



## Analysis of Foreign Direct Investment (FDI) in ASEAN-5 in 2000-2019

<sup>1</sup>Kevin Eric Andrawina\*, <sup>1</sup>Kiki Bekt Handayani\*, <sup>1</sup>Nimas Melenia Mutiara Akbary

<sup>1</sup>Development Economics, Faculty of Economics and Business, Universitas Sebelas Maret, Surakarta, Indonesia

### Abstract:

This study seeks to analyze the impact of macroeconomic variables on the inflow of Foreign Direct Investment (FDI) in the ASEAN-5 nations—Indonesia, Malaysia, the Philippines, Thailand, and Singapore—during the period from 2000 to 2019. This research examines the macroeconomic factors of Gross Domestic Product (GDP), labor, exchange rate, and inflation. A quantitative research methodology is employed, utilizing panel data regression with the Fixed Effect Model (FEM) for model estimation. This model considers country-specific attributes that may affect foreign direct investment (FDI). The analytical results indicate that, when assessed individually, GDP and labor exert a significant and positive impact on FDI inflows, suggesting that more robust economies and larger labor forces draw increased investment. Conversely, currency rates and inflation do not exert a statistically significant influence on foreign direct investment (FDI). Nevertheless, when these four variables are evaluated concurrently, the results indicate that collectively they exert a substantial influence on FDI inflows in the ASEAN-5 nations during the study period.

JEL: F21; F23; C33

### Keywords:

Exchange rate; foreign direct investment; gdp; inflation; labor

### Corresponding Author\*:

Kevin Eric Andrawina, Kiki Bekt Handayani

### Email:

kevinzone99@gmail.com  
kikibekti27@gmail.com

DOI:



## 1. Introduction

Macroeconomics in general describes how the economy functions and carries out its activities as a whole. Macroeconomic analysis seeks to find answers to the conditions that create a problem in achieving economic goals and explain the steps that can be used to overcome these problems. Some of the problems in the economic development process, especially in developing countries, are the lack of funds flow for the development process. This flow of funds can be obtained from domestic and foreign financing through foreign investment (Akinlo, 2015; Borensztein et al., 1998; Emako et al., 2022; Jayadi & Prasetyo, 2022)

There are two forms of foreign investment that enter a country, namely portfolio investment and Foreign Direct Investment (FDI). With investment, a country's economy, especially in the economic development of developing countries and developed countries, will have a significant influence. Although both forms of investment have their own advantages, the existence of FDI will be more influential in the economy compared to portfolio investment. Therefore, FDI is one of the main keys to the economic sustainability of a country, especially in developing countries.

In addition, there is also FDI provides several benefits, namely being able to complement the shortage of domestic capital, increase foreign exchange reserves, increase government revenue, expand knowledge and control over FDI-receiving countries (Mejia, 2023; Sommer, 2020; London & Ross, 1995; London & Williams, 1988; Schultz, 1994; Vian, 2008).

Several studies have been carried out in the past with the purpose of determining the various elements that can have an impact on the amount of Foreign Direct Investment (FDI) that is brought into a country. Aribowo (2016) argued, on the basis of his research, that in order to attract foreign direct investment (FDI) in a country, fundamental macroeconomic characteristics are required. There are a number of macroeconomic factors that have an impact on foreign direct investment (FDI), including economic growth as measured by GDP growth, the quality of labor, exchange rates, and inflation rates. Increase in the economy, as measured by the increase of the GDP, is one of the significant elements that might have an effect on the amount of foreign investment, particularly foreign direct investment (FDI).

When a country's gross domestic product (GDP) is growing at a healthy rate, it will be in a better position to attract more foreign investment into the country. Aprianto et al. (2020) found that gross domestic product (GDP) can have a favorable influence on foreign direct investment (FDI). In addition to Aribowo (2016), Dewi and Triaryati (2015), Pratama and Aminda (2008), Rahajeng (2014), Ruth and Syofyan (2014), Tambunan et al. (2015), and Tulong et al. (2015), other researchers came to the same conclusions about the findings of their studies. While this is going on, Ho and Rashid (quoted in Wardhani and Suharyono, 2017) assert that economic growth has a negative impact on foreign direct investment (FDI), and that slower economic growth in a country can attract foreign direct investment to countries like Malaysia and the Philippines with slower economic growth.

According to Aribowo (2016), the relationship between labor and the entrance of foreign direct investment (FDI) in a country is a positive one. The greater the quality of labor, the larger the inflow of FDI will be due to the high labor productivity produced by the labor force. Additionally, Aminda et al. (2022), Muwarni (2007), Sari & Baskara (2018), and Wardhani & Suharyono (2017) discovered that the exchange rate variable has a beneficial effect on the entry of foreign direct investment flows into a nation. This was discovered by the researchers. However, study conducted by Tambunan et al. (2015) discovered that there is a negative and significant relationship between currency rates and foreign direct investment in Indonesia. This is in contrast to the findings of Tulong et al. (2015), who discovered that exchange rates do not have a significant effect on foreign direct investment.

Another element that warrants attention in the pursuit of foreign direct investment, particularly FDI, is the inflation rate. When a country's inflation rate is elevated, it leads to a decrease in the competitiveness of goods and services, which can subsequently lower a company's profit margins. This occurs as high inflation typically leads to a reduction in people's purchasing power, which can adversely affect FDI inflows (Saragih et al., 2021). Findings from the studies conducted by Agustin et al. (2021), Aminda et al. (2022), and Barorah et al. (2019) indicate that inflation adversely affects FDI. Nevertheless, findings from the studies conducted by Aprianto et al. (2020), Ruth & Syofyan (2014), and Tulong et al. (2015) demonstrate a favorable relationship between inflation and FDI, suggesting that as long as the inflation rate remains outside the hyperinflation threshold, there is an indication of rising consumption within the nation. This results in heightened production due to the rising demand for goods and services, which carries implications for enhanced profits for investors. This study aims to analyze the influence of Gross Domestic Product (GDP), labor, exchange rates, and inflation on Foreign Direct Investment (FDI) flows in five ASEAN countries from 2000 to 2019.

## **2. Literature Review**

### **2.1. Investment**

Mankiw (2016) identified three categories of investment expenditure: company fixed investment, residential investment, and inventory investment. Investment remains a category of expenditure including the acquisition of equipment and infrastructure by the company for the production of goods and services. Residential investment encompasses expenditures on new dwellings for personal occupancy and the acquisition of land for rental purposes. Ultimately, inventory investment comprises commodities stored in the company's warehouse, including materials and equipment.

Todaro & Smith (2012) asserted that among other prevalent economic growth determinants, the presence of investment serves as a key predictor of a nation's economic growth. Investment enhances capital quality, thus elevating resource quality via novel ideas, innovations, and technical developments. Capital formation is regarded as an expenditure that might enhance the demand for the necessities of the entire community. Thus, it may be inferred that investment influences demand and supply. Consequently, a country requires investment to enhance its economy.

### **2.2. Foreign Direct Investment**

According to Krugman & Obstfeld (2003), Foreign Direct Investment (FDI) refers to an international capital flow in which a company from one country sets up and grows its operations in other nations. This situation involves not just the transfer of resources, but also the enforcement of controls on foreign companies.

Vernon (1966) presented a theory of foreign investment through the Product Life Cycle (PLC) model. This PLC model indicates that a product undergoes multiple phases. Initially, the investment phase involves the development and marketing of the product for the first time. During this initial phase, collaboration is essential among the design, production, and marketing teams of companies and markets that continue to utilize the product.

The second stage involves the company contemplating the potential for discovering new market shares in other relatively developed countries, while initiating export activities aimed at third world countries. The organization's profits are derived from production, transportation, and marketing activities. In terms of pricing and location strategies, these are influenced by the behaviors and responses of other companies rather than being grounded in competitive costs.

The third stage indicates that the product has reached a level of standardization where the significance of research and management skills diminishes. Unskilled and semi-skilled labor will find opportunities in a developing country. This phenomenon can be attributed to the generally low labor costs observed in developing nations. Subsequently, goods manufactured in developing nations will be brought back to their countries of origin as well as to the markets of more advanced nations. Consequently, the site of production will be established based on the variations in cost and proximity to the market.

## **3. Data and Methodology**

This study employs a quantitative methodology, focusing on Foreign Direct Investment (FDI) as the dependent variable, while Gross Domestic Product (GDP), labor, exchange rate, and inflation serve as independent variables. This study utilizes secondary data sourced from the World Bank. This study employs a method that utilizes panel data, integrating time series

data from 2000 to 2019 with cross-sectional data from five ASEAN countries: Indonesia, Malaysia, Thailand, Singapore, and the Philippines. The equation for the panel data regression model is expressed as follows:

$$FDI_{it} = \alpha + \beta_1 GDP_{1it} + \beta_2 LBF_{2it} + \beta_3 EXR_{3it} + \beta_4 INF_{4it} + e_{it} \quad (1)$$

In this equation, FDI denotes Foreign Direct Investment, serving as the dependent variable. Gross Domestic Product (GDP), labor force (LBF), exchange rate (EXR), and inflation rate (INF) are all independent variables that impact foreign direct investment (FDI). The symbol  $\alpha$  signifies the constant term in the regression equation, whereas  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$ , and  $\beta_4$  indicate the regression coefficients that quantify the strength and direction of the relationship between each independent variable and the dependent variable. Finally,  $e_{it}$  represents the error term that accounts for the influence of additional factors not incorporated into the model.

This quantitative analysis was conducted utilizing panel data analysis, which incorporates both time series data and cross-sectional data. Panel data regression analysis serves to assess the impact of independent variables on dependent variables. Three models exist for estimating the panel data regression model: the common effect model, the fixed effect model, and the random effect model. The optimal model estimate can be ascertained through the application of the Chow Test and the Hausman Test. Additionally, to ascertain the impact of independent variables on dependent variables, one can employ a hypothesis test that includes a simultaneous test (F-test), a partial test (t-test), and a determination coefficient test.

#### 4. Result and Discussion

The panel data regression technique seeks to analyze the impact of independent variables on dependent variables. Various model specifications utilizing the data panel method encompass the common effect model, fixed effect model, and random effect model. Additionally, to determine the optimal model in panel data regression, it is essential to conduct several tests, specifically the Chow Test and the Hausman Test.

**Table 1.** Chow Test and Hausman Test

Source: Data processed, 2022

Yes	Test	P-Value	Alpha ( $\alpha$ )	Decision
1	Chow	Prob. Cross-section Chi-square = 0.0000	0.05	Fixed effect model
2	Hausman	Prob. Cross-section .0000	0.05	Fixed effect model

This study conducted a model specification test, specifically the Chow Test and the Hausman Test. The Chow test is employed to ascertain the most suitable model between the common effect model and the fixed effect model. The results of the Chow Test presented in Table 1 indicate that the prob value was less than  $\alpha$ , leading to the conclusion that a fixed effect model was employed. In the meantime, the Hausman Test is employed to determine the most suitable model between fixed effect models and random effect models. The analysis of Table 1 indicates that the probability value is less than  $\alpha$ , leading to the conclusion that a fixed effect model is employed.

The findings from the Chow test and the Hausman test indicate that the optimal model for this study is the Fixed Effect Model. This fixed-effect model was employed to analyze the impact of GDP, labor, exchange rate, and inflation on Foreign Direct Investment (FDI) in the ASEAN-5 countries from 2000 to 2019.

**Table 2.** Regression with *Fixed Effect Models*

Source: Data processed, 2022

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-29.39531	11.22003	-2.619896	0.0103
GDP	0.384629	0.125990	3.052860	0.0030
LBF	0.455515	0.172207	2.645160	0.0096
EXR	8.813147	4.629940	1.903512	0.0601
INF	-0.098271	0.143508	-0.684778	0.4952
R-squared = 0.876292				
Prob(F-Statistic) = 0.000000				

The findings of the panel data regression analysis employing a fixed effect model are presented in Table 2. The partial test indicates that GDP and labor variables exert a significant positive influence on Foreign Direct Investment (FDI) in ASEAN-5 countries, with a significance level ( $\alpha$ ) of 5%, as evidenced by a prob value of  $< 0.05$ . In the meantime, the variables of exchange rate and inflation did not significantly impact Foreign Direct Investment (FDI) in the ASEAN-5 countries, as indicated by a probability value greater than 0.05.

The simultaneous test (F-test) indicates an F-Statistic prob value of 0.0000, suggesting that all independent variables—GDP, labor, exchange rate, and inflation—have a significant impact on the dependent variable, Foreign Direct Investment (FDI). Meanwhile, the determination coefficient test reveals an R-square ( $R^2$ ) value of 0.8762, indicating that Foreign Direct Investment (FDI) is accounted for by an independent variable at a rate of 87.63%, with the remainder attributed to other variables not included in the model.

## Discussion

GDP has a strong and beneficial effect on FDI in the ASEAN-5 countries. The regression coefficient for the GDP variable is 0.3846. This means that if GDP changes by 1% in ASEAN-5 nations, FDI will also vary by 0.3846, all other things being equal. These findings indicate that an increase in economic growth, as evidenced by GDP growth, will lead to heightened investment. This is because investors usually want to put their money into countries with high GDPs.

Wardhani and Suharyono (2017) say that GDP can be utilized to figure out how much money a country makes. So, the more money a country has, the more likely it is that people will do business there. This will show how big the return on investment can be (Tulong et al., 2015). The findings of this study align with the research undertaken by Agustin et al. (2021), Aribowo (2016), Pratama & Aminda (2008), Saragih et al. (2021), Tulong et al. (2015), and Wardhani & Suharyono (2017), which indicated a substantial positive relationship between GDP and FDI.

Labor has a statistically significant beneficial effect on foreign direct investment (FDI) in the ASEAN-5 countries. The regression coefficient for the labor variable is 0.4555. This means that if the labor force in the ASEAN-5 nations changes by 1%, the FDI in those countries will also vary by 0.4555, all other things being equal.

Aribowo (2016) indicates that the quality of work can be assessed from the viewpoint of employees by examining the wage levels offered by foreign companies, which tend to be higher than those of domestic firms. Furthermore, a national perspective emphasizes overall job productivity within the economy, which in turn influences foreign direct investment (FDI). The findings of this study align with the analysis performed by Aribowo (2016), which indicated a significant positive correlation between labor and FDI.

The exchange rate exhibits a positive effect on FDI in ASEAN countries; however, this effect is not statistically significant at a 5% significance level ( $\alpha$ ). The regression coefficient for the exchange rate variable is 8.8131. This indicates that a 1% change in the exchange rate among ASEAN-5 countries will result in a change in FDI in those countries of 8.8131, assuming all other factors remain constant. Sari & Baskara (2018) discuss the currency areas hypothesis theory, which posits that foreign companies with a strong currency value are inclined to invest in countries exhibiting a weaker currency value.

Consequently, foreign direct investment flows are typically sourced from nations with robust currencies. Moreover, variations in a nation's exchange rate are typically observed in the short term, whereas foreign direct investment is evaluated over a longer horizon, indicating that changes in exchange rates have a diminished impact on foreign investors, as noted by Wardhani & Suharyono (2017). The findings of this study align with those reported by Aminda et al. (2022), Muwarni (2007), Sari & Baskara (2018), and Wardhani & Suharyono (2017), indicating a positive relationship between exchange rates and FDI.

The impact of inflation on FDI in ASEAN countries is negative and does not reach statistical significance at a 5% significance level. The regression coefficient for the inflation variable is -0.0982. This indicates that a 1% change in the inflation rate in ASEAN-5 countries will result in a change in FDI in those countries of -0.0982, assuming a paribu quota.

Inflation serves as a significant indicator that can reveal the economic condition of a country. The elevated inflation rate leads to a reduction in public consumption, as individuals' purchasing power diminishes when prices rise (Septifany et al., 2021). Consequently, inflation has the potential to influence the stability of a nation's economy, as it can lead to a decrease in production levels. Barorah et al (2019) indicate that inflation adversely affects investment activities due to the resulting high costs associated with investment.

A low inflation rate can lead to reduced investment costs and may facilitate an increase in foreign direct investment within a country. The findings of this study align with the investigations carried out by Agustin et al. (2021), Aminda et al. (2022), Barorah et al. (2019), Pratama & Aminda (2008), and Saragih et al. (2021), which indicate that inflation adversely impacts FDI.

## 5. Conclusion

The things that can impact Foreign Direct Investment (FDI) in ASEAN-5 countries are looked at in this study. These include GDP, labor, exchange rates, and inflation. We can say that GDP and labor have a positive and significant effect on FDI in ASEAN-5 countries based on the study and discussion that took place. In ASEAN-5 countries, the exchange rate variable has a small but positive effect on FDI, while inflation has a negative effect. The factors GDP, labor, exchange rate, and inflation all have a big effect on FDI in the ASEAN-5 countries at the same time.

People expect the government to keep macroeconomic factors stable by boosting economic growth. This will make it easier for foreign direct investment (FDI) to come into a country. But the government needs to keep the inflation rate fixed so that it doesn't hurt investment, which is one way to get more foreign investment. The next researcher should also include factors that weren't looked at in this study and use the most up-to-date data from a longer period of time. This will help them get the best results when trying to explain other variables that can affect FDI.

## 6. References

- Agustin, E. B., Muljaningsih, S., & Asmara, K. (2021). Analysis of factors affecting foreign direct investment (FDI) in Singapore in 2004-2019. *Equilibrium: Scientific Journal of Economics, Management and Accounting*, 10(2), 2005-2008. <https://doi.org/10.35906/je001.v10i2.778>
- Akinlo, A. E. (2015). The foreign direct investment-economic growth nexus. *International Economics*, 144, 49-58. <https://doi.org/10.1016/j.inteco.2015.02.003>
- Aminda, R. S., Natasha, V., Suharti, T., & Tinakartika, R. (2022). Analysis of the determination of foreign direct investment in the ASEAN region 5. *Management*, 11(2), 2005-2008.
- Aprianto, R., Asmara, A., & Sahara. (2020). Determinants of foreign direct investment inflows to low-income countries. *Journal of Development Economics and Policy*, 7(2), 174-188. <https://doi.org/10.29244/jekp.7.2.2018.174-188>
- Aribowo, W. G. (2016). Foreign direct investments (FDI) as a comparison of macroeconomics in ASEAN 5, China and Japan during period 1996-2015. *Journal of Economic Development, Environment and People*, 5(2), 29-43. [http://jedep.spiruharet.ro/RePEc/sph/rjedep/jedep27\\_4wira\\_p29-42.pdf](http://jedep.spiruharet.ro/RePEc/sph/rjedep/jedep27_4wira_p29-42.pdf)
- Assist, G. A., Suhadak, & Topowijono. (2015). Analysis of macroeconomic influence on foreign investment decisions in Indonesia (Study on Bank Indonesia for the period 2005-2013). *Business Administration*, 22(2), 1-8.
- Barorah, F., Malik, N., & Arifin, Z. (2019). Analysis of foreign direct investment (FDI) in ASEAN countries in 2000-2017. *Economics*, 3(3), 397-409.
- Borensztein, E., De Gregorio, J., & Lee, J.-W. (1998). How does foreign direct investment affect economic growth? *Journal of International Economics*, 45(1), 115-135. [https://doi.org/10.1016/S0022-1996\(97\)00033-0](https://doi.org/10.1016/S0022-1996(97)00033-0)
- Dewi, P., & Triaryati, N. (2015). The effect of economic growth, interest rates and taxes on foreign direct investment. *E-Journal of Management*, 4(4), 866-878.
- Emako, E., Nuru, S., & Menza, M. (2022). The effect of foreign direct investment on economic growth in developing countries. *Transnational Corporations Review*, 14(4), 382-401. <https://doi.org/10.1080/19186444.2022.2146967>
- Jayadi, A., & Prasetyo, S. B. (2022). An analysis of the influence of foreign direct investment on emerging market economies growth. *Journal of Developing Economies*, 7(2), 123-135. <https://doi.org/10.20473/jde.v7i2.40421>
- Krugman, P. R., & Obstfeld, M. (2003). *International economics: Theory and policy* (6th ed.). Pearson Education. <https://doi.org/10.4337/9781843768685.00065>
- London, B., & Ross, R. J. (1995). The political sociology of foreign direct investment. *International Journal of Comparative Sociology*, 36(3), 198-218.
- London, B., & Williams, B. A. (1988). Multinational corporate penetration, protest, and basic needs provision in non-core nations: A cross-national analysis. *Social Forces*, 66(3), 747-773.
- Mankiw, N. G. (2016). *Macroeconomics* (9th ed.). Worth Publishers.
- Mejia, S. A. (2023). The economic growth effects of foreign direct investment in developing countries, 1980-2019. *International Journal of Sociology*, 53(4), 239-260. <https://doi.org/10.1080/00207659.2023.2226484>
- Murwani, S. (2007). *Monetary policy analysis in relation to foreign investment: The Taylor rule approach* [Thesis].
- Pratama, R. R., & Aminda, R. S. (2008). Foreign direct investment analysis in ASEAN-5. *Economics*, C, 2005-2008.

- Rahajeng, L. R. M. (2014). Analysis of factors influencing the entry of foreign direct investment (FDI) of developing countries in the ASEAN region (Indonesia, Malaysia, Thailand, Cambodia and Vietnam) for the period 1995-2014. *Implementation Science*, 39(1), 1-15.
- Ruth, A. M., & Syofyan, S. (2014). Determinants of foreign direct investment in ASEAN-7: Panel data analysis, 2000-2012. *Media Economics*, 59.
- Saragih, C. A. M., Haryadi, H., & Emilia, E. (2021). The effect of gross domestic product, interest rates, and inflation on foreign direct investment in Indonesia for the period 2000-2017. *Journal of Actual Economics*, 1(1), 35-44. <https://doi.org/10.53867/jea.v1i1.4>
- Sari, G. A. A. R. M., & Baskara, I. G. K. (2018). The effect of economic growth, interest rates, and exchange rates on foreign direct investment in Indonesia. *Management*, 7(C), 2005-2008.
- Schultz, T. P. (1994). Human capital, family planning, and their effects on population growth. *American Economic Review*, 84(2), 255-260.
- Septifany, A. T., Hidayat, R. R., & Sulasmiyati, S. (2021). Foreign investment in Indonesia (Study on Bank Indonesia for the period of 2006-2014). *Journal of Business Administration*, 25(2), 1-7.
- Sommer, J. M. (2020). Accountable government spending: A cross-national analysis of child mortality in developing nations. *International Journal of Health Services*, 52(4), 457-472. <https://doi.org/10.1177/0020731420960972>
- Tambunan, R. S., Yusuf, Y., & Mayes, A. (2015). The effect of exchange rate, inflation, LIBOR and GDP on foreign direct investment (FDI) in Indonesia. *Economics*, 3(2), 124-133.
- Todaro, M. P., & Smith, S. C. (2012). *Economic development*. Pearson.
- Vernon, R. (1966). International investment and international trade in the product cycle. *Quarterly Journal of Economics*, 80(2), 190-207.
- Vian, T. (2008). Review of corruption in the health sector: Theory, methods and interventions. *Health Policy and Planning*, 23(2), 83-94.
- Wardhani, D. P., & Suharyono. (2017). The effect of total export value and other macroeconomic variables on foreign direct investment (FDI) in Indonesia. *Journal of Administration*, 50(5), 171-180.
- Weigelt, C., & Sarkar, M. B. (2012). Performance implications of outsourcing for technological innovations: Managing the efficiency and adaptability trade-off. *Strategic Management Journal*, 33, 189-216