457	6.893656	0.071390	1.655552

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

FDI	6.177104	9.022045	1.757858	1.550382
IF	2.124118	4.410000	-0.790000	1.037381
FL×FDI	22.999900	50.569820	0.513905	10.656960

Source: Eviews 12 (Data processed) 2026

Based on Table 1, the average Open Unemployment Rate (OUR) during the research period is 4.539706%, with a minimum value of 1.790000% and a maximum of 7.520000%. The lag variable of the Open Unemployment Rate has an average of 4.790000%, indicating that the unemployment rate in the previous period is still relatively high. The FL variable has an average value of 3.914457, while FDI has an average of 6.177104. These values indicate variations in the number of foreign labor and foreign investment among provinces in Indonesia. The IF variable has an average of 2.124118%, with a minimum value of −0.790000%, indicating that some provinces experienced deflation during certain periods. Meanwhile, the interaction variable FL×FDI has an average value of 22.999900, indicating a relationship between the presence of foreign labor and foreign investment in each province.

Panel Data Regression Model Selection

The selection of the panel data regression model is conducted to determine the most appropriate estimation model. Testing is performed using the Chow Test, Hausman Test, and Lagrange Multiplier (LM) Test. The test results are presented in Table 2.

Tabel 2. Results of Panel Data Regression Model Selection

Types of Testing	Statistic Test	Probability	Desicion
Chow Test	Cross-section F	0,5889	Common Effect Model (CEM)
Hausman Test	Chi-Square	0,4814	Random Effect Model (REM)
Lagrange Multiplier Tess	Breusch–Pagan	0,5178	Common Effect Model (CEM)

Source: Eviews 12 (Data processed) 2026

The selection of the panel data regression model is conducted through the Chow Test, Hausman Test, and Lagrange Multiplier (LM) Test. Based on Table 2, the results of the Chow Test show a probability value of Cross-section F of 0.5889, which is greater than the significance level of 5%. Therefore, the Common Effect Model (CEM) is more

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

appropriate than the Fixed Effect Model. Furthermore, the results of the Hausman Test show a probability value of 0.4814, so the Random Effect Model is more appropriate than the Fixed Effect Model. However, the results of the Lagrange Multiplier Test show a probability value of 0.5178, which is greater than 0.05. Thus, the Common Effect Model (CEM) is more accurate than the Random Effect Model. Based on all the test results, the panel data regression model used in this study is the Common Effect Model (CEM).

Classical Assumption Testing

Before hypothesis testing is conducted, the selected model is first tested using classical assumption tests to ensure that the model meets the basic regression assumptions. The tests include normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test.

Tabel 3. Normality Test Results

Method	Value
Jarque–Bera	1.983911
Probabilitas	0.370922

Source : Eviews 12 (Data Processed) 2026

The results of the normality test show that the residuals have a Jarque–Bera probability value of 0.370922 (>0.05). Thus, the residuals are normally distributed, so the normality assumption is met.

Multicollinearity testing was conducted using the Variance Inflation Factor (VIF) values. The test results show that all variables have VIF values below 10, so the model does not experience multicollinearity.

Table 4. Multicollinearity Test Results

Variabel	VIF	Keterangan
TPT(-1)	1,23	No Multicollinearity
FL	1,45	No Multicollinearity
FDI	1,61	No Multicollinearity
IF	1,04	No Multicollinearity
FL × FDI	1,58	No Multicollinearity

Source : Eviews 12 (Data Processed) 2026

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

Based on the test results presented in Table 4, all independent variables have VIF values below 10. The highest VIF value is found in the FDI variable at 1.61, while the lowest VIF value is found in the IF variable at 1.04. Meanwhile, the OUR(-1), FL, and FL×FDI variables also have VIF values that are below the established threshold. These results indicate that there is no strong linear relationship among the independent variables, so the regression model does not exhibit multicollinearity symptoms and is suitable for further analysis.

The next classical assumption test is the heteroskedasticity test. This test aims to examine whether the disturbance variable is constant (Widarjono, 2018).

Table 5. Heteroscedasticity Test Results

Variable	Probability	Description
OUR(-1)	0,7357	No Heteroskedasticity
FL	0,3574	No Heteroskedasticity
FDI	0,5237	No Heteroskedasticity
IF	0,8697	No Heteroskedasticity
FL × FDI	0,4103	No Heteroskedasticity

Source : Eviews 12 (Data Processed) 2026

Based on Table 5, all variables have probability values greater than the 5% significance level (0.05), namely OUR(-1) at 0.7357, FL at 0.3574, FDI at 0.5237, IF at 0.8697, and the interaction variable FL×FDI at 0.4103. Thus, it can be concluded that the regression model does not exhibit heteroskedasticity symptoms, thereby meeting one of the classical assumptions and is suitable for further analysis.

The last test is the autocorrelation test. This test is conducted to examine whether there is a correlation between disturbance variables (Drukker, 2003). The test is performed using Durbin–Watson (DW) statistics. The regression model is stated to be free from autocorrelation if the Durbin–Watson value is within the interval dU < DW < 4 – dU.

Table 6. Autocorrelation Test Reasults

Criteria	Value
Number of Observations (n)	68

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

Number of Independent Variables (k)	5
Durbin–Watson (DW)	2,158356
dU	1,803
4 − dU	2,197
Desicion	No autocorrelation

Source : Eviews 12 (Data Processed) 2026

Based on the test results presented in Table 6, a Durbin–Watson value of 2.158356 is obtained. With the number of observations (n) being 68, the number of independent variables (k) being 5, and a significance level of 5%, a dU value of 1.803 and 4 − dU value of 2.197 are obtained. Because the value 1.803 < 2.158356 < 2.197, the Durbin–Watson value is in the area indicating no autocorrelation. Thus, the regression model has met the assumption of being free from autocorrelation, making it suitable for hypothesis testing.

The results of the classical assumption test show that the initial FEM model is unable to meet all classical assumptions. Therefore, it can be concluded that the FEM model has parameter bias, necessitating estimation using another method that can produce efficient parameters without classical assumptions.

Results of Panel Data Regression Estimation

After selecting the panel data regression model and testing classical assumptions, the best model used in this study is the Common Effect Model (CEM). Subsequently, regression estimation is performed to analyze the effect of Foreign Labor (FL), Foreign Direct Investment (FDI), inflation, lag of Open Unemployment Rate , as well as the interaction variable between foreign labor and Foreign Direct Investment on the Open Unemployment Rate in Indonesia. The results of the panel data regression estimation are presented in Table 7.

Table 7: Results of Panel Data Regression Estimation (Common Effect Model)

Variable	Coefficient	Std. Error	t-Statistic	Probability
C	-0,942622	0,713350	-1,321401	0,1912
OUR(-1)	0,860523	0,046194	18,628370	0,0000
FL	0,495624	0,154068	3,216911	0,0021
FDI	0,198362	0,101514	1,954033	0,0552

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

IF	-0,107237	0,071068	-1,508944	0,1364
FL × FDI	-0,068574	0,023143	-2,963035	0,0043

Source : Eviews 12 (Data Processed) 2026

The estimation results show that the lag variable of the Open Unemployment Rate has a positive coefficient of 0.860523 and has a significant effect at a significance level of 1% (p-value = 0.0000). This indicates that the unemployment rate in the previous period positively affects the unemployment rate in the current period, indicating the persistence of unemployment in Indonesia.

The variable of Foreign Labor (FL) has a positive coefficient of 0.495624 with a probability value of 0.0021, thus having a positive and significant effect on the Open Unemployment Rate. This finding indicates that an increase in the number of Foreign Labor tends to be followed by an increase in the open unemployment rate, assuming other variables remain constant.

The variable of Foreign Direct Investment (FDI) has a positive coefficient of 0.198362 with a probability value of 0.0552. This result indicates that FDI has a positive and significant effect at a significance level of 10%, but is not significant at a significance level of 5%.

Meanwhile, the inflation (IF) variable has a negative coefficient of -0.107237, but does not have a significant effect on the Open Unemployment Rate because it has a probability value of 0.1364 (>0.05). This indicates that changes in inflation during the study period have not been able to explain the variation in the unemployment rate significantly.

The interaction variable FL×FDI has a negative coefficient of -0.068574 with a probability value of 0.0043, thus having a negative and significant effect on the Open Unemployment Rate. This result indicates that an increase in foreign investment can weaken the effect of foreign labor on the open unemployment rate through increased economic activity, technology transfer, and job creation.

Hypothesis Testing

Results of Partial Test (t-test)

Partial testing (t-test) is conducted to determine the effect of each independent variable on the Open Unemployment Rate. The testing is conducted at a significance level of 5%, also considering a significance level of 10% for variables that are at the significance threshold.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

Table 8. F-Test (Simultaneous Test) Results.

Variable	t-statistic	t-tabel	p-value	Decision
OUR(-1)	18,628370	1,999	0,0000	H_0 rejected, positive and significantly influential
FL	3,216911	1,999	0,0021	H_0 rejected, positive and significantly influential
FDI	1,954033	1,999	0,0552	H_0 accepted, no at α = 5%, but significantly at α = 10%
IF	-1,508944	1,999	0,1364	H_0 accepted, not significantly influential
FL × FDI	-2,963035	1,999	0,0043	H_0 rejected, negatively and significantly influential

Source : Eviews 12 (Data Processed) 2026

Based on Table 8, the variable OUR(-1) has a probability value of 0.0000, thus having a positive and significant influence on the Open Unemployment Rate. The variable FL also has a positive and significant influence with a probability value of 0.0021. Furthermore, the variable FDI has a probability value of 0.0552, thus having a positive and significant influence at the 10% significance level, but not significant at the 5% level. Meanwhile, the variable IF has a probability value of 0.1364, thus not having a significant influence on the Open Unemployment Rate. The interaction variable FL × FDI has a probability value of 0.0043, which indicates a negative and significant influence on the Open Unemployment Rate.

Simultaneous Test (F Test)

The simultaneous test (F Test) is conducted to determine whether all independent variables, namely the lag of the Open Unemployment Rate (OUR) , Foreign Labor (FL), Foreign Direct Investment (FDI), inflation (IF), and the interaction variable FL×FDI, collectively influence the Open Unemployment Rate (OUR). The testing is done by comparing the calculated F value with the F table at a significance level of 5%, while also considering the Prob(F-statistic).

Table 9. Results of Simultaneous Test

Description	Value
F-statistic	77,46334

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

F-tabel (α = 5%; df1 = 5; df2 = 62)	2,36
Prob(F-statistic)	0,000000
Decision	H_0 rejected

Source : Eviews 12 (Data Processed) 2026

The results indicate that the lag variable of the Open Unemployment Rate , Foreign Labor (FL), Foreign Direct Investment (FDI), inflation (IF), and the interaction variable FL×FDI simultaneously have a significant influence on the Open Unemployment Rate (OUR) in Indonesia during the study period. Thus, the regression model used has a good ability to explain the relationship between independent and dependent variables, making it suitable for analysis and hypothesis testing.

Coefficient of Determination (R^2)

Table 10. Coefficient of Determination (R^2) Test Results

Description	Value
R-squared	0,862013
Adjusted R-squared	0,850885
Percentage of model capability	85,09%
Other variables outside the model	14,91%

Source : Eviews 12 (Data Processed) 2026

Based on the results of the panel data regression estimation using the Common Effect Model (CEM), an Adjusted R-squared value of 0.850885 was obtained. This result indicates that the ability of independent variables to explain the variation in the Open Unemployment Rate (TPT) is 85.09%. In other words, changes in the Open Unemployment Rate can be explained by the lag variable of the Open Unemployment Rate , Foreign Labor (LOGTKA), Foreign Direct Investment (LOGFDI), inflation (INFLASI), as well as the interaction variable LOGFDI×LOGTKA. Meanwhile, the remaining 14.91% is influenced by other factors outside the research model that were not included in this study, such as economic growth, education level, minimum wage, quality of human resources, industrial structure, labor policies, and other macroeconomic factors.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

International Journal of Economics, Business and Innovation Research
https://e-journal.citakonsultindo.or.id/index.php/IJEBIR
E-ISSN : 2964-0865
IJEBIR

DISCUSSION OF RESEARCH RESULTS

Effect of Lag Open Unemployment Rate on the Open Unemployment Rate

The research results show that the lag variable of the Open Unemployment Rate has a positive and significant effect on the Open Unemployment Rate in Indonesia. This indicates that the unemployment rate in the previous period still affects the unemployment rate in the current period. This finding indicates the existence of unemployment persistence, which is a condition when unemployment tends to persist over a certain period, so the adjustment process does not occur quickly. This finding is in line with the Partial Adjustment Model (PAM) which explains that the adjustment of an economic variable towards equilibrium occurs gradually due to adjustment costs and rigidity in the labor market. Therefore, changes in economic conditions do not directly reduce the unemployment rate, so unemployment in the previous period still affects the following period.

This research finding is supported by the study of Ball and Onken, which found that the unemployment rate has hysteresis properties, meaning that shocks to the unemployment rate can have a permanent impact on the natural unemployment rate, so the process of its reduction takes a relatively long time (Ball & Onken, 2021). In addition, the research by Cuestas and Gil-Alana shows that most countries in Europe still experience high unemployment persistence, so labor market policies need to be implemented continuously to accelerate the adjustment process after economic shocks occur (Cuestas & Alana, 2024).

Effect of Foreign Labor on the Open Unemployment Rate

The results of the study show that the variable Foreign Labor (FL) has a positive and significant effect on the Open Unemployment Rate in Indonesia. This finding indicates that an increase in the number of Foreign Labor tends to be followed by an increase in the open unemployment rate. This condition indicates that in certain sectors, the presence of foreign labor has the potential to increase competition in the labor market, especially if the competencies of local workers do not fully meet the needs of the industry.

According to Human Capital Theory, which explains that companies tend to recruit workers who have higher skills, knowledge, and productivity to improve production efficiency (Becker, 1992). Therefore, if local workers are not able to meet the competency needs of the industry, companies may choose to use foreign labor to fill certain positions (Lestari & Caroline, 2021). However, the presence of foreign labor does

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

not always have a negative impact. The research by Lestari and Caroline (2021) shows that foreign labor also plays a role in encouraging human capital spillover through the transfer of knowledge, technology, and skills to local workers, which in the long term can improve the quality of human resources.

Effect of Foreign Direct Investment on the Open Unemployment Rate

The results of the study show that the variable Foreign Direct Investment (FDI) has a positive effect on the Open Unemployment Rate, but it is only significant at the 10% significance level. This indicates that the increase in foreign investment has not fully been able to reduce the unemployment rate in Indonesia during the study period.

This finding indicates that the incoming foreign investment is still dominated by capital-intensive sectors and requires labor with specific skills, so not all local workers can be absorbed. Dari and Astuti (2025) explain that the flow of foreign investment is influenced by macroeconomic conditions such as inflation, exchange rates, and GDP, so the effectiveness of investment in creating job opportunities also depends on the economic conditions of a country (Dari & Astuti, 2025). Research by Matsuura and Saito (2023) also found that the entry of FDI increases the demand for skilled labor, while its impact on unskilled labor is relatively limited (Matsuura & Saito, 2023), and research by Fazaalloh (2024) states that FDI contributes to economic growth through capital accumulation and technology transfer, but its effect on labor absorption varies between provinces and sectors, so it may not necessarily be able to directly reduce the unemployment rate (Fazaalloh, 2024). In addition, Febriyanti (2024) found that the contribution of FDI to the reduction of unemployment is influenced by labor productivity and economic growth, so the effectiveness of foreign investment in creating jobs varies in each region (Febriyanti et al., 2024).

Effect of Inflation on the Open Unemployment Rate

The results of the study show that the inflation variable has a negative but not significant effect on the Open Unemployment Rate in Indonesia. This finding indicates that changes in inflation during the study period have not been able to provide a significant impact on changes in the unemployment rate. These results indicate that the relationship between inflation and unemployment in Indonesia does not always follow the Phillips Curve concept. This finding is in line with the research by Octavia and Samsuddin (2025), which shows that inflation has not been able to provide a significant effect on the unemployment rate in Indonesia due to labor absorption is also influenced by investment and exports

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

(Octavia & Samsuddin, 2025). According to research by Rizky Maulana and Gerry Ganika (2022), which states that there is no causal relationship between inflation and unemployment in Indonesia, this condition may be caused by the influence of other factors, such as the structure of the labor market, productivity, and government policies that are more dominant in influencing the unemployment rate compared to changes in inflation (Putra & Ganika, 2022).

In addition, Duwita (2026) found that investment and economic activity have a greater impact on changes in the unemployment rate compared to inflation, so the relationship between inflation and unemployment is not always significant (Duwita et al., 2026). Research by Ahmadi Murjani (2021) also shows that the Phillips Curve phenomenon does not always empirically apply, so the relationship between inflation and unemployment can vary depending on economic conditions and the characteristics of each region (Murjani, 2021).

Effect of the Interaction of Foreign Labor and Foreign Direct Investment on the Open Unemployment Rate

The research results show that the interaction variable FL×FDI has a negative and significant effect on the Open Unemployment Rate in Indonesia. This finding indicates that the presence of foreign labor can strengthen the impact of foreign investment in reducing the unemployment rate through increased transfer of knowledge, technology, and skills to local labor.

This result is in line with the theory of spillover effect, which explains that foreign labor acts as a medium for the transfer of technology and knowledge from multinational companies to domestic labor, thereby increasing the productivity and competence of local labor (Javorcik, 2022). With the improvement in the quality of labor, companies have a greater opportunity to absorb local labor, thus reducing the unemployment rate.

The findings of this study are supported by Lestari and Caroline (2021), who state that the presence of foreign labor provides human capital spillover through the transfer of knowledge and skills that positively impacts the productivity of domestic labor. Furthermore, Matsuura and Saito (2023) found that companies with foreign investment tend to increase the demand for local labor with higher skills after the process of technology transfer and competency enhancement.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

CONCLUSION

This study aims to analyze the lag effect of the Open Unemployment Rate (OUR), Foreign Labor (FL), Foreign Direct Investment (FDI), inflation, and the interaction of FL and FDI on the Open Unemployment Rate in Indonesia for the years 2023–2024 using the Common Effect Model (CEM).

The research results show that the lag of the Open Unemployment Rate and Foreign Labor has a positive and significant effect on the Open Unemployment Rate. The Foreign Direct Investment variable has a positive effect, but is only significant at the 10% significance level, while inflation has a negative but insignificant effect. Meanwhile, the interaction of Foreign Direct Investment and Foreign Labor has a negative and significant effect on the Open Unemployment Rate. These findings indicate that the presence of foreign labor can strengthen the benefits of foreign investment through technology transfer and the enhancement of local labor competencies, thereby helping to suppress the unemployment rate. These findings are also consistent with research on knowledge spillover and human capital spillover, which shows that foreign labor can increase productivity Domestic labor when supported by foreign investment and the development of human resource capacity.

Based on these results, the government needs to improve the quality of human resources through education, vocational training, and competency certification, as well as encourage foreign investment that is oriented towards job creation and technology transfer. In addition, supervision of the use of foreign labor needs to be strengthened so that its presence truly supports the improvement of the competencies of Indonesian labor and provides benefits for the absorption of domestic labor.

REFERENCES

Agustina, M., Astuti, H., & Susilo, J. H. (2023). *Unemployment in Indonesia : An Analysis of Economic Determinants from 2012-2021*. *12*(1), 69–82.

Amalia, S., Arifin, Z., & Articles, I. (2025). *Analysis of the Role of Economic Factors on Foreign Direct Investment in Indonesia*. *23*(02), 182–194.

Ball, L. M., & Onken, J. (2021). *HYSTERESIS IN UNEMPLOYMENT: EVIDENCE FROM OECD ESTIMATES OF THE NATURAL RATE*.

Becker, G. S. (n.d.). *HUMAN CAPITAL*.

Becker, G. S. (1992). Population Economzcs Fertility and the economy *. *Journal of Population Economics*, *5*, 185–201.

Cuestas, J. C., & Alana, L. G. (2024). Unemployment Hysteresis by Sex and Education Attainment in the EU. *Journal of the Knowledge Economy*, 801–827.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

https://doi.org/10.1007/s13132-023-01106-1

Dari, T. U., & Astuti, R. D. (2025). *Macroeconomic Determinants of Foreign Direct Investment in Indonesia : The Role of GDP , Inflation , and Exchange Rate (1990 – 2023)*. *11*(1), 35–47.

Drukker, D. M. (2003). *Testing for serial correlation in linear panel-data models*. *2*, 168–177.

Duwita, R. P., Haliza, A., Desyantara, R., & Bahtiar, M. Y. (2026). *Analisis Pengaruh Inflasi , Investasi dan Produk Domestik Bruto (PDB) Terhadap Tingkat Pengangguran di Indonesia Periode 2020-2025*.

Fazaalloh, A. M. (2024). FDI and economic growth in Indonesia : a provincial and sectoral analysis. *Journal of Economic Structures*. https://doi.org/10.1186/s40008-023-00323-w

Febriyanti, A. R., Rusgianto, S., Herianingrum, S., Ghani, D., Dasangga, R., Info, A., Unemployment, Y., Investment, D., & Growth, E. (2024). *Impact of Foreign Direct Investment, Productivity, and Growth on Indonesian Youth Unemployment*. *22*(01), 40–53.

Lee, E. S. (2009). *A Theory of Migration*. *3*(1), 47–57.

Lestari, E. P., & Caroline, C. (2021). How Does Human Capital Spillover Inflow of Foreign Workers Affect Economic Growth? *Frontiers in Sociology*, *6*(December), 1–9. https://doi.org/10.3389/fsoc.2021.750946

Matsuura, T., & Saito, H. (2023). Foreign direct investment and labor demand by skill in Indonesian manufacturing firms. *Review of World Economics*, *159*(4), 921–941. https://doi.org/10.1007/s10290-022-00485-y

Murjani, A. (2021). *Apakah Fenomena Kurva Phillips Terjadi di Kalimantan Selatan ? Pemodelan Autoregressive Distributed Lag (ARDL) pada Inflasi dan Pengangguran*. 96–109.

Octavia, & Samsuddin, M. A. (2025). *Pengaruh inflasi, investasi asing dan ekspor terhadap tingkat pengangguran di indonesia*. *2*(6), 19–25.

Putra, R. M., & Ganika, G. (2022). *Causal Relationship between Inflation and Unemployment in Indonesia 1986-2018 : A Phillips Curve Analysis*. *17*(1), 45–54.

Tegep, J., Suratman, E., & Indra, S. (2019). *The Failure of Foreign Direct Investment to Explain Unemployment Rate and the Mediating Role of Economic Growth and Minimum Wage*. *9*(2), 154–161.

Widarjono, A. (2018). *Ekonometrika Pengantar dan Aplikasinya Disertai Panduan EViews* (Kelima). UPP STIM YKPN.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.