

ANALYSIS OF THE INFLUENCE OF EXPORTS, IMPORTS, AND THE RUPIAH EXCHANGE RATE ON INDONESIAN FOREIGN EXCHANGE RESERVES PERIOD 1990 – 2020

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ABSTRACT

The study was to analyze the impact of export, import and exchange rate toward Indonesia foreign exchange reserve during the 1990-2020 periods. According to its sources the type of data used in the study is secondary data obtained from the official Statistical Central Agency's Website and the World Bank. Simultanly, all the variables in the model analysis (export and exchange rate) are significant to the Indonesian foreign exchange reserve. The impact is partially indicated by the regression coefficient value of 0.801, which indicates that exports have a positive and significant impact on the 1990-2020 periodes. So does the regression coefficient value of exchange rate variable or rupiah exchange rate of 0.211 indicate that exchange rate has a positive and significant impact for Indonesia's 1990-2020 periods.

Keywords: *Exports, import and exchange rate*

INTRODUCTION

The information revolution and technological advances that occurred in the current era of globalization have increasingly increased opportunities for business activities, especially through the development of the internet and e-commerce. Along with this development of globalization, export activities are becoming increasingly important because they are one of the drivers of the economy for a country. The era of globalization and trade freedom has pushed competition between countries to become increasingly stringent. Every country, including Indonesia, is trying to increase the quantity and quality of its exports. Each country continues to increase the competitiveness of its products to make them more efficient and marketable in the international market.

Indonesia as a country that has an abundance of human resources should be able to make this factor an advantage to produce goods and services in large quantities. In addition, to increase the production capacity of goods and services to be exported is largely determined by the ability of human resources to use existing technology as well as expertise to create a new technology that will be used to increase the production capacity of goods and services that have advantages over with other countries that produce the same product. The ability of a country to produce high quality products will make the country a winner in global competition. This will bring

economic benefits and be able to increase the income of the country concerned. Saputra, dkk (2016)

One of the important funding sources used by Indonesia to carry out national development is foreign exchange. Foreign exchange reserves can be an important indicator to see the extent countries can carry out international trade and to show the strength and weakness of their economic fundamentals. Every country tries to increase its foreign exchange reserves by implementing various policies. Zhang (2021), China has the largest foreign exchange reserves in the world so that on the one hand it will cause very high management costs and on the other hand it will cause economic demand to be more objective. Victor (2015), although several Latin American countries have poor economic performance, the accumulation of foreign exchange reserves from 2006 has increased due to short-term debt payments, quarterly import payments and protection of capital flows abroad. Based on article 13 of Law no. 3 of 2004, to Bank Indonesia in order to implement monetary policy is given the authority to manage foreign exchange reserves. In managing foreign exchange reserves, Bank Indonesia can carry out various foreign exchange transactions and can receive loans (Ghandi, 2006:39).

Over the past thirty-one years, Indonesia's foreign exchange reserves have tended to increase continuously, although they have fluctuated. Indonesia's foreign exchange reserves during the 1990-2020 period averaged US\$ 59,412 million. The highest amount of foreign exchange reserves was achieved in 2020 of US\$ 135,916 million, while the lowest was in 1990 of US\$ 8,657 million. One of the efforts to increase foreign exchange reserves is by increasing the activity of exporting goods and services abroad. The more export activities, the greater the foreign exchange earned by a country. Generally, goods exported by Indonesia consist of two kinds, namely oil and natural gas (oil and gas) and non-petroleum and natural gas (non-oil and gas). Indonesia's oil and gas exports were also affected by rising world oil prices and exchange rates as well as production capacity. Non-oil and gas exports are still dominated by the manufacturing, mining and agricultural sectors with the main commodities including mineral fuels, fats and vegetable animals, as well as iron and steel.

Many factors can affect foreign exchange reserves, as shown in several research results. Factors of exports, imports, exchange rates, and inflation simultaneously affect Indonesia's foreign exchange reserves in 2007-2014. Meanwhile, partially, exports, imports and exchange rates have a positive and significant effect on Indonesia's foreign exchange reserves. Inflation has a significant negative effect on Indonesia's foreign exchange reserves (Genta, 2019). Foreign exchange reserves are also significantly affected by the movement itself. Exports have a negative effect, but imports and exchange rates have a positive effect, although not significantly to foreign exchange reserves in Indonesia (Uli, 2016). In addition, foreign exchange reserves have a negative effect on foreign debt, and imports have a positive effect on the US dollar exchange rate in the Southeast Asia region (Rahma and Mustika, 2021). Dananjaya et.al. (2019), exports and exchange rates had a significant and positive effect on Indonesia's foreign exchange reserves in 1999-2018. However, inflation has a significant and negative effect on Indonesia's foreign exchange reserves. Agustina (2014), simultaneously exports, imports, the rupiah exchange rate and the inflation rate affect Indonesia's foreign exchange reserves. Partially, exports have a significant positive effect on Indonesia's foreign exchange reserves and the rupiah exchange rate has a significant negative effect. Sayoga and Tan. (2017), foreign debt and export values have a positive and significant effect on Indonesia's foreign exchange reserves, while the rupiah exchange rate has a negative and significant effect.

Indonesia's exports are expected to remain strong supported by global demand and price factors, although commodity prices themselves can be expected to experience moderation. In particular, the portrait of Indonesia's export performance during 1990-2020 continued to increase, even though the

condition of this increase was still fluctuating. Indonesia's average exports in that period amounted to US\$ 101,908 million. The highest amount of Indonesian exports was achieved in 2011 amounting to US\$ 203,497 million, while the lowest export occurred in 1990 of US\$ 25,675 million. The cumulative export value recorded a decline, especially during the pandemic, although it continued to be driven by an increase in the price of main commodities. In addition to exports, import activities have an impact on the economy of a country and its people. Large imports cause the demand for other countries currencies to increase, so that the domestic currency weakens. High imports will also reduce domestic production resulting in increased unemployment and decreased income so that purchasing power will also decrease. Uzma, et.al. (2022) indicate that imports are important for economic growth because they can absorb foreign technology into the domestic economy so that they can increase exports and then become an engine for economic growth.

Indonesia's imports during 1990-2020 also experienced a fluctuating increase. The government continues to try to reduce dependence on imports by reducing import activities and implementing import substitution policies. The average import during the study period was US\$ 90,724 million. The highest amount of Indonesian imports was achieved in 2012 amounting to US\$ 191,691 million, while the lowest import occurred in 1999 US\$ 24,003 million. The fluctuating increase in import performance was aimed at supporting domestic activity to strengthen further. An increase in imports of raw materials and capital goods reflects an increase in domestic industrial activity, while imports of consumer goods will indicate an increase in people's purchasing power. Apart from exports and imports, developments in the exchange rate or exchange rate can also determine the amount of Indonesia's foreign exchange reserves. In addition, according to Lily, et.al. (2022) exchange rates affect firm value. James (2022) appreciation of the real exchange rate hinders economic growth even though the depreciation of the real exchange rate helps growth in the region. Domestic exchange rates are often valued against the US dollar almost all over the world. Cova, Pagano and Pisani (2015), if the demand for Euro increases against the United States Dollar, then the aggregate demand for United States Dollars decreases due to higher interest rates, while the external balance increases; the countries that amassed reserves continued to carry out trade surpluses, as they exported large amounts of the euro.

Countries that have small foreign exchange reserves will be vulnerable to exchange rate attacks because countries do not have sufficient foreign exchange reserves to intervene in the foreign exchange market to maintain the exchange rate. Changes in exchange rates reflect official perceptions from the government regarding changes in economic fundamentals that require exchange rate adjustments or the existence of strong market pressures that affect foreign exchange reserves, forcing the need for exchange rate adjustments (Simorangkir and Suseno. 2004:21). The average rupiah exchange rate against the US dollar in Indonesia was IDR 8,561, also during the same study period. The highest number of rupiah exchange rates against the United States dollar occurred in 2018 of Rp. 14,481 per dollar, while the lowest exchange rate occurred in 1999 Rp. 1,843 per United States dollar. As is known, in order to prevent the depletion of foreign exchange reserves, the Government on August 14, 1997 adopted a policy to float the rupiah by adopting a free floating exchange rate system (Simorangkir and Suseno. 2004: 46).

LITERATURE REVIEW

1. Foreign Exchange Reserves

Unexpected fluctuations in foreign currency exchange rates have become an important concern for companies with international involvement since the introduction of flexible

exchange rate systems. Movements in exchange rates can change a company's operating cash flow, revenues, and expenses, affecting both the value and risk of cash flows. Kiyamaz, H. (2003)

Adler and Dumas (1984) argue that a company exhibits exchange rate exposure if its value is affected by changes in exchange rates. Exchange rates may affect a country's value through various channels. Export-oriented countries will benefit from the depreciation of the local currency, because their products will become more affordable to outside or international markets. This will result in an increase in production costs and a subsequent reduction in profits and firm value. Therefore, it is necessary to have a concept in reserve foreign exchange so that foreign currency exchange rates do not change in value.

Based on the concept of international reserves and foreign currency liquidity (Concepts of International Reserves and Foreign Currency Liquidity) by the International Monetary Fund (IMF), then the Balance of Payments and International Investment Position Manual, sixth edition (BPM6) establishes the concept underlying foreign exchange reserves. A country's international reserves refer to ".....the external assets available to and controlled by monetary authorities to meet balance of payments financial needs, to intervene in exchange markets to influence currency exchange rates, and for other related purposes (such as: maintaining confidence currency and the economy, as well as the basis for foreign loans)" (BPM6, paragraph 6.64). Furthermore, the International Monetary Fund (in Ghandi, 2006:3), defines foreign exchange reserves which are also known as international reserves and foreign currency liquidity (IRFCL) or official reserve assets as all foreign assets controlled by monetary authorities and can be used at any time. time, in order to finance balance of payments imbalances or in the framework of monetary stability by intervening in the foreign exchange market and for other purposes. According to Adler (2016: 8), foreign exchange reserves are deposits by central banks and monetary authorities. The central bank in Indonesia is Bank Indonesia and the monetary authorities are Bank Indonesia, the Ministry of Finance and the National Development Planning Agency (Bappenas).

In particular, foreign exchange reserves are used to support various purposes, including to: (1) support and maintain confidence in monetary policy and exchange rate management, including intervention capacity in support of the national currency or common currency; (2) limit external vulnerabilities by maintaining foreign currency liquidity to absorb stress during times of crisis or when access to loans is restricted, and by doing so; (3) provides a level of market confidence that a country can fulfill its external obligations; and (4) demonstrating the support of the domestic currency with external assets; (5) helping the government meet its foreign currency needs and external debt obligations; and (6) maintaining reserves for national disasters or emergencies.

Reserve management strategies should be consistent with and supportive of a country's or union's policy environment, especially in terms of monetary and exchange arrangements. Evaluation of alternative reserve management strategies and the implications of each for reserve adequacy will likely be facilitated by a cost-benefit analysis of maintaining reserves. Reserve management strategies also need to incorporate external debt management strategies for the purpose of reducing external vulnerabilities.

2. Export

The definition of export and import is officially regulated in Law Number 7 of 2014 concerning Trade. Export is the activity of removing goods from the customs area. Meanwhile, individual exporters, institutions or business entities, both in the form of legal entities and non-legal entities, are referred to as exporters. Export transactions can have an impact on increasing the country's foreign exchange. In theory, exports are goods and services that are produced domestically and sold freely abroad (Mankiw, 2012: 230). For developing countries, exports open up employment and income opportunities to pay for products that cannot be produced domestically and for the need for advanced technology (Salvatore, 2013:6)

According to Sukirno (2008: 206), exports are purchases by other countries of goods made by domestic companies. The most important factor determining exports is the ability of the country to produce goods that can compete in foreign markets. Exports will directly affect national income. However, the opposite relationship does not always apply, that is, an increase in national income does not necessarily increase exports because national income can increase as a result of an increase in household spending, corporate investment, government spending and the replacement of imported goods with domestically made goods. According to Wahyu Puji Astuti (2010: 6), export is the activity of selling goods and services from within the country to abroad. Furthermore, people who sell goods abroad are called exporters. In general, goods exported are cheaper than the same goods abroad. Export activities carried out by entrepreneurs or individuals can bring benefits to the country, the profits are in the form of foreign exchange, the more exports are made, the greater the foreign exchange earned by the country. Goods exported by Indonesia include oil and gas and non-oil and gas. Oil and gas goods include petroleum and liquefied natural gas, while non-oil and gas exports are industrial, agricultural, plantation and forestry products.

3. Import

Broadly speaking, policies in the import sector only concern tariffs, various import quotas, and as in the import sector also foreign exchange policies, both through exchange control and various foreign exchange exchange policies. As in Law Number 7 of 2014 concerning Trade, the definition of import is the activity of entering goods into the Customs area. Meanwhile, individual importers,

institutions or business entities, both in the form of legal entities and non-legal entities, are importers. Import transactions will have an impact on reducing the country's foreign exchange. In calculating Gross Domestic Product, goods and services originating from imports are not part of domestic output, so imports must be deducted from Gross Domestic Product.

According to Wahyu Puji Astuti (2010:22), import is an activity of buying goods or services from other countries. In general, purchases of goods are goods that cannot be produced independently or goods that are cheaper than the domestic market. The person or institution carrying out the import activity is called the importer. The interest of importers in carrying out import activities is because they get profits. These advantages are obtained because the price of goods in the country is more expensive than abroad. Types of goods imported can be consumer goods, capital goods, raw materials and auxiliary materials. Some of the purposes for which imports are carried out include: (a) meeting domestic needs in the form of raw/auxiliary materials, capital goods, and consumer goods; (b) acquire modern technology; (c) the need for goods can be reached by the community; (d) maintaining price stability for domestic products. Usually the scarcity of a domestic item will raise the price of the item, thus requiring imports to stabilize the price of the product.

4. Exchange Rate

According to Aninditha and Reed (in Agustina and Reny, 2008:63), the exchange rate is a relative price which is defined as the value of a currency against other currencies. It determines the purchasing power at least for goods traded from one currency value to another currency value. Changes in exchange rates have a significant effect on the prices of traded goods. Appreciation of the exchange rate in a country will lower the price of its exported goods and increase the price of imported goods for their trading partners. According to Sukirno (2010: 397), the exchange rate or what is commonly referred to as the exchange rate is the price or value of the currency of other countries expressed in the value of the domestic currency. "Foreign exchange rates can also be defined as the amount of domestic money needed, namely the amount of rupiah that is needed required to obtain one unit of foreign currency. The exchange rate is determined by the amount of demand and supply in the market for that currency. According to Blanchard and Johnson (2013: 447), the real exchange rate is equal to the nominal exchange rate (the price of the domestic currency in a foreign currency framework) multiplied by the domestic price level divided by the domestic price level. Economists distinguish exchange rates into two: the nominal exchange rate and the real exchange rate (Mankiw, 2007:128). The nominal exchange rate is the relative price of the currencies of two countries. The real exchange rate is the relative price of goods between two countries.

There are three main factors that influence the demand for foreign exchange (Simorangkir and Suseno, 2004:6-7), including: First, the import payment factor. Second, the capital outflow factor. Third, speculative activities. Meanwhile, foreign exchange supply was influenced by two main factors. First, the factor of acceptance of export proceeds. Second, the factor of capital inflow (capital inflow). The greater the inflow of capital, the exchange rate will tend to strengthen. The inflow of capital can be in the form of receiving foreign debt, placement of short-term funds by foreign parties (Portfolio investment) and foreign direct investment (foreign direct investment).

METHODOLOGY

The type of data used in this study is secondary data obtained from official websites of the Central Bureau of Statistics and the World Bank. The nature of the research data is included in quantitative data consisting of export, import, exchange rate and Indonesia's foreign exchange reserves based on the time series during the period 1990 – 2020. The method of analysis in this study uses quantitative analysis, namely data processing in the form of input and output taken from the literature mentioned above. This study uses the econometric analysis method, namely the multiple regression model using the simple least squares method OLS (Ordinary Least Square) with the following models:

$$\ln FER_i = \beta_1 + \beta_2 \ln EXP_{2i} + \beta_3 \ln IMP_{3i} + \beta_4 \ln ER_{4i} + u_i \dots\dots\dots (1.1)$$

where :

- $\ln FER$ = Logarithm natural variabel Foreign Exchange Reverse (foreign exchange reserves, in million US\$)
- $\ln EXP$ = Logarithm natural variabel Exsport (exports, in million US\$)
- $\ln IMP$ = Logarithm natural variabel Import (imports, in million US\$)
- $\ln ER$ = Logarithm natural variabel Exchange Rate (US\$ exchange rate against Rupiah)
- u = Error rate
- β_1 = Intercept or constant
- β_2, β_3 dan β_4 = Regression coefficient or regression parameters

RESULTS

Descriptive statistics in this study focused on presenting data in tabular form and narrative explanations as a basis for decision making. The form of descriptive statistical analysis in this section is focused on measuring the average, minimum and maximum values, especially for the variable foreign exchange reserves during the 1990-2020 period. The results of the descriptive statistical calculations are shown in Table 1 below.

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Foreign Exchange Reserves (Million US\$)	31	8657	135916	1841789	59412.55	44715.356
Exsport (Million US\$)	31	25675	203497	3159158	101908.32	58844.218
Import (Million US\$)	31	24003	191691	2812464	90724.65	60534.702
Exchange Rate (US\$)	31	1843	14481	265411	8561.65	4180.923
Valid N (listwise)	31					

Source: Processed data

Based on Table 1. above, Indonesia's average foreign exchange reserves during the 1990-2020 period amounted to US\$ 59,412 million. The highest amount of Indonesia's foreign exchange reserves was achieved in 2020 of US\$ 135,916 million, while the lowest was experienced in 1990 of US\$ 8,657 million. Meanwhile, Indonesia's average exports in the same period amounted to US\$ 101,908 million. The highest amount of Indonesian exports was achieved in 2011 amounting to US\$ 203,497 million, while the lowest export occurred in 1990 of US\$ 25,675 million. Meanwhile, the average import during the study period was US\$ 90,724 million. The highest amount of Indonesian imports was achieved in 2012 amounting to US\$ 191,691 million, while the lowest import occurred in 1999 US\$ 24,003 million. Furthermore, the average rupiah exchange rate against the US dollar was IDR 8,561, also in the same study period. The highest number of rupiah exchange rates against the United States dollar occurred in 2018 of Rp. 14,481 per dollar, while the lowest exchange rate occurred in 1999 Rp. 1,843 per United States dollar.

Regression analysis in this study was carried out twice, bearing in mind that in the first analysis there were symptoms of multicollinearity in the classical assumption test. Thus, regression analysis is performed before and after data transformation using the stepwise exclusion method (stepwise exclusion regression method) to mitigate the occurrence of multicollinearity symptoms. Furthermore, the results of the regression analysis after transforming the data using the stepwise method exclude or delete the imported variables because these variables still show symptoms of multicollinearity, as shown in Table 2. below.

Table 2. Multiple Regression Calculation Results (OLS)

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-4.574	.626		-7.306	.000

2	InExport (Million US\$)	1.342	.055	.976	24.361	.000
	(Constant)	-4.188	.548		-7.643	.000
	InExport (Million US\$)	1.101	.085	.801	12.919	.000
	InExchange Rate (US\$)	.265	.078	.211	3.396	.002

a. Dependent Variable: InForeign Exchange Reserves (Million US\$)

Source: Processed data.

Parameter values obtained from multiple regression analysis as in Table 2 above, are formulated in the regression equation as follows:

$$\text{InForeign exchange reserves} = -4.188 + 0.801\text{In Exports} + 0.211\text{In Currency. (2)}$$

The intercept or constant value (β_1) is -4.188 which is the actual condition when exports, imports and exchange rates are 0 (zero). This indicates that if there is no increase in export, import and exchange rate activities by 1 (one) percent, the total foreign exchange reserves will experience a deficit of US\$ -4.188 million. In other words, if activity exports, imports and constant exchange rates, this could have an impact on a deficit in foreign exchange reserves of US\$ -4.188 million.

The value of the regression coefficient (β_2) of the export variable is 0.801 indicating that if Indonesia's export activity increases by US\$ 1 million, the total foreign exchange reserves will also increase by US\$ 0.801 million. The assumptions used for the increase in foreign exchange reserves are variable imports and the exchange rate/exchange rate remains constant and does not change. The findings in this study prove compatibility with the first hypothesis which suspects that exports have a positive effect on Indonesia's foreign exchange reserves for the 1990-2020 period.

The regression coefficient (β_4) of the exchange rate variable or the rupiah exchange rate against the US\$ is 0.211 indicating that if the rupiah exchange rate increases by US\$ 1, the amount of foreign exchange reserves will also increase by US\$ 0.211 million. The assumption used for the increase in foreign exchange reserves is that the export and import variables remain constant or do not change. The findings in this study are in accordance with the third hypothesis which suspects that the exchange rate has a positive effect on Indonesia's foreign exchange reserves for the 1990-2020 period. The ability to predict the effect of the three independent variables (exports, imports and exchange rates) on foreign exchange simultaneously is shown in Table 3 below.

Table 3. Determinant Coefficient Calculation Results

Model	R	R Square	Adjusted R Square	F Change	Sig. F Change
1	.976 ^a	.953	.952	593.469	.000
2	.983 ^b	.967	.965	11.532	.002

- a. Predictors: (Constant), lnExport (Million US\$)
- b. Predictors: (Constant), lnExport (Million US\$), lnExchange Rate (US\$)
- b. Dependent Variable: lnForeign Exchange Reserves (MillionS US\$)

Source: Processed data

Simultaneously all variables in the analysis model used (exports and exchange rates) have a significant effect on Indonesia's foreign exchange reserves. This can be seen from the statistical F value of 11.532 with a prob (F-statistic) = 0.002 < 0.01. Based on the Adjusted R-squared value, it can be stated that the contribution of all variables is 96.50 percent to Indonesia's foreign exchange reserves. So that it can be said, there were other variables that also influenced Indonesia's foreign exchange reserves during the 1990-2020 period of 3.50 percent, which in this study these variables were not examined.

The classical assumption test is a statistical requirement that must be met in multiple linear regression analysis based on Ordinary Least Square (OLS) used to determine whether the regression results produce a Best Linear Unbiased Estimator (BLUE). In OLS, the way to detect assumptions is by carrying out heteroscedasticity tests, autocorrelation tests, multicollinearity tests and normality tests. Normality test is done by looking picture of the Normal P-P Plot graph where The results of the study show that the dots spread in a linear direction from the bottom left to the top right. Thus, the research variables tested have symptoms of normality so that the variables studied can be said to have fulfilled the required classical assumption test of normality. Multicollinearity measurement is done by calculating the impact of the correlation between several independent variables and the *j*th independent variable (*j*th independent variable). Therefore we need to regress the *j*th variable on the remaining *k*-1 variables. The determinant coefficient in the R^2_j regression is then used to divide the variance of the estimated *j*th regression coefficient by the correction term. This kind of correction pattern is called the *Variance Inflation Factor* (VIF). (Fabozzi, FJ., Focardi, SM., Rachev, ST., and Arshanapalli, BG., 2014: 84). The results of detecting the presence or absence of multicollinearity symptoms using the *Variance Inflation Factor* (VIF) are as shown in Table 4 below.

Table 4. Multiple Regression Calculation Results (OLS)

Model	Correlations			Collinearity Statistics	
	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)					

2	InExport (Million US\$)	.976	.976	.976	1.000	1.000
	(Constant)					
	InExport (Million US\$)	.976	.925	.443	.306	3.263
	InExchange Rate (US\$)	.878	.540	.117	.306	3.263

a. Dependent Variable: InForeign Exchange Reserves (Million US\$)

Source: Processed data.

As shown in Table 4 above, it was found that the export (X_1) and exchange rate (X_3) variables had a VIF value > 1 , resulting in a widening of the confidence interval. As a rule of thumb, the default for VIF is often set at 10. A VIF exceeding 10 indicates an unfavorable effect, because multicollinearity and the independent variables may be removed from the regression (Fabozzi, FJ., Focardi, SM., Rachev, ST., and Arshanapalli, BG., 2014: 84). The mitigation of multicollinearity in this study uses the natural logarithm transformation (ln), so that it is known that only the export (X_1) and exchange rate (X_3) variables meet the standard VIF value limit below 10, namely 3,263 each. Thus, only the imported variable (X_2) after data transformation is carried out using natural logarithms still experience symptoms of multicollinearity, so it is variable the independent were excluded from the regression analysis. To detect whether there are symptoms of heteroscedasticity, it is done by looking at the graph plot between the predicted value of the dependent variable (Z_{pred}) and its residual (SD_{resid}). Detection of the presence or absence of these symptoms can be done by looking at the presence or absence of certain patterns on the *scatterplot* graph. The results of the heteroscedasticity test showed that there was no clear pattern, and the dots spread above and below the number 0 on the Y axis. Therefore, through the heteroscedasticity test in this study there were indications of heteroscedasticity symptoms. Meanwhile, to detect residual autocorrelation using the *Durbin-Watson* test method (*DW-test*). (Fabozzi, FJ., Focardi, SM., Rachev, ST., and Arshanapalli, BG., 2014: 97). The results of the calculation of the autocorrelation test using the Durbin Watson test with the number of independent variables ($k = 3$) and the amount of data ($n = 31$) is $DW = 1.255$, as in Table 5 below.

Table 5. Durbin Test - Watson

Model	F Change	df1	df2	Sig.F Change	Durbin-Watson
1	593.469	1	29	.000	

2	11.532	1	28	.002	1.255
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- a. Predictors: (Constant), lnExports (Million US\$)
- b. Predictors: (Constant), lnExport (Million US\$), lnExchange (US\$)
- b. Dependent Variable: lnForeign Exchange Reserves (Million US\$)

Source: Processed data

After performing the autocorrelation test, it can be seen in Table 5 that *Durbin Watson's* value of 1.255 is still between 0 and 4 as required (Gujarati, 2012: 97), which means that the model used has no autocorrelation problems.

Reporting Research Results

Based on the calculation of the partial test, it can be interpreted that exports have a positive and significant effect on foreign exchange reserves. Activities during exports in 1990-2020 as a whole were in a surplus position, compared to import activities that had been carried out by the government. This condition is also known as the net export surplus. The net export deficit as a result of high imports and decreased exports during this study period only occurred 8 (eight) times, namely in 1990-1992 and 2012-2014, and occurred in 2018-2019. Thus, overall there has been a net export surplus in Indonesia of 24 (twenty four) times during the last 31 (thirty one) years.

So it is very reasonable to find the results of research on the export variable showing a significant positive effect on Indonesia's foreign exchange reserves during the study period. This is because there are prospects Exports continued to improve so that it was alleged that they also had an impact on the export surplus position netto. In addition, optimism for the domestic economy which remains positive after achieving investment grade and conducive global financial market conditions also further supports the strengthening of foreign exchange reserves to maintain the resilience of the external sector in Indonesia.

Thus, overall, if Indonesia frequently exports goods to other countries, Indonesia will earn foreign exchange from importing countries, so the more goods are exported, the more foreign exchange will be earned. With the increasing value of exports, it shows that the country is receiving more and more income from foreign countries, or commonly referred to as receiving foreign exchange or foreign exchange which is one of the sources of state income. The results of the current research, especially on the findings of a positive and significant effect between export variables on foreign exchange reserves, are in contrast to the results of previous research conducted by Uli (2016). In his research it was found that the export variable had a negative and insignificant effect on foreign exchange reserves.

Furthermore, the calculation of the partial test in this study also shows the finding that the exchange rate has a positive and significant effect on foreign exchange reserves. The findings of the current

research also have similarities with the results of previous research conducted by Genta, Teguh Gema (2019) and Dananjaya, Jayawarsa and Purnami (2019). In particular, although they also have similar research results on the same variable, the research conducted by Uli (2016) goes deeper into the existence of a two-way relationship between the exchange rate and foreign exchange reserves.

Indirectly, the results of the current study regarding the positive and significant effect between exchange rate variables and foreign exchange reserves also have similarities with the results of previous studies conducted by Cova, Pagano and Pisani (2015), even though they use different types of currencies. His research results show that if the demand for Euro increases due to lower demand for US Dollars, then the aggregate demand for US Dollars falls due to higher interest rates, while external balances increase; the countries that amassed reserves continued to carry out trade surpluses, as they exported large amounts of the euro. This of course can also have an impact on the condition of foreign exchange reserves

DISCUSSION

In order to increase export activities and reduce greater dependence on imports, especially the government continues to promote efforts to encourage the rise of micro, small and medium enterprises (MSMEs) after being hit hard by the COVID-19 pandemic. Therefore it is necessary to increase creativity, digitization and private synergy with the government so that MSMEs have added value and competitiveness in the current national economy. In addition, what is no less important is building a national strategy within the framework of MSME development on the basis of policies regarding corporatization, capacity and financing. The hope is that these efforts can answer the challenges faced by MSMEs in Indonesia.

For this reason, there is a need for concrete support from other institutions to encourage MSMEs to innovate, improve product quality according to market tastes and direct exports, and utilize digital platforms to expand market access to foreign countries. In particular, Bank Indonesia as the reliable central bank continues to ensure the implementation of effective monetary policy in order to maintain price stability. This is because exchange rate stability can encourage price stability, especially price stability for goods originating from imports. In addition, Bank Indonesia needs to maintain a balanced exchange rate in order to support the trade balance so that it is maintained because an over-valued exchange rate can result in an unfavorable national trade balance and the economy.

The limitations in this study are as follows: (1) there are findings of multicollinearity symptoms so that it is necessary to transform the data using natural logarithms (\ln); (2) the current research uses independent variables which are limited to exports, imports and exchange rates or exchange rates, so that further research can be developed by studying other independent variables.

CONCLUSION

Indonesia's average foreign exchange reserves during the 1990-2020 period amounted to US\$ 59,412 million. The highest amount of Indonesia's foreign exchange reserves was achieved in 2020 of US\$ 135,916 million, while the lowest was experienced in 1990 of US\$ 8,657 million. In order to produce in-depth research findings, further research on export, import and exchange rate variables on foreign

exchange reserves was examined using multiple regression analysis techniques with the Ordinary Least Square (OLS) model. Regression analysis in this study was carried out twice, bearing in mind that in the first analysis there were symptoms of multicollinearity in the classical assumption test.

Thus, the regression analysis was carried out before and after the data transformation was carried out using the stepwise method (stepwise exclusion regression method) in order to mitigate the occurrence of multicollinearity symptoms. Simultaneously all variables in the analysis model used (exports and exchange rates) have a significant effect on Indonesia's foreign exchange reserves. This can be seen from the F-statistic value of 11.532 with a prob (F-statistic) = 0.002 < 0.01. Based on the Adjusted R-squared value, it can be stated that the contribution of all variables is 96.50 percent to Indonesia's foreign exchange reserves.

Partial influence is shown from the value of the regression coefficient of the export variable of 0.801 which indicates that exports have a positive and significant effect on Indonesia's foreign exchange reserves for the period 1990-2020. Likewise, the regression coefficient value of the exchange rate variable or the rupiah exchange rate is 0.211 indicating that the exchange rate has a positive and significant effect on Indonesia's foreign exchange reserves for the 1990-2020 period.

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