The Analysis on the Influence of Foreign Direct Investment (FDI) on Total GDP at ASEAN

Adiguna Dwirusandi[1] and Hendri[1]
[1]*Faculty of Economics, Universitas Negeri Medan, Medan -Indonesia*

Keywords: Gross Domestic Product (GDP), Foreign Direct Investment (FDI)

Abstract: This study aims to analyze the effect of FDI on the gross domestic product (GDP) growth rate in ASEAN countries using the panel data method during the period of 2007-2016. This study uses ordinary methods least square (OLS). To estimate it used three models of approaches, namely common effect model (CEM), fixed effect model (FEM) and random effect model (REM). After the Chow test and Hausman test, the best model was obtained as a random effect model (REM). The results of the study show that the FDI (Foreign Direct Investment) has a positive impact on the GDP (Gross Domestic Product) growth in ASEAN.

1 INTRODUCTION

Economic development for a developing country is the main instrument for achieving its national ideals. There are various indicators used to measure the success of this development including economic growth as measured by the number of Gross Domestic Product (GDP) of each country. In each country and international institutions such as the World Bank, the Asian Development Bank (ADB), and the IMF, use GDP / GDP as an indicator to measure the level of economic development of a country. Theoretically, it can be said that the more advanced economic development of a country the greater its GDP (both in total and per capita) so that the welfare of the community increases with the assumption of higher growth compared to population growth..

The increase in ASEAN GDP that has occurred so far is not supported by the inequality of development that occurs in every country in ASEAN. This is due to differences in social structure, culture and the state of nature and human resources to carry out development in each country. Therefore, to move the regional economy of countries in ASEAN, the Government of each country must cooperate with each other and try to explore domestic sources of funding and also seek sources of foreign financing as a complement so that development can be carried out optimally.

Harrod and Domar provide an important role in the formation of investment in the process of economic growth of a country. Investment is considered an important factor because it has two characters or two roles simultaneously in influencing the economy, namely: First, investment plays a role as a factor that can create income, meaning that investment affects the demand side. Second, investment can increase economic production capacity by increasing capital stock, meaning that investment will affect the supply side.

In the theory of development it is known that investment and GDP growth rate of a country has a positive influence. This positive relationship can occur, because if a country's investment continues to be encouraged it will increase the amount of capital and encourage an increase in output so that it will eventually increase the country's economic growth or GDP. And in this study only discussed the variable Foreign Direct Investment / Foreign Direct Investment (FDI) and GDP growth. In this case investment is a function of (GDP).

2 THEORETICAL STUDY

2.1 Foreign Direct Investment (FDI)

Foreign investment is an effort to increase the amount of capital for economic development

Dwirusandi, A. and Hendri, .
The Analysis on the Influence of Foreign Direct Investment (FDI) on Total GDP at ASEAN.
DOI: 10.5220/0009508511741178
In *Proceedings of the 1st Unimed International Conference on Economics Education and Social Science (UNICEES 2018)*, pages 1174-1178
ISBN: 978-989-758-432-9

sourced from abroad. Salvatore (1997) explains that FDI consists of; 1) Portfolio investment (portfolio investment), namely investment that involves only financial assets, such as bonds and stocks, which are denominated or valued in national currency. These portfolio or financial investment activities usually take place through financial institutions such as banks, investment fund companies, retirement foundations, etc .; 2) Foreign Direct Investment, is a PMA which includes investment into assets in the form of building factories, procuring various kinds of capital goods, purchasing land for production purposes, and so on. Wiranata (2004) argues that foreign investment directly can be considered as one of the important sources of economic development capital. All countries that adhere to an open economic system generally require foreign investment, especially companies that produce goods and services for export purposes. In developed countries like America, foreign capital (especially from Japan and Western Europe) is still needed to spur domestic economic growth, avoid market sluggishness and create job opportunities. Especially in developing countries like Indonesia and almost all countries in ASEAN, foreign capital is needed especially as a result of insufficient domestic capital. For this reason, various policies in the field of investment need to be created in an effort to attract foreign parties to invest in developing countries.

In an effort to attract foreign investors to invest specifically in developing countries, the government continues to improve promotional activities, both through sending envoys abroad and increasing collaboration between national private parties and foreign private sector.

The strategic ASEAN region is certainly the reason for the strong flow of foreign investment into countries in the region even though the investment is not spread evenly due to various factors such as differences in area size, population size and differences in available resources.

Based on the data, that for countries in ASEAN in general shows the condition of the amount of fluctuating FDI from year to year. Some countries such as Brunei even have a downward trend and the Philippines with an increasing trend. Singapore is the country with the highest level of foreign investment in ASEAN. Whereas Laos and Brunei are countries with a relatively low level of foreign investment when compared to other countries in ASEAN

2.2 Gross Domestic Product (GDP)

In the economy of a country there is an indicator that is used to assess whether the economy is going well or badly. Indicators in assessing the economy must be used to find out the total income earned by everyone in the economy. The right and appropriate indicator in making measurements is the Gross Domestic Product (GDP). In addition, GDP also measures two things at the same time: the total income of all people in the economy and the total expenditure of the state to buy goods and services resulting from the economy. The reason GDP can measure total income and expenditure is because for an economy as a whole, income must equal expenditure. The definition of GDP is the market value of all final goods and services produced in a country in a period. However, in GDP there are some things that are not included such as the value of all activities that occur outside the market, environmental quality and income distribution. Therefore, GDP per capita which is the amount of GDP when compared to the population in a country is a better tool that can tell us what happens to the average population, the standard of living of its citizens (Mankiw, 2006).

Gross Domestic Product (GDP) is the most concerned economic statistics because it is considered the best single measure of people's welfare. The underlying reason is that GDP measures two things at the same time: the total income of all people in the economy and the total expenditure of the state to buy goods and services resulting from the economy. The reason GDP can measure total income and expenditure is because for an economy as a whole, income must be equal to expenditure (Mankiw, 2006: 5).

Based on the data obtained it can be seen that the total GDP receipts of countries in the Southeast Asia region from year to year continue to increase. Indonesia is a country with the largest total GDP income in ASEAN. Whereas Laos is the country with the lowest GDP.

2.3 Literature Review

The effect of FDI on GDP growth is positive in Sri Lanka (Balamurali and Bogahawatte, 2004), Nigeria (Adegbite and Ayadi, 2010), Asia (Tiwari and Mutascu, 2011), and Bangladesh (Adhikary, 2011). FDI can also have a negative effect on primary sector economic growth such as in OEDC countries (Alfaro, 2003). In fact, FDI can not affect economic growth as in Pakistan (Falki, 2009).

Based on the description above, this study tries to answer the problem of whether there is an influence of FDI on economic growth in ASEAN countries which can depend on the economic, technological, and institutional conditions of the country where FDI is invested.

3 RESEARCH METHOD

This study aims to examine the effect of foreign investment (FDI) on GDP growth in ASEAN countries during the 2007-2016 period. The countries that are the object of research are ASEAN countries (Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam).

This study uses secondary data with the type of panel data (a combination of time series and cross section data) sourced from the world bank site during the period 2007-2016.

Analysis of the effect of foreign investment (FDI) on GDP growth in ASEAN during the 2007-2016 period using the Generalized Least Square (GLS) method and the model specifications are as follows:

$$GDPit = \alpha 0 + \alpha 1\ FDIit + \mu it$$

Where :
GDP : Gross Domestic Product
FDI : Foreign Direct Investment
α0 : Constantas
α1 : Regression Coefficient
μ : error term
i : Country
t : Year

To estimate the type of panel data it is recommended to use the method through three models of approaches, namely common effects model (CEM), fixed effects model (FEM) and random effects model (REM). Basically the use of panel data methods has several advantages (Wibisono, 2005), including; 1) The data panel is able to take into account the heterogeneity of individuals explicitly by allowing individual specific variables; 2) The ability to control individual heterogeneity then makes panel data can be used to test and build more complex behavior models; 3) The panel data are based on repeated cross-section observations (time series), so the panel data method is suitable for use as a study of dynamic adjudication; 4) The high number of observations has implications for data that are more informative, more varied, the colinearity between variables decreases and the degree of freedom-df increases, so that estimation results can be obtained more efficiently; 5) Panel data can be used to study complex behavior models; 6) Panel data can minimize the bias that might be caused by aggregation of individual data.

These advantages have implications for not having to test classic assumptions in the panel data model (Verbeek, 2000; Gujarati, 2003; Wibisono, 2005; Aulia, 2004).

4 RESULT AND DISCUSSION

To analyze the panel data model is done through several stages starting with determining the panel data analysis model that is appropriate to be interpreted.

4.1 Assumption of Data Panel Regression

The Data Panel Regression Method will give the results of the estimation that is the Best Linear Unbiased Estimation (BLUE) if all of the Gauss Markov assumptions are fulfilled including non-autorrelation.

It is this non-autocorrelation that is difficult to fulfill when we analyze the panel data. So that parameter estimation is no longer BLUE. If panel data is analyzed by approaching time series models such as transfer functions, then there is information on the diversity of unit cross sections that are ignored in modeling. One of the advantages of panel data regression analysis is considering the diversity that occurs in the unit cross section.

4.2 Determining the Panel Data Regression Estimation Method

To choose the most appropriate model there are several tests that can be done, including:

1) Chow Test
   Chow test is a test to determine whether the Common Effect (CE) model or Fixed Effect (FE) is the most appropriate to be used in estimating panel data. If Result: H0: Choose PLS (CE); H1: Choose FE (FE)
2) Hausman Test
   Hausman test is a statistical test to choose whether the Fixed Effect or Random Effect model is best used. If Result: H0: Select RE; H1: Select FE
3) Test the Lagrange Multiplier
   The Lagrange Multiplier (LM) test is a test to determine whether the Random Effect model is better than the Common Effect (PLS) method used. If Result: H0: Choose PLS; H1: Select RE

4.3 Analysis of the Effect of FDI on Total GDP in ASEAN

Chow test

Performed to see the estimation model that should be used between the Common Effect Model (CEF) and the Fixed Effect Model (FEM)

The results can be seen in table 1 below:

Table 1: Chow Test

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	126.314512	(9,89)	0.0000
Cross-section Chi-square	262.273757	9	0.0000

Source : Eviews output

From the table above the value of Chi-square Prob Cross-section 0.000 is smaller than the 95% significant level (0.0000 <α = 0.05), then H1 is accepted which means the fixed effect model is the best model used for estimation.

Hausman Test

Performed to see the estimation model that should be used between Fixed Effect Model (FEM) and Random Effect Model (REM)

Table 2: Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Stat	Chi-Sq. d.f.	Prob.
Cross-section random	0.045	1	0.83

Source : Eviews output

From the table above, it can be seen that the Prob Shi-SQ Statistic value of 0.8326 is greater than α = 0.05 (0.8326> 0.05), meaning H1 is rejected, so the more appropriate model to analyze the effect of FDI on GDP is Random Effect Model (REM).

Random Effect Model (REM)

As the result of Hausman test estimation, it is found that the best model used in this study is Random effects model (REM), so to analyze the effect of Foreign Investment (FDI) on total GDP in ASEAN countries using REM (random effects model).

Table 3: Estimated REM model

Dependent Variable: GDP
Method: Panel EGLS (Cross-section random effects)
Sample: 2007 2016
Periods included: 10
Cross-sections included: 10
Total panel (balanced) observations: 100
Swamy and Arora estimator of component variances

Variable	Coef	Std. Error	t-Stat	Prob.
FDI	4.207303	0.776787	5.416292	0.0000
C	1.67E+11	7.62E+10	2.184009	0.0313
	Effects Specification			
			S.D.	Rho
Cross-section random			2.39E+11	0.9337
Idiosyncratic random			6.37E+10	0.0663
	Weighted Statistics			
R-squared	0.232125	Mean dependent var		1.72E+10
Adjusted R-squared	0.224290	S.D. dependent var		7.20E+10
S.E. of regression	6.34E+10	Sum squared resid		3.94E+23
F-statistic	29.62501	Durbin-Watson stat		0.306644
Prob(F-statistic)	0.000000			

Source : Eviews output

From the table of estimation results, the regression equation in this study is made as follows:

GDP = 1.67 + 4.20FDI

Based on the model, the coefficient of determination (R2) is 0.232125, which means that the overall independent variable, namely Foreign Investment (FDI) can explain the variation in the total GDP of ASEAN countries by 23.21% and the remainder explained by other variables outside the model.

The estimation results show that the FDI variable has a positive and significant influence on the GDP growth of ASEAN countries at a 90% confidence level. The coefficient value is 4.21 which means that every increase in FDI of 1%, Cateris Paribus, will encourage ASEAN's total GDP to increase by 4.21 percent. These empirical results are in line with the hypothesis which states that there is a positive influence between investment and total GDP growth.

These empirical results reinforce the study conducted by Balamurali and Bogahawatte in 2004 which concluded that there is a positive relationship between FDI and the GDP growth in Sri Lanka and research from Adhikary (2011), where FDI has a positive effect on GDP growth in Bangladesh which means that there are similarities in countries in Asia.

5 CONCLUSIONS

5.1 Conclusions

Based on the results of the analysis carried out, it can be concluded that foreign investment has a significant influence on GDP growth in ASEAN with a positive influence, which means that if foreign investment rises, it will increase the total GDP of ASEAN countries.

5.2 Suggest

Based on the conclusions obtained, some suggestions can be made, among others, countries in the Southeast Asia must continue to increase investment in their country to be able to explore the economic potential in their country to achieve the desired growth and of course the cooperation of each state government is needed ASEAN countries to achieve progress, prosperity and common prosperity in Southeast Asian countries.

REFERENCES

Alfaro, Laura. (2003) 'FDI and Economic Growth: The Role of Local Financial Markets', *Journal of International Economic*, pp.89-112, doi:10.1016/ S0022-1996(03)00081-3

Balamurali, N. and C. Bogahawatte. (2004) 'Foreign Direct Investment and Economic Growth in Sri Lanka', *Sri Lankan Journal of Agricultural Economics*. Vol. 6, No. 1, pp.37-50, doi: http://dx.doi.org/10.4038/ sjae.v6i1.3469

Bishnu, Adhikary. (2011) 'FDI, Trade Openness, Capital Formation, and Economic Growth in Bangladesh: A Linkage Analysis', *International Journal of Business and Management,* Vol. 6 No. 1, pp.16-28, doi:10.5539/ijbm.v6n1p16

Dominick, Salvatore. (1997) *Ekonomi Internasional*, alih bahasa oleh Haris Munandar, edisi 5 cetak 1. Jakarta: Erlangga.

Dermawan, Wibisono. (2005) *Metode Penelitian & Analisis Data*. Jakarta: Salemba Medika.

Esther O. Adegbite, Folorunso. S. Ayadi, (2011) 'The role of foreign direct investment in economic development: A study of Nigeria', *World Journal of Entrepreneurship, Management and Sustainable Development*, Vol. 6 Issue: 1/2, pp.133-147, https://doi.org/10.1108/20425961201000011

Falki, Nuzhat. (2009) 'Impact of Foreign Direct Investment on Economic Growth in Pakistan' *International Review of Business Research Papers,* Vol. 5 No. 5 Pp. 110-120

Mankiw N,Gregory, dkk. (2012) *Pengantar Ekonomi Makro.* Jakarta: Salemba Empat.

Wiranata, S. (2004) 'Pengembangan Investasi di Era Globalisasi dan Otonomi Daerah. Jurnal Ekonomi Pembangunan' Vol. XII No.1 2004