

**Penanaman Modal Asing dan Pertumbuhan Ekonomi di Indonesia: Suatu Analisis Kausalitas****Al Muizzuddin Fazaalloh**

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**ABSTRAK**

Penelitian ini menganalisa hubungan antara penanaman modal asing (PMA) dan pertumbuhan ekonomi di Indonesia selama periode 1970 hingga 2015. Metode yang digunakan dalam penelitian ini adalah dengan pendekatan model uji kausalitas Granger. Hasil dari penelitian ini menunjukkan bahwa dalam jangka panjang maupun jangka pendek, tidak ada hubungan timbal balik antara PMA dan pertumbuhan ekonomi. Namun demikian, penelitian ini berhasil membuktikan bahwa ada hubungan satu arah dari pertumbuhan ekonomi ke PMA. Maka dapat dikatakan bahwa pertumbuhan ekonomi memiliki pengaruh terhadap aliran masuk PMA di Indonesia.

**Kata kunci:** *penanaman modal asing, pertumbuhan ekonomi, kausalitas Granger, Indonesia*

**Klasifikasi JEL :** *O1, O4, F2, F6*

**Foreign Direct Investment and Economic Growth in Indonesia: A Causality Analysis****ABSTRACT**

*This study analyse the causality relationship between foreign direct investment (FDI) and economic growth in Indonesia over the period 1970-2015. The method used in this research is Granger causality approach. Results from the estimation show that there is no causal relationship between FDI and economic growth in short and long run. However, the results in this paper indicate that there is a unidirectional causal relationship running from economic growth to FDI in short and long run. It means that economic growth influences FDI inflows in Indonesia.*

**Keywords:** *foreign direct investment, economic growth, Granger causality, Indonesia*

**JEL Classification:** *O1, O4, F2, F6*

**INTRODUCTION**

*In the classical theory of economic growth, capital is the main factor for driving economic growth. On its development, the capital used by a nation to push economic growth is not only from domestic capital, but it is also from the capital brought by foreign countries (known as foreign direct investment (FDI)). The role of FDI toward economic growth has received many attentions from economists. So, the theory explaining this relationship has been developing, which FDI is becoming the significant determinant of economic growth. Furthermore, as economic performance also has impact on FDI, there is a causal relation between FDI and economic growth.*

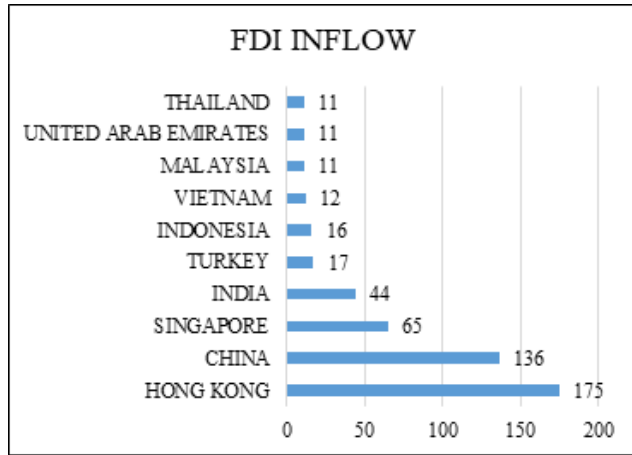
*In this context, there are many empirical studies that resulted by previous studies. In general, the previous papers are divided into three groups. Firstly, the studies that were showing negative results of the impact of FDI on economic growth*

*(see Carkovic and Levine, 2002; Herzer, 2012; Saqib et al, 2013; Temiz and Gokmen, 2014). Secondly, the previous studies found positive results from the relationship between FDI and economic growth (see Makki and Somwaru, 2004; Li and Liu, 2005; Azam and Ahmed, 2015; Iamsiraroj, 2016). Thirdly, the relationship between FDI and economic growth was run in bi-directional causal relationship (Srinivasan et al, 2011; Omri and Kahouli, 2014; Gupta and Singh, 2016).*

*In the case of Indonesia, the trend of FDI inflows in the last five year (2011-2016) was dramatically increase. Based on data from BKPM (2016), it was recorded that in the first quarter of 2011, the number of FDI inflows in Indonesia reached IDR 39 trillion. This number had been increasing significantly becoming 96.1 trillion rupiah (rose more than 100%) in the first quarter of 2016. In addition, if Indonesia's FDI inflows compared with Asia countries' FDI inflows,*

Indonesia is one of favorable destination countries of FDI. In 2015, the number of Indonesia's FDI inflows was 16 billion dollars, which its rank in Asia was 6th and 2nd after Singapore for Southeast Asia.

**Figure 1. FDI inflows in Asia countries, top 10 host economies, 2015 (Billions of dollars)**



Source: UNCTAD (2016)

However, the boosting trend is not followed by the trend of economic growth, which Indonesia's economic growth had been fluctuating, around on 4-5 percent (Bank Indonesia, 2016). This is should be questioned, whether FDI flowing to Indonesia is only for maximizing multinational corporation's (MNC's) profit or vice versa, to improve Indonesia's economic growth through transfer knowledge and accumulation of domestic capital. Then this is likely that the host country are doubted to receive benefit from FDI.

In theory, the role of FDI towards economic growth is based on endogenous growth theory. De Mello (1997) argued that the influence of FDI on economic growth through externality effect and spillover productivity effect, which those effects will make the scale of production to be increasing return in long run. By contrast, according to neoclassical growth theory, FDI has an impact on economic growth only in short run, since physical capital has been assumed in condition of diminishing return.

The results of past studies that explained the impact of FDI on economic growth was vary. Those results depend on how a researcher using data and methods to analyse the issue. Balasubramanyam et al (1996) did study about the relationship between FDI and economic growth related with trade policy. They used data cross-section from 46 countries of developing countries over a period 1970-1985. Their study result was

that the country which applied export promoting policy would gain more on economic growth rather than applied import substituting policy. This is because the export promoting strategy will attract more on FDI volume.

The role of FDI to stimulate economic growth is considered better than domestic investment. This statement is the result of study that was conducted by Borensztein et al (1998). They performed study with data from 69 developing countries over period two decades (1970-1989). They found also a crucial finding, which the capability of human capital to absorb technology brought by FDI was perceived as the main factor to guarantee the influence of FDI toward economic growth considerably. Likewise, if the host countries has ample capacity to absorb the advancement of technology from FDI, then they will enjoy higher economic growth.

To prove empirically the impact of FDI on economic growth, Li and Liu (2005) used data from 84 countries over the period 1970-1999. They found that FDI has positive impact on economic growth directly. They also investigated the indirectly impact of FDI on economic growth, which the way is through two interactions, between FDI and human capital and between FDI and technology gap. The first interaction resulted positive effect, meanwhile the second interaction lead to negative effect.

Using panel data from 23 countries of Asia region and time period from 1986-2008, Tiwari (2011) proved that FDI has positive impact on economic growth. Moreover, the created model indicated that other determinants of economic growth (export, labour, and capital) have important role to influence economic growth positively. Furthermore, the interesting point from this study is when the examination was held for non-linear relationship between export, FDI, and economic growth, the result was export only which contributed on economic growth. This suggests that the FDI-led growth hypothesis is less appropriate compared with export-led growth hypothesis.

Srinivasan et al (2011) investigated the relation between FDI and economic growth in SAARC countries (South Asian Association for Regional Cooperation) over the period 1970-2007). Those countries namely Bangladesh, India, Maldives, Nepal, Pakistan, and Sri Lanka. Using Johansen co-integration test, their result showed

that in the long run there was a relationship between FDI and GDP in such countries. Additionally, they also proved that VECM model successfully explained a long run bidirectional causal connection between GDP and FDI for those countries, except for India.

Omri and Kahouli (2014) using data on 13 MENA (Middle East and North Africa) countries over the period 1990-2010 found that economic growth and FDI have bi-directional causal relation. Moreover, they also analysed the relation of domestic capital and FDI. The result was unidirectional relation running from FDI to capital domestic.

In the period 1992-2013, Gupta and Singh (2016) using Johansen co-integration test found the long run relationship between FDI and economic growth for three countries (Brazil, China, and India). However, the VECM model that they used indicated that there was just unidirectional long run causality for those countries (GDP affects FDI only). In short run, they proved that the causality between FDI and economic growth was existing in China.

Recently, Sothan (2017) explained that there was a causal impact of FDI on Cambodia's economic growth (GDP). The data used was over the period 1980–2014. Furthermore, he claimed that his study did not confirm causality to run from GDP to FDI.

According to the empirical issues stated above, there are three points of the author's motivations to do this study. First, due to the contrary results from past studies, this study is performed to make clearer the relationship between FDI and economic growth. Second, because data on FDI inflows in Indonesia have different trend with economic growth, then this study is important to find what reason behind this. The last, the studies investigating the impact of FDI on economic growth in Indonesia are still few, particularly the causality relationship between either. Therefore, this study is expected to contribute on the literature.

This study differs from the past studies on two points as follows. First, this study applies data from Indonesia with the longer period (1970-2015). Second, the causality between FDI and economic growth are analysed. Moreover, there are two objective exerted in this study. First, this study is conducted to test the long run relationship between FDI and economic growth in Indonesia. Second, it

is performed to test the causality between FDI and economic growth in these country. The rest of this paper is organized as follows. Methodology used in this study is described in section 2. Section 3 explains econometrics result and analyses the main findings. Finally, section 4 provides conclusions.

## RESEARCH METHODS

This study use data FDI and economic growth in Indonesia over period 1970-2015. The sample selection is based on two reasons, namely: first, data availability; and second, we use data from 1970 as suggested by Khaliq and Noy (2007) that "new order" regime of Indonesian government in that year made economic policy more close to market, meaning Indonesia has been more open to foreign direct investment as the source of funding in developing economy. We find data from two sources. First is from World Development Indicators (WDI) published by World Bank for economic growth and second is from United Nations Conference on Trade and Development (UNCTAD) for FDI.

There were many indicators used to measure economic growth and FDI. In the present study we use the growth rate of GDP per capita as proxy of economic growth as suggested by Levine and Renelt (1992). Next, according to Borensztein (1998) and Li and Liu (2005) we use the ratio of FDI inflow to GDP as proxy of FDI to asses FDI.

To analyse the causal relation between FDI and economic growth in Indonesia, we employ several steps in econometrics technique. First, we test stationary data with applying Augmented Dickey-Fuller (ADF) test, DF-GLS test, and Phillips-perron test. This test is used to measure the degree of integration and to validate the stationary of the variables. Second, to find the existence of long run relationship between FDI and economic growth, Johansen co-integration test is applied. Third, we use Wald test to find the short run causal relation between both FDI and economic growth variable. Forth, we use Granger Causality to analyse the causal relation between FDI and economic growth in the long run. The

$$\text{Growth}_t = \sum_{i=1}^n \alpha_i \text{FDI}_{t-1} + \sum_{i=1}^n \beta_i \text{Growth}_{t-1} + u_{1t} \quad (1)$$

$$\text{FDI}_t = \sum_{i=1}^n \hat{\alpha}_i \text{FDI}_{t-1} + \sum_{i=1}^n \hat{\beta}_i \text{Growth}_{t-1} + u_{2t} \quad (2)$$

where,

Growth denotes economic growth that is measured by the GDP rate per capita in percentage. FDI denotes foreign direct investment inflow that is measured by the ratio of FDI inflow to GDP in percentage.  $U_1$  and  $u_2$  denote error term.

**ECONOMETRIC RESULTS AND DISCUSSION**

**Stationarity tests**

The stationary tests are provided in three tables, which in table 1 it explains ADF test's result, result from DF-GLS test for table 2, and the last is result from Phillips-perron test. In table 1, both of the variables (Growth and FDI) are stationary on level, which growth variable is significant at 1 percent both for with and without trend. Meanwhile, FDI variable is only significant at 5 percent without trend. Next, DF-GLS test in table 2 shows that both variables are stationary at level, which both variables are significant at 1 and 5 percent for variables of growth and FDI, respectively, without trend. Similar with previous tables, Phillips-perron test in table 3 shows that both variables are stationary at level, without trend. To sum up, we do not continue stationarity test for level of differences, as all variables have been stationary at level.

**Cointegration test**

We use Johansen co-integration test to prove the long run relation between FDI and economic growth. The result is provided in table 4 below. From Johansen's trace statistics and maximum eigen statistics indicate that the null hypothesis of no co-integrating vector can be rejected at 5 percent level and the alternative hypotheses of at most one co-integrating vector can be accepted. This result proves that the hypothesis of co-integrating between FDI and economic growth is true. Moreover, this result implies that there is

**Table 1. Stationary test of variables on level – ADF test**

Variable	Trend	No trend
Growth	-4.887*	-4.855*
FDI	-3.019	-3.056**

Notes: \* Denotes significance at 1 percent level, \*\* Denotes significance at 5 percent level

**Table 2. Stationary test of variables on level – DF-GLS test**

Variable	Trend	No trend
Growth	-3.643*	-3.824*
FDI	-2.466	-2.396**

Notes: \* Denotes significance at 1 percent level, \*\* Denotes significance at 5 percent level

**Table 3. Stationary test of variables on level – Phillips-perron test**

Variable	Trend	No trend
Growth	-4.852*	-4.827*
FDI	-3.082	-3.133**

Notes: \* Denotes significance at 1 percent, \*\* Denotes significance at 5 percent level

a long run relation between FDI and economic growth.

**Wald and Granger Causality tests**

The result of Wald test is provided in table 5. This test is aimed at finding information whether the lags of independent variables can affect the dependent variable or not (Gupta and Singh, 2016). The null hypothesis for this test is the lags of independent variables cannot influence dependent variable. Furthermore, the null hypothesis rejected is when the probability of chi-square statistics is less than 5% or vice versa. From table 5, it is concluded that there exists short run causality between FDI and economic growth, which economic growth affects FDI in short run.

Table 6 shows the result of granger causality test for the relation of economic growth and FDI. The result examines that the null hypothesis for growth Granger causes FDI can be rejected. Meanwhile, null the hypothesis for FDI Granger causes growth cannot be rejected. This means that in the long run there is no causal relation between FDI and economic growth, however, unidirectional

**Table 4. Result of Johansen's Co-integration test**

Vector (s)	Trace statistics	5 percent critical value for trace statistics	Max-eigen statistics	5 percent critical value for max-eigen statistics	Remarks
H0: $r = 0$	38.31739**	15.49471	31.13783**	14.26460	Cointegrated
H1: $r \geq 1$	7.179559**	3.841466	7.179559**	3.841466	

Notes: r denotes the number of co-integrating vectors; H0 is the hypotheses of presence of no co-integrating vector; H1 is the hypothesis of presence of co-integrating vector; \*\* Significant at 5 percent level.

Table 5. Results of Coefficients Diagnostics (Wald tests)

Equation	Chi-Square Statistics	Probability	Inference
Growth → FDI	12.75887*	0.0017	Growth influences FDI
FDI → Growth	0.041637	0.9794	No short run causality

Note: \*Significance at 1 percent level

Table 6. Granger Causality test

Null hypothesis	Lags	F-statistics	Prob.
GROWTH does not Granger Cause FDI	2	6.37943*	0.0040
FDI does not Granger Cause GROWTH	2	0.02082	0.9794

Note: \*Significance at 1 percent level

relation from economic growth to FDI is exist. In other words, it is only economic growth influencing FDI in the long run.

From the result of Granger causality test, this study is in line with Bermejo Carbonell & Werner (2018). They confirm that the effect of FDI that is statistically insignificant on economic growth in Spain may be due to factors other than FDI, one of which is due educational factor. In addition, Makiela & Ouattara (2018) also supports that there are other factors that influence economic growth rather than FDI. Another reason for the insignificant effect of FDI on economic growth can be explained by FDI crowds out domestic investment, implying that local companies in Indonesia cannot absorb the high technology brought about by FDI.

Furthermore, in the case of Indonesia, the role of the level of education is very decisive in the absorption of technology transfers brought by multinational companies, which in turn will boost economic growth. Lipsey & Sjöholm (2011) through an in-depth study of the impact of FDI on economic growth in Indonesia commented that the low education level in Indonesia made the country's economy lagging behind the countries in the East Asia region in 2010, where this low level of education occurred at secondary and tertiary level. The importance of human capital has also been highlighted by several researchers such as Ford et al (2007) and Borenzstein et al (1998), they agreed that this variable is one of the variables that are very important in determining economic growth, where certain conditions of human capital can be felt the impact of FDI on greater economic growth.

Other past empirical evidence also states that low human capital has also been proven to reduce economic growth in Pakistan (Rehman, 2016) and has been a strong factor in driving economic growth in Malaysia (Fadhil and Almsafir, 2015). Meanwhile, the role of FDI in encouraging economic growth through domestic investment from several previous studies shows that FDI has a negative impact or crowds out domestic investment (see Agosin and Machado, 2005; Adams, 2009). In the case of Indonesia, with reference to the study of Negara and Adam (2012), they found that FDI inward in Indonesia could not contribute positively to existing local industries. Thus, in realizing the real contribution of FDI to economic growth for Indonesia, the ability of local companies is needed to absorb the transfer of technology and knowledge brought by foreign companies through the inflow of FDI.

### CONCLUSION

This article has focused on the causal relation between FDI and economic growth in Indonesia over the period 1970. Based on theory, FDI will has positive impact on economic growth, which with transfer of technology and the capacity of human capital in host countries to absorb that transfer, FDI would be increasing economic growth. In addition, FDI inflows in those countries are determined by their economic growth. Furthermore, it is very important to analyse the relationship both FDI and economic growth. This study proves that based on Granger causality test, there is no causal relationship between FDI and economic growth in short and long run. However,

the result of this study shows that there is a unidirectional causal relationship running from economic growth to FDI in short and long run. It means that economic growth influences inflow of FDI.

This paper has two essential implications to policy makers. First, related to the evidence of the influence of economic growth toward FDI in short and long run, governments should need to boost higher economic growth for attracting more the inflow of FDI to host countries. As suggested by Sothan (2017), there are many factor that can has an impact to the inflow of FDI such as a good macroeconomic policy, a good physical infrastructure, a financial deepening, and a good environment for trade and investment activities, therefore, those factors should obtain an ample attention by government.

Second, as FDI has not effect on economic growth, Indonesian governments should make pay attention more on the quality of human capital in host countries. As suggested by Borensztein et al (1998), the absorbing of knowledge and technology brought by FDI is the key factor that affects economic growth in host countries. Beside, the government should raise an incentive for FDI to foster the advancement of local firm that in turn it will increase domestic investment as well.

Moreover, this research has two limitations as follows. First, this study does not include some control variables such as population, human capital, and export to determine economic growth, vice versa to explain FDI as well. If those variables are included, it is likely to better in describing the causal relationship between FDI and economic growth. Second, because this study is using time series data and data in national level, then it is hard to prove the contribution of regional economy characteristics toward national economy. Therefore, further research is suggested to combine both time series and cross section data in regional level to get the proper result of the causal relationship between FDI and economic growth.

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