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THE ROLE OF DOMESTIC AND FOREIGN INVESTMENTS IN REDUCING UNEMPLOYMENT IN ASEAN: A 1999-2023 PANEL ARDL ANALYSIS

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Abstract

Unemployment is a challenge in economic development in ASEAN countries because its members are mostly developing countries that have market potential in Asia. Many countries in ASEAN face a mismatch in workforce skills, high levels of workers in the informal sector, and limited job opportunities for less skilled job seekers. Therefore, the government needs to understand how FDI and domestic investment affect unemployment in ASEAN in order to formulate short-term and long-term public policies to optimize investment strategies to create sustainable jobs. This study analyzes the impact of domestic investment per GDP and FDI per GDP on unemployment in ASEAN countries in the period 1999-2023. This study uses the Panel Autoregressive Distributed Lag analysis method to see the short-term and long-term effects. The results of the research show that domestic investment per GDP and unemployment have no impact in the short term but have a negative and significant effect in the long term. Then, FDI per GDP and unemployment have a positive and significant effect in the short term but have a negative and significant effect in the long term. In conclusion, foreign and domestic investment has a role in reducing unemployment in the long term and needs to be encouraged by appropriate policies.

Keywords: *Unemployment, Investment Domestic, Foreign Direct Investment, Inflation, Gross Domestic Product Growth, Panel Autoregressive Distributed Lag*

INTRODUCTION

High unemployment can trigger political and social instability, as well as reduce public trust in the government. From a macroeconomic perspective, unemployment is an economic burden that is detrimental to society in economic growth (Daveri & Tabellini, 2000) and labour productivity (Bräuninger & Pannenberg, 2002). Then from a microeconomic perspective, people who are currently unemployed will find it difficult to get jobs in the future (Arulampalam et al., 2000; Gregg, 2001). People with a long history of unemployment will find it increasingly difficult to get decent jobs due to a lack of work experience (Bavaro & Tullio, 2024).

Because of that, unemployment is the most challenging economic problem in developing countries. Because the market may not be able to generate full employment and decent working conditions (Irandoust, 2023). Previous researchers also explained that the

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government can play a role in overcoming market failure (Stiglitz, 2002). Therefore, the government can help reduce unemployment and achieve full employment in the market by providing incentives for both domestic and foreign investment.

Countries with higher levels of FDI (Foreign Direct Investment) tend to have lower unemployment rates. Because increasing FDI will create jobs that will reduce unemployment in the country, then increasing FDI will increase the output of goods and economic services so that it requires additional workers. After that, increasing FDI can be a vehicle for technology transfer from developed countries to developing countries. Which will later encourage the recruitment and training of local human capital workers to adopt developed country technology. This claim is supported by previous research, which found that countries that receive FDI have lower unemployment rates (Schmerer, 2014).

Similar to FDI, high domestic investment will reduce unemployment in the country. Increasing domestic investment will create jobs and increase the output of goods and services in the economy. Then increasing domestic investment can also expand economic diversification by opening new industrial sectors and empowering small and medium enterprises, which are labour-intensive sectors. This claim is supported by previous research, where capital investment has a significant negative effect on unemployment (Driver & Muñoz-Bugarin, 2010).

Then, as a control variable, macroeconomic factors, namely inflation and GDP (Gross Domestic Product) growth, are used. This control variable helps to see the impact of FDI and domestic investment on unemployment in ASEAN. These two control variables empirically reflect the effects of unemployment related to Okun's law and the Phillips curve (Phillips, 1958). When inflation increases, the aggregate demand for goods and services requires a lot of labour to respond to the increase in market demand. The increase in inflation can lower real wages so that labour costs become cheaper to recruit.

Furthermore, when economic growth increases, people's income also increases. As a result, market demand increases, and companies respond with higher levels of production that require a lot of labour. This claim is supported by previous research where there are implications of a negative relationship between long-term economic growth and unemployment rates (Mauro & Carmeci, 2003). Due to low job creation and high unemployment rates caused by low economic growth rates with inefficient and unproductive labour markets (Arestis et al., 2023; Blanchard & Wolfers, 2000). The two control variables,

inflation and economic growth, also represent responses to government monetary and fiscal policies (Azu et al., 2021).

The purpose of this study is to see whether FDI has a significant influence on reducing poverty in ASEAN countries. Then, to analyze the influence of domestic investment to reduce unemployment in the workforce. Then, analyze the influence of macroeconomic factors, namely inflation and GDP growth, on poverty. After that, provide empirical evidence for policymakers regarding investment strategies in reducing poverty rates.

The significance of this study enriches the macroeconomic literature with empirical evidence that FDI and domestic investment have an effect on unemployment in ASEAN. Then this study also adds macroeconomic control variables that provide a comprehensive analysis. The results of this study are expected to be a reference for policymakers in ASEAN countries to design public policies in the form of investments that create jobs. Because if FDI and domestic investment are proven to reduce poverty rates significantly, the government can provide incentives to attract investors. Then, there is also empirical evidence of inflation and GDP growth on poverty rates that can help the government formulate effective monetary and fiscal policies.

RESEARCH METHODS

The study uses panel data from 10 ASEAN countries, namely Cambodia, Brunei Darussalam, Lao PDR, Malaysia, Thailand, Singapore, Vietnam, Philippines, Indonesia, and Myanmar. The data covers a 25-year period from 1999 to 2023. The data source used is the World Bank Database which provides related macroeconomic indicators in the study. The dependent variable is the unemployment rate (% of the total workforce, ILO estimates). Then, the main independent variables are Foreign Direct Investment (FDI), net inflows (% of GDP) and Gross Domestic Investment (% of GDP). Then, the controls are Inflation GDP Deflator (annual percentage) and GDP Growth (annual percentage).

All variables are taken from the World Bank Database to ensure data reliability. Before estimating the model, a stationarity test is carried out on all variables to determine the integrated variables at the stationary or first difference level with the Im-Pesaran-Shin (IPS) Test. The results of the stationarity test determine the use of the Panel Autoregressive Distributed Lag (ARDL) as an estimation method based on the model (Pesaran et al., 1999; Pesaran & Smith, 1995). The ARDL Panel Model in the research is formulated as follows:

$$Unemployment_{it} = \alpha + \sum_{a=0}^{q1} \beta_{1q} FDI\ per\ GDP_{it-q} + \sum_{a=0}^{q2} \beta_{2q} Investment\ Domestic\ per\ GDP_{it-q}$$

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$$+\sum_{q=0}^{q3}\beta_{3q}GDP\ Growth_{it-q}+\sum_{q=0}^{q4}\beta_{4q}Inflation\ GDP\ Deflator_{it-q}+\epsilon_{it}$$

Description: α is a constant, β is the regression coefficient, q1 q2 q3 q4 are the lags of the independent variables, and ϵ_{it} is the error term.

Researchers test variables' stationarity with stationary tests; if the stationary variable is at the stationary level or first difference stationary, the ARDL model can be used. Then, the ARDL model estimation uses the Pooled Mean Group (PMG) or Mean Group (MG) approach with the Hausman test after the Pedroni cointegration test results are carried out. After that, the estimation results can be interpreted by looking at the short-term and long-term coefficients and their significance levels.

RESULTS AND DISCUSSION

Stationery Test

Table 1. Stationary Test

Variables	Constant	Level	Constant	1st Difference
Unemployment	-0.7138	Nonstationary	-8.1521*	Stationary
GDP Growth	-5.7188*	Stationary		
FDI per GDP	-4.3669*	Stationary		
Domestic Investment per GDP	-2.8268*	Stationary		
Inflation GDP Deflator	-7.0285*	Stationary		

Z-t-tilde-bar statistics. *p<0.05

Based on the stationarity analysis, unemployment is not stationary at the level but stationary at the 1st Difference. This is because unemployment has a unit root and requires the 1st Difference to achieve stationarity. Then, GDP growth, FDI per GDP, Domestic Investment per GDP, and GDP Deflator Inflation are all stationary at the level.

Pedroni Cointegration Test

Table 2. Pedroni Cointegration Test

Test Statistic	Panel	Interpretation	Group	Interpretation
v	-0.6406	No cointegration		
rho	-2.877	Cointegration	-2.105	Cointegration
t	-10.82	Cointegration	-14.05	Cointegration
adf	-5.965	Cointegration	-5.552	Cointegration

The majority of test statistics, both panel-based and group-based, provide strong evidence to reject the null hypothesis of no cointegration, indicating that there is a long-run equilibrium relationship among the variables. The Pedroni Cointegration Test establishes

that unemployment, FDI per GDP, domestic investment per GDP, as well as the control variables inflation, GDP deflator, and GDP growth are cointegrated.

Hausman Test

Table 3. Hausman Test

Test Statistic	Chi2	Prob>chi2
Hausman Test	0.52	0.9717

Since the chi2 probability value is 0.9717, the null hypothesis of homogeneity cannot be rejected. So, the selected model is the Pooled Mean Group (PMG) estimator, which shows that it is more efficient for estimating the panel. The PMG allows short-term parameters to vary from country to country but makes the long-term parameters homogeneous.

PMG Short-Run and Long-Run Estimation for Unemployment

Table 4. PMG Short-Run and Long-Run Estimation for Unemployment

Variables	Short-run Unemployment	Long-run Unemployment
ECT	-1.091862*	
GDP Growth	-0.0136785	-0.0578233*
FDI per GDP	0.0645047*	-0.0287555*
Domestic Investment per GDP	-0.0064272	-0.0134122*
Inflation GDP Deflator	0.0202918*	-0.0119594*
Constant	0.892543*	
N	199	

Standard errors in parentheses. *p<0.056

In the short term, the FDI per GDP and inflation GDP Deflator variables have a positive relationship to unemployment with a significance level of 5%. This illustrates that when FDI per GDP increases by 1%, unemployment increases by 0.0645047% in the short term. Because in the short term, jobs created by FDI often require special skills that are not possessed by local workers. So, it takes time for local workers to be fully absorbed into the job market due to this FDI. Furthermore, when inflation increases by 1%, unemployment increases by 0.0202918% in the short term. Furthermore, the GDP growth and domestic investment per GDP variables are not significant at the 5% level in the short term. This means that GDP growth and domestic investment per GDP have no impact on unemployment in the short term. Because domestic investment may create jobs, in the short-term local workers will not be immediately absorbed because they do not yet have the required skills or because the investment project is still in the preparation stage.

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The ARDL panel model estimation also shows a long-term relationship between the dependent variable and the independent variable. The FDI per GDP, domestic investment per GDP, inflation GDP deflator, and GDP growth variables has a negative relationship to unemployment with a significance level of 5% in the long term. This means that if FDI per GDP increases by 1%, unemployment decreases by -0.0287555% in the long term. This is in line with previous research showing a significant and negative relationship between net FDI and unemployment (Schmerer, 2014). Then, if domestic investment per GDP increases by 1%, unemployment decreases by -0.0134122% in the long run. This means that if domestic investment per GDP increases by 1%, then unemployment will decrease by 0.0578233% in the long run. This is also in line with previous research where private investment has a significant negative effect on unemployment (Young & Pedregal, 1999).

In general, the increase in investment from FDI and domestic investment can reduce a country's decline. Based on the theory of labour demand, investment can increase productivity and business expansion, which creates many jobs. Then, based on the Keynesian multiplier effect theory, investment can create job demand due to increased purchasing power. This theory is also supported by previous research, which states that investment can reduce unemployment (Driver & Muñoz-Bugarin, 2010; Teimouri & Zietz, 2018).

Likewise, if the inflation GDP deflator increases by 1%, then unemployment will decrease by -0.0119594% in the long run. This is by the Phillips curve, which empirically explains the negative relationship between inflation (Phillips, 1958). Then, when GDP growth increases by 1%, unemployment decreases by -0.0578233% in the long run. This is by previous research which proves a negative relationship between economic growth and unemployment rates in the long run (Mauro & Carmeci, 2003). Then, the negative relationship between GDP growth and unemployment is also shown by Okun's law. The negative and significant ECT variable in the PMG model indicates the speed of error correction. The magnitude of ECT -1.091862 in the PMG model indicates that the imbalance in the previous period can be corrected at a rate of 109.1862% per year. This explains the swift convergence rate and strong cointegration among the panels. Thus, indicating the consistency of the impact of FDI per GDP and domestic investment per GDP on unemployment in ASEAN.

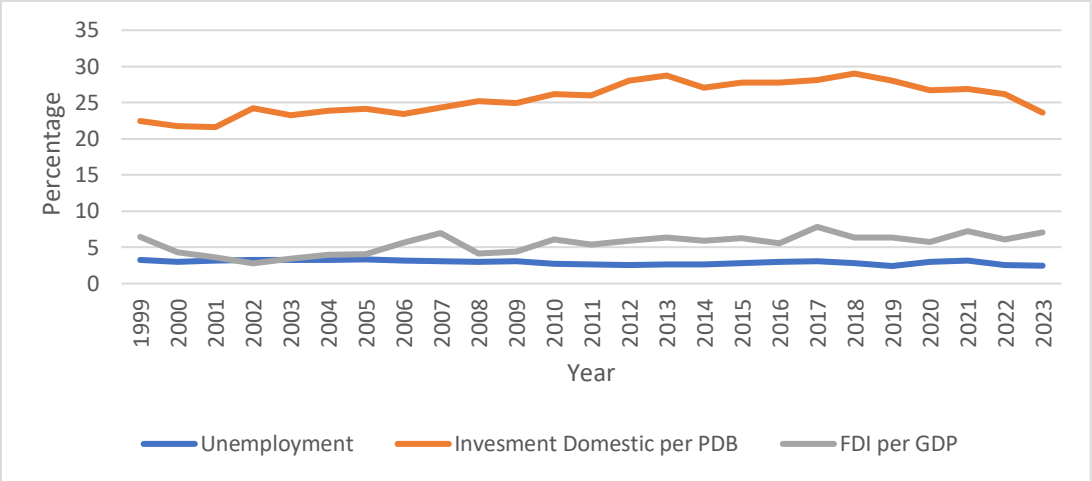

Figure 1. Unemployment, Investment Domestic per GDP, and FDI per GDP in ASEAN Countries from 1999 – 2023

The graph on figure 1 above is a graph of unemployment, a graph of domestic investment per GDP, and a graph of FDI per GDP in ASEAN countries from 1999 to 2023. Based on the graph above, there is a tendency for when FDI per GDP increases and domestic investment per GDP increases, the unemployment graph decreases. Because domestic and foreign investment can create new businesses and develop existing ones. This increases the demand for labour, such as direct labour for factories and offices and indirect labour, such as suppliers and distributors.

Increased domestic investment and FDI can reduce unemployment, as proven by previous studies. A consistent decline in the investment-to-GDP ratio will increase the overall unemployment rate which will negatively impact employment opportunities in the country (Teimouri & Zietz, 2018). Next increasing private investment has proven to be very effective in reducing unemployment (Young & Pedregal, 1999). Then, the results of other studies prove that net FDI is significantly related to low aggregate unemployment rates (Schmerer, 2014). After that, other studies showed that in the long term, the labor share would decrease along with the decrease in capital investment (Driver & Muñoz-Bugarin, 2010).

CONCLUSION

In conclusion, this study empirically proves the impact of FDI per GDP and domestic investment per GDP in ASEAN countries in the short and long term. In the short term, FDI per GDP has a positive relationship with unemployment, where unemployment increases for every increase in FDI per GDP. Meanwhile, domestic investment per GDP

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does not have a significant effect on unemployment in the short term. Because, in the short term, local workers do not yet have the required skills, they cannot be directly absorbed into the labour market.

In the long term, FDI per GDP and domestic investment per GDP have a negative and significant relationship with unemployment. Because every increase in FDI per GDP and domestic investment per GDP can reduce unemployment in the long term. The long-term relationship between FDI per GDP and domestic investment per GDP and unemployment supports previous theories such as Phillips' law, Okun's law, and prior researchers.

Given the short-term public policy implications for FDI that are positively correlated with unemployment, the government should ensure the readiness of human capital from the workforce before opening the door to large-scale foreign investment. The strategy is to create a skills training program for local workers through vocational or undergraduate education so that they can meet the requirements of the incoming industry. This short-term job creation policy through vocational and undergraduate education can bridge the gap between foreign investment flows and the workforce.

The long-term public policy implications for FDI and domestic investment have been proven to reduce unemployment. Therefore, the government should formulate policies that are friendly to sustainable investment to attract foreign and domestic investors, such as corporate tax reduction incentives. Then, the government must simplify investment regulations, reduce bureaucratic barriers, and ensure political and economic stability to increase investor confidence. After that, the government should focus on developing public infrastructure such as good transportation connectivity, digital connectivity, and special industrial economic zones to increase investment in the long term.

Thus, this study suggests that government incentives for FDI and domestic investment will increase opportunities to enter the labour market in the ASEAN region in the long term. Therefore, the role of the government in supporting FDI and domestic investment in the economy is very important to encourage output productivity, which will reduce unemployment rates in the country.

REFERENCES

Arestis, P., Ferreiro, J., & Gomez, C. (2023). Does employment protection legislation affect employment and unemployment? *Economic Modelling*, *126*, 106437.

Arulampalam, W., Booth, A. L., & Taylor, M. P. (2000). Unemployment persistence. *Oxford Economic Papers*, *52*(1), 24–50.

Azu, N. P., Jelivov, G., Aras, O. N., & Isik, A. (2021). Influence of digital economy on youth unemployment in West Africa. *Transnational Corporations Review*, *13*(1), 32–42.

Bavaro, M., & Tullio, F. (2024). A cycle or a tunnel? A study on unemployment and low-pay dynamics in Italy. *Labour Economics*, *90*, 102597.

Blanchard, O., & Wolfers, J. (2000). The role of shocks and institutions in the rise of European unemployment: the aggregate evidence. *The Economic Journal*, *110*(462), 1–33.

Bräuninger, M., & Pannenberg, M. (2002). Unemployment and productivity growth: an empirical analysis within an augmented Solow model. *Economic Modelling*, *19*(1), 105–120.

Daveri, F., & Tabellini, G. (2000). Unemployment, growth and taxation in industrial countries. *Economic Policy*, *15*(30), 48–104.

Driver, C., & Muñoz-Bugarin, J. (2010). Capital investment and unemployment in Europe: Neutrality or not? *Journal of Macroeconomics*, *32*(1), 492–496.

Gregg, P. (2001). The impact of youth unemployment on adult unemployment in the NCDS. *The Economic Journal*, *111*(475), 626–653.

Irandoust, M. (2023). Active labor market as an instrument to reduce unemployment. *Journal of Government and Economics*, *9*, 100065.

Mauro, L., & Carmeci, G. (2003). Long run growth and investment in education: does unemployment matter? *Journal of Macroeconomics*, *25*(1), 123–137.

Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*, *94*(446), 621–634.

Pesaran, M. H., & Smith, R. (1995). Estimating long-run relationships from dynamic heterogeneous panels. *Journal of Econometrics*, *68*(1), 79–113.

Phillips, A. W. (1958). The relation between unemployment and the rate of change of money wage rates in the United Kingdom, 1861-1957. *Economica*, *25*(100), 283–299.

Schmerer, H.-J. (2014). Foreign direct investment and search unemployment: Theory and evidence. *International Review of Economics & Finance*, *30*, 41–56.

Stiglitz, J. E. (2002). Employment, social justice and societal well- being. *International Labour*

Review, *141*(1- 2), 9–29.

Teimouri, S., & Zietz, J. (2018). The impact of surges in net private capital inflows on manufacturing, investment, and unemployment. *Journal of International Money and Finance*, *88*, 158–170.

Young, P. C., & Pedregal, D. J. (1999). Macro-economic relativity: government spending, private investment and unemployment in the USA 1948–1998. *Structural Change and Economic Dynamics*, *10*(3–4), 359–380.