

Indonesia Economic Growth Determinant: The Impact of Macro Economic Variables and International Trade

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ABSTRACT

The economic growth is one of measurements for a country to be categorized as a developed country. The basic things in economy are monetary stability and fiscal. Monetary stability can be seen from the government's success in controlling inflation flow and restraining interest rates meanwhile fiscal policy can be seen from rate of exchange sector and free trade. Considering those basic conditions, this research is aimed to study the impact of inflation, interest rates, exchange rates, and free trade toward the economy of Indonesia. This research uses data time series from Q1 2009 to Q1 2020 by using ordinary least square (OLS) model. The result of this research shows that interest rates, exchange rates, and import affect the economic growth, meanwhile inflation and export do not affect the economic growth.

Keywords: Macroeconomic Variable, Free Trade, Economic Growth, Indonesia

JEL Classifications: E31, E43, F10, F43

1. INTRODUCTION

The economic growth is the main goal that wants to be achieved in the development of every country since the economic growth can indicate and measure the success and the development of each period. The basic goal of economic growth is stability that can be seen from monetary factor and fiscal. For the framework of monetary policy, some of the factors are inflation and interest rates (Debelle et al., 1998; Arestis and Sawyer, 2008), meanwhile for the fiscal policy, the factors are exchange rates, export, and import (Monacelli and Perotti, 2007).

The framework of the monetary policy that is implemented by a country is related to the level of financial sector development and fundamental conditions in macro economy that affects it. The monetary condition in Indonesia was very bad in 1998 that made Bank Indonesia as a central bank in Indonesia impossible to

continue using a monetary aggregate-based monetary framework (Goeltom, 2008). Considering this condition, Bank Indonesia used inflation targeting framework to run the monetary policy that focused on low inflation and long-term stability to reach the targets of macro economy in which economic growth is one of them. Every country avoids high inflation because it can happen anywhere and anytime and it shows whether the implemented monetary policy in a country is good or not (Dornbusch et al., 2001). Inflation is also caused by the imbalance of goods flows and money flows that is caused by various external factors such as political situation and unsecured situation (Byun, 1993; Pangannavar, 2014; Khumalo et al., 2017).

Monetary policy in resolving inflation is very significant toward the aggregate of economic growth because it will affect the external balance such as free trade and interest rates that can increase the inflation (Houck, 1979; Rogers and Wang, 1993; Erceg et al.,

2018). Therefore, inflation and economic growth do not go in the same direction and Indonesia government takes the policy of using BI rate to control inflation. Raising BI rate will slow down the economic activity (Wuhan and Kurshid, 2015) and burden the investors for the high capital cost that will make the investors change their investment from production to stock market (Alfaro and Chauvin, 2020).

Stock market and exchange rate are closely related and if there is a problem in the condition of Indonesian micro banking that often faces economy turmoil, they will decrease the economic growth. It was proved when a crisis happened in 1998 and 2008 in the developing countries, include Indonesia. There are two different opinions about exchange rate that it can give bad impact toward economy and development since it can cause hazard moral, capital inflow, and investment surplus (Eichengreen and Hausmann, 1999; McKinnon and Pill, 1999; Saxena and Wong, 1999) and that exchange rate can give good impact toward economy and development because it can keep the stability and drive low transaction cost for international and national trade (Schnabl, 2007; Nicita, 2013; Anindhita, 2017; Guzman et al., 2018).

In the last 10 years, the exchange rate of Rupiah has depreciated considerably and it reached 14.902 Rupiah/USD in the third quarter in 2014 that is the lowest rate of Rupiah toward USD since the monetary crisis in 1998. Though, the lowest rate since the monetary crisis in 1998 is in the third quarter in 2014, there is a big increase from the second quarter to third quarter in 2013 that should be criticized where Rupiah rate increased from 9.925 Rupiah/USD to 11.850 Rupiah/USD. This increase happened because during that period of time the need of foreign currency was high meanwhile the stock of USD did not meet the demand that came from big corporation to pay dividend, debt service, and repatriation of profits. Moreover, there was also a structural problem such as transaction deficit that happened for 26 months. The high depreciation of Rupiah shows that Indonesia economy still depends on importing rather than exporting goods and services that some of them are oil and gas sector and machinery sector.

The business of exporting goods and services will get more profit as the value of domestic currency is lower than the value of foreign currency. The profit that they get will increase the employment and increase tax revenue and economic growth. This condition is in line with Adam Smith's theory who stated that a country can be categorized as a developed country if it can develop its output through trade. However, neo classics believe that export does not have impact on the economic growth because it is more affected by the factor of production input, such as capital, labor and technology (Solow, 1956). Another theory, that is endogenous economic theory, states that international trade affects the increase of output and economic growth (Romer, 1986) that is also supported by some studies such as Balassa (1978), Kavoussi (1984), and Salvator (1990).

Based on the theories above, the Indonesia government should start implementing development strategy in developing their industries by outward looking and inward looking spearheaded by Streeten (1982). The outward looking strategy believes

that the high economic growth can be realized when local products, goods, and services can be sold abroad without any discrimination in giving incentive and other conveniences and with only imposition of income tax. Meanwhile, inward looking strategy emphasizes more on the improvement of domestic development that is aimed to find substitute goods. Inward looking can be done by protecting domestic industry by charging fares, duties, excise, and taxes from any import outputs. The development of export and import in Indonesia is always in line where the export's development is bigger than import's development in the past 10 years. However the number of export cannot cover the number of import since the import goods that are dominated from oil and gas sector and aircraft and motor vehicle engine sector imported from China, Japan, and Thailand are more expensive.

2. LITERATURE REVIEW

Literacy about economic growth are various and many economists analyze macro and micro economic determination that increase the economic growth in a country every decade, Indonesia as one of developing countries is no exception. Many factors affect the economic growth and a study conducted by Mutinda (2014) in Kenya using OLS method, and using some variables such as inflation, exchange rate, and interest rate, proves that all variable give negative impact on the economic growth because there is financial liberalization that causes instability and it doubts the financial market's ability in allocating credit efficiently. Other than that, the high liquidity can be one of preference terms to encourage crowding out in private sector and the government should bear the costs of budget deficit.

Vardari (2015) who conducted study in Kosovo using vector error correction model (VECM) method found that import and export give impact on the economic growth in a long term but it does not give impact in short term. This happens because export and import companies will get added value from exchange rate difference in the export and import destination countries. This study is in line with the studies from Hamad et al. (2014) in Tanzania, Andrews (2015) in Liberia, Saaed and Hussain (2015) in Tunisia, and Keho (2017) in Cote d'Ivoire.

Yusuf et al. (2019), who conducted a study in Nigeria using error correction model (ECM) method, and inflation, exchange rate, and interest rate variables, found that inflation and exchange rate affect the economic growth and interest rate does not affect the economic growth. This happens because Nigeria government can manage the exchange rate well, maintain the inflation well, and increase the investor's confidence. Moreover, Nigerian people's savings and loans transaction in bank does not give good effect for the economic growth because it is constrained by high credit interest rates. As a result, there are many loans that cannot be repaid and there are hidden transactions between loan collectors and credit recipients in repaying the loan.

Semuel and Nurina (2015), who conducted study in Indonesia using ordinary least square (OLS) method and inflation, interest rates, and exchange rates variables, found that inflation has a

bad effect for the economic growth, meanwhile interest rate and exchange rate does not affect the economic growth. This is caused by high BI rate that will make the investors hesitate to make investment.

3. METHODOLOGY

For the model specification, this study uses ordinary least square (OLS) method that is begun by conducting classical assumption test, such as multicollinearity test, heteroscedasticity test, autocorrelation test, and normality test. Classic assumption test is aimed to provide model certainty that the result of regression equation is accurately estimated or consistent (Gujarati, 2003. p. 97; Ainiyah et al., 2016). The estimate accuracy is also supported by the result of stability test that is presented on a curve picture with a blue line that should be between two red lines. The aim of the stability test is to confirm the stability of regression result. If both tests pass, it can be confirmed that the regression model in this study is consistent, normal, and stable. Therefore, the regression in this study is:

$$Grt = \beta_0 + \beta_1INFt + \beta_2IRt + \beta_3ERT + \beta_4EXt + \beta_5IMt + \epsilon_t \quad (1)$$

Grt is the economic growth, INFt is inflation, IRt is interest rates, FRT is exchange rates, Ext is export, IMt is import, and ϵ_t is regression error term. Equation 1 is the form of multiple regression (OLS) without using logarithm. All data are quarterly data from 2009 to 2020 that are taken from the database of Economy Statistic-Indonesia Finance, Bank Indonesia.

4. RESULTS AND DISCUSSION

4.1. Empirical Results

4.1.1. Multicollinearity test

The aim of multicollinearity test is to know the relationship between the independent variables. If the coefficient value of each variable is <0.8, the model does not have multicollinearity and if the coefficient value is more than 0.8, the model has multicollinearity.

Table 1: Multicollinearity test

Variable	LGR	INF	IR	ER	LEX	LIM
LGR	1.00000	-0.08261	-0.42196	0.88206	0.05096	0.40883
INF	-0.08261	1.00000	0.17854	-0.09542	-0.03546	-0.04582
IR	-0.42196	0.17854	1.00000	-0.21671	-0.03513	-0.20853
ER	0.88206	-0.09542	-0.21671	1.00000	-0.30152	0.04939
LEX	0.05096	-0.03546	-0.03513	-0.30152	1.00000	0.85010
LIMP	0.40883	-0.04582	-0.20853	0.04939	0.85010	1.00000

Source: Eviews 11

Table 2: Improved multicollinearity test

Variable	LGR	INF	IR	ER	LEX	LIM
LGR	1.00000	-0.18825	0.08519	0.15447	-0.24059	-0.17172
INF	-0.18825	1.00000	0.04864	-0.18550	-0.07264	-0.07144
IR	0.08519	0.04864	1.00000	0.40661	-0.07211	-0.20033
ER	0.15447	-0.1855	0.40661	1.00000	-0.15541	-0.13498
LEX	-0.24059	-0.07264	-0.07211	-0.15541	1.00000	0.66368
LIMP	-0.17172	-0.07144	-0.20033	-0.13498	0.66368	1.00000

Source: Eviews 11

Table 1 shows that the coefficient value of economic growth (LGR), exchange rates, export, and import is more than 0.8. The result shows that the regression model has multicollinearity. To overcome or eliminate multicollinearity, variable transformation method or first difference can be done by deriving the equation from all variables.

$$Y = \alpha_0 + \alpha_1INF + \alpha_2IR + \alpha_3LGER + \alpha_4LGEX + \alpha_5LGIMP \quad (2)$$

$$Y-Y(-1) = \alpha_0 + \alpha_1INF-INF(-1) + \alpha_2IR-IR(-1) + \alpha_3LGER-LGER(-1) + \alpha_4LGEX-LGEX(-1) + \alpha_5LGIM-LGIM(-1) \quad (3)$$

$$Y-LY = \alpha_0 + \alpha_1INF-LINF + \alpha_2IR-LIR + \alpha_3LGER-LLGER + \alpha_4LGEX-LLGEX + \alpha_5LGIM-LLGIM \quad (4)$$

$$DY = \alpha_0 + \alpha_1DLINF + \alpha_2DLIR + \alpha_3DLLGER + \alpha_4DLLGEX + \alpha_5DLLGIM \quad (5)$$

Y=Economic Growth
 INF=Inflation
 IR=Interest rate
 LGER=Exchange rate
 LGEX=Export
 LGIM=Import.

After deriving the equation of all variables, the result of multicollinearity is as follow in Table 2.

The table shows that after changing all variables into transformation form or first difference, all the coefficient values are <0.8. The result shows that the multicollinearity of the regression model in this study has been eliminated.

4.1.2. Autocollinearity test

The aim of this test is to know the correlation between the bullies error in each period of time in the regression model by seeing the value of Prob. Chi-squares. If the value of Prob. Chi-squares is under 5%, it shows that there is autocorrelation but if the value is above 5%, it shows that there is no autocorrelation.

Based on the Table 3, the value of Prob. Chi-square is 0.2031 and it is above 5%. It means that the model in this study does not have autocorrelation and it is safe.

4.1.3. Heteroscedasticity test

The aim is to test whether in the regression model there is inequality of variance of the residual in each period of time from each variable. The heteroscedasticity test, in the multiple regression model, is done by seeing the result of Prob. Chi-squares value in the Obs. R-squared column. If the probability value is under 0.05, it means that there is heteroscedasticity in the model and if the value is above 0.05, it means that there is no heteroscedasticity in the model.

Based on the result of heteroscedasticity test shown in Table 4, the probability value in the research is above 0.05 which means there is no heteroscedasticity problem in the regression model of this study.

4.1.4. Normality test

Normality test is used to determine whether the model that will be regressed, both independent and dependent variables, is normally distributed normally by seeing the result of probability value from Jarque-Bera. If the probability value is above 0.05, it means that the model in this study will be normally distributed, with the hypothesis:

H_0 = Not Normally distributed

H_1 = Normally distributed

Figure 1 shows that the probability value from Jarque-Bera is 0.819344 and it is above 0.05. It means that the model in this study and all independent and dependent variables are normally distributed.

Table 3: Autocorrelation test

F-statistic	1.410531	Prob. E	0.2568
Obs R-squared	3.187956	Prob. Chi-Squares	0.2031

Source: Eviews 11

Table 4: Heteroscedasticity test

F-statistic	1.623188	Prob. E	0.1273
Obs R-squared	24.85336	Prob. Chi-Squares	0.1654

Source: Eviews 11

4.1.5. Stability test

After proving that the model has no multicollinearity, autocorrelation, and heteroscedasticity, and the model is normally distributed, the next step is to test the stability of the model in this study. In this study, testing the model stability can be done in two ways and they are seeing the result of CUSUM test and CUSUM of Square test where there is a limitation line to see whether another line is in this border. It is shown in Figures 2 and 3 as follows:

Based in Figures 2 and 3, the blue line is between two red lines which means that all variables and model used in this study is stable. This is a proper condition in conducting research to see the short term and long term effect.

4.1.6. The result of ordinary least square

According to the explanation above, it is proven that all conditions to run multiple regression models (OLS) have been fulfilled. Therefore, this study can run the regression according to OLS model criteria. The following table shows the result of multiple-regression estimation in this study.

Table 5 shows the result of multiple linear regression where inflation (INF) does not affect the economic growth but it has positive relationship with the economic growth, interest rates (IR) not affects the economic growth and it has negative relationship with the economic growth, exchange rates (ER) affects the economic growth and it has positive relationship with the economic growth, export (EX) does not affect the economic growth and it has positive relationship with the economic growth, and import (IMP) affects the economic growth and it has positive relationship with the economic growth.

5. DISCUSSION

According to Table 5, inflation does not affect the economic growth but it shows positive relationship with the economic growth. This result is in accordance with studies conducted by Gokal (2004), Sattarov (2011), Semuel and Nurina (2015), and Sumon and Miyan (2017) who state that inflation in a country is under 5% in every year and it does not give effect on the price of basic necessities that also does not give effect on the economic growth. This statement is also proven by the inflation in Indonesia during the period of the research that never reached 3% in every quarter. According to the data of Bank Indonesia, the highest inflation only happened in

Figure 1: Normality test

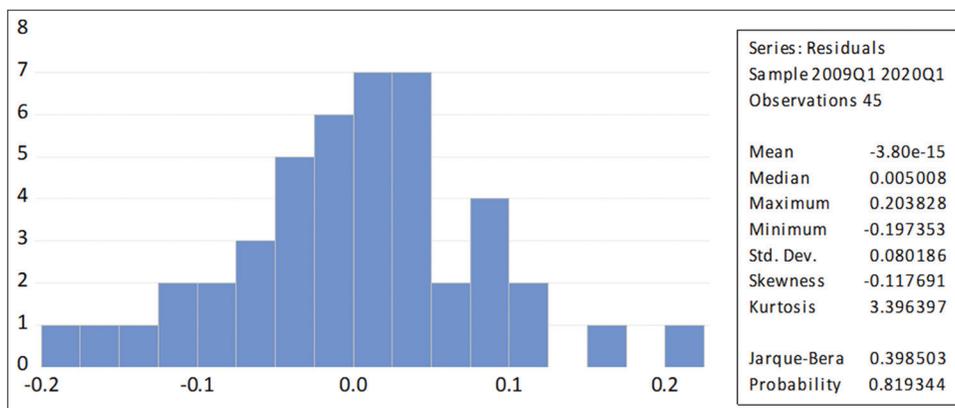


Figure 2: CUSUM test (OLS)

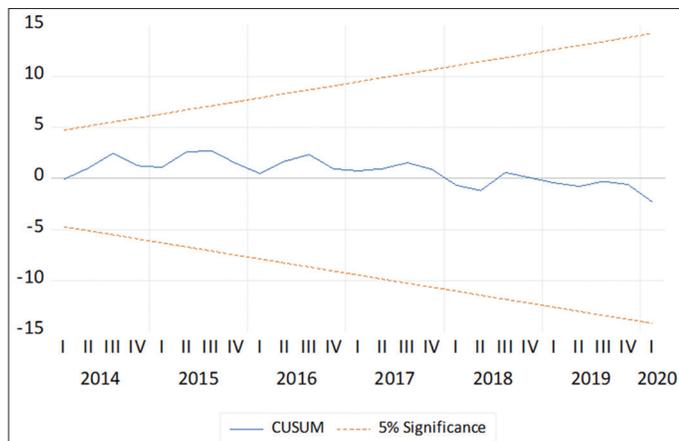


Figure 3: CUSUM of squares (OLS)

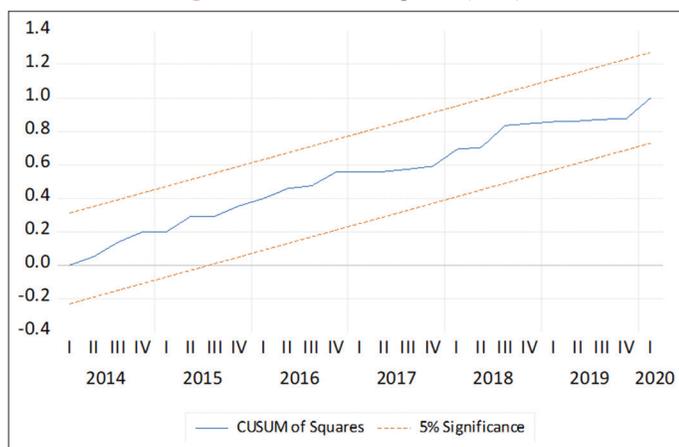


Table 5. Results of OLS (variable dependent growth)

Variable	Coefficient	Std. error	t-statistic	Prob.
INF	0.03365	0.02755	1.22144	0.2293
IR	-0.06811	0.01501	-4.53791	0.0001*
ER	1.51656	0.09001	16.84801	0.0000*
EX	0.21202	0.22231	0.95374	0.3461
IMP	0.38953	0.14913	2.61198	0.0127*
C	-8.89348	2.30650	-3.85584	0.0004
R-squared		0.94245	AIC	-1.9648
Adj. R-squared		0.93508	SC	-1.7239
F-stat		127.7408	HQC	-1.8750
Prob. (F-stat)		0.00000	DW stat	2.6004

Source: Eviews 11

fourth quarter in 2014 where price increases happened due to the 2% increase of the domestic oil price, in November. Other than most of basic necessities price that does not increase, people's consumption behavior that does not change also make the inflation has no impact toward the economic growth (Fischer, 1983; Melo and Carneiro, 2000; Khan, 2004). People's consumption behavior that never change make the demand and supply also does not change (Henchion et al., 2017) that makes people prefer to save their money in the form of precious metals and stocks rather than savings and deposits (Suppakitjarak and Krishnamra, 2016).

Table 5 also shows that interest rate affects the economic growth and it shows negative relationship with the economic growth. This

result is in accordance with the studies conducted by Giovanni and Shambaugh (2008), Udoka and Roland (2012, Harswari and Hamza (2017) and Salami (2018) who stated that the low interest rate in a country can increase the investment and increase the economy because increased investment can reduce unemployment and poverty. Besides, interest rate can also control the inflation that was proven by the success of central bank of Indonesia in suppressing the quarterly inflation under 5%. Although interest rate theoretically can increase the investment and people's consumption activity, in fact Indonesian people prefer to save their money for their future. It proves that Indonesia government has not been able to guarantee economic stability for them. One of real examples is the number of unemployment in Indonesia that is still high according to the data of Central Bureau of Statistic of Indonesia and the number is 6.88 million people or 4.99% of unemployment per February 2020. Another example is that many Indonesian people seek for a job in foreign countries such as Malaysia, Singapore, Hongkong, some East Asian countries, and some Middle-east Asian countries and at the end of 2019, 276.553 people were recorded by Central Bureau of Statistic of Indonesia worked in foreign countries.

This study also shows that exchange rate affects the economic growth and it has positive relationship with the economic growth. This result is in accordance with the studies conducted by Chughtau (2015), Jakob (2016), Aslam (2016) and Kala et al. (2018) who stated that the strong domestic currency against foreign currencies will also increase the economic growth through the free trade in which companies of goods services sector export their products and gain more profit from it. Companies can use this profit to build new branch companies in the areas that are still lack in using human resources and they can use these resources for production factor (Bettencourt et al., 2015). The income that is obtained from these labors can be used to increase domestic's economy and it also can increase the national's economy from income tax, income retribution, cargo costs, and other incomes that can give contribution for the economic growth (Birnlleitner, 2013; Cyril, 2017; Shahnazarian et al., 2017).

Another variable is the different result in the free trade where export does not affect the economic growth and import affects the economic growth and both of them has positive relationship with the economic growth. The result of this study is in accordance with the study from Bruton (1989) who stated that a country implements a policy to make import as its short term income because there is a dependence on consumer behavior in consuming import goods more than local goods. The change of this behavior can increase the economic growth because the import goods are more expensive and they have better quality. The high price of the import goods can add the value in the customs and excise and taxes for the importer companies. This can cause give impact on the companies that produce domestic products loss their customers in their own country and they have to export their products to other countries that is also not easy. Their income will decrease and cannot cover the production cost that they spent. Therefore, exporting local or domestic goods does not affect on the increase of the economic growth. This study and statement is supported by studies conducted by Edwards (1993) and Giles and Williams

(2000) who underline the difference of commodity that is sold in exporter countries and importer countries and the quality of products from importer countries that are still lack compared to the products of exporter countries.

6. CONCLUSION

The economic growth of Indonesia as one of developing countries always show positive result in the last 10 years and answer the doubts of international community who predicted otherwise. This study proves that Indonesia is able to survive from any problems of global economy that nowadays other developed countries also face. It was proven by the exchange rate of Rupiah which strengthens toward USD and supported by the policy of central bank in setting the low interest rate and controlling the quarterly inflation under 3%. However, there are some improvements that should be done by Indonesia government, especially in changing people's consumption behavior that still depends on import products. Moreover, Indonesian people still prefer saving their money rather than spending them on secondary and tertiary goods and it shows that Indonesia government should provide real guarantee for the future economy through their policies that support Indonesian people and domestic business to promote domestic product internationally.

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