

Relationship Economic Growth with Foreign Direct Investment

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ABSTRACT

This study aims to determine the one-way causality relationship between foreign investment and economic growth, a one-way causality relationship between economic growth and foreign investment, and a two-way causality relationship between foreign investment and economic growth in Indonesia. This was conducted in Indonesia, the data are secondary data taken using the method *time series* from 1971 to 2018 from the official websites, the Investment Coordinating Board, and literature sources, Foreign Investment and Gross Domestic Product. (1) in the long run the Economic Growth variable has a significant effect on Foreign Direct Investment, and vice versa; and (2) the Foreign Direct Investment variable has a significant effect on Economic Growth; (3) in the short term, the Economic Growth variable has an influence on Foreign Direct Investment, and vice versa; and the Foreign Direct Investment variable has an influence on Economic Growth. It is possible to have a better long-term relationship, bringing positive impact on economic growth in Indonesia when investment in Indonesia increases. Conversely, when economic growth decreases, it means that foreign investment is also low. Granger Causality test, shows a two-way causality relationship between Economic Growth and Foreign Direct Investment and vice versa. It is necessary to maintain growth to attract foreign direct investment, as well as foreign investment. Investment climate needs to be improved enabling to invest in Indonesia.

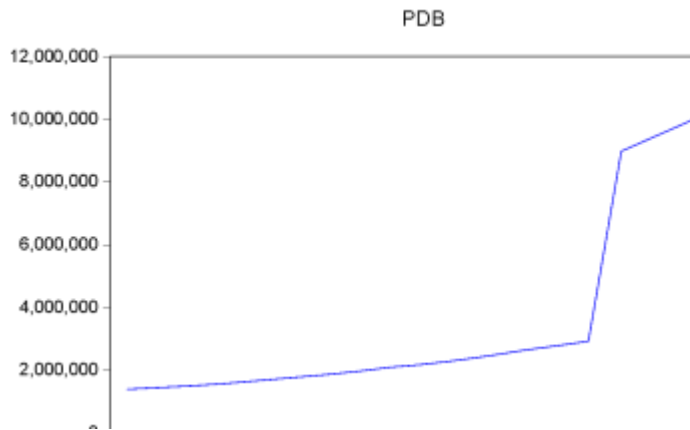
Keywords: Causality, Foreign Investment, Gross Domestic Product

INTRODUCTION

Development is a process towards continuously pursued change to improve community welfare. The results of development can be measured, among others, by economic growth. Economic growth is the process of increasing national income in which can grows higher than what was achieved in the previous period. Economic growth is defined as the development of activities in the economy that causes goods and services, as well as prosperity of society to increase. This is the result of the addition of production factors both in quantity and quality. Sukirno (1996: 33) states that economic growth is a continuous process of increasing per capita output in the long run.

An important indicator to determine the economic condition of a country in a certain period is the Gross Domestic Product (GDP). GDP provides an overview of the State's ability to manage and utilize existing resources. Figure 1.1. illustrates Indonesia's GDP development for the 1971 to 2018 period.

Figure 1. Indonesia's GDP Development for the 2000-2018 Period



Source: BPS, processed

Between 1965 and 1997, the Indonesian economy grew at an average annual rate of nearly 7%. This has enabled the Indonesian economy to grow from a low-income country to a lower-middle-income category. However, the Asian Financial Crisis which erupted in the late 1990s brought highly negative impacts on the Indonesian economy, causing a 13.6% decline in Gross Domestic Product (GDP) in 1998 and extremely limited growth of 0.3% in 1998 and 1999.

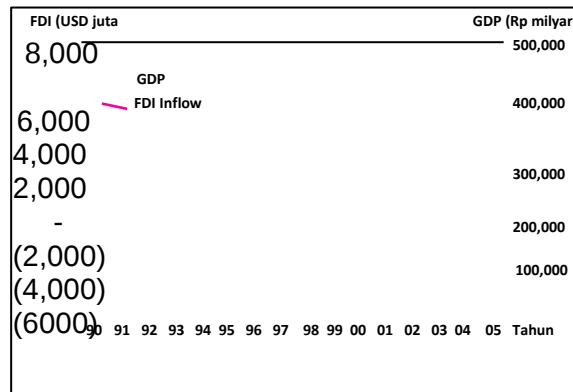
Between 2000-2004, Indonesia's economic recovery occurred with an average GDP growth of 4.6% per year. After wards, GDP growth accelerated (with the exception of 2009 when, due to global financial shocks and uncertainties, capital outflows from Indonesia resulted in Indonesia's GDP growth falling to 4.6%, a figure that was still impressive in that year) and then peaked. at 6.5% in 2011. The impressive period of recovery and the acceleration of economic growth between 2000 and 2011 was mainly due to rising household consumption.

Higher GDP highly will increase people's income. Higher people's income increases demand for goods and services, leading company tol increase their amount of production of goods and services. This will encourage additional investment. In other words, in the long run, if GDP increases, it will affect investment. As previously stated, the increase in investment entering Indonesia was due to an increase in domestic economic growth.

Economic growth in Indonesia affects the amount of investment that enters Indonesia. Prior to 1997, before the crisis in Indonesia, the amount of investment in Indonesia increased along with the increase in Gross Domestic Product (GDP). Meanwhile, in times of crisis, namely 1997-1999, investment in Indonesia experienced a drastic decline, even to a negative level. The decline was solely due to reduced economic growth, yet the risk of investing in Indonesia was high.

The existence of a crisis in Indonesia has caused the return on investment to be uncertain as a result of quite high fluctuations in the exchange rate. However, after 2000, economic growth once more picked up and encouraged increased investment. This continued until 2005, even when FDI growth exceeded GDP growth.

Figure 2. Growth of Net FDI and GDP for the Period 1990-2005(Million)



Source: UNCTAD, computed

This rapid growth of FDI is an opportunity for developing countries to obtain funds for financing economic development. FDI is pre-eminent for developing countries since, simultaneously, the entry of FDI in a country is usually followed by the *transfer of technology*, technical skills, experts, organizational experience, market information, advanced production techniques, product renewal, and training local workers in new skills.

The noteworthy point here is that, certainty is a factor taken into account by employers(*businesspeople*) if it will do productive activities, especially for a long period of time. If investors decide to invest, they really hope to be able to calculate the estimated profit as well as the estimated costs that will be borne throughout the investment period. Therefore, uncertainty is one of the problems they mostly feared.

The high level of uncertainty in Indonesia is once detected by *Japan External Trade Organization* (JETRO) which proves that the investment climate in Indonesia is no longer very attractive compared to the investment climate in its neighboring countries. Their survey on business communities and multinational corporations (MNCs), revealed that the factors of the uncertainty are local government policies; unclear tax system; unclear trade and customs procedures; as well as high labor wages and low labor productivity, remaining lower than its Asian neighbors. For example, Thailand, which received 10% of respondents' answers for unclear local government policies, 46% for unclear tax systems, and 42% for high labor wages and low labor productivity. Indonesia, for the same categories were 68 %, 72%, and 86%, implying how weak our business climate competitiveness compared to our neighboring competitors illustrated Table 1.

Table 1. Key Factors Barring Investment (% of Respondents' Answers)

Country	Unclear local government policies	Unclear taxation system	Unclear trade and customs procedures	High labor wages and low labor productivity
Singapore	6	13	21	54
Thailand	10	46	63	42

India	15	56	59	56
Malaysia	17	11	34	52
Philippines	48	21	37	37
Vietnam	61	40	57	30
Indonesia	68	72	68	86

Source: JETRO

The World Bank in its report entitled "*Doing Business in 2005: Removing Obstacles to Growth*" places Indonesia in the lower ranks among its toughest rivals in terms of timeframe and total costs required to start a new business activity. The study states that it takes 151 days and costs US \$ 1,163 to start a business in Indonesia. When compared to Vietnam only takes 56 days and US \$ 136, Philippines, takes 50 days and 202 US dollars, China, only takes 41 days and 158 US dollars, starting a business in Indonesia is tough on the eyes of potential investors as illustrated in table 2.

Table 2. Duration and Costs of Starting a New Business

Country	Duration (days)	Cost (USD)
Vietnam	56	136
China	41	158
Thailand	33	160
Philippines	50	202
India	89	265
Malaysia	30	966
Indonesia	151	1,163

Source: World Bank Report "*Doing Business in 2005: Removing Obstacles to Growth*"

An increase or decrease in the investment growth rate is defined as an increase or decrease in output. In addition, economic growth shows the extent of market in the country and how much the ability of the population to produce output in a country (Anwar, Kuswantoro & Dewi, 2016). Furthermore, in increasing national income, economic growth will have an effect on increasing people's income making higher purchasing power and vice versa, concludes that if the level of economic growth is high, the incoming foreign investment will be high.

According to Ernita, Dewi Amar and Sofyan (2013), in a macro analysis, economic growth is measured by the balance of real national income. An economy is said to increase when the number of goods and services has increased. Soumia, Zenasni and Abderrazak (2013), explain that long-term growth rate in a country will improve the economic situation in that country.

Previous research in Pakistan by Awan (2011) states that the Gross Domestic Product has effect on FDI inflows, due to an increase in *Gross Domestic Product (GDP)* causes an increase in the attractiveness of *FDI* to Pakistan. Sarwedi's (2002) finds that Gross Domestic Product is an indicator of economic growth that has a positive relationship with FDI, since country's economic factors can attract investors to invest in that country.

Shahzad (2014), contends a good GDP growth rate will have a positive effect it attracts investors. Different research is put forward by Jayachandran (2010), stating that high or

low levels of economic growth do not have an effect on the existence of foreign direct investment.

Since the enactment of Law Number 1 of 1967 concerning Foreign Investment, the government has begun to invite foreign investment into Indonesia. The development of FDI only started to increase significantly increase in early 1990s. FDI flows more than quadrupled from 1990 to 1997 with a value of USD 1,092 million to USD 4,729. Early in 1998, Indonesia was hit by a financial crisis that spread to a multidimensional crisis as a result of the financial crisis that hit the Asian region. Indonesia was the only country that experienced a very high decline in FDI which reached a negative number during the period 1998 to 2003, although in 2002 it experienced positive FDI. Entering 2004, the entry of FDI into Indonesia was still fluctuating with a positive trend. This condition is illustrated in Figure 1.3.

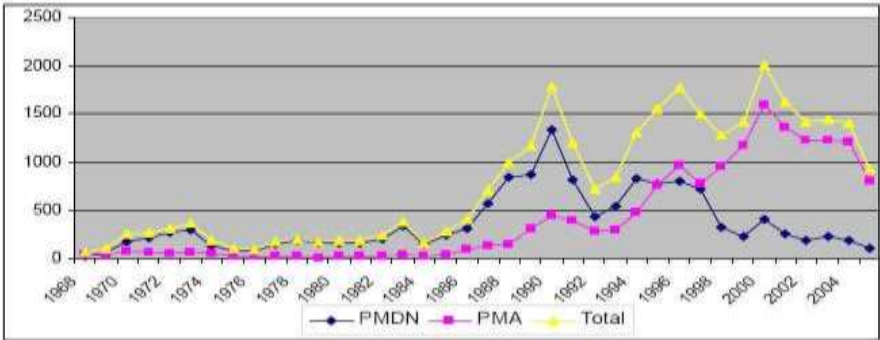
Figure 3. Flow of Foreign Direct Investment in Indonesia for the Period 1990-2010 (Million USD)



Source: UNCTAD, 2019

After the 1998 crisis, the number of new PMA projects had increased. However, after 2000 the number decreased and tended to decrease. One interesting matter is that since the crisis, the number of PMA projects on average per year has been greater than the number of PMDN projects. This indicates that for the development of long-term domestic direct investment, especially in the post-crisis period, the role of PMA is much bigger than that of PMDN as shown in Figure 4.

Figure 4. Development of PMA and PMDN in Indonesia 1967-2005 Period



Source: BKPM, 2006

Referring to the theory of economic growth by Robert Solow with the Neo-classical approach, capital formation and population growth are factors significantly affecting a country's economic growth. In this case, capital formation, the role of both domestic and foreign investment. Foreign Direct Investment (FDI), contributes to economic growth. FDI, capital and labor are important factors in the process of economic growth.

Capital inflows of FDI is supposed to encourage the sustainable growth of investments. This is the most potential source of foreign financing compared to other sources. Panayotou (1998) explains that FDI is more important in ensuring the continuity of development compared to the flow of assistance or portfolio capital, because the occurrence of FDI in a country will be followed by the *transfer of technology, know-how and management skills*. While business risks are relatively smaller and more *profitable*.

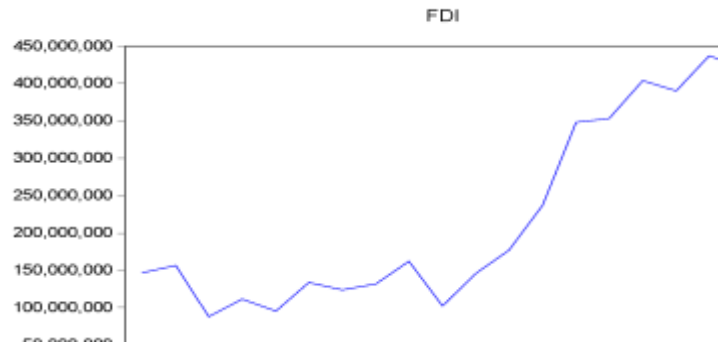
Panayotou (1998) finds that more than 80% of private capital and 75% of FDI since 1990 have flowed to *middle income countries*. For the Asian region the value reaches 60%. Theoretically, economic growth in a country could increase investor interest in investing in FDI. However, if FDI is expected to encourage the growth of *sustainable* investment, in turn it could boost economic growth.

According to Athukorala (2003), foreign investment has a positive impact on the economy of the host country, since it will increase the availability of funds for the host country (*recipient country*). Athukorala conducted research using cointegration econometric models and time series data from 1959 to 2012 to analyze the relationship between FDI and GDP in Sri Lanka. The results showed that FDI has a positive effect on GDP and proved a causal relationship between FDI and GDP in Sri Lanka.

Lipsey (2000), found that the flow of foreign direct investment (FDI) has a positive impact on the host. However, there is no significant relationship FDI and growth, especially for developing countries.

For the Indonesian state, in addition to domestic investment, FDI has a big role in complementing domestic investment needs. FDI increases production capabilities and becomes a medium for technology transfer from abroad to within the country. In terms of production, FDI can increase the productivity of domestic companies by transferring technology brought along with the entry of FDI. The presence of foreign investment in the form of FDI can also increase the competitiveness and superiority of domestic products. Figure 1.5 below illustrates the development of FDI in Indonesia from 2000 to 2018.

Figure 5. Development of FDI in Indonesia for the 2000-2018 Period



source: BPS, BKPM, processed

The figure shows the amount of FDI continues to fluctuate over years. In 1980, the amount was 175235 billion, in 1990, there was an increase of 16.633940 billion. The increase continued to occur until 1995 with a total of 91165175 billion. FDI developments from 1996 to 2009 fluctuated due to unstable economic conditions. However, from 2010 to 2018 the value of foreign investment increased along with the improvement in the investment climate in Indonesia. Even though the amount has tended to increase, overall, the stability and growth FDI in Indonesia still need to be maintained.

Foreign investors will greatly assist in improving the economy. Investment is expenses to buy capital goods and production equipment with the aim of replacing and adding capital goods in the economy which will be used to produce goods and services in the future.

This study is intended to observe the relationship between FDI and GDP, as well as GDP and FDI. Is there a one-way causality relationship between FDI and GDP or vice versa, or is there a two-way causality relationship between FDI and GDP or is there no relationship at all between the two variables. It is possible that there is a relationship between FDI and GDP or vice versa so that the impact on the Indonesian economy could develop in a better direction. In accordance with the background described, the problems studied are: Is there a one-way causality relationship between foreign investment and economic growth, is there a one-way causality relationship between economic growth and foreign investment in Indonesia and is there a two-way causality relationship between foreign investment and economic growth in Indonesia.

Theory of Investment

Sukirno (2013: 121), defines investment as expenditure or capital expenditure of a company to buy capital goods and production equipment to increase the ability to produce goods and services available. in the economy. This allows the economy to produce more goods and services in the future. Frequently, foreign investment is to replace old capital goods that need to be depreciated.

According to Mankiw (2007: 186), There are two forces that affect the capital stock, including investment and depreciation. Investment refers to spending on expanding new businesses and equipment, causing the capital stock to increase. Depreciation refers to the use of capital, and making the capital stock decrease.

Types and Characteristics of Investments

Noor (2007: 437) groups investments as follows.

Direct investment

It is investment in assets or production factors to conduct business. For example, investment in plantations, fisheries, factories, shops and other types of businesses. In general, this type of investment refers to investment in real assets, or investments that are clear and easy to see. In addition, this direct investment generates a *multiplier effect* which is great for the wider community. This direct investment will have a permanent impact, in the form of business input, and in the future, business output which is an input for other businesses.

Indirect Investment

It is an investment in financial assets, rather than in assets or factors of production. For instance, deposits, securities and so on. Investments in these financial assets are intended to obtain future benefits better known as investment returns, or to simplify, interest.

Foreign Direct Investment (FDI)

According to Krugman (1999: 204), it is the flow of international capital where companies from one country establish or expand their companies in other countries. Therefore, there is not only a transfer of resources, but also the imposition of control over companies abroad.

According to Dominick (1997: 469), foreign direct investment includes investment in real assets, such as building factories, procuring various kinds of capital goods, purchasing land for production purposes, purchasing various inventory equipment and so on. The existence of these assets is usually followed by the implementation of management functions and the investor itself (the owner of the asset) maintains control over the funds that have been invested.

As attested by Sukirno (2013: 121-122), Expenditures that are classified as investment (capital formation or investment) are the first to purchase various types of capital goods, such as machines and other production equipment to establish various types of industries and companies. The second is expenditures for building residential houses, office buildings, factory buildings and other buildings. The third is the added value of the stock of goods that have not been sold, raw materials and goods that are still in the process of production at the end of the national income calculation year.

As mentioned by Irawan and Suparmoko (2002: 141), Foreign investment is an investment by foreign investors. In contrast to Suparmoko which stated that PMA is an investment carried out by foreign investors. Amalia (2007: 58) states that foreign investment is something positive because it fills the shortage of savings that can be collected from within the country, increases foreign exchange reserves, increases government revenue and develops managerial skills for the economy in the recipient country.

The above explanations, conclude that Foreign Investment (PMA) is an activity of investing in the territory of the Republic of Indonesia by using foreign capital or by joining forces with domestic investors. Suryana (2000) states that the lack of capital in

developing countries can be perceived from the absolute small amount of material capita, limited capacity and expertise of the population and low net investment.

Due to these limitations, developing countries have undeveloped natural resources and potential human resources. Thus, in increasing investment productivity it is highly necessary to accelerate the development of human resources. In addition, foreign investment is beneficial in improving the Indonesian economy so that the lack of capital to improve welfare in Indonesia can be obtained from the presence of PMA.

The sum of the three types of investment components is called gross investment. It includes investments to increase the production capacity of the economy and replace depreciated capital goods. If the gross investment is reduced by the depreciation value, the net investment will be obtained.

Economic Growth

Growth is one indicator of the success of development in an economy. The progress of an economy is determined by the amount of growth shown by changes in national output. The existence of a change in output in the economy is a short-term economic analysis.

Sukirno (2005: 13) define economic growth is the development of activities in the economy that causes goods and services be produced in society to increase. In addition, according to Kuznets in Boediono (1999), economic growth is an increase in the long-term capacity of the country concerned to provide various economic goods to its residents.

Samuelson (2005), defines that economic growth indicates an expansion or increase of Gross Domestic There are four factors that cause economic growth. First, human resources, meaning the quality of labor input, or human resources, are the most important factor for economic success. Almost all other production factors, such as capital goods, raw materials and technology, can be purchased or borrowed from other countries. However, the application of high productivity techniques to local conditions commonly demands the provision of management, production skills, and expertise that can only be acquired through a skilled, educated workforce. Second, natural resources with factors of production are land. Cultivable land is the most valuable factor. Apart from land, important natural resources include oil, gas, water forests and other mineral materials. Third, it is capital formation, a reduction in consumption is required, which may last several decades. The formation of capital and investment capital is actually highlyneeded for rapid progress in the economic field. Fourth, it is technological change and innovation. One of the key tasks of economic development is to spur the entrepreneurial spirit. The economy will find it difficult to progress if it does not have entrepreneurs who are willing to bear business risks by establishing factories or production facilities, applying new technology, facing various business obstacles, and importing various more advanced business methods and techniques.

Economic growth is an effort to increase production capacity to achieve additional output, which is measured using the Gross Domestic Product (GDP) and the Gross Regional Domestic Product (PDRB) in a region. It is the process of increasing per capita output in the long run. The emphasis is on three aspects, such as per capita and long-term output process. Economic growth is a process, not a picture of the economy at a time. This focuses on the dynamic aspects of an economy, namely how an economy develops or changes from time to time. The emphasis is on change or development itself.

Harold Domar's theory, Neoclassical, from Solow, and endogenous theory by Romer, propose three main factors or components in economic growth. They are:

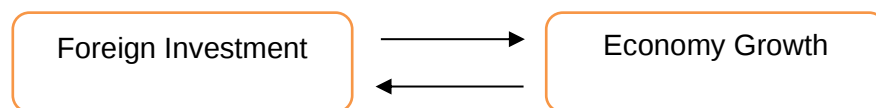
1. Capital accumulation, includes all forms or types of new investment invested in land, physical equipment, and capital or human resources,
2. Population growth, which in the next few years could increase number of the labor, and
3. Technology advances

Theoretical Framework

Countries with a large GDP value, high growth rate, a friendly business environment and modern infrastructure facilities highly will attract FDI. On the other hand, FDI significantly affects their economic growth.

Based on various theoretical foundations that PMA (Foreign Investment) affects economic growth in Indonesia or does economic growth affect foreign investment as shown in the following figure.

Figure 6. Framework



Hypothesis

Hypotheses are temporary answers to the problem formulation research since they are given only based on theories relevant to this research, rather than empirical facts obtained through data collection. Hypotheses can also be provisional. The hypothesis proposed are:

H0: It is assumed that there is no one-way relationship between FDI and GDP

H1: It is suspected that there is a one-way relationship between FDI and GDP

H0: It is assumed that there is no one-way relationship between GDP and FDI

H2: It is suspected that there is a one-way relationship between GDP and FDI

H0: It is suspected that there is no two-way causality relationship between FDI and GDP

H3: It is suspected that there is a two-way causality relationship between FDI and GDP

RESEARCH METHOD

This was conducted in Indonesia, data used are secondary data, taken from 1971 to 2018. The data in 2 stages. They are:

1. The first stage was through literature study, the collection of library sources in the form of books, journals and previous research result.
2. The second stage through documentation, collecting data and information to search and find evidences. In the research, the researcher obtained Foreign Investment data from the official website of the Investment Coordinating Board, while the Gross Domestic Product data was taken from Central Bureau of Statistics.

Economic growth in this study is economic growth from the development of Indonesia's Gross Domestic Product (GDP) which is calculated in units of billions. Foreign Direct

Investment (FDI) in this study means total value of foreign investment or foreign investment in Indonesia, which is calculated in units of billion.

This research was conducted by using time series regression method. Data analysis in the form of quantitative and data processing using the program Eviews 9. The model used in this study is Error Correction Model (*Error Correction Model*). Widarjono (2013), data that is not stationary often shows an imbalance relationship in the short term, but there is a tendency for a long-term equilibrium relationship.

Technical Analysis of Unit Root Test

Widarjono (2013: 306), defines unit root test is a test to determine the presence or absence of stationarity in the data. Stationarity is an important matter related to research using time *series data*. It was developed by Dickey-Fuller and commonly known as the Dickey-Fuller (DF) unit root test. To determine the stationary existence, the unit root test is carried out using the Augmented Dickey-Fuller (ADF) test.

In addition to the ADF test, the PP (*Philip-Perron*) is used comparing the probability of ADF *test statistic* or PP *test statistic* with a certain level of significance (α). In the ECM analysis method, the variables to use must be not stationary at the level, degree of integration test carried out until all the variables in the data are stationary, at *first difference* or *second difference*. The data are stationary if the ADF test statistic value is greater ($>$) than the critical value of MacKinnon.

$$\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + \sum_{i=1}^z + \beta \Delta Y_{t-1} + 1 + e_t$$

Note: Y : observed variables

$\Delta Y_t: Y_t - Y_{t-1}$
 t : time trend of

Test

According to Widarjono's slackness (2013: 203), The impact of an economic policy such as monetary and fiscal policy, usually does not directly impact economic activity. It requires time or *lag*. Economic policy work may take, for example, six to twelve months. Mathematically, we can demonstrate this effect by stating that changes in economic policy X_t have an economic impact on Y_t , Y_{t+1} , Y_{t+2} , and so on. If we reverse this statement, the dependent variable Y_t is influenced by the independent variables X_t , X_{t-1} , X_{t-2} , and so on.

A regression model that includes not only the current value but also the lags value of the independent variable called a *distributed lag model*. In general, the indolence model can be written as follows:

$$Y_t = a + \beta_0 X_t + \beta_1 X_{t-1} + \beta_2 X_{t-2} + \dots + \beta_k X_{t-k} + e_t$$

Cointegration test

A stated by Widarjono's (2013: 315), coherent data time (time series) has data that is not stationary, it will result in a false regression or so-called *spurious regression*. In addition to the unit root test, the cointegration test is to determine whether there is a relationship between the dependent variable and the independent variable in short and long term. The cointegration test can be carried out if the analyzed data integrates to the same degree.

However, the cointegration test currently and widely used is the cointegration test developed by the *Johansen* to determine the cointegration of a number of variables (vectors). To explain it, we consider the autoregressive model with order p as follow:

$$Y_t = A_1 Y_{t-1} + \dots + A_p Y_{t-p} + B X_t + e_t$$

Y_t is the vector k of the non-stationary variable $I(1)$, X_t is the vector d of the variable deterministic and e_t is a vector of innovation.

Engle-Granger test (ECM)

According to Widarjono (2013: 320), The cointegration of the two means a long-term relationship or balance between the two variables. In short term there may be an imbalance (*disequilibrium*). There are differences in what economic actors want and what happens, adjustments are needed. Models that include adjustments to make corrections for imbalances are called error correction models.

$$Y_t = \beta_0 + \beta_1 X_t$$

$$\Delta Y_t = \beta_0 + \beta_1 \Delta X_t + \alpha_2 EC_t + e_t$$

Test of Causality Granger

Widarjono (2013: 343) states that, Causality is a two-way relationship. Thus, if there is causality in economic behavior, in this economic model, there are no independent variables. All variables are dependent.

$$Y_t = \sum_{i=1}^n a_i Y_{t-i} + \sum_{i=1}^n \beta_i X_{t-i} + e_{1t}$$

$$X_t = \sum_{i=1}^m \delta_i X_{t-i} + \sum_{i=1}^m \varphi_i Y_{t-i} + e_{2t}$$

The model equations in the study are:

$$PMA_t = \sum_{i=1}^n a_i PMA_{t-i} + \sum_{i=1}^n \beta_i PDB_{t-i} + e_{1t}$$

$$PDB_t = \sum_{i=1}^m \delta_i PDB_{t-i} + \sum_{i=1}^m \varphi_i PMA_{t-i} + e_{2t}$$

RESULTS AND DISCUSSION

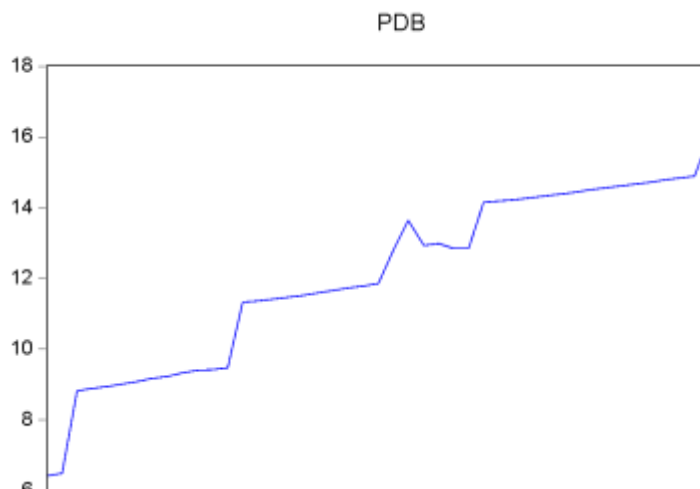
The objects of this study are product data of BPS and BKPM in the 1971-2018 period. In this study the data used were Gross Domestic Product (GDP) and Foreign Direct Investment (FDI) in Indonesia which researchers obtained from various sources such as the Central Statistics Agency (BPS), the Investment Coordinating Board (BKPM) and other relevant literature sources. with this research from 1971-2018.

Descriptive Statistics Variable

Description of Gross Domestic Product (GDP) Variables

Figure 7 below is to determine economic growth in Indonesia during the period 1971 to 2018 in terms of Gross Domestic Product (GDP)

Figure 7. GDP Development in Indonesia for the 1971-2018 Period



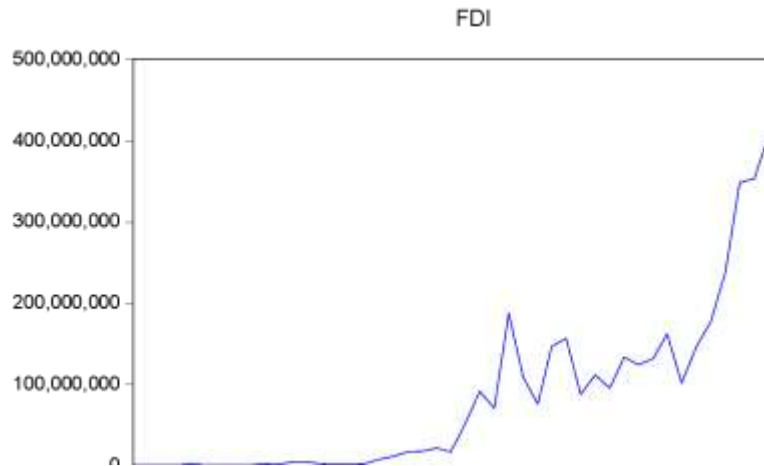
Source: BPS, Processed

Figure 7 indicates that economic growth measured using GDP has increased from 1971 by 611.0 billion, this increase occurred until 1983 with a size of 12842.2 billion, however there was a decrease in 1984, of 83037.4 billion. In 1985 it once more increased by 85081.9 billion, this increase continued to occur until 1995 with a total of 838792.3 billion. However, in 1996 there was a decrease of 413.797.9 billion, continuing to arise until 1999 of 379.352.5 billion, this is due to Indonesia's monetary crisis. However, after the monetary crisis, Indonesia's GDP one more time increased in 2000 of 1.389.769.9 billion. This occurred until 2018 with a total of 10.425.316.3 billion.

Description of the variable Foreign Direct Investment (FDI)

FDI has a major role in complementing domestic investment needs. FDI increases production capabilities and becomes a medium for technology transfer from abroad within the country. In terms of production, FDI could increase the productivity of domestic companies by transferring technology brought along with the entry of FDI. The presence of foreign investment of FDI increases the competitiveness and superiority of domestic products. Figure 4.2. shows the development of FDI in Indonesia in 1971-2018

Figure 8. Period is Development of FDI in Indonesia for the 1971-2018 Period



Source: BKPM, Processed

Figure 8 indicates the amount of FDI continue to fluctuate over years. In 1980, the amount of FDI was 175235 billion, in 1990 there was an increase of 16.633940 billion. The increase in FDI occurred until 1995 with a total of 91.165.175 billion. FDI developments from 1996 to 2009 fluctuated due to unstable economic conditions. However, from 2010 to 2018 the value of foreign investment increased along with the improvement in the investment climate in Indonesia. Even though until now the amount has tended to increase, overall, the amount of FDI in Indonesia still needs to be maintained in terms of stability and growth.

Test Requirements Analysis and Hypothesis Testing

Results of Unit Root Test

It is a form of data behavior analysis used to determine the stationarity of data, to determine a long-term relationship between the variables. To examine data stationarity, this study used Unit Root Test developed by Dickey and Fuller. The estimation results are presented in table 3.

Table 3. Unit Root Test Results

Variable	ADFStatistic	MackinnonCritical Value			Description
		1%	5%	10%	
FDI	-3.577723 - 2.925169 - 2.600658			0.541995	Not Stationary
GDP	-3.577723 - 2.925169 - 2.600658			1.483473	Not Stationary

Source: Adapted, Grade Level, Attachment 1.

Variable	ADF Statistic	Critical Value Mackinnon			Information
		1%	5%	10%	
FDI	-8.286299	-3.581152	-2.926622	-2.601424	Stationary
GDP	-6.292353	-3.581152	-2.926622	-2.601424	Stationary

Source: processed, *First Difference level* , Appendix 1.

Based on the results of the unit root test with Augmented Dickey-Fuller test in Table 3 states that both the data in the FDI variable and the GDP variable are not stationary at the level with the ADF statistical value that is smaller than the real levels of 1%, 5% and 10%. To sum up, the analyzed variables are not stationary at the level or they have unit roots.

Research with non stationary data will result in *spurious regression*, which is a regression that describes the relationship between two variables that are statistically significant yet not in real situation. It could lead to *misleading* on an ongoing economic phenomenon. Therefore, unit root testing of the two variables was followed by data differentiation.

Furthermore, the testing phase with the method is *Augmented Dicky Fuller* carried out at the level *First Difference*. The ADF statistical value shows a greater number at the real level of 1%, 5% and 10%. Thus, for all variables analyzed, the test results can be said to be stationary at the level *First Difference*.

Inaction Test Results

The determination of Lag length is used to determine the length of the response period of a variable to its past variables and to other endogenous variables.

Table 4. Test Results Inertia (Optimum Lag)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-152.6470	NA				
		3.311693				
		6.873199				
		6.953495				
		6.903133	1			
		-55.91033				
		180.5751	*			
				2.981417	3.543490	3.190952

Source: Processed, Appendix 2. Note: **Optimal Lag*

Table 4 above exhibits, time calculation *lag* of the optimal for FDI and GDP variables according to criteria starting from LR (*sequential modified LR statistical test*), FPE (*final prediction error*)), AIC (*Akaike information criterion*), SC (Schwarz information criterion) and HQ (Hannan-Quinn information criterion). It shows that time *lag* the optimal is at *lag* 1 where there are criteria with the smallest value marked with * of the various *lags* proposed. It can conclude that *the lag* optimal is in lag 1.

Cointegration Test Results

The cointegration test is used to determine the existence of a long-term equilibrium relationship by knowing whether there are similarities in movement and stability of the tested variables. The cointegration testing method in this research is based on the *Johansen's Cointegration Test method* with a lag length of 1.

Table 5. Cointegration Test Results

Hypothesized No. of CE (s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob. **
	21.17436			
	15.49471			
None *	0.0062			0.333076
At most 1	0.053735	2.540689	3.841466	0.1109

Source: Processed, Appendix 3.
information: * significant at the 5% real level.

Table 5 above, indicates a probability value less than the real level of 5%. Therefore, each of the equations in this study are cointegrated or explain collectively. In other words, even though all the variables in each equation are stationary, there is a long-term balance between these variables. Thus, the equation no longer contains the problem of *spurious regression*.

Engle-Granger Test (ECM) Results

The Engle-Granger estimation results show that the model used succeeds in explaining the factors that influence FDI. The initial indication of the validity of using the Engle-Granger ECM can be seen from the significant coefficient of *error correction term* with a negative sign as expected. This study uses a causality test between the two variables, so it is necessary to test twice on each variable, alternately as the dependent variable and the independent variable.

a. Long-Run Estimation

ECM estimation for long-term analysis, includes equilibrium with a series of adjustment processes that will bring each shock to balance. To observe the long-run effect between FDI as the dependent variable and GDP as an independent variable, it can be seen from the regression equation below.

$$\begin{aligned}
 Y_t &= \beta_0 + \beta_1 X_t LFDI \\
 &= 5.736255 + 0.898975 LPDBt \quad (9.945514) \quad (19.54382)R^2 \\
 &= 0.8925
 \end{aligned}$$

Source: Processed, Appendix 4

These results argue that in the long run. FDI variables are influenced by GDP. the magnitude of the long-run effect of the GDP variable is 0.898975.

b. Short-Run Estimation

In connection with observations of short-term dynamics, estimates are made of the error correction model between the FDI variable and the GDP variable. The following are the results of the EG-ECM estimation.

$$\begin{aligned} \Delta Y_t &= \beta_0 + \beta_1 \Delta X_t + \alpha_2 EC_t + e_t \\ LFDI &= 0.90313 + 0.271903 LPDB \\ &\quad - 0.272251 EC_t \quad (1.077734) \quad (1.715913) R^2 = 0.1608 \end{aligned}$$

Source: Processed, Appendix 4

The equation above shows that the coefficient of *Error Correction Term* (ECT) is significant at the 5% significance level. This means that in the short term, the GDP variable has an influence on FDI. In the short-term equation. ECM method produces the ECT coefficient value. The coefficient value of *error correction term* by -0.272251 shows that the speed of adjustment of GDP in Indonesia is 27.22% per year, where the probability of ECT is 0.0090 significant at 5% degree.

c. Long Run Estimation

ECM estimation is to observe the long run effect between GDP as the dependent variable and FDI as the independent variable. Here are the static estimation results.

$$\begin{aligned} Y_t &= \beta_0 + \beta_1 X_t \\ LPDB &= -4.375885 + 0.992813 LFDI_t \quad (-5.083079) \quad (19.54382) R^2 \\ &= 0.892514 \end{aligned}$$

Source: Adapted, Appendix 4

These results imply that in the long term, GDP variable is affected by FDI. the magnitude of the long-run effect of the FDI variable is 0.992813.

d. Short-Run Estimation

Estimation Estimation of the Error Correction Model is to observe the short-run effect of the GDP variable and the FDI variable. The following is the static estimation result.

$$\begin{aligned} \Delta Y_t &= \beta_0 + \beta_1 \Delta X_t + \alpha_2 E + e_t \\ LPDB &= 0.172058 + 0.230671 LFDI \\ &\quad - 0.230086 EC_t \quad (2.332393) \quad (1.715913) R^2 = 0.138303 \end{aligned}$$

Source: Processed, Appendix 4

The equation above shows that the coefficient of *Error Correction Term* (ECT) is significant at the 5% significance level. This means that in the short term the FDI variable has an influence on GDP. In this condition, method produces the ECT coefficient value. The coefficient value *error correction term* of -0.230086 shows that the speed of adjustment for FDI in Indonesia is 23% per year, where the probability of ECT is 0.0172 which is significant at the 5% degree.

Results of the Granger Causality Test

The Granger Causality Test is used to determine the reciprocal relationship between variable Y and variable X. It aims to recognize the past effect of a variable on the condition of other variables in the present. The following estimation results are in table 6 below.

Table 6. Granger Causality Test Results

Variable	Lag	F-Statistic	Probability	Description
----- LPDB LFDI	1	4.14651	0.0478	H ₀ is rejected*)
----- LFDI LPDB	1	4.31503	0.0436	H ₀ is rejected*)

Source: Processed, Appendix 5

Table 6 above, indicates that in Lag 1 there is a causal relationship between the GDP and FDI variables where the probability value of the effect of GDP on FDI is 0.0478 and the effect of FDI on GDP (0.0436) is significant at the 5% real level, thus concluding that there is a two-way causality relationship between the GDP variable and the FDI variable. Therefore, hypothesis that there is a two-way causality (H₃) is accepted and H₀ is rejected.

Relationship of Economic Growth (GDP) and Foreign Direct Investment (FDI)

Based on the long-term test results using the EG-ECM method, it states that there are two approaches, namely the long term and the short term. In the long term, the Economic Growth variable (LPDB) has a significant effect on Foreign Direct Investment (LFDI) have a positive value of 0.898975. This could increase Economic Growth (LPDB) of 1 billion will cause Foreign Direct Investment (LFDI) to increase by 898975 billion. Vice versa, the Foreign Direct Investment (LFDI) variable has a significant relation to Growth (LPDB) with a positive coefficient of 0.992813. This means that an increase in Foreign Direct Investment (LFDI) of 1 billion could make Economic Growth (LPDB) to increase by 992813 billion.

Whereas in the short term the Economic Growth variable (LPDB) has an influence on Foreign Direct Investment (LFDI) with a positive coefficient of 0.271903. This means that an increase in the Economic Growth variable (LPDB) in the previous year of 1 billion will cause Foreign Direct Investment (LFDI) to increase by 271903 billion. Vice versa, in the short term the Foreign Direct Investment (LFDI) variable has an influence on Economic Growth (LPDB) with a positive coefficient of 0.230671. This means that an increase in the Foreign Direct Investment (LFDI) variable in the previous year of 1 billion will cause Economic Growth (LPDB) to increase by 230671 billion.

Likewise, the Granger Causality Test proves that there is a two-way causality relationship between the LPDB variable and the LFDI variable. The two-way causality relationship occurs with the pattern of changes in the value of LPDB affecting changes in the value of LFDI and vice versa. This shows that changes in the value of LPDB in the past have an effect on changes in the value of LFDI in the present, and vice versa. Changes in the value of LFDI in the past have an effect on changes in the value of LPDB in the present.

Theoretically, increasing economic growth in a country could increase foreign capital inflows in the form of FDI. This is the result of investors consider that investing in a country with high economic growth is expected to provide *return on* a high investment. In this regard, developing countries whose economic growth generally originates from consumption is one of the factors influencing investors to invest in seeking new market shares.

This research is in line with Setyowati, Wuryaningsih and Kuswati (2008) In their reseacrh of "The *Causality of Foreign Investment to Economic Growth in the 1980-2002s*" showing that in the long and short term both variables have a significant effect on each other as a whole, exhibiting a two-way causality relationship between the variables of Economic Growth and Foreign Investment. Additionally, Asti (2018) foreign investment has a significant impact on economic growth and vice versa thus showing a two-way causality relationship.

CONCLUSIONS

Result shows that in the long run the Economic Growth has a significant effect on foreign direct investment, and vice versa, the foreign direct investment has a significant effect on economic growth. Whereas in the short term the Economic Growth variable has an influence on Foreign Direct Investment, and vice versa, the Foreign Direct Investment has an influence on Economic Growth. It is possible to have a better long-term relationship. When investment in Indonesia increases, it will have relation to Growth in Indonesia, thus improving the economy. Conversely, when economic growth decreases it means that foreign investment in Indonesia at that time is low.

The test Granger Causality, shows that there is a two-way causality relationship between Economic Growth and Foreign Direct Investment and vice versa. It is necessary to maintain economic growth in Indonesia to attract foreign direct investment, as well as foreign investment, the investment climate needs to be improved facilitating investors to invest in Indonesia.

Based on the government to pay more attention to policies on State and overseas macroeconomic conditions to macroeconomic conditions maintaining, stable economic growth, simplifying licensing matters and sustaining the investment climate is vital to attract investors. Moreover, further researcher: are suggested to to increase the research period and include other analysis tools, to thoroughly perceive the conditions of economic growth and foreign investment in short and long term.

This study is inseparable from a number of limitations recognize through observations along the way. The deficiencies need to be addressed for the perfection of further research in the same discussion. In addition to other determining factors or variables excluded in this study, deepening of the material on the variables is still lacking, observation period of the Economic Growth and Foreign Direct Investment.

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