

The Effect of Export Value, Exchange Rate, and Inflation on Indonesia's Foreign Exchange Reserves

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Abstract

Foreign exchange reserves are used to finance imbalance in the balance of payments or are used in the context of monetary stability, namely by intervening in the foreign exchange market to maintain exchange rate stability. The purpose of this study is to analyze the effect of export value, rupiah exchange rate and inflation simultaneously and partially on Indonesia's foreign exchange reserves. The data collection method in this study was through non-participant observation. The data used in this study use secondary data. The analysis technique used in this research is multiple linear regression analysis techniques. The results of this study indicate that simultaneously the export value, dollar exchange rate, and inflation have an effect on foreign exchange reserves. Partially, the export value and the dollar exchange rate have a positive and significant effect on foreign exchange reserves. Meanwhile, inflation has a negative and insignificant effect on foreign exchange reserves.

Keywords: *Exports Value, Exchange Rate, Inflation, Foreign Exchange Reserves*

1. Introduction

International trade is a form of economic cooperation between two or more countries that provides direct benefits. In addition to complementary needs between countries, international trade can provide benefits for participating countries such as foreign exchange reserves. Foreign exchange reserves can be an important indicator to see the extent to which a country can conduct international trade and to show the strength and weakness of a country's economic fundamentals (Andriani, 2015). The national development that is being carried out of course requires a very large cost, so that an adequate source of funding is needed. Foreign exchange reserves are one of the sources of funding for national development in Indonesia. Through international trade activities, Indonesia creates foreign exchange reserves in order to be able to support national development (Adriyansyah, 2016). Based on a Bank Indonesia report, with Indonesia's current reserve position which is able to finance imports for the next few months due to a surplus in the trade balance, and interest rate and inflation policies set by Bank Indonesia to a lesser extent help to smoothen economic activities such as export, import and investment. which is increasing. According to Tambunan (2001) foreign exchange reserves are foreign currency reserved at the central bank which is used for the purposes of financing development and foreign transactions such as imports, foreign debt payments, investment and other financing. This means that foreign exchange reserves have an important role in the economy.

One of the factors that can affect the country's foreign exchange reserves is exports (Dani, 2020). When a country produces a product in the country in abundance, with domestic needs that have been filled, there will be a surplus in supply. This supply surplus will later encourage countries to export. Export is one of the international trade activities which has an important role for the country's economy (Dewi, 2015). Indonesia has abundant resources that can be used as trading commodities. Natural resources, human resources and strategic location are important factors for Indonesia in creating comparative advantages. If managed properly, Indonesia's resources can improve people's welfare. Resources managed with high technology are expected to become Indonesia's mainstay commodities. Therefore, exports are one of the leading trade activities with abundant resources owned by Indonesia, ranging from factors of production to labor (Bejo, 2010). Having an abundance of production factors will increase productivity. With an increase in productivity, it will cause abundant available export products, so that Indonesia's export ability will increase (Dewi, 2017). This will cause the volume of Indonesian exports to also increase accompanied by an increase in export value.

The second factor that can affect foreign exchange reserves is the exchange rate (Agustina, 2014). When the value of the currency depreciates, the value of the domestic currency will weaken against the value of the foreign currency, which in turn

causes the price of export commodities to become cheaper. However, when the value of the domestic currency is appreciated, the value of the domestic currency will increase against the value of the foreign currency, so the price of export commodities will become more expensive. The existence of this exchange rate greatly determines how the export value of a commodity is carried out by an exporting country (Gebreyesus, 2015). This will have an impact on increasing the volume of exports of these commodities accompanied by an increase in the country's foreign exchange reserves

The third factor that can affect foreign exchange reserves is inflation. Continuously increasing inflation can cause the prices of goods to rise, including raw materials for carrying out a production activity. The increase in the price of raw goods causes producers to experience a decrease in the quantity of production and ultimately will affect the value of exports (Rahardja and Manurung, 2008). The increase in inflation will cause exporters to be unable to produce optimally, causing exports to decline because producing export commodities requires relatively high costs. Indonesia as an exporter country is certainly very much influenced by the domestic inflation rate. When inflation is high, the price of export commodities will increase, then followed by a decrease in the value of exports which will reduce the country's foreign exchange reserves.

2. Literature Review

Dian (2014)

Yang found that inflation has a negative effect on export volume. When the inflation rate is high, it will cause export commodity prices to increase, so that commodity prices become less competitive. A less competitive product price will reduce demand, which will cause the export volume of this commodity to decrease. The decreasing volume of export commodities will be accompanied by a decline in the country's foreign exchange reserves.

Pridayanti (2017)

Which states that the increase or decrease in foreign exchange reserves will be seen from the monetary traffic balance. The size of the accumulation of a country's foreign exchange reserves is usually determined by trade activities such as exports and imports with the flow of capital in that country. The adequacy of foreign exchange reserves is determined by the amount of import demand and the exchange rate system used.

Purba (2011)

Those who have the opinion that when the value of the domestic country's currency depreciates, the price of export products tends to be cheap, then it will cause the export volume of a commodity to increase. However, if the value of the domestic currency appreciates, the prices of export products are relatively more expensive, which causes the volume of export to decline. Exchange rate is a key for a country to transact with the outside world.

Lukman (2012)

Finds the result that exports are one of the sources of foreign exchange that plays an important role in enhancing the country's economic development. The higher the volume of commodities, the higher the export value produced by Indonesia, so that the foreign exchange reserves generated from these export activities will also increase.

3. Problem Formulation

The problem formulation of this study is:

- a) The export value, dollar exchange rate, and inflation simultaneously affect Indonesia's foreign exchange reserves in 2014-2019.
- b) The export value partially has a positive effect on Indonesia's foreign exchange reserves in 2014-2019.
- c) The dollar exchange rate partially has a positive effect on Indonesia's foreign exchange reserves in 2014-2019.
- d) Inflation partially has a negative effect on Indonesia's foreign exchange reserves in 2014-2019.

4. Research Methodology

The research design used is an associative quantitative approach. This research was conducted in Indonesia using reports published by the Ministry of Trade of the Republic of Indonesia, the Central Bureau of Statistics, as well as those related to the object of research. The object of this research is the foreign exchange reserves which are thought to be influenced by the value of exports, the dollar exchange rate, and inflation. The data collection method used in this study was non-participant observation. This research includes quantitative data using secondary data sources. The data analysis technique used is multiple linear regression analysis.

5. Analysis Result

1) Descriptive Statistical Analysis Results

Table 1. Descriptive Statistical Analysis

Variable	N	Min.	Max.	Mean	Std. Deviation
Export Value	72	9,17	9,70	9,5212	0,10821
Exchange Rate	72	9,34	9,63	9,5053	0,06741
Inflation	72	2,48	8,36	4,3947	1,66517
Foreign Exchange Reserves	72	11,44	11,92	11,6644	0,09479

Source: Processed Data, 2021

Based on the results of descriptive statistical analysis, it can be described as follows:

- 1) The export value variable (X1) has a minimum value of 9.17 and a maximum value of 9.70. The average value is 9.5212 with a standard deviation of 0.10821 which means that there is a deviation in the export value at the average value of 0.10821.
- 2) The exchange rate variable (X2) has a minimum value of 9.34 and a maximum value of 9.63. The average value is 9.5053 with a standard deviation of 0.06741 which means that there is a deviation in the exchange rate at the average value of 0.06741.
- 3) The inflation variable (X3) has a minimum value of 2.48 and a maximum value of 8.36. The average value is 4.3947 with a standard deviation of 1.66517 which means that there is a deviation in the value of inflation at the average value of 1.66517.
- 4) The foreign exchange reserve variable (Y) has a minimum value of 11.44 and a maximum value of 11.92. The average value is 11.6644 with a standard deviation of 0.09479 which means that there is a deviation in the value of foreign exchange reserves at an average value of 0.09479.

2) Multiple Linear Regression Analysis

Table 2. Multiple Linear Regression Analysis Test Results

Variabel	<i>Unstandardized Beta</i>	<i>Std. Error</i>	t-count	<i>Sig.</i>
(Constant)	5,198	1,438	3,614	0,001
Export Value	0,383	0,068	5,622	0,000
Exchange Rate	0,309	0,126	2,454	0,017
Inflation	-0,027	0,005	-5,383	0,000

Source: Processed Data, 2021

Based on the results of the Multiple Linear Regression Analysis Test presented in the table, a regression equation can be made, as follows:

$$Y = 5.198 + 0.383X_1 + 0.309X_2 - 0.027X_3$$

3) Classic assumption test

- The normality test aims to test whether the regression model has a normal distribution or not. To detect data normality, Kolmogorov-Smirnov is used with the criteria if Asymp.Sig (2-tailed) is greater than the 0.05 level of significance, it can be concluded that the residuals are normally distributed, but vice versa, if Asymp. Sig (2-tailed) is smaller from a significant level of 0.05, the data has an abnormal distribution. Based on the test results, it can be seen that the Asymp. Sig (2-tailed) of 0.200 is greater than the level of significant 5 percent, namely 0.05 ($0.200 > 0.05$), so it can be concluded that the variables used in this study are normally distributed.
- Multicollinearity test aims to test whether the regression model found a correlation between the independent variables. The presence or absence of multicollinearity in the regression model can be detected by looking at the tolerance value and the variance inflation factor (VIF) value. A regression model is said to have no symptoms of multicollinearity if the tolerance value is more than 10 percent (0.10) and the VIF value is less than 10. Based on the test results, it can be seen that the tolerance value of each variable is greater than 10 percent (0.10), and the VIF of each of these variables is less than 10, so it can be concluded that the regression equation model in this study is free from multicollinearity.
- The autocorrelation test aims to test whether a linear regression model has a correlation between confounding errors in period t with confounding errors in period $t-1$ (Ghozali, 2016). Autocorrelation test was performed using the Durbin-Watson test. A regression model is said to have no autocorrelation with the terms $du < dW < 4-du$. Based on the test results, it can be seen that the Durbin Watson (dW) value is 1.961. The value of du with $k = 3$ and $N = 72$ is 1.7054 and the value of $4-du$ is 2.2946. Thus, $du < dW < 4-du$ is $1.7054 < 1.961 < 2.2946$. This shows that the regression model used does not occur autocorrelation so that the equation model can be used in this study.
- This heteroscedasticity test aims to determine whether in the regression model there is an inequality of variance from the residuals of one observation to another using the Glejser test. A good regression model is one that does not contain heteroscedasticity symptoms or has a homogeneous variance. If the independent variable under study does not have a significant effect or the significance value is more than 0.05 on the absolute residual value, it means that the regression model does not contain heteroscedasticity symptoms. The results of the heteroscedasticity test show that the significance value of each variable used in this study for the absolute residual value is greater than 0.05 so it can be concluded that the regression equation model used in this study does not contain heteroscedasticity symptoms.

4) Model Feasibility Test

1. F test

This test is conducted to determine the effect of the independent variables simultaneously on the dependent variable. If the significance value is less than 0.05, simultaneously the independent variables used have an effect on the dependent variable. The results of the F test test show that the significance value of 0.000 is smaller than 0.05. This means that simultaneously the export value (X_1), Exchange Rate (X_2), and inflation (X_3) affect Indonesia's foreign exchange reserves in 2014-2019.

2. Determination Coefficient Test (R^2)

The coefficient of determination test measures how far the variance of the independent variable is able to explain the variance of the dependent variable. The coefficient of determination used in this study is r square, because if a variable is added to the regression model and the results are not significant, it will increase which is not too high. The results of the determination coefficient test in this study can be seen that the value of R Square is 0.597 or 59.7 percent, which means that 59.7 percent of the variance of foreign exchange reserves is influenced by the variance of export value, exchange rate and inflation, while the rest is 40, 3 percent is influenced by other variables that are not explained in this study.

3. T test

Testing the Effect of Export Value (X1) on Foreign Exchange Reserves (Y)

The test results show that the export value has a positive regression coefficient of 0.383, tcount of 5.622, and a significance value of 0.000. The significance value of $0.000 < 0.05$ means that the export value has a positive and significant effect on foreign exchange reserves. Foreign exchange reserves are an important source of funding used by Indonesia to carry out national development, which is kept and accounted for by Bank Indonesia (Almutmainah, 2016). Exports have an important role in economic development, because they are able to generate foreign exchange reserves which are used in development. Therefore, exports are one of the important factors that can affect the country's foreign exchange reserves. When a country has high productivity, the opportunities for conducting international trade in the form of export activities will increase. The more exports made by the country, the country's foreign exchange reserves will also increase. The results of this study are in line with research conducted by Siantury (2011) which in their research found that exports had a positive effect on foreign exchange reserves.

Test of the Effect of Exchange Rate (X2) on Foreign Exchange Reserves (Y)

The test results show that the exchange rate has a positive regression coefficient of 0.309, tcount of 2.454, and a significance value of 0.017. The significance value of $0.017 < 0.05$ means that the exchange rate has a positive and significant effect on foreign exchange reserves. Currency exchange rate or exchange rate is the most important macroeconomic indicator because it influences various world business decisions, one of which is in the decision of export activities (Genc, 2014). The foreign exchange rate for exports directly affects the success of policies in terms of reducing the foreign trade deficit. Each currency exchange rate will experience appreciation or depreciation. When there is appreciation, the exchange rate of the domestic currency against foreign currencies will strengthen, while when depreciation of the domestic currency exchange rate against foreign currencies will weaken, these two conditions will affect a country's exports (Rahmawati, 2020). If the domestic currency depreciates, this means that the domestic currency is devalued (in other words, the foreign currency is strengthening). This causes the price of foreign goods to be higher than the price of domestic goods. Thus, this will encourage exports and have a positive impact on the trade balance (Yee et al, 2016). The results of this study are in line with research conducted by Wijaya (2011) which states that the exchange rate has a positive effect on foreign exchange reserves.

Testing the Effect of Inflation (X3) on Foreign Exchange Reserves (Y)

The test results show that inflation has a negative regression coefficient of -0.027, tcount of -5.383, and a significance value of 0.000. The significance value of $0.000 < 0.05$ means that inflation has a negative and significant effect on foreign exchange reserves. If the inflation rate is high, the prices of domestic goods and services will increase, which will hamper economic activity. This means that the required amount of foreign exchange reserves is more used to conduct foreign transactions (Boediono, 2001). The higher the inflation rate of a country, the more foreign exchange that the country must use in order to be able to overcome economic constraints, so that the country's foreign exchange reserves will be lower. In other words, the higher the inflation rate of a country, the lower the foreign exchange reserves that the country has. The results of this study are in line with research conducted by Agustina and Reny (2014) by concluding that a country's inflation rate has a negative effect on foreign exchange reserves.

6. Conclusion

Based on the research results that have been described, it can be concluded as follows: The simultaneous test results show that the value of exports, exchange rates, and inflation have a significant effect on Indonesia's foreign exchange reserves in 2014-2019. The coefficient of determination (R^2) of 0.597 or 59.7 percent indicates that the fluctuation of the foreign exchange reserve variable in Indonesia is influenced simultaneously by the variables of export value, exchange rate and inflation, while the remaining 40.3 percent is influenced by other variables. not described in this study. The export value (X1) partially has a positive effect on Indonesia's foreign exchange reserves in 2014-2019. This shows that, as the country's exports increase, the country's foreign exchange reserves will also increase. The exchange rate (X2) has a positive effect on Indonesia's foreign exchange reserves in 2014-2019. This shows that the higher the exchange rate of a country's currency, the country's economy is strong so that more foreign exchange reserves are obtained. Inflation (X3) partially has a negative effect on Indonesia's foreign exchange reserves in 2014-2019. This shows that, the higher the inflation rate of a country, the lower the foreign exchange reserves owned by the country.

7. References

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