
Analysis of Indonesia's Foreign Exchange Reserves 2010-2021

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ABSTRACT: The purpose of this research is to analyze the factors that affect Indonesia's foreign exchange reserves. Factors related to changes in foreign exchange reserves include net exports, exchange rates, interest on foreign loans and special drawing rights. This analysis uses time series data for the period Q1-2010 to Q4-2021. This research method uses multiple linear regression analysis. The findings of this study are partially positive and significant effect of net exports on foreign exchange reserves ($p < 0.100$); Exchange rate against foreign exchange reserves ($p < 0.05$). Furthermore, foreign loans have a negative and significant effect on foreign exchange reserves ($p < 0.10$); special drawing rights (SDR) have a positive and significant effect on division reserves ($p < 0,05$). Simultaneously, net exports, exchange rates, interest on foreign loans and special drawing rights have an effect on Indonesia's foreign exchange reserves (Prob. < 0.05).

KEYWORDS: Foreign Exchange Reserves; Export Net; Exchange rate; Foreign Loan Interest; Special Drawing Rights

JEL : F4, F41, F42, F43

1. INTRODUCTION

Indonesia's foreign exchange reserves continue to increase. This increase occurred because Indonesia was active in international trade. International trade carried out by a country is of course to gain benefits such as earning foreign exchange and being able to meet domestic needs and to be able to achieve economies of scale in production (Krugman *et al.*, 2018). With the existence of international trade carried out by a country, of course the country will get remuneration from the trade, namely in the form of foreign exchange or foreign exchange. The reason or motive for the state to have foreign exchange reserves is like an individual holding money, namely for transactions, precautions and speculation.

The value of international trade, especially exports, has a positive influence on foreign exchange reserves. Therefore, the value of positive international trade will encourage an increase in the foreign exchange reserves owned by a country, whereas if it is negative, it will certainly reduce foreign exchange reserves (Simamora & Widanta (2021). In carrying out international trade activities the exchange rate is a determining factor, where the exchange rate has an influence on Indonesia's foreign exchange reserves, the same thing also happens to foreign exchange reserves in Serbia and North Macedonia, where the exchange rate has a positive effect (Bosnjak *et al.*, 2020).

The condition of foreign exchange reserves can be affected by transaction activities such as interest payments on foreign loans (Zehri, 2020). Indonesia's foreign loans have a very large amount and are considered less effective in their utilization. Then, Gallagher *et al.*, (2020) explained the importance of an allocation from the IMF called special drawing rights which aims to help overcome economic problems and also the financial stability of a country.

Changes in net export factors, exchange rates, foreign loan interest and special drawing rights can cause Indonesia's foreign exchange reserves to rise and fall. The data in Table 1 shows the amount of foreign exchange reserves fluctuating during the 2010-2021 period. Fluctuations in the value of foreign exchange reserves are closely related to fluctuations in exchange rates, loan interest rates, SDRs and net exports. Indonesia's net exports show fluctuating developments and there are even several periods of time when there is a deficit.

This shows that the conditions in international trade carried out by Indonesia are not yet optimal because there is still a deficit value when conducting international trade. Then related to the development of the exchange rate, it shows that the rupiah exchange rate continues to increase, the highest reaching IDR 15,152/US\$ in 2020 quarter 1. The exchange rate that continues to depreciate has a positive side in conducting trade, which will increase the number of goods to be exported because domestic prices become cheaper. In a state of trade deficit on the one hand, and domestic needs to finance the development process on the other hand, the Government makes foreign loans (debts) which have an impact on the payment of principal and interest on

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the debt. The interest on Indonesia's foreign loans that have been paid by the government varies between the lowest value of US\$ 479 (2013 quarter 3) to the highest value of US\$ 998 (2019 quarter 1). Annual interest payments will have an impact on the decline in foreign exchange reserves.

Special Drawing Rights (SDR) is a foreign exchange reserve asset established by the International Monetary Fund (IMF) in 1969. SDR functions as a complement to the currency reserves of IMF member countries. SDR itself is not a currency, but can be exchanged for currency. SDR can also function as a unit of account for the IMF and also several other international organizations. The allocation of SDRs owned by Indonesia is useful in helping domestic finances, especially when experiencing economic shocks, as the purpose of the IMF in allocating the SDR funds. The IMF is recorded to have provided an injection of aid funds to Indonesia of 4.46 billion SDRs, (equivalent to US\$ 6.31 billion) from the IMF. Bank Indonesia recorded a foreign exchange reserve position of US\$ 144.6 billion in 2021 quarter 3.

If you look closely at the data in Table 1 in detail, the increase and decrease in foreign exchange reserves occurred due to changes in the value variables exchange rate, loan interest rate, SDR and net exports. However, it is not yet certain whether the increase and decrease in foreign exchange reserves are in the same direction or in the opposite direction (positively or negatively correlated). To answer how the four variables affect foreign exchange reserves, this study was conducted.

Table 1. Development of Foreign Exchange Reserves (FER), Exchange Rate (ER), Interest, *Special Drawing Rights* (SDR) dan Net Export (NE), 2010.1 – 2021.4

Kuartal	FER (Million US\$)	ER (thousand Rupiah)	i (Millio n US\$)	SDR (Millio n US\$)	NE (Million US\$)	Kuartal	FER (Million US\$)	ER (thousand Rupiah)	i (Millio n US\$)	SDR (Millio n US\$)	NE (Million US\$)
2010.1	64.660	9.254	642	2.707	5.576	2016.1	107.543	13.260	972	1.574	1.766
2010.2	70.630	9.110	724	2.618	4.008	2016.2	109.789	13.313	709	1.561	2.364
2010.3	76.193	8.998	687	2.650	3.944	2016.3	115.671	13.051	868	1.564	2.231
2010.4	87.105	8.936	684	2.738	8.589	2016.4	116.362	13.473	615	1.499	3.147
2011.1	93.759	8.897	597	2.769	6.638	2017.1	121.806	13.326	978	1.521	4.116
2011.2	110.332	8.589	521	2.825	8.397	2017.2	123.094	13.309	592	1.542	3.550
2011.3	113.436	8.599	595	2.806	7.158	2017.3	129.402	13.333	608	1.578	3.192
2011.4	104.692	8.933	602	2.749	3.868	2017.4	130.196	13.537	693	1.588	985
2012.1	104.235	9.144	594	2.729	2.768	2018.1	126.003	13.809	822	1.629	261
2012.2	104.466	9.277	526	2.684	-2.258	2018.2	119.839	14.330	787	1.570	-1.457
2012.3	101.185	9.491	635	2.682	513	2018.3	114.848	14.601	826	1.566	-2.619
2012.4	103.963	9.336	588	2.709	-2.694	2018.4	120.654	14.109	985	1.553	-4.883
2013.1	99.444	9.680	648	2.672	-235	2019.1	124.539	14.208	998	1.580	596
2013.2	97.224	9.781	648	2.648	-3.107	2019.2	123.823	14.111	854	1.551	-2.466
2013.3	87.473	10.652	479	2.679	-3.061	2019.3	124.332	14.120	929	1.522	-371
2013.4	91.662	12.210	842	2.712	2.326	2019.4	129.183	14.085	723	1.542	-1.352
2014.1	102.592	11.360	712	2.721	1.068	2020.1	120.969	15.152	984	1.528	2.541
2014.2	107.678	11.855	787	2.719	-2.198	2020.2	131.718	14.286	787	1.538	2.885
2014.3	111.164	11.770	745	2.619	-540	2020.3	135.153	14.067	830	1.569	7.925
2014.4	111.862	12.244	664	2.551	-530	2020.4	135.897	14.036	700	1.605	8.273
2015.1	111.554	12.807	771	2.436	2.320	2021.1	137.095	14.248	863	1.579	5.522
2015.2	108.030	13.131	636	2.471	2.155	2021.2	137.093	14.411	770	1.590	6.309
2015.3	101.720	14.650	955	2.474	2.741	2021.3	146.870	14.363	903	1.623	7.409
2015.4	105.931	13.785	655	2.442	455	2021.4	145.408	14.365	689	1.698	8.972

Source: Bank Indonesia and the Central Bureau of Statistics, 2022

2. THEORITICAL FRAMEWORK AND EMPIRICAL STUDIES

2.1. Open Economy Equilibrium Theory (International Trade)

An open economy is an economic system in which there are four sectors, namely the household sector, the corporate

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sector, the government sector and the foreign sector (Mankiw, 2021). Foreign sector activities are manifested in international trade (export and import activities of goods and services). The economic principle in international trade is trade that benefits everyone/country. Mankiw (2021) explains that an open economy interacts with the existing economy by buying and selling goods and services in the world product market so that it will have an impact on a country's income and expenditure.

The role of international trade in development is quite vital. Classical and neoclassical economists have expressed how important international trade is, and it is considered an engine of growth (Jhingan, 2016). The role of international trade in an economy can be seen from the theory of comparative advantage put forward by David Ricardo (1817) in Mankiw (2021) illustrating that trade between the two countries can still be carried out by considering the opportunity costs incurred when producing a good. International trade results in an increase in world output, so that it allows each country to specialize in producing goods that have a comparative advantage (Krugman, 2018).

International trade for a country will increase national income in the form of foreign exchange reserves if it obtains an export surplus (exports > imports). A country's foreign exchange reserves actually do not only come from export activities, but foreign exchange reserves will be healthier if they come from domestic productive activities originating from export performance. According to Tambunan (2001), a country's foreign exchange reserves are influenced by net exports recorded in the current account balance of the capital account. In addition, foreign exchange reserves are also influenced by foreign debt, foreign investment and portfolio investment/FDI and exchange rates/exchange rates (Tambunan, 2008; Juliansyah, 2020).

Foreign debt, foreign investment is closely related to interest rates. The credit interest rate is a certain price or value charged to the borrower and must be paid to the lender for what is obtained. For the party providing the loan, the interest is the selling price charged to the party who borrows and needs funds (Mishkin, 2019). Foreign loans or debts made by Indonesia are made to several countries and organizations, in 2019 there were five largest countries that provided loans to Indonesia, namely Singapore, Japan, China, the United States and Hong Kong (Pellu, 2019). The exchange rate (exchange rate) in the long term has a positive effect on foreign exchange reserves. The results of Juliansyah's research (2020) prove that there is a long and short-term relationship between the exchange rate and foreign exchange reserves.

2.1.2. The Effect of International Trade on Foreign Exchange Reserves

Todaro & Smith (2015) said the relationship between exports and foreign exchange reserves in international trade activities. Through international trade, a country will get a certain amount of money in foreign currency or foreign exchange. In the theory of international trade (Mankiw, 2021) it is stated that the more volume and type of products exported by a country, the greater the foreign exchange obtained, and vice versa.

The more advanced a country is, the greater the opportunity to produce quality and diverse export products. Quality and diverse export products will generate foreign exchange for the country that produces them. If in international trade there is a positive net export condition or export surplus, it will increase the country's foreign exchange reserves.

2.1.3. Effect of Exchange Rate on Foreign Exchange Reserves

Mishkin (2019) said that if the exchange rate depreciates, it will affect the price of domestic goods that are exported to be cheaper and the price of imported goods will be more expensive, but with this condition it causes an increase in exports and a decrease in imports of a country which will ultimately affect the value of foreign exchange reserves. In addition, Baldwin & Yan (2012) also studied the effect of the Canadian dollar exchange rate, where an increase in the Canadian dollar provides benefits when exporting, so that it also affects the foreign exchange reserves owned by the country.

2.1.4. Effect of Foreign Aid on Foreign Exchange Reserves

Developing countries get foreign exchange, apart from export activities and direct investment, also from bilateral, multilateral development assistance and private assistance provided by non-governmental organizations. The concept of foreign aid that is currently widely used and accepted is a concept that includes all official grants and loans, in currency or goods, intended to send resources for development, address problems that occur or income distribution (Todaro & Smith, 2020).

2.2. Empirical Study

Previous research related to exports and imports by a country affects the level of a country's foreign exchange reserves. International trade is considered profitable because it can gain benefits from trade, in research conducted by Simamora & Widanta Research (2021), Merry Indriany et al., (2021) Andriyani et al., (2020), Agustina & Reny (2014), Jalunggono et al., (2020), Rahayu & Fidayetti (2021), Mahmudah (2019), Ridho (2015), Juniantara & Budhi (2012) and Rahmawati et al., (2020) with multiple linear regression analysis, it was found that exports simultaneously have a positive and significant effect on foreign exchange reserves. The exchange rate can also have an effect where this exchange rate will determine the amount of foreign exchange when exporting and importing. Therefore, research by Bosnjak et al., (2020), Simamora & Widanta (2021), Sanusi et al., (2019), Dani et al., (2020), Juniantara & Budhi (2012), Islami & Rizki (2018), Ardianti & Swara (2018) and Reny & Agustina (2014) used

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multiple linear regression to obtain the results that the exchange rate has a positive and significant effect on foreign exchange reserves. Then, the factor that will also have an impact on the level of foreign exchange reserves owned by a country is foreign loan interest where based on research from Zehri (2020), Islami & Rizki (2018), Masitha & Pangidoan (2020), Putra & Indrajaya (2013) and Rangkuty & Hidayat (2021) related to the effect of interest rates on Indonesia's foreign exchange reserves using a multiple linear regression model and getting the results that interest rates have a negative and significant effect on Indonesia's foreign exchange reserves.

The foreign exchange reserves in Indonesia do not entirely come from export and import activities carried out but there is also foreign exchange obtained from the International Monetary Fund (IMF), namely the allocation of special drawing rights (SDR), through research conducted by Gallagher et al., (2020) and Herman (2020) related to special drawing rights (SDR) obtained the results that the allocation of special drawing rights (SDR) is used as a tool to provide financial support to member countries to help overcome crises or problems that occur in member countries.

2.3. Conceptual Framework and Research Hypothesis

2.3.1. Conceptual Framework

Based on theory and empirical studies, a conceptual framework is prepared as in Figure 2.1.

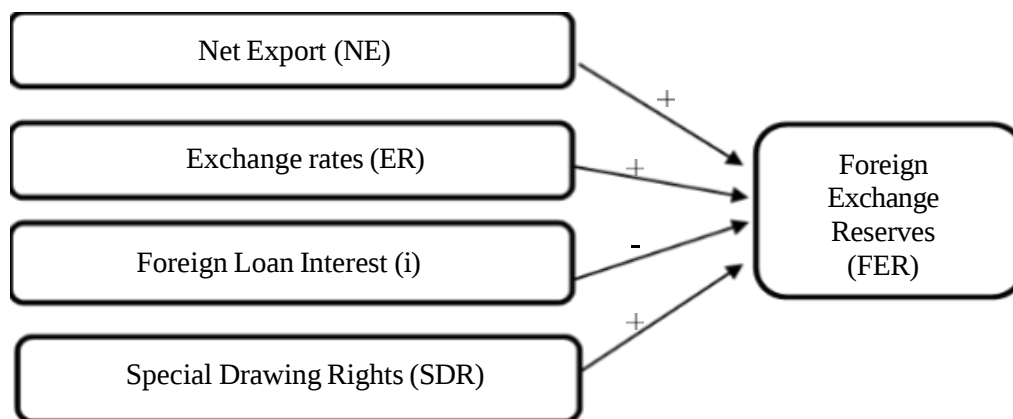


Figure 2.1 Conceptual Framework

2.3.2. Hypothesis

- H1: Net exports have a positive and significant effect on foreign exchange reserves.
- H2: Exchange rates have a positive and significant effect on foreign exchange reserves.
- H3: Foreign loan interest has a negative and significant effect on foreign exchange reserves.
- H4: Special Drawing Rights have a positive and significant effect on foreign exchange reserves.

3. RESEARCH METHODS

The form of research that will be used in this study is a quantitative descriptive research form, where the form of this descriptive research is a research that aims to provide an overview of a particular situation (Zikmund et al., 2012). Then the form of quantitative research is a form of research that aims to achieve research objectives through empirical studies with numerical measurements and analytical approaches (Zikmund et al., 2012).

From the two explanations above, it can be concluded that this research was conducted to provide an overview of the factors that can affect the value of foreign exchange reserves in Indonesia. Therefore, this research was conducted in Indonesia with a research period of 2010.1 to 2021.4, the use of the data time is expected to be more visible regarding the changes that occur in each period in the existing data so that the results of the test can provide maximum results. The data used is secondary data that has been collected or obtained from related sources, namely the Central Statistics Agency (BPS) and Bank Indonesia.

Analysis Method

The analysis method used to achieve the objectives of this study is to use the multiple linear regression analysis method through the Eviews 10 application. The regression model is expressed in the form of an equation as follows:

$$FER_t = b_0 + b_1.NE_t + b_2.ER_t + b_3.i_t + b_4.SDR_t + e \dots\dots\dots (1)$$

Keterangan:

FER : Foreign Exchange Reserves.

b₀ : Constant

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b_1, b_2, b_3, b_4	: Coefficient of Regresi NE_t	: Net Export
ER_t	: Exchange Rate	
it	: Foreign loan interest	
SDR_t	: <i>Special Drawing Rights</i>	
e	: Error term	

4. DATA ANALYSIS AND DISCUSSIONS

4.1. Research Results

4.1.1. Classical Assumption Test

This classical assumption test is a requirement that must be carried out before conducting multiple linear regression analysis, in this test research must be met so that the regression coefficients and parameter estimates do not get biased results. Based on Table 2, the estimation results above can be seen that the Jarque - Bera probability value is 0.474420 > 0.05 (5%), so it can be concluded that the data does not have normality problems or is normally distributed.

Table 2. Classical Assumption Test

Uji Normalitas			
Jarque-Bera		1,491323	
Probability		0,474420	
Uji Autokorelasi			
Obs*R-squared	3.976912	Prob. Chi-Square	0.1369
Uji Heteroskedastisitas			
Probabilitas		0.4158	
Uji Multikolinearitas			
Net Ekspor		1.098816	
Nilai Tukar (Kurs)		1.276915	
Bunga Pinjaman Luar Negeri		1.372605	
<i>Special Drawing Rights</i>		1.171824	

Source: Processed Data, 2022

The test results show an autocorrelation problem which shows the results of the Prob. Chi-Square is worth $0.0000 < 0.05$, so to overcome the autocorrelation problem, a first difference needs to be carried out to be free from autocorrelation problems (Ghozali, 2013). Table 2 shows the results of the autocorrelation test using the first difference method, where the test using the first-level difference method obtained the results that the Prob. Chi-Square is worth $0.1369 > 0.05$, so it can be said that there is no autocorrelation problem.

Heteroscedasticity is a condition where there is inequality in error variance in each observation. Symptoms of heteroscedasticity can be identified by the provision, if the value of Prob. Chi-Square < 0.05 , then the model in the study is heteroscedastic and vice versa if the Prob. Chi-Square value > 0.05 then the model in the study is homoscedastic. From the test results, it shows that the Probability value is $0.4158 > 0.05$, therefore it can be said that there is no heteroscedasticity problem.

Multicollinearity is a test carried out to see if there is a linear relationship between independent variables. Symptoms of multicollinearity can be identified by looking at the middle value of the VIF with the provision that if the Centered VIF value < 10 , then the model in the study does not have a multicollinearity problem and vice versa if the Centered VIF value > 10 , then the model in the study has multicollinearity. From the test results, it shows that the Variance Inflation Factors value for all variables is less than 10, therefore it can be said that there is no multicollinearity problem.

4.1.2. Regression Equation Test

The data analysis method used in this study is a multiple regression model. The results of data processing are presented in Table 3.

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Table 3. Regression Equation Test

Variabel	Koefisien	t-Statistic	Prob.
C	2862.591	4.544303	0.0000
NE	0.498244	1.931728	0.0602**
ER	-8.711838	-6.281631	0.0000*
I	7.006135	1.697831	0.0969**
SDR	11.19039	2.287562	0.0273*
R-squared	0.498377		
Adjusted R-squared	0.450603		
F-statistic	10.43206		
Prob(F-statistic)	0.000006		

*Signifikan $\alpha = 5\%$; **Signifikan $\alpha = 10\%$ The regression equation is as follows:

$$FER = 2862.591 + 0.4982*NE - 8.7118*ER + 7.0061*i + 11.1903*SDR \dots (2)$$

The equation above can be explained as follows:

- The constant value (C) of US\$ 2862.591 million indicates the value of Foreign Exchange Reserves when net exports, exchange rates, foreign loan interest and special drawing rights are constant (= 0)
- The coefficient value (β_1) is 0.4982. This means that for every increase in net exports of one million US\$, the value of Indonesia's foreign exchange reserves will increase by US\$ 0.4982 million assuming other variables are constant.
- The ER coefficient value (β_2) is -4.4418. This means that for every one thousand rupiah depreciation in the exchange rate, Indonesia's foreign exchange reserves will decrease by Rp. 8.7118 thousand, assuming other variables are constant.
- The i coefficient value (β_3) is 7.0061. This means that for every one million US\$ increase in foreign loan interest, Indonesia's foreign exchange reserves will increase by US\$ 7.0061 million, assuming other variables are constant.
- The SDR coefficient value (β_4) is 11.1903. This means that for every one million US\$ increase in special drawing rights, Indonesia's foreign exchange reserves will increase by US\$ 11.1903 million, assuming other variables are constant.

4.1.3. Simultaneous Significance Test (F Test)

The F significance test basically shows whether all independent variables intended in the model have a joint influence on the independent variables. Based on Table 4 above, it can be seen that the Prob (F-Statistic) has a value of 0.0000 which is smaller than the α value of 0.05. Thus, it can be said that the variables of net exports, exchange rates, foreign loan interest and special drawing rights simultaneously affect Indonesia's foreign exchange reserves.

4.1.4. Determination Coefficient Test (R^2 Test)

The R^2 test is used to measure how far the model's ability to explain variations in the dependent variable. In this study, the determination coefficient uses the R^2 value. Based on Table 4. from the results of the R^2 test, the R^2 value is 0.498377 or 49.84%. This shows that Indonesia's foreign exchange reserves can be explained by 49.84% by independent variables, namely net exports, exchange rates, foreign loan interest and special drawing rights. While the remaining 50.16% of the variation in Indonesia's foreign exchange reserves is explained by variables outside the independent variables of this study.

4.1.5. Regression Test (t-Test)

The t-statistical test basically shows how far the influence of one independent variable partially explains the variation of the dependent variable. The strength of the relationship that occurs between each independent variable and the dependent variable is as follows:

- Net exports have a significant effect on foreign exchange reserves. It is also explained in the results of the regression analysis that the net export variable has a probability value of 0.0602, which is smaller than $\alpha = 0.10$.
- The exchange rate has a significant effect on foreign exchange reserves. It is also explained in the results of the regression analysis that the exchange rate variable has a probability value of 0.0000, which is smaller than $\alpha = 0.05$.
- Foreign loan interest has a significant effect on foreign exchange reserves. It is also explained in the results of the regression analysis that the foreign loan interest variable has a probability value of 0.0969, which is smaller than $\alpha = 0.10$.
- Special drawing rights have a significant effect on foreign exchange reserves. It is also explained in the results of the regression analysis that the foreign loan interest variable has a probability value of 0.0273, which is smaller than $\alpha = 0.05$.

4. DISCUSSION

4.2.1. Effect of Net Exports (NE) on Foreign Exchange Reserves

Indonesia's net exports show a positive effect on foreign exchange reserves. During the observation period of 2010-2021, out of

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44 quarters of Indonesia's trade activities, there were 14 quarters where the net export value was negative (deficit). The largest deficit occurred in 2018 quarter 4 worth US\$ -4,883 million, see Table 1. Indonesia's net export deficit (trade balance deficit) in 2018 occurred due to a higher increase in imports compared to exports, especially in the oil and gas sector which experienced a severe deficit, and a decrease in the non-oil and gas surplus due to weakening commodity prices, such as palm oil, which is one of the contributors to non-oil and gas exports. Indonesia's largest imports until 2021 came from China, Singapore, and Japan. Indonesia's imports from China in 2018 were dominated by goods such as electrical equipment, steel sheets, woven fabrics and the largest were machinery and mechanical equipment. The increase in Indonesia's imports occurred due to the large domestic demand which also increased imports of goods from abroad, the China Asean Free Trade Area (CAFTA) agreement, namely a free trade agreement between China and ASEAN countries including Indonesia, also encouraged an increase in foreign goods entering Indonesia. Overall, imports made by Indonesia from other countries, especially from China, Singapore and Japan, are finished goods that cannot be met by the domestic economy. Net exports (NE) during the observation period experienced a surplus in 30 quarters. The largest NE surplus occurred in the fourth quarter of 2021 with a value of US\$ 8,972 million. Indonesia's trade balance was in surplus in 2021 because it was driven by an increase in exports of Indonesia's mainstay commodities, such as mineral fuels (coal), manufactured products (rubber, precious metals), and oil and gas. The government is always active in encouraging the export of these products. Based on data provided by PPEJP (Expo and Trade Services Human Resources Training Center) there are 10 leading products supporting foreign exchange reserves to become Indonesian export commodities, namely Furniture; Motor Vehicle Components; Electronics; Footwear; Textiles; Rubber and Rubber Products; Cocoa; Palm Oil; Coffee and Shrimp.

The sector that provides the largest contribution is the processing industry sector. The increase that occurred in the processing industry sector is a factor that drives the increase in Indonesian exports, thus causing an increase in Indonesia's foreign exchange reserves. Indonesia is the largest producer and exporter of palm oil in the world. Indonesia controls around 55 percent of the global palm oil export market share.

Efforts that are currently being made to increase exports from this processing industry sector are industrial development through increasing competitiveness and weeding out superior products, then utilizing free trade agreements (FTAs) such as accelerating FTA negotiations, expanding to non-traditional markets and initiating bilateral FTAs according to industry needs. Research conducted by Rahmah & Widodo (2019) related to the role of the processing industry sector in Indonesia provides results that the processing industry sector also plays a role in the availability of output used as input by other sectors in Indonesia, so it must continue to be improved.

In addition to this, other sectors have not provided maximum contributions such as agriculture, oil and gas and mining where the decline is thought to be due to several things, namely the issue of the green economy, many developed countries see and assume that agriculture, plantations and mining in Indonesia are not environmentally friendly so that various actions must be taken so that Indonesian products can gain the trust of other countries.

4.2.2. Effect of Exchange Rates on Foreign Exchange Reserves

In Table 1, the rupiah exchange rate against the dollar continues to depreciate, especially the highest in the first quarter of 2020. This is also influenced by conditions outside of normal conditions, namely the Covid-19 pandemic which has disrupted the world economy which ultimately has an impact on the Indonesian economy. This can be seen from the realization of state expenditure and revenue.

The 2022 publication of the Central Statistics Agency revealed that state expenditure during the 2010-2021 period tended to increase every year. The highest expenditure occurred in 2020, which was IDR 2,595 billion. Government spending increased significantly in 2020 to address problems related to the impact of the Covid-19 pandemic. This expenditure, in addition to subsidizing social protection for those affected by the Covid-19 pandemic, was also for imports of medical devices from other countries, which caused Indonesia's import value to increase, which affected the exchange rate. During the Covid-19 pandemic, the Indonesian economy experienced a deficit, where expenditure reached IDR 2,595 billion, which was greater than state revenues of IDR 1,628 billion. This large deficit has an impact on economic growth which has contracted.

This also occurred due to the influence of government policy, where the government relocated the APBN budget, which was taken from the official travel budget, non-operational spending, honorariums to focus on handling or controlling Covid-19, social protection and business incentives.

Then, the rupiah exchange rate depreciated starting in 2013 which has occurred until now. The depreciation of the exchange rate was caused by negative sentiment from market players towards the plan to reduce US monetary stimulus (tapering-off). In fact, the effect felt by Indonesia when there was a discourse on the implementation of this policy was the occurrence of capital flight and continued with the trend of weakening the rupiah exchange rate. This policy was implemented due to the financial crisis that occurred in America. Therefore, the policy taken by America is Quantitative Easing (QE), where this policy is a

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monetary policy that utilizes the asset and liability side of the central bank's balance sheet, which is designed to absorb shocks that affect the economy (Shiratsuka, 2010).

This policy is carried out by providing stimulus to economic institutions by purchasing long-term bonds which aim to maintain the domestic money supply and stimulate the American economy (Dinata & Oktora, 2020). With this policy, of course, the American economy requires sufficient domestic money to realize its policies. Then this policy has an impact on Indonesia which causes capital flight, namely the existence of funds or debts that are sent back abroad (Hoeriyah et al., 2019).

So, from the results of this study, it shows that the exchange rate tends to weaken due to changes in policies from other countries and also domestic policies. Therefore, Indonesia must reduce its dependence on the currencies of other countries, which will have a major impact if the country implements policies that of course have an impact on the Indonesian economy. On the other hand, with the depreciation of the exchange rate, it is expected that the government will continue to encourage increased exports in order to maintain the stability of the rupiah exchange rate and increase the value of Indonesia's foreign exchange reserves.

4.2.3. Effect of Foreign Loan Interest on Foreign Exchange Reserves

The value of foreign loans made by Indonesia continues to increase. The increase in the value of Indonesia's foreign loans is due to expenditures that continue to increase every year and state revenues are unable to keep up, so foreign loans are made as an effort by the government to help state finances. However, it is necessary to pay attention to the loans made by Indonesia, whether the loans are used as capital for domestic infrastructure development or only to cover costs that do not provide added value.

For developing countries, foreign loans have an impact on the economy, both positive and negative, where positive will increase domestic finances, and negative if the amount of the loan is too large, what might happen is that it is trapped in a debt trap, which in the end the country cannot be free from the country that provides the loan. Research by Rangkuty & Sari (2019) where foreign loans and their interest are expected not to disrupt the state treasury and/or foreign exchange reserves continuously, which should be done to increase the productivity of the domestic market economy from the use of loans so that independent domestic industries are created.

Foreign loans made by Indonesia are also made due to several factors such as to continue to maintain the momentum of state spending needs that cannot be postponed and Indonesia's foreign loans are also used as financing for the APBN which prioritizes productive spending such as the infrastructure, education and health sectors. Therefore, the large amount of government spending is to provide stimulus for the economy which still cannot be met in full from state revenues (taxes, customs, PNPB and grants). So that government spending has an impact on the increase in the amount of loans made by Indonesia.

Central government spending during the 2010-2021 period tended to increase. This is because the state revenue has not been met to meet productive spending needs. From the explanation above, it shows that Indonesia borrows from other parties or countries because domestic revenues have not been able to fully support the expenditures made.

Interest payments on loans have a positive impact on foreign exchange reserves, allegedly caused by the level of interest payments that are not too large, when viewed from the average interest burden that must be paid, which is US\$ 797.9 million, while loans made by Indonesia amount to US\$ 320,161 million, which can be said that interest payments are only worth 0.23% of the total loan. So, in a period of 12 years, loan interest that has a low rate and tends to decrease will increase Indonesia's foreign exchange reserves, but if you look at the longer term, interest payments and principal on foreign loans do not always have a positive impact, as shown by existing research, most of which give negative results. Therefore, the policy and allocation of this loan must be considered seriously so that it is right on target and on time in payment and utilization.

4.2.4. Effect of Special Drawing Rights on Foreign Exchange Reserves

Indonesia received a special allocation from the IMF because Indonesia is a member of the IMF itself, where many other countries are members of the IMF. The allocation of funds from the IMF to its member countries is called a quota, where the value of this quota can be used by a country to help the economy and also maintain domestic financial stability.

The quota obtained by Indonesia from 2010 to 2015 was worth US\$ 2,789.8 million, while from 2016 to 2021 it increased and was worth US\$ 6,236.8 million.

This value has increased because this value reflects the size and position of the country in the world economy. The increase was also due to an agreement by the IMF and also 85% of IMF members agreed to the increase because the Indonesian economy was considered to be in good condition so that the increase in the number of SDRs was given.

Special drawing rights can benefit Indonesia in relation to the exchange policy of the SDR. Special drawing rights are not a currency so they cannot be used for transactions. Therefore, if a country wants to use the SDR facility, it can exchange it for a currency that has been agreed upon by the IMF and its member countries.

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Table 4 shows that the SDR allocation obtained by a country, including Indonesia, can exchange its SDR allocation value for the currency value agreed upon by the IMF and its member countries. This allows Indonesia to more easily trade or use the SDR, because if Indonesia trades with America, it can certainly use the SDR facility by exchanging the SDR for US dollars.

Table 4. SDR Value against the Currency Value of Other Countries and the Rupiah

Currency	Exchange Rate 1 SDR	Exchange Rate 1000 Rupiah
Dollar Amerika	0,58252	0,067
Euro	0,38671	0,066
Yuan China	1,0174	0,450
Yen Jepang	11,900	9,020
Pound Sterling	0,085946	0,056

Sources : IMF (2022)

Then if compared SDR with rupiah. For example, SDR 1 is equivalent to US\$ 0.58252 while Rp. 1000 is equivalent to US\$ 0.067. From the comparison example, it can be assessed that the allocation of SDR will provide benefits for Indonesia, especially in conducting trade or importing goods because with this SDR Indonesia will save and increase its domestic foreign exchange reserves to help the economy and domestic financial stability.

For developing countries like Indonesia, this SDR facility is an important thing in helping the country meet domestic needs, especially in terms of finance, where this SDR is expected to help and stabilize the economy of developing countries. Therefore, the Indonesian government is expected to continue to maintain the condition of its foreign exchange reserves so that it can continue to participate in supporting this SDR facility, because on the other hand it has a positive influence but there are obligations that must be fulfilled.

5. CONCLUSION AND RECOMMENDATION

5.1. Conclusion

Based on the results of hypothesis testing and discussion descriptions, it can be concluded that partially:

1. Net exports have a positive and significant effect on Indonesia's foreign exchange reserves. Hypothesis is proven at the level of significance (prob. < 0.10)
2. Exchange rate has a positive and significant effect on Indonesia's foreign exchange reserves. Hypothesis is proven at the level of significance (prob. < 0.05)
3. Foreign loan interest has a negative and significant effect on Indonesia's foreign exchange reserves. Hypothesis is proven at the level of significance (prob. < 0.10)
4. Special drawing rights have a positive and significant effect on Indonesia's foreign exchange reserves. Hypothesis is proven at the level of significance (prob. < 0.05)
5. Simultaneously, net exports, exchange rate, foreign loan interest and special drawing rights have a significant effect on Indonesia's foreign exchange reserves. Based on the coefficient of determination, the variation in foreign exchange reserves of 49.84% can be explained by the independent variables. Meanwhile, the rest (50.16%) is influenced by factors or variables outside the model.

5.2. Recommendations

In an effort to increase foreign exchange reserves through international trade, the Indonesian government makes policies/regulations in the form of selecting and determining superior export commodities; procedural simplification to reduce costs, and economic diplomacy and increasing market access.

Increasing active community participation in order to maintain exchange rate stability by consuming/using domestic products and refraining from imported products, not hoarding dollars and exchanging them for rupiah, doing business with an export orientation, traveling and enjoying domestic tourism, traveling by public transportation, investing domestically, and not taking advantage of the weak rupiah.

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