

## **Analysis Determinant Factors of Foreign Direct Investment in Indonesia**

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### **ABSTRACT**

Foreign direct investment (FDI) cannot be separated from economic growth, especially in developing countries to build the country's economy. Problem that many developing countries face is the need for substantial funds for development capital, while state revenues are too low. Therefore, foreign capital is needed to accelerate the economic development of a country. The purpose of this research is to analyze variables that affect the inflow of FDI in Indonesia, in this case, macroeconomic variables which include Gross Domestic Product (GDP), exchange rates, inflation, and exports. The method of analysis uses the Vector Error Correction Model (VECM), with secondary data, 2005-2019, quarterly. The results show 85.65% of the factors that determine the inflow of FDI in Indonesia can be explained by variables of macroeconomics. These influences are: a. Simultaneously, all macroeconomic variables have a significant effect on FDI; b. Partially, in the short-term, GDP and inflation didn't have a significant effect; exchange rate have a negative significant effect; export negatively significant effect; c. Partially, in the long-term exchange rates didn't have a significant effect, GDP and inflation have a positive significant effect, export has a negative significant effect; d. The causality test shows that only exchange rate has a causality with FDI, the causality between FDI and exchange rate is unidirectional. The study implies that even though the exchange rate has a negative, significant, and causal effect on FDI, the stability of the rupiah's exchange rate must still be maintained because the interest of domestic economic actors must be prioritized.

**Keywords:** FDI; Macro-economic; GDP; VECM.

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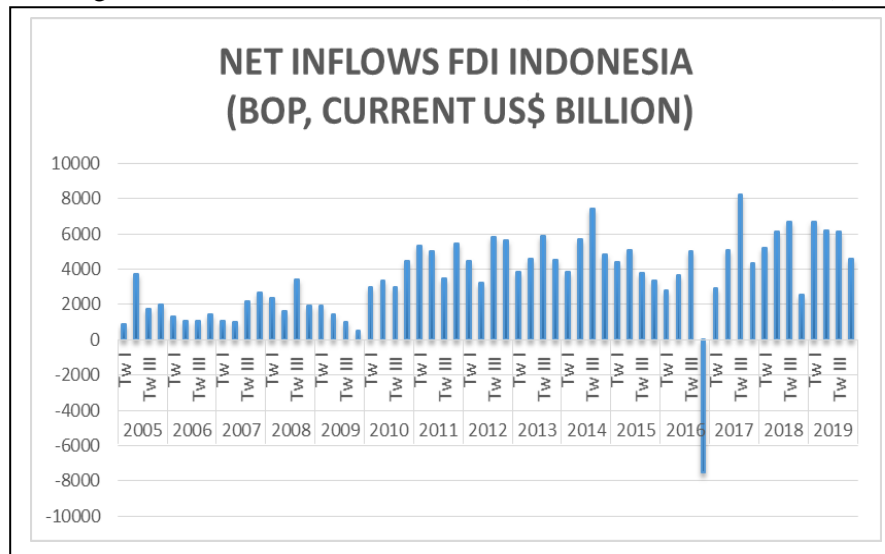
### **1. Introduction**

There is no denying that investment is urgently needed to encourage economic development in every country. The success of economic development will have an impact on economic growth on the realization of people's well-being. As stated in the Opening of the 1945 Constitution of the Republic of Indonesia that advancing public welfare is one of the main objectives of the country. Therefore, the government is working on various ways to increase investment in both domestic

and foreign investment. The government through Economics Policy Package Volume 2, the Government seeks to increase investment by deregulating and make the investment rules less bureaucratic, for domestic investment and foreign investment. According to Jufrida, Mohd. Nur Syechalad, and Muhammad Nasir, 2016 the influence of domestic investment is more real than foreign investment means to increase investment in order to encourage economic growth, domestic investment takes precedence. However, in countries whose domestic investment capabilities are insufficient due to lack of public funds and or because of the capacity of economic resource exploitation that is not optimal, foreign investment is still needed, especially in the era of economic liberalization as it is today.

The role of foreign investment in the economy is not only limited to encouraging economic growth but also plays a role in maintaining the sustainability of foreign economic relations, (Recep Kok and Bernur Acikgoz Ersoy, 2012). According to Jhingan, 2012 the role of foreign investment not only overcomes the shortage of money capital and physical capital, but the foreign investment also brings engineering skills, experts, organizational experience, market information, advanced production techniques, and product renewal. Foreign investment also helps modernize society and strengthen the state and private sectors.

Figure 1.1 Net Inflows FDI Indonesia (BOP Current US\$ Billion)



Source: SEKI, Bank Indonesia. 2020

The amount of foreign investment in Indonesia from 2015 to 2019 fluctuates, as shown in Figure 1, even in 2019 from the first quarter to the fourth quarter the value of FDI inflows tends to decrease. Thus, the foreign investor who is interested in investing in our country should not only consider the importance of the role of foreign investment in the domestic economy but also should prepare for the conditions that attract foreign investment. Economic conditions are important for investors to ensure the profit and sustainability of their investment activities. These conditions include GDP, exchange rate, inflation rate, and exports of the country of an investment destination.

Tabel 1. GDP, nilai tukar, tingkat inflasi dan ekspor Indonesia Tahun 2006-2018

Year	GDP (in Thousands USD)	Kurs (in IDR)	Inflation (in percent)	Export (in Thousand USD)
2005	5,192,502	9,833	10.6	86,995
2006	5,478,139	9,158	13.1	103,527
2007	5,825,728	9,182	6.5	118,014
2008	6,176,070	9,693	10.6	139,606
2009	6,461,955	10,220	4.3	119,645
2010	6,864,133	9,028	5.3	158,074
2011	7,287,635	8,799	5.1	200,787
2012	7,727,083	9,480	4.3	188,496
2013	8,156,498	10,863	5.3	182,089
2014	8,564,867	12,006	6.7	175,292
2015	8,982,517	13,717	6	149,124
2016	9,434,613	13,219	3.5	144,469
2017	9,912,928	13,420	3.8	168,882
2018	10,425,397	14,267	3.1	223,926

Sources: SEKI, Bank Indonesia. 2020.

It is shown in **Table 1**, that the variable conditions that are suspected to affect FDI growth are very volatile, therefore analysis is needed to find out which factors affect FDI and how it affects it in the short term and long term.

## 2. Literature Review

FDI is widely expected to help drive sustainable investment growth in developing countries. The reason foreign investors choose to invest in FDI, compared to other forms of capital investment in a country is influenced by the conditions of the host country (pull factors) as well as the conditions and strategies of foreign investors (push factors). Each country has a different push and pull factors according to the conditions of each country (Griffin, 2010).

According to the research by Putri & Regina (2016) and Swanitarini (2016), Gross Domestic Product has a positive and significant effect on the inflow of FDI. GDP is one of the important indicators for knowing the economic conditions in a country within a certain period, both based on of current prices and on a constant price basis.

The exchange rate is the price of domestic currency against another currency. In Malisa & Fakhruddin research (2017), it was found that the exchange rate had a negative and significant effect on inflow of FDI. This is in contrast to the results of Chatherine & Rashid research (2011) in 5 major ASEAN countries which instead showed a positive relationship between exchange rates and FDI.

Inflation is a trend of rising prices in general and continuously (Boediono, 1982). The results of Xaypanya, Rangkakulnuwat & Paweenawat research (2014), concluded that inflation has affected FDI in Indonesia, Malaysia, and the Philippines. Fadhillah (2017) also found that inflation has a positive effect on FDI flows in Indonesia.

Export is the distribution of goods and services to other countries. According to research by Safitriani (2014) and Febriana & Muqorobin (2014) exports have a negative relationship with FDI. Meanwhile, in Swanitarini research (2014), she finds that exports have a positive effect on FDI in Indonesia.

Based on the above studies can be found the following hypothesis, there is a positive effect of GDP on FDI flows in Indonesia; there is a negative effect of rupiah exchange rate on FDI flows in Indonesia; there is a positive effect of inflation rate on FDI flows in Indonesia; there is a negative effect of exports on FDI flows in Indonesia; and there is an effect of GDP, rupiah exchange rate, inflation, and exports on the inflow of FDI in Indonesia simultaneously.

### 3. Research Methodology

This study used secondary data in a time series quarter with a period from 2005 to 2019 and Indonesia as an object of research. The data was obtained from Bank Indonesia's official website and the Bappenas Report. The variables used in this study are FDI (Foreign Direct Investment) as dependent variables and GDP, exchange rate, inflation, and export as independent variables. Data processing in this study uses E-views 9.

#### 3.1 Data Analysis Techniques

To determine the effect of independent variables on dependent variables is used the Vector Error Correction Model (VECM) analysis tool. VECM analysis stages, as follows (Basuki. 2018:23):

- Stationarity test using the ADF root unit test (Augmented Dickey Fuller) using a real level 5%. This test is performed so that it can be known at what level the data time series is stationary (not the root of the unit).
- The optimal Lag Test using in the VAR model can be determined based on criteria Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quin Criterion (HQ) to determine the optimal number of orders (lag).
- The co-integration test, this test uses the Johansen Cointegration method with Trace analysis and Max-Eigen value. This test is used to determine which method to use. If it is known that the co-integration relationship means the right method is VECM, but if not then the right method is VAR.
- Analysis Causality Granger.

### 4. Results

#### 4.1 Uji Stationarity

Unit root Augmented Dickey-Fuller (ADF) test results with Schwarz Information Criteria (SIC) lag criteria,  $\alpha = 5\%$  all passed stationary test level 2 due to  $\alpha = 5\% > \text{ADF Prob.}$

Table 2. Unit Root Test with ADF

Variabel	Tingkat Level	Tingkat 1st Difference	Tingkat 2nd
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	ADF stat	ADF Prob	ADF stat	ADF Prob	ADF stat	ADF Prob
<b>FDI</b>	-5.0017	0.0001	-7.7654	0.0000	-7.8118	0.0000
<b>GDP</b>	2.1063	0.9999	-1.5783	0.4862	-86.2787	0.0001
<b>KURS</b>	-0.1697	0.9358	-6.3779	0.0000	-5.8269	0.0000
<b>INFLASI</b>	-2.2670	0.1861	-7.2808	0.0000	-7.2808	0.0000
<b>EXPORT</b>	-3.4039	0.0150	-6.7928	0.0000	-6.8557	0.0000

Source: Processed data by Researcher. 2020.

#### 4.2 Lag Optimal

Optimal lag testing is used to look at periods where data affects each other optimally. Based on the results of the Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quin Criterion (HQ) optimal lag test occurs at the fourth lag.

Table 3. Lag Optimal

Lag <sup>S</sup>	LogL	LR	FPE	AIC	SC	HQ
0	-2872.822	NA	6.77e+43	115.1129	115.3041	115.1857
1	-2812.577	106.0298	1.66e+43	113.7031	114.8503	114.1400
2	-2768.835	68.23851	8.10e+42	112.9534	115.0566	113.7543
3	-2633.536	184.0061	1.06e+41	108.5414	111.6007*	109.7064
4	-2596.763	42.65706*	7.80e+40*	108.0705*	112.0858	109.5995*

Processed data by Researcher. 2020.

Description:

\* Indicates the optimum amount of lag based on election criteria

#### 4.3 Co-integration

The results of the co-integration test, value of trace statistic and max-eigen on  $\alpha = 5\%$  greater than the critical value. This means that independent variables have a relationship of stability/balance and movement similarity in the long term. Therefore the Vector Error Correction Model (VECM) method can be used.

Table 4. Cointegration Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.654699	161.3362	69.81889	0.0000
At most 1 *	0.545683	109.2327	47.85613	0.0000

Source: Processed data by Researcher. 2020.

Table 5. Cointegration Test (Max-Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.654699	52.10353	33.87687	0.0001
At most 1 *	0.545693	38.66007	27.58434	0.0013

Source: Processed data by Researcher. 2020.

#### 4.4 VECM

#### 4.4.1 Long Terms

Through the long-term VEC Test, it is said to be significant if  $t\text{-statistic} > t\text{-table}$  (2.007584). **Tabel 6** shows insignificant independent variables are exchange rates. GDP and inflation have a significant and positive effect, while exports have a significant and negative effect on FDI.

Table 6. VECM Jangka Panjang

<b>D(FDI(-1).2)</b>	<b>D(GDP(-1).2)</b>	<b>D(Kurs(-1).2)</b>	<b>D(Inflasi(-1).2)</b>	<b>D(Export(-1).2)</b>
1.00000	601.6989	-3117.246	1907366.	-2033.878
	[ 2.21707]	[-1.32498]	[ 3.92849]	[-5.73742]

Source: Processed data by Researcher. 2020.

#### 4.4.2 Short Terms

Through simultaneous short-term VEC tests all independent variables have a significant effect due to the value of F-statistic (14.64525)  $>$  F-table (2.553395). Spatially, independent variables is significant if  $t\text{-statistic} > t\text{-table}$  (2.007584). **Table 7** showed that the exchange rate has a negative and significant effect on the second, third, and fourth lags. While exports had a negative and significant effect on the fourth lag. Variable GDP and inflation have no significant effect on FDI. Adj. R-squared value of 0.856524 means 85.65 % variation in FDI changes can be explained by the independent variables contained in this study.

Table 7. VECM Jangka Pendek

<b>Variabel Dependen FDI</b>			
<b>Variabel</b>	<b>Coeff</b>	<b>Std. Error</b>	<b>t-statistik</b>
<b>CointEq1</b>	-0.281512	(0.28021)	[-1.00464]
<b>D(GDP(-1).2)</b>	111.0153	(161.478)	[ 0.68749]
<b>D(GDP(-2).2)</b>	57.67363	(123.369)	[ 0.46749]
<b>D(GDP(-3).2)</b>	20.08119	(96.8414)	[ 0.20736]
<b>D(GDP(-4).2)</b>	-15.48221	(73.9161)	[-0.20946]
<b>D(KURS(-1).2)</b>	-2493.948	(1250.25)	[-1.99476]
<b>D(KURS(-2).2)</b>	-3012.747	(1406.91)	[-2.14139]
<b>D(KURS(-3).2)</b>	-4054.645	(1161.75)	[-3.49013]
<b>D(KURS(-4).2)</b>	-2542.009	(932.827)	[-2.72516]
<b>D(INFL(-1).2)</b>	335746.9	(497178.)	[ 0.67511]
<b>D(INFL(-2).2)</b>	352952.2	(498689.)	[ 0.70776]
<b>D(INFL(-3).2)</b>	406017.2	(368961.)	[ 1.10043]
<b>D(INFL(-4).2)</b>	77568.12	(244223.)	[ 0.31763]
<b>D(EXPT(-1).2)</b>	-607.8578	(525.772)	[-1.15613]
<b>D(EXPT(-2).2)</b>	-718.6942	(466.786)	[-1.53967]
<b>D(EXPT(-3).2)</b>	-603.3766	(349.839)	[-1.72472]
<b>D(EXPT(-4).2)</b>	-417.4771	(204.044)	[-2.04601]
<b>C</b>	-534036.0	(851581.)	[-0.62711]
<b>R-squared</b>	0.919295	<b>F-statistic</b>	14.64525
<b>Adj. R-squared</b>	0.856524	<b>Akaike AIC</b>	33.1515
<b>Sum sq. resids</b>	2.92E+14	<b>Schwarz SC</b>	34.0009

Source: Processed data by Researcher. 2020.

#### 4.5 Causality test

Independent variables have a causality relationship with dependent variables when the Granger Causality test shows a probability value smaller than of  $\alpha = 0.05$ . From the test results, only the

exchange rate has a causality relationship to FDI (probability value  $0.0315 < \alpha = 0.05$ ). But the relationship is only one-way because statistically, FDI does not significantly affect the Exchange Rate, then there is no causality relationship.

Table 8. Granger Causality test

<b>Null Hypothesis:</b>	<b>F-Stat</b>	<b>Prob.</b>
<b>Growth does not Granger Cause FDI</b>	0.90482	0.4701
<b>FDI does not Granger Cause Growth</b>	0.12597	0.9722
<b>Kurs does not Granger Cause FDI</b>	294.491	0.0315
<b>FDI does not Granger Cause Kurs</b>	0.56634	0.6884
<b>Inflasi does not Granger Cause FDI</b>	146.544	0.2303
<b>FDI does not Granger Cause Inflasi</b>	0.55452	0.6968
<b>Export does not Granger Cause FDI</b>	0.44902	0.7725
<b>FDI does not Granger Cause Export</b>	147.357	0.2278

Source: Processed data by Researcher. 2020.

Description:

Lags: 4

## 5. Discussion

Based on the results, simultaneously factors that affecting FDI are GDP, Exchange Rate, Inflation, and Exports against FDI tested to have a significant effect. The results of VECM analysis spatially in the long-term and short-term are as follows:

### 5.1 GDP

GDP in the short-term has no significant effect. But in the long-term, it has a positive and significant influence on FDI. This means that in the long term any increase in GDP in the previous year's quarter will affect the flow of FDI to Indonesia in the following year. These results are in line with the research of Swanitarini (2016) and Putri & Regina (2016). In investing, foreign investors pay attention to the GDP levels of host countries. GDP can indicate the size of a country's market. With a large market can motivate investors to invest. Dunning in Putri, et al (2016) also stated that market size is one of the factors motivating investors to invest. Therefore it is important for the government needs to maintain the increase and stability of GDP if it wants to attract FDI to Indonesia.

### 5.2 Exchange rates

Exchange rates in the long-term and short-term have a negative and significant effect on FDI flows. This means that if the rupiah is appreciated then FDI goes down and vice versa. This condition is because if the rupiah exchange rate increases it means the price of foreign currencies will be low and not profitable for investors. Whereas gaining more profit is one of the motives of investors investing abroad. Therefore the exchange rate is one of the important indicators considered by investors before investing in a country (Malisa & Fakhrudin, 2017). The effect of the exchange rate will occur at second, third, and fourth time lags.

### 5.3 Inflation



Variable inflation only affects the long term, the effect is positive and significant. For investors inflation in the short term can not change the investment activities that have been carried out. Investment changes will be made after a certain period. Therefore the decision to invest for foreign investors should also consider the increase and decrease in the inflation rate of the destination country. According to research by Xaypanya, et al (2014) and Fadhillah (2017). Therefore to maintain the continuity of investment and FDI efforts to maintain exchange rate stability is necessary. Although in fact inflation that relatively stable can also encourage a business passion for investors. The results of the analysis showed that inflation had a positive effect. According to Fadilah (2017), mild inflation has a positive influence on boosting the economy better by increasing national income and making people passionate about working, saving, and investing.

#### *5.4 Export*

Export variables in the short term and long term have a negative and significant effect. It means that increases in exports will decrease FDI. This can happen because with the availability of export foreign exchange and increasing profits entrepreneurs will increase their ability to make investments. According to Safitriani (2014) and Febriana & Muqorobin (2014), in the short term export activity negatively affects FDI. Because in the short term the impact of foreign exchange flows on export proceeds will be able to lead to changes in exchange rates (Safitriani, 2014). Increased export receipts are likely to make the rupiah appreciated. In these conditions the cost of foreign investment will increase and reduce investment interest. Based on the analysis of the effect of export changes will be seen at the lag of the fourth time.

## **6. Conclusion**

Simultaneously the entry of FDI into Indonesia during the period 2005 – 2019 was influenced by GDP, Exchange Rate, Inflation, and exports. GDP and inflation have a positive effect. Meanwhile, the exchange rates and exports have a negative effect. Spatially in the short-term variable GDP and inflation are positive but not significant. While in the long-term it has a positive and significant effect. For variable exchange rates and exports in the short term and long term, it has a negative and significant effect. The exchange rate will feel the effect on lags 2, 3, and 4 while exports will feel the effect on the 4th lag.

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