

Impacts of Foreign Direct Investment on ASEAN Developing Countries' Industrial Gross Domestic Product

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Abstract. Foreign Direct Investment (FDI) is a long-term foreign capital flow and relatively is not vulnerable to economic turmoil. ASEAN countries have become the world's FDI destination. Numbers amount of FDI will contribute to the GDP and economic growth of a nation. The goal of this study is to analyze and study the consequence of FDI on industrial sectoral GDP in ASEAN Developing Countries. This research is quantitative. Secondary information from each country during the previous 14 years was used. (2006-2019), A totally of 84 data are collected for each research variable. This study used data panel analysis and e-Views help to calculate the data. The end outcome that FDI had a strong and favorable influence on ASEAN Developing countries' industrial GDP.

Keywords: Foreign Direct Investment; Sectoral GDP; Data Panel Analysis

1 Introduction

Foreign Direct Investment is a long-term flow of foreign capital and is relatively not vulnerable to economic turmoil. Foreign direct investment encourages economic development, especially for developing countries with insufficient funds to meet domestic investment needs. Almost all ASEAN member countries are foreign natural investment destinations in the world. The amount of foreign direct investment received fluctuates and increases if there is no world economic crisis. The amount of FDI also affects the GDP[1] of each country, both as a whole[2] and by sector [3]. One sector affected by FDI is the industrial or manufacturing sector [4], [5].

Foreign Direct Investment, according to the OECD Benchmark Foreign Direct Investment (FDI) is a term used to describe investments made by [6], is a foreign direct investment activity that can be realized when a resident company's direct investor finds lasting interest through a direct investment company located in another economy. The researcher himself defines foreign direct investment or can be called foreign investment as a Companies from one country create or expand their businesses in other nations, resulting in international capital movement. Foreign direct investment involves investments in physical assets such as factory development, capital goods procurement, land acquisition for production, inventory equipment spending, and so on.

Several forms of FDI can be carried out depending on investment direction, the investment instrument used, and sector breakdown [7]. Several theories that explain the existence of FDI in a country[8] are 1). Hymer put forward the international operation of Domestic company theory in 1960, 2). Vernon in 1966, 3 proposed product life-cycle theory). Caves offered horizontal and vertical ideas in 1971, 4). Buckley and Casson proposed internalization theory in 1976, 5). Many experts put forward strategic behavior of firms theory, one of which is Graham in 1976 and 6). Dunning proposed the Eclectic Paradigm theory in 1988.

The entry of FDI into a country can have many effects or impacts both economically and non-economically. From a non-economic perspective, the entry of FDI also affects energy use[9], CO2 emissions[10], company performance[11], and so on. From the economic side, FDI has a strong and beneficial influence on GDP and expansion of the economy both overall and sectorally. One sector of concern is the industrial and manufacturing sectors.

The industrial and manufacturing sectors make up the national GDP, including mining, construction, electricity, water, and gas, as well as manufacturing which includes the production process of raw materials and auxiliary materials into finished products. In the ISIC classification rev. 4 [12], the industry is included in divisions 05-43 and 10-33, while manufacturing is included in divisions 15-37. GDP of the industrial and manufacturing sectors is the added value resulting from the production process of raw materials, auxiliary materials, and direct labour and overhead.

2 Research Methods

The quantitative research approach was applied in this investigation. According to the degree of explanation, this study is a causal associative study that investigates and analyzes hypotheses about the impact of FDI on agricultural GDP. Six ASEAN emerging nations, namely Indonesia, Malaysia, Vietnam, Thailand, Cambodia, and the Philippines, are the focus of this study. From 2006 through 2019, 14 years were explored. As a result, 84 data points were employed in this analysis, including FDI and GDP in the agriculture sector. Secondary sources or statistics issued by the ASEAN Secretariat, the World Bank, UNTAD, and the World Economic Forum are used to get data. The data in this study was analyzed using panel regression model. The Least Squares Problem in Ordinary Life approach is being used to investigate panel data in this study. For the data analysis process, researchers used e-Views software.

3 Results and Discussion

The model in this study is used to examine the impact of straight capital of another countries on the GDP of emerging ASEAN nations' industrial sectors. To obtain the desired results, the researcher took several steps. First, do a stationary model test as shown in table 1, which shows the outcomes of all factors are standing at the level, so the model can be continued using panel data regression; then, in order to select the finest model, this research uses the common effects model (results can be seen in table 2), model with a fixed effect (table 3) and Model with a random effect (table 4). After the results are obtained, it is done by comparing the results of the Models with a shared effect and a fixed effect results using a redundant or chow test.

The result of this comparison is shown in Table 5. Per the them, the development, As shown, the likelihood value is rather high of cross-section $F < 0.05$; therefore, It may be inferred H_0 has been denied, but H_a has been approved, implying demonstrating the fixed effect is accurate is the most effective model based on the redundant test. The limited The impact model is more accurate for evaluating var model when compared to the standard effect model. Data processing is continued by conducting the Hausman test, which results in Table 6. Table 6 is the Hausman study's outcome, which was done in order to choose the finest estimated Fixed Effect model with random effects for model II.

Table 1. Stationer Test

Variable	Level	
	PP Fisher	Keterangan
Industry Sectoral GDP	0.0001	Stationer
Foreign Direct Investment	0.0001	Stationer

Sources: output e-Views (2021)

Tabel 2. Prototype of Main Impacts

Dependent Variable: IND

Method: Panel Least Squares

Date: 08/19/21 Time: 04:26

Sample: 2006, 2019

Periods included: 14

Cross-sections included: 6

Total panel (balanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-54.82177	11.96813	-4.580645	0.0000
lnFDI	4.015249	0.531645	7.552505	0.0000
R-squared	0.410243	Mean dependent var		35.47964
Adjusted R-squared	0.403051	S.D. dependent var		6.262098
S.E. of regression	4.838252	Akaike info criterion		6.014506
Sum squared resid	1919.512	Schwarz criterion		6.072382
Log-likelihood	-250.6092	Hannan-Quinn criter.		6.037772
F-statistic	57.04034	Durbin-Watson stat		0.500583
Prob(F-statistic)	0.000000			

Sources: Output e-Views (2021)

Table 3. Redundant or Chow Test

Redundant Fixed Effects Tests

Equation: Untitled

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	25.031878	(5,77)	0.0000
Cross-section Chi-square	81.081086	5	0.0000

Sources: Output e-Views (2021)

Table 4. Hausman Test

Hausman Test for Correlated Random Effects

Equation: Untitled

Cross-section random effects are put to the test.

Summary of the test	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
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Cross-section random	11.521076	1	0.0007
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Sources: Output e-Views (2021)

The randomised pass significance level is 0.05 (0.0007 0.05) may be observed from the Hausman test findings above. As a result, Ho is rejected and Ha is accepted, indicating that Depending on the Hypotheses testing, the panel regression model is better. The limited effect When predicting panel data, the approach is more effective, when compared to the random effect model.

Because the redundant test and The fixed - effects model is suitable, according to the Hausman test for estimating model II, we may infer that it is the best. so there is no need to proceed to the Langanre trial, which is used to test the ideal model for regular people effects and random effects. Based on the stages above, the best model for model II is the fixed effect model shown in table 4.14. The interpretation of extrapolation on data set using the fixed-concept of impact and the recursive technique ($1 = Y1 + \text{Residual model 1}$) is described in table 4.14. This model is used to evaluate the overseas direct fund's impact on the GDP of emerging ASEAN nations' mechanical sectors, specifically:

$$Z_2 = \beta_0 + \beta \text{Ln}_\hat{Y} + \varepsilon_t \quad (1)$$

- Z_2 = Agricultural Sector GDP
- β_0 = Model Constant
- \hat{Y} = Foreign Direct Investment (FDI)
- β = The regression coefficient of the independent variable
- ε_t = (Other factors outside the model)

The calculation results in Table 4.10 can be explained as follow:

$$\text{Agricultural Sector GDP} = 9.368369 + 1.161037 \text{Ln}\hat{Y}$$

From the form of the formula of correlation above, it can be interpreted as follows:

1. Value that remains constant = 9.368369 means that statistically, if all ceteris paribus variables have a constant value, then the GDP value of the Industrial Sector is 9.368369 units.
2. The value of the Regression Coefficient $\beta = 1.161037$, meaning that the elasticity value of straight foreign ownership to GDP in the industrial sector is $E = 1.161037$. The value of $E > 1$ indicates that the increase in straight foreign ownership is elastic to the GDP of the Industrial Sector.

Results of Model II Hypothesis Testing

The t-value of straight foreign ownership statistics is 2.475294, with a probability value (p-value) of 0.0155, according to Table 4.14. Foreign direct investment has a positive t-statistic value of 2.475294, indicating that straight foreign ownership has a positive influence on the Industrial Sector's GDP. The significance value of 0.05 is smaller than the probability value (p-value) of 0.0155. H06 is denied, whereas Ha6 is accepted, implying that straight foreign ownership has a positive and considerable influence on the industrial sector's GDP in emerging ASEAN nations. A positive interpretation indicates that any increase in straight foreign ownership in the industrial and manufacturing sectors will result in an increase in GDP. The Adjusted R-Squared value of 0.757865 indicates the magnitude of fdi flows fund's influence on

the Industrial Sector's GDP, indicating that Overseas investment has an impact on the Industrial Sector's GDP by 75,7865 percent, with the remaining 24.21 percent influenced by factors outside the model under study.

4 Conclusion

In emerging ASEAN countries, Overseas investment has a favorable impact on the industrial sector's GDP. In emerging ASEAN nations, foreign direct investment affects 75.78 percent of GDP in the industrial and manufacturing sectors. The industrial and manufacturing sectors of emerging ASEAN countries continue to rely on foreign direct investment as a source of funding.

References

- [1] S. Mitra, "Effect of Foreign Direct Investment on GDP, Export and Domestic Investment: Bangladesh Perspective," *J. Innov. Dev. Strategy.*, vol. 9, no. 2, 2015.
- [2] J. A. Edwards, C. B. Naanwaab, and A. A. Romero, "Effect of FDI on real per capita GDP growth. A Rolling Window Panel Analysis of 60 countries, 1982-2011," *Appl. Economy. Int. Dev.*, vol. 17, no. 1, pp. 19–36, 2017.
- [3] M. A. Khan and S. A. Khan, "Foreign direct investment and economic growth in Pakistan: A sectoral analysis," 2011.
- [4] D. Jain, K. Nair, and V. Jain, "Factors affecting GDP (manufacturing, services, industry): An Indian perspective," *Annu. Res. J. SCMS Pune*, vol. 3, pp. 38–56, 2015.
- [5] C. U. Idoko and U. U. Taiga, "Effect of Foreign Direct Investment (FDI) On Manufacturing Output In Nigeria (1981–2016).," *Adv. Soc. Sci. Res. J.*, vol. 5, no. 5, 2018.
- [6] H. Qi, "The Definition of Investment and its Development: for the Reference of the Future BIT between China and Canada," *RJT ns*, vol. 45, p. 541, 2011.