

Determinant Analysis of Foreign Investment in Indonesia

Nazlia Wibowo¹, Rujiman²

¹(Faculty of Economics and Business, Department of Economics, Universitas Sumatera Utara, Indonesia)

²(Faculty of Economics and Business, Department of Economics, Universitas Sumatera Utara, Indonesia)

Corresponding Author: Nazlia Wibowo

Abstract: This study aims to determine the factors that influence foreign investment in Indonesia. This study uses secondary data for the first quarter of 2000 to the fourth quarter of 2012 sourced from research.stlouisFed.org, the Central Bureau of Statistics, Bank Indonesia and library research to support this research. Data were analyzed using multiple linear regression models. The results showed that Indonesia's gross domestic product had a positive and significant effect on foreign investment in Indonesia, while Indonesia's real interest rate had a negative and significant effect on foreign investment in Indonesia. Foreign investment in Indonesia of 65.96 percent is influenced by real interest rate and gross domestic product, while the remaining 34.04 percent is influenced by other factors outside of this research. Given that in this study only using two independent variables is expected to the next researcher in order to be able to add other variables as determinants of foreign investment in Indonesia in future studies so that research becomes better.

Keywords: Foreign Investment, Gross Domestic Product, Real Interest Rate

Date of Submission: 03-07-2019

Date of acceptance: 18-07-2019

I. Introduction

Economic development in a country requires large capital, but the effort to provide capital is faced with problems of limitations. This limitation arises from the formation of capital sourced from within the country, this is because the level of public consumption is still very high compared to the savings rate, so one solution is to direct foreign capital through investment and investment.

Investors buy capital goods not to meet their needs but to make a profit. Unlike what is done by consumers who spend a portion of their income just to buy goods for their needs. The amount of profits obtained by investors depends on the level of investment made. Besides the hope of the future to gain profit, economists also agree that the level of investment is determined by the interest rate and national income level (Sukirno, 1997: 109). Foreign investment in Indonesia fluctuates up and down annually, can be seen in Table 1:

Table 1. Growth of Foreign Investment in Indonesia, 2006 - 2012

No.	Year	Foreign Investment (USD Million)	Growth (%)
1	2006	4.914	
2	2007	6.928	40,98
3	2008	2.360	-65,94
4	2009	4.877	106,65
5	2010	13.771	182,37
6	2011	19.242	39,73
7	2012	19.617	1,95

Source: research.stlouisFed.org, 2013 (processed)

In 2010 foreign investment in Indonesia increased to 182.37 percent, namely USD 13,771 million. This is due to the confidence of foreign investors due to the improving Indonesian economy. In 2011 foreign investment in Indonesia increased by 39.73 percent, amounting to USD 19,242 million and in 2012 foreign investment in Indonesia again increased by 3.18 percent, amounting to USD 19,853 million. Although its growth is small but it is very influential on the economy in Indonesia.

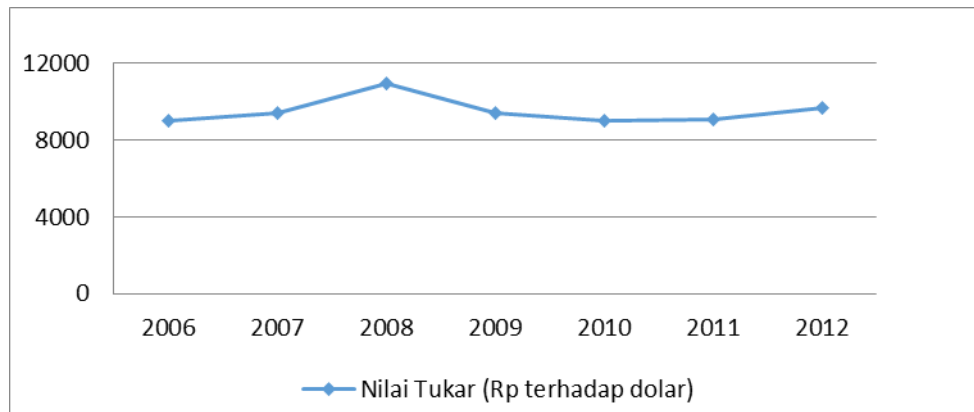
Table 2. Growth of Indonesian National Income, 2006 - 2012

Year	Indonesian National Income (Billion Rupiah)	Growth (%)
2006	1.847.127	
2007	1.964.327	4,86
2008	2.082.456	1,85
2009	2.178.851	-2,26

2010	2.314.459	3,75
2011	2.464.677	3,97
2012	2.618.139	6,22

Source: research.stlouisFed.org, 2013 (processed)

In 2010 Indonesia's national income again increased by 31.22 percent from 2009, which was USD 708.03 billion. In 2011 Indonesia's national income increased by 19.60 percent, which was USD 846.83 billion.



Source: Bank Indonesia, 2013 (processed)

Figure 1. Development of Rupiah Exchange Rates to USD, 2006 – 2012

The biggest depreciation of the rupiah exchange rate against the USD occurred in 2008, which amounted to Rp. 10,950 per USD which in the previous year was Rp. 9,419 per USD with a growth of 16.15 percent. This is caused by one of the impacts of the United States financial crisis on developing countries such as Indonesia. But in 2009 the rupiah exchange rate appreciated again with Rp. 9,400 per USD. But in 2011, the Rupiah exchange rate against the USD again weakened to Rp. 9,086 per USD which in the previous year strengthened to Rp. 8,991 per USD.

Table 3. Growth of the BI Rate Interest Rate, 2006 – 2012

Year	BI Rate (%)	Growth (%)
2006	9,75	
2007	8	-17,95
2008	9,25	15,62
2009	6,5	-29,73
2010	6,5	0
2011	6	-7,69
2012	5,77	-3,83

Source: Bank Indonesia, 2013 (processed)

BI Rate interest rates fluctuate every year. The highest interest rate occurred in 2008, which amounted to 9.25 percent. In 2009 and 2010 the interest rate fell to 6.5 percent. Whereas in 2011 the interest rate again was reduced to 5.93 percent. Based on this background description the author is interested in conducting a research entitled "Analysis of Determinants of Foreign Investment in Indonesia".

II. Materials and Method

The scope of this research is the field of international economics which discusses the analysis of determinants of foreign investment in Indonesia. The factors discussed in this study are gross domestic product, the exchange rate of the Rupiah against the United States Dollar, and the real interest rate.

The source of the data used comes from related agencies such as: Bank Indonesia (BI), research.stlouisFed.org, the Central Statistics Agency (BPS) and other relevant agencies. The data collected in this study includes foreign investment in Indonesia, Indonesia's gross domestic product, the exchange rate of Rupiah against the United States Dollar, and the real interest rate. Data collected in the form of quarterly data in the form of times series covers the first quarter 2000 period until the fourth quarter of 2012.

The model or analytical tool used in this study is multiple linear regression (Gujarati, 2004: 202), namely:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \varepsilon_i$$

Where:

- Y_i = Dependent variable
- β_0 = Constant
- $\beta_1 \beta_2 \beta_3$ = Regression coefficient (parameters to be estimated)
- X_{1i}, X_{2i}, X_{3i} = Independent variable
- ε_i = Error Term

To make it easier to analyze the determinants of foreign investment in Indonesia, the author transforms the model into the following forms:

$$I = \beta_0 + \beta_1 Y + \beta_2 i + \beta_3 ER + \varepsilon_i$$

Where:

- I = Foreign investment
- Y = Gross domestic product
- i = Real interest rate
- ER = Exchange rate of rupiah to United States dollar
- β_0 = Constant
- $\beta_1 \beta_2 \beta_3$ = Regression coefficient (parameters to be estimated)
- ε_i = Error Term

Classic Assumption Test

a. Multicollinearity Test

Multicollinearity means that there is a perfect or definite linear relationship, between several or all variables that explain the regression model. The presence or absence of multicollinearity can be seen or seen from the correlation coefficient of each independent variable. If the correlation coefficient between each independent variable is greater than 0.8, multicollinearity occurs (Ajija et al., 2011).

b. Heteroscedacity Test

The heteroscedastic test aims to test whether in the regression model variance inequalities occur from one residual to another observation. If the residual variance from one observation to another observation remains, then it is called homoskedasticity and if it is different it is called heteroscedasticity. A good regression model is that homoskedasticity or heteroscedasticity does not occur (Ghozali, 2006).

c. Autocoleration Test

Autocoleration shows correlation between members of a series of observations sorted by time or space. The classical linear regression model assumes that autocoleration does not exist in ui disturbances or disturbances (Ajija et al., 2011).

III. Results and Discussion

3.1 Classic Assumption Test

a. Multicollinearity Test

Multicollinearity means that there is a perfect or definite linear relationship, between several or all variables that explain the regression model. The presence or absence of multicollinearity can be seen or seen from the correlation coefficient of each independent variable greater than 0.8, then multicollinearity occurs.

Table 4. Multicollinearity diagnosis

CORRELATION MATRIX OF COEFFICIENTS				
LLPDB	1.0000			
LLr		-0.45197	1.0000	
CONSTANT	-0.83758	-0.41240E-01	1.0000	
			LLPDB	LLr
CONSTANT				

Source: Estimated Results, 2013 (processed)

Based on the estimation results above, it can be seen that there is no multicollinearity in this study, because the coefficients of each variable are smaller than 0.8.

b. Heteroscedasticity Test

To test for the presence or absence of patterned error variations or so-called heteroscedasticity, the hypothesis is:

H0: Homoscedasticity

H1: Heteroscedasticity

If $\alpha >$ probability, then H0 is rejected at 99 percent confidence level ($\alpha = 0.01$ percent), and if $\alpha <$ probability then H0 is accepted at 99 percent confidence level ($\alpha = 0.01$ percent).

Testing the initial model by detecting whether the model contains heteroscedasticity or not using the White Test method from Shazam.

Table 5. White Heteroskedasticity Test

HETEROSKEDASTICITY TESTS

E**2 ON X X**2 XX (WHITE) TEST:

	CHI-SQUARE	D.F.	P-VALUE
KOENKER(R2):	14.131		5 0.01480
B-P-G (SSR) :	9.457		5
0.09215			

Source: Estimated Results, 2013 (processed)

Detection of heteroscedasticity can be seen from koenker (R^2) test with p-value = 0.01480 and BPG (SSR) test with p-value = 0.09215. P-value shows a value greater than α , so H0 is accepted. This means that there is no heteroscedasticity in the regression model.

c. Autocoleration Test

Autocoleration is a violation of classical assumptions that show correlation between members of a series of observations sorted by time and space. Autocoleration is detected when there is a relationship between the estimation of an observation and other observation estimation tools. To detect the presence of autocoleration on the model can be done by Durbin Watson (DW) test which can be seen in the estimated output.

In the regression results with multiple linear regression models, the Durbin Watson statistical value is 0.7797 which is smaller than the upper limit (dl) of 1.4741 and also smaller than the lower limit (du) of 1.6334, so the results are autocratic in this study.

3.2 Analysis of Results of Estimates of Determinants of Foreign Investment Analysis in Indonesia

To find out the effect of the Gross Domestic Product (GDP), the rupiah exchange rate against US Dollars, and the real interest rate on foreign investment in Indonesia in the first quarter of 2000 until the fourth quarter of 2012, the following multiple linear regression models were obtained:

$$I = \beta_0 + \beta_1 TB + \beta_2 PDB + +\beta_3 ER + \epsilon_i$$

The results of the estimation can be seen in the following table:

Table 6. Results of Determinants of Foreign Investment in Indonesia, Q1 2000 – Q4 2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NILAI_TUKAR	-0,12337E+06	0,1769E+06	-0,6975	0.489
PDB	17805	2350	7,576	0.000
TINGKAT_BUNGA_RIIL	-0,32438E+10	0,1301E+11	-0,2494	0.804
C	-0,56739E+10	0,1869E+10	-3,036	0.004

$R^2 = 0,8067$	$DW = 1,3432$
$Adj.R^2 = 0,7946$	$F_{hitung} = 66,776$

Source: Estimated Results, 2013 (processed)

Based on the estimation results in Table 6, it can be concluded that gross domestic product has a significant effect and has a positive relationship to foreign investment in Indonesia, while the exchange rate and real interest rates do not significantly influence foreign investment in Indonesia. Variables of gross domestic product have a statistically significant and theoretical effect. However, the variable exchange rate against the US

Dollar does not have a statistically significant effect or in theory, while the real interest rate variable is in accordance with the theory but does not have a statistically significant effect. In this study the correlation between the rupiah exchange rate against US Dollars with Gross Domestic Product is too high (> 80 percent), the variable exchange rate of rupiah against US Dollars is not included in the model. So the estimated equation becomes:

$$I = \beta_0 + \beta_1 TB + \beta_2 PDB + \varepsilon_i$$

The estimation results are shown in Table 7:

Table 7. Results of Determinants of Foreign Investment in Indonesia, Q1 2000 – Q4 2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
L PDB	17331	2238	7,744	0.000
L TINGKAT_BUNGA_RIIL	-0,59902E+10	0,1233E+11	-0,4858	0.629
C	-0,65042E+10	0,1433E+10	-4,539	0.000

R ² = 0,8047	DW = 1,3234
Adj.R ² = 0,7968	F _{hitung} = 100,979

Source: Estimated Results, 2013 (processed)

Based on Table 7 by removing the exchange rate variable, the real interest rate variable still has no significant effect. To correct the real interest rate coefficient (β_1), an adjustment is made in the estimation model. This is due to the time lag between the increase in gross domestic product and the use of gross domestic product after the increase in gross domestic product. Likewise with the real interest rate, there is a lag between the increase in real interest rates and the use of real interest rates after the interest rate increase. A four-quarter adjustment is needed so that Gross Domestic Product and real interest rates can have an effective effect on foreign investment in Indonesia. Gross domestic product in the first quarter affected foreign investment in Indonesia in the fourth quarter. Likewise with the real interest rate, the real interest rate in the first quarter affected foreign investment in Indonesia in the fourth quarter.

The estimation results are shown in Table 8.

Table 8. Results of Estimates of Determinants of Foreign Investment in Indonesia, Q1 2000 – Q4 2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LL PDB	0,44651E+09	0,5198E+08	8,591	0.000
LL BUNGA RIIL	-0,80133E+11	0,9407E+10	-8,518	0.000
C	-0,12027E+10	0,5808E+09	-2,071	0.044

R ² = 0,6729	DW = 0,7797
Adj.R ² = 0,6596	F _{hitung} = 50,403

Source: Estimated Results, 2013 (processed)

The estimation results in Table 8 can be seen that the gross domestic product variable is significant for foreign investment in Indonesia as indicated by Thitung gross domestic product of 8.591 which is greater than T table with a significant level of $\alpha = 0.05$, which is 1.671. Likewise, the significant real interest rate for foreign investment in Indonesia, which is shown by Thitung, is the real interest rate of 8.518 which is also greater than the table with a significant level of $\alpha = 0.05$, which is 1.671.

The constant coefficient (β_0) of 0.12027 means that if the gross domestic product variable and the real interest rate are considered constant, foreign investment in Indonesia will increase by US \$ 0.12027 million. The regression coefficient for real interest rates (β_1) is 0.80133 meaning that if there is an increase in the real interest rate of 1 percent, it will affect the increase in the number of foreign investment in Indonesia of US \$ 0.80133 million assuming the gross domestic product variable is considered constant. The regression coefficient for

gross domestic product (β_2) is 0.44651, which means that if there is an increase in gross domestic product of one Rp billion it will affect the increase in foreign investment in Indonesia amounting to US \$ 0.44651 million assuming the variable real interest rate is considered constant.

The coefficient of determination (Adj. R^2) is 0.6596 percent indicating that 65.96 percent of changes in foreign investment in Indonesia are influenced by interest rates and gross domestic product, while the remaining 34.04 percent is influenced by other factors beyond this research model.

IV. Conclusion

The results showed that the growth of gross domestic product has a positive and significant effect on the growth of foreign investment in Indonesia, while the real interest rate has a negative and significant effect on foreign investment in Indonesia.

Interest rate growth in the first quarter affected the growth of foreign investment in the fourth quarter, and first quarter gross domestic product growth also affected the growth of foreign investment in the fourth quarter.

The growth of foreign investment in Indonesia by 65.96 percent is influenced by growth in real interest rates and growth in gross domestic product, while the remaining 34.04 percent is influenced by other factors outside of this research.

Reference

- [1]. Ajija, Shochrul Rohmatul, dkk. 2011. *Cara Cerdas Menguasai EvIEWS*. Jakarta: Salemba Empat.
- [2]. Ghozali, Imam. 2006. *Analisis Multivariat Dengan Menggunakan SPSS*. Semarang: Badan Penerbit Universitas Diponegoro.
- [3]. Gujarati, Damodar N. 2004. *Basics Econometrics*, Fourth Edition, TheMgGraw-Hill, New York. Research.stlouisFed.org/
- [4]. Sukirno, Sadono. 1997. *Pengantar Ekonomi*. Jakarta: PT. Raja Grafika
- [5]. www.bi.go.id/
- [6]. www.bps.go.id/

IOSR Journal of Business and Management (IOSR-JBM) is UGC approved Journal with SI. No. 4481, Journal no. 46879.

Nazlia Wibowo. " Determinant Analysis of Foreign Investment in Indonesia". IOSR Journal of Business and Management (IOSR-JBM), Vol. 21, No. 7, 2019, pp. -.29-34