



Analysis of Factors Affecting Indonesia's Foreign Exchange Reserves from 2001 to 2020

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Abstract. In this study, the impact of exports, foreign debt, FDI (foreign direct investment), currency rates, and real interest rates on Indonesia's foreign exchange reserves from 2001 to 2020 is to be determined and measured. Multiple linear regression is the methodology applied in this research. The study used Ordinary Least Square (OLS) method with the aid of a computer program called EViews 10. It used quantitative secondary data in time series for a period of 20 years, from 2001 to 2020, which gathered from paperwork provided by Bank Indonesia, BPS Indonesia, and the International Monetary Fund (IMF). This form of research is descriptive in nature. Foreign exchange reserves are the dependent variable in this study, while exports, foreign debt, FDI (foreign direct investment), exchange rates, and real interest rates are the independent factors.

Keywords: Foreign Exchange Reserves · Exports · External Debt · Foreign Direct Investment · Exchange Rates · Real Interest Rate

1 Introduction

Indonesia is one of the nations with an open economic system. The establishment of an open economic system is directly tied to international trade operations, which are critical to the nation's ability to meet its domestic demands, not all of which can be met locally [1]. International trade is defined as trade between nations, including exports and imports that advance trade, which has the effect of boosting a nation's foreign exchange reserves.

The main source of income for the Indonesian economy is the foreign trade. One of the economic activities that cannot be isolated from international trade is the activity of capital flows, both into and out of a country. According to Salvatore, the factors of production will transfer from the exporting to the importer countries during trading operations because of the disparity in costs in international trade [2].

By implementing international commerce, each nation can exchange resources with others to meet local requirements and promote both global and domestic economic progress. Bank of Indonesia is responsible for keeping foreign exchange reserves that are used to fund Indonesia's international trade activities, which are then documented in the bank's balance of payments [3].

It is possible to define foreign exchange reserves as a highly valued, liquid asset that may be used as payment in international trade transactions and whose worth is acknowledged on a global scale [1]. One of the most crucial financial indicators that reveals the strengths and weaknesses of a nation’s economic foundations is its foreign exchange reserves [3]. Additionally, one of the safeguards for attaining monetary and macroeconomic stability of a nation is maintaining sufficient foreign exchange reserves. Foreign exchange reserves are frequently linked to a number of variables that may affect them. As an example, consider portfolio investment, inflation, exports, trade balance, foreign direct investment, foreign debt, and value [4]. This is evident from Indonesia’s experience during the economic crisis, particularly the real estate sector, which was severely impacted by the issue of foreign debt that grew more serious as a result of depletion. Foreign exchange reserves must be decreased or stopped, especially for exporters or those who export frequently. Their action is wholly a result of the US dollar’s strong position in the domestic foreign currency market.

An overview of a nation’s foreign relations can be found in its balance of payments. We can determine a country’s behavior in terms of meeting responsibilities to other nations and the rights that the state must grant to these other nations from its balance of payments. The balance of payments is a record of the economic dealings a nation has with other nations, as well as the obligations a nation has to other nations [5]. The goal of the balance of payments is to tell people about a country’s financial standing in comparison to other nations. The government can utilize this information to make monetary, fiscal, and trade decisions.

Figure 1 The value of Indonesia’s foreign exchange reserves from 1991 to 2020 can be observed. The amount of foreign exchange reserves tends to rise during a 30-year period. Foreign currency reserves dropped dramatically in 2013, from 112,789 to 13,402 million USD, from the previous year. Meanwhile, 2010 saw the biggest growth in foreign exchange reserves. a rise of USD 30,092 million from the USD 66,119 million in the prior year. The economic situation becomes slow as a result of Indonesia’s declining foreign exchange reserves, which has an impact on the rupiah exchange rate. The value of the rupiah could decline. The following image shows the state of the rupiah exchange rate for over the years 1991 to 2020.

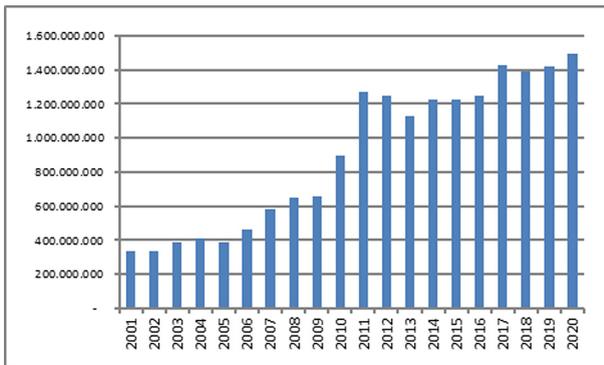


Fig. 1. Value of Indonesia’s Foreign Exchange Reserves (million USD). Source: World Bank

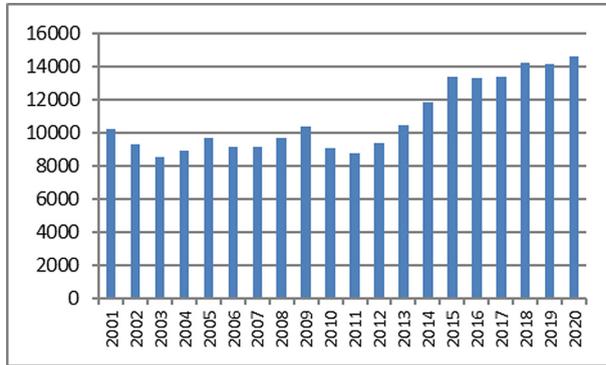


Fig. 2. Rupiah Exchange Rate Against USD (million USD). **Source:** World Bank

Figure 2 For the years 1991 through 2020, there are yearly fluctuations in the rupiah's value in relation to the US dollar. In 1998 had a very significant gain, going from USD 2,909.38 million to USD 10,136.23 million. One of the key sources of foreign exchange reserves is exports of goods and services [6]. Exports and foreign exchange reserves are closely related. So that a nation can earn some money from its export activities in the form of foreign currency, which can then be used as one of the sources of state income. The following graph shows the size of Indonesian exports from 1991 to 2020.

Figure 3 shows the amount of Indonesia's exports from 1991 to 2020. Indonesian exports fluctuated between increases and decreases between 1991 and 2020. In 2011, the greatest export value was US\$ 203,496.6. Selling products outside of Indonesia involves exchanging foreign currencies for the products. Indonesia's exports, particularly in the export sector, have dropped as a result of a lack of human resources. Additionally, the technology is still in its early stages, which reduces its effectiveness. in the creation of commodities for export. The number of exports of raw goods rather than finished items

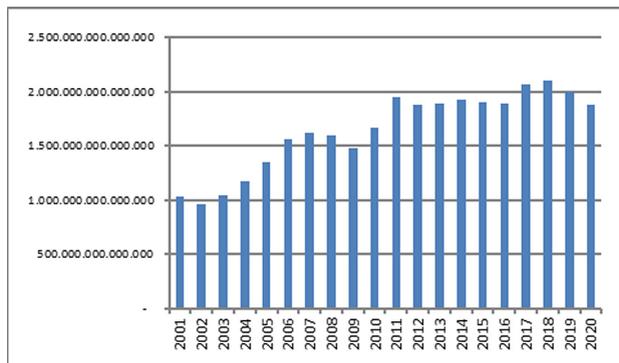


Fig. 3. Export Value (Oil and Gas) Indonesia. **Source:** Badan Pusat Statistik

has an impact on the amount of foreign exchange that comes in. Because a rise in exports may also result in an increase in foreign exchange reserves [6].

2 Literature Review

2.1 Foreign Exchange Reserves

Foreign currency reserves are deposited by central banks and monetary authorities. Foreign currency deposits and bonds, commonly referred to as foreign exchange reserves, are held by central banks and monetary authorities. The prior definition makes it possible to define foreign exchange reserves as a tool for doing international business. The central and monetary authorities keep these instruments in dollars in order to preserve monetary stability and settle foreign debts. Additionally, it belongs to the government [7].

Foreign exchange reserves increased, which led to a growth in total and liquid debt as well as a reduction in debt maturity. The increase in foreign reserves also results in a decline in long-term spending since foreign exchange reserves have low interest rates. However, the rise can promote expenditure and economic growth if a tradeable industry needs a lot of capital [4].

2.2 Exports

The most dependable and long-term way to build up foreign exchange reserves is to increase export volume. A nation must raise the competitiveness of its domestic goods in order to promote export growth. Because a favorable balance between foreign debt and foreign investment will ultimately benefit investors and borrowing nations. However, the surplus in the current account must be used to pay it off. As a result, exports are the key method by which a nation replenishes its foreign exchange reserves [4].

The ability of a product to compete in international markets has a significant impact on export activity. Exports have a direct impact on national income in this regard. However, because there are other external variables that are unrelated to activity, rising national income does not always contribute to rising export numbers [8].

2.3 Exchange Rates

Currency exchange rates are significant in international trade because they make it easier to compare pricing [9]. The amount of domestic money that can be equivalent to one unit of foreign currency is the definition of the foreign exchange rate itself [10].

Today, the majority of nations in the globe employ flexible exchange rates. The demand for a nation's foreign exchange reserves, particularly its exchange rate policy and desire to participate in the currency market, will be influenced to some extent by these factors. When a nation experiences considerable fluctuations in its foreign exchange rates, the central bank's foreign currency reserves can be utilized to stabilize the volatility of exchange rates [4].

Currency exchange rates and foreign exchange have a close link. Import-export activities are influenced by the US dollar, which is the dominant currency in international

trade. Exporters should raise their exports when the value of the US dollar increases in order to gain more rupiah, so that when the value of the US dollar advances, exports, foreign exchange, and foreign exchange reserves all grow as well [9].

2.4 External Debt

After World War II, the provision of foreign debt began with the intention of lending to third-world nations, Indonesia being one of them, in order to support development and budget deficits. Foreign debt is defined as any state revenue received from the borrower in the form of foreign currency that must be reimbursed subject to restrictions [11].

Due to a lack of financial reserves for a country's trade operations, foreign debt is required to finance infrastructure development, debt interest financing, disaster financing, and boosting financial position [12].

Foreign debt is often voluntary, however if a country has influence over other nations, this voluntary character does not apply. The transfer of money from the nation making the loan, also known as the creditor, to the nation receiving the loan, also known as the debtor at the time of the debt, is included in foreign debt. When citizens of the debtor country purchase assets from the creditor country, foreign debt can likewise become domestic debt [13].

2.5 Foreign Direct Investment

Foreign direct investment, or FDI, is described by Lindert in his book as the movement of loans to or purchases of stock in foreign firms whose capital is predominantly owned by locals. Additionally, Krugman discusses in his book how foreign direct investment (FDI) is a global capital movement that enables enterprises from one nation to establish or grow in another. In addition to the transfer of resources, foreign direct investment also involves the exercise of control. In other words, the branch or subsidiary owes money to both the parent firm and other members of the same organizational structure [14].

While developing nations are not required to repay their foreign debts, industrialized nations can benefit greatly from foreign direct investment. Despite the fact that foreign debt is excluded from foreign direct investment, the objective can still be to make more money than domestic investment. If the earnings from their international investments are difficult to transfer, investors' enthusiasm will decline. As a result, the recipient nation will annually transfer a substantial sum of money. Transfers of income suggest that there are fewer available foreign exchange reserves in the foreign exchange market [4].

2.6 Real Interest Rate

According to Lipsey, the interest rate is the cost associated with borrowing a unit of money over a predetermined period of time. There are two sorts of interest rates that can be distinguished: nominal interest rate and real interest rate. The nominal interest rate is determined by dividing the amount paid back by the amount borrowed. For medium-rate real interest, the proportion of the purchasing power of money repaid to that of money borrowed is more crucial. Real interest rates are the difference between the nominal and inflation rates [15].

According to [7], an increase in interest rates will shake up the financial system and encourage loans from international investors. Additional foreign exchange reserves that will be directly received by the loan include the following.

2.7 Relationships Between Variables Theory

2.7.1 Foreign Exchange Reserves with Exports

When a nation engages in export activities, it will acquire the value of foreign currency, also known as foreign exchange, which is a source of income for the country. This is how exports and foreign exchange reserves are related. Therefore, exports are a trading activity that increases domestic demand, leading to the growth of large-scale production and advantageous structures that sustain an effective and stable social system [16]. An increase in exports is one of the key reasons for the growth of foreign exchange reserves [17]. Foreign exchange reserves will rise as a result of increased exports. If the quality of export items improves and there is an increase in demand for these commodities, exports will rise.

From 1980 to 2015, [18] demonstrated that Nigeria's foreign exchange reserves were influenced by oil and gas exports, non-oil exports, and exchange rates. The Vector Error Correction Model and cointegration were both used to examine these data. Additionally, the Vector Error Correction results reveal that oil and gas exports are correct and positive, demonstrating that they have a favorable influence on foreign exchange reserves.

This study, which employs ARDL inside a panel econometric framework, utilizes an annual data set covering South African countries from 1990 to 2015. The results demonstrate that exports, inflation rates, currency rates, and imports—with the exception of import demand—are all major drivers of long-term holdings of foreign exchange reserves [19].

[20] discovered that when exports rose, the country's revenue rose as well, increasing the amount of foreign currency the exporting nation got, which in turn increased its foreign exchange reserves.

2.7.2 Foreign Exchange Reserves with External Debt

A nation will benefit if it pays off its international debt since both its foreign debt and foreign exchange reserves will decrease. Foreign exchange reserves can be increased by taking into account a country's foreign debt, but reserves can also use to pay off debt abroad [21].

[22] As long with the ARDL model demonstrates that the short-term growth of Ethiopia's foreign exchange reserves is significantly and negatively impacted by the rates of inflation and exchange. Long term Long-term foreign exchange reserves benefit from external debt as well. The exchange rate affects foreign exchange reserves negatively over the long term, just as it does in the short term.

The Auto Regressive Distributed Lag (ARDL) model was used in research done by [23] in India in 2000, and it was discovered in the first quarter of 2014 that variables like inflation and the impact of external debt on GDP have an effect on foreign exchange reserves over the long term. While foreign debt/GDP reserves increased by 0.46 percent, foreign exchange reserves fell by 0.12 percent while inflation increased by 1%.

Foreign debt has a favorable impact on foreign exchange reserves. One example of a source of funding for the government budget and economic expansion is the nation's extensive debt [24].

2.7.3 Foreign Exchange Reserves with Foreign Direct Investment

Foreign direct investment can indirectly affect foreign exchange reserves even though it cannot generate new debt or require existing debt to be repaid. This obviously hinders the growth of foreign exchange reserves. Foreign direct investment, meanwhile, improves the company's capacity for international competition. Additionally, it can alter the structure of industry and assist in domestic economic growth, both of which have an impact on a nation's balance of payments and foreign exchange reserves [4].

China's foreign exchange reserves are calculated using the updated Agarwal model. The results show that in 2016, China's foreign exchange reserves were at ideal levels. The test results demonstrate a cointegration between foreign exchange reserves, GDP, and foreign direct investment (FDI). Therefore, over time, these factors have an impact on the level of foreign exchange reserves [25].

[26] It was discovered that Indonesia's foreign exchange reserves were impacted by FDI. [27] It also discovered that foreign investment had an impact on Indonesia's foreign exchange reserves from 2006 to 2015.

2.7.4 Foreign Exchange Reserves with Exchange Rates

Because they are utilized as a form of payment in cross-border transactions, exchange rates are tremendously helpful to nations. According to [17] when foreign exchange reserves have increased, the exchange rate against other currencies will decline, which will raise the exchange rate of the home currency since it can act as a stimulus to increase the exchange rate. The economy of the nation is stronger and can generate more foreign exchange when the domestic currency exchange rate is greater. The currency rate has a negative and large impact on foreign exchange reserves, according to study by [28]. As a result, the connection between the exchange rate and foreign exchange reserves is negative.

According to the estimated cointegration coefficient, the quantity of foreign exchange reserves accumulated in Serbia between 2002-Q1 and 2020-Q3 is considerably influenced by the exchange rate. The results demonstrate that Serbia has foreign exchange reserves above the median ideal level [29].

According to research [30] in developing market economies (EMEs), before the 2000s, the majority of countries' reserve buildup was primarily motivated by a need for precaution. Monetary policy and currency rates were also significant factors in the fall in foreign exchange reserves.

Because of India's transition from having extremely low foreign exchange reserves in 1991 to its current comfortable position, the study of foreign exchange reserves is particularly pertinent in the context of India. Exchange rate volatility was found to have a detrimental effect on foreign exchange reserves in studies spanning the years 1996–1997:Q1 to 2014–15:Q4 [31].

2.7.5 Foreign Exchange Reserves with Real Interest Rate

Rate Interest rate is the interest rate for a specific time period given as a percentage (monthly or annually). The three motivations for holding cash, according to Keynes' theory, are transaction motives, precautionary motives, and speculation. The supply and demand for money determine interest rates. Foreign parties will start vying for loans to Indonesia as a result of the high interest rates. Selling locally produced goods or importing goods from Indonesia is crucial for the Indonesian economy. Foreign exchange can be made by selling Indonesian imports or exports [32].

Saudi Arabia, the United Arab Emirates, Bahrain, Kuwait, Oman, Qatar, and the Gulf Cooperation Council (GCC) nations are among the places where this has occurred [33]. Using annual data from 1996 to 2015, empirical findings demonstrate that foreign currency reserves are influenced by interest rates. Between 1960 and 2018 in Brazil. Real interest rates and foreign reserves are associated over a long period of time, according to an auto-regressive distributed lag (ARDL) limit testing method [34]. [35] revealed that interest rates had an impact on foreign currency reserves for the period of 2016–2020 in Indonesia utilizing regression analysis of the Error Correction Model (ECM).

3 Research Methods

3.1 Multiple Linear Regression Analysis

To study the impact of exports, foreign debt, foreign direct investment, exchange rates, and real interest rates on Indonesia's foreign exchange reserves from 2001 to 2020, time series data, or data that is consecutive in time, were employed.

Multiple linear regression with the ordinary least squares approach (Method of Ordinary Least Squares, OLS) or only with the following econometric model is the analytical technique used:

$$CD_t = \beta_0 + \beta_1 EX_t + \beta_2 ULN_t + \beta_3 FDI_t + \beta_4 KURS_t + \beta_5 SBR_t + \varepsilon_t$$

CD	= Foreign Exchange Reserves (Billion US\$)
EX	= Export (Million US\$)
ULN	= External Debt (Million US\$)
FDI	= Foreign Direct Investment (Million US\$)
KURS	= Exchange rate (Rupiah)
SBR	= Real Interest Rate (%)
β_0	= Constant
$\beta_1 \dots \beta_5$	= Coefficient
ε_t	= Confounding Variables
Log	= natural logarithm
t	= year t

The econometric model described above is a synthesis of several models. Foreign exchange reserves are influenced by exports, exchange rates (in Rupiah), and foreign debt, but they are unaffected by foreign direct investment and real interest rates. Time series data were used. Sources of data include Ceic Data and the World Bank. The Indonesian time series data are from 2001 to 2020.

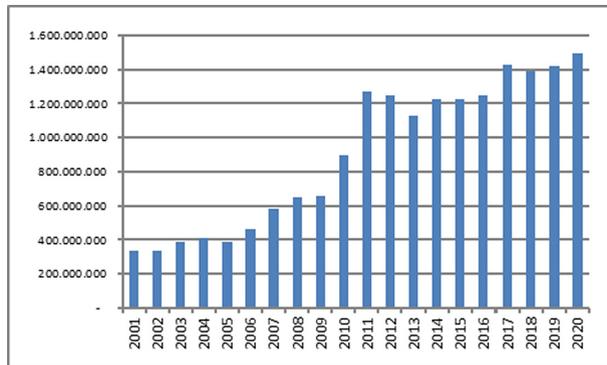


Fig. 4. Value of Indonesia's Foreign Exchange Reserves (million USD) **Source:** World Bank

4 Result and Discussion

4.1 Detailed Analysis

In this study, Bank Indonesia's foreign exchange reserves are the dependent variable. E-Views is used to process and evaluate all data. The following graph shows the evolution of Indonesia's foreign exchange reserves from April 2000 to September 2022.

Between April 2000 and September 2022, the growth of foreign exchange reserves was extremely rapid. In September 2022, there can be a maximum of 133,498.5 million USD in reserves. Due to the requirement for open market operations (OPT) or exchange rate stabilization, balance exchange rates, and asset revaluation, foreign exchange reserves reached their lowest point in previous years. The priority of BI in preserving the foundations of economic growth is the exchange rate policy. Earnings from the export of oil and gas have an impact on the growth of foreign exchange reserves. Due to tax revenue, government payments for oil and gas exports in foreign currency, and the outcomes of securities auctions, the country's foreign exchange reserves increased (Fig. 4).

4.2 Statistic Test

The coefficient of determination (R^2), the value of the F statistic, and the statistical value of t can all be used to determine how accurate the regression function is at estimating the true value.

According to the estimation outcomes in the table, net exports have a positive impact on Indonesia's foreign exchange reserves, with a regression coefficient of 4.88E-07. Accordingly, a 1.00 US\$ increase in net exports will result in a rise in foreign exchange reserves of 4.88E-07 US\$. Since the net export coefficient is positive, rising net exports will result in rising foreign exchange reserves.

From 2000 to 2020, Indonesia's foreign exchange reserves are positively impacted by foreign debt. 0.003678 as the regression coefficient. Where this condition states that foreign exchange reserves will increase by 0.003678 US\$ if foreign debt (ULN) increases by 1 US\$ while other variables stay the same.

Table 1. Estimation Result of Multiple Linear Equations with the Newey West Method.

$\widehat{CD}_t = -36226408 + 4,88 EKSPOR_t + 0,003678 ULN_t$	
	(0,0022) (0,0017)
-	$0,003117 FDI_t - 722857,44 KURS_t$
	(0,6703) (0,0135)
	+ 8,00 SBR _t
	(0,1821)
$R^2 = 0,979345; DW-stat = 1,174987; F-stat = 132,7581; Prob.F-stat = 0,0000$	
Diagnostic Test	
1. Multicollinearity (VIF)	
$EKSPOR = 8,047581; ULN = 32,74116; FDI = 9,560349; KURS = 10,81782; SBR = 12,078256$	
2. Normality Residual (Jarque-Bera)	
$JB (2) = 0,434579; Prob. JB (2) = 0,80469$	
3. Autocorrelation (Breusch-Godfrey)	
$\chi^2 (3) = 5,755141; Prob. \chi^2 (3) = 0,1242$	
4. Heteroscedasticity (White)	
$\chi^2 (10) = 8,344850; Prob. \chi^2 (10) = 0,5952$	
5. Linearity (Ramsey Reset)	
$F-stat (1, 13) = 0,228699; Prob. F (1, 13) = 0,6404$	

Source: EViews processed

From 2000 to 2020, foreign investment in Indonesia has little impact on its foreign exchange reserves. It has a -0.003117-regression coefficient. This condition states that foreign exchange reserves will persist if FDI rises by \$1 US while other variables stay the same.

From 2000 to 2020, the exchange rate has a detrimental impact on Indonesia's foreign exchange reserves. It was as much -72857.44 as the regression coefficient. This condition states that the foreign exchange reserves will decline by 72,857.44 rupiah if the exchange rate rises by 1 US dollar and all other factors stay the same.

With a regression coefficient of 8.00E + 08, real interest rates have no impact on Indonesian foreign currency reserves. This condition states that the foreign exchange reserves will not change if the SBR rises by 1% and all other factors stay the same.

Results of Multicollinearity Test

In light of the test findings and the calculated value of the variance inflation factors:

1. There is no multicollinearity, it is claimed, for the EXPORT, FDI, and SBR variables.
2. Multicollinearity is said to be existed between exchange rates and foreign debt variables.

Results of Normality Test

Given the aforementioned normality test results, it can be concluded that the regression model data in this study are normally distributed because the Jarque-Bera probability value is 0.434579, which is higher than the significance level chosen (= 5% or 0.05).

Results of Heteroscedasticity Test

It is clear from the results of White's test in Table 1 that the regression model data in this study do not exhibit heteroscedasticity issues because the probability value 0.5952 is higher than the significance threshold utilized (= 5% or 0.05).

Results of Autocorrelation Test

It can be inferred from the Breusch-Godfrey test results in Table 1 that the regression model data in this study do not exhibit autocorrelation issues because the probability value 0.1242 is greater than the significance threshold utilized (= 5% or 0.05).

Results of Linearity Test

Table 1 Ramsey Reset test results show that the regression model data in this study are linear because the probability value of F stat 0.6404 is higher than the significance threshold employed (= 5% or 0.05).

Coefficient of Determination Test (R^2)

The results of the regression estimation are shown in the table above, and the Adjusted R^2 value of 0.1888858 indicates that 18% of the variation in Indonesia's foreign exchange reserves can be attributed to changes in the variables of exports, foreign debt, foreign direct investment, exchange rates, and real interest rates, while the remaining 82% can be attributed to factors outside the model.

Regression analysis, which typically employs the OLS (Ordinary Least Squares) method, was used in this study. In determining whether the outcomes of a study using the equation model will satisfy some traditional requirements.

Simultaneous Significant Test (Uji F)

Inferring that H_0 is rejected and H_a is accepted from the table's F-count value of 132.7581, which means that $F\text{-count} > F\text{-table}$ is $132.7581 > 13,135$ with a probability value of 0.000000 and a significance level of 0.05, or inferring that the independent variables Exports, Foreign Debt, Foreign Direct Investment, Exchange Rates, and Real Interest Rates collectively affect foreign exchange reserves.

5 Discussion

Indonesia's Foreign Exchange Reserves and the Impact of Exports from 2001 to 2020

According to this study, the variable affecting exports has a positive and significant impact on the variable affecting Indonesia's foreign exchange reserves. This is possible because doing export-related operations will result in a country receiving a certain

sum of money in payment in foreign currency, which might boost its foreign exchange reserves.

Research has shown that exports have a large positive impact on foreign exchange reserves [16] which is consistent with the study's findings. The results of this study are intended to persuade governments in Islamic nations to give all current export industries more attention in order to boost exports. Foreign exchange reserves and exports. [37] discovered that exports significantly and favorably impacted Indonesia's economic growth. So that more items can be exported and this condition can help the economy progress in the right direction, the government should create export laws. This outcome is also consistent with study results [20] which demonstrate that exports have a favorable and considerable impact on foreign exchange reserves.

Indonesia's Foreign Exchange Reserves: The Impact of Exchange Rates, 2001–2020

A partial analysis of the exchange rate variable reveals that Indonesia's foreign exchange reserves are significantly negatively impacted by the exchange rate. This suggests that if the value of the rupiah relative to the US dollar increases, foreign exchange reserves will decline. This is due to the fact that foreign exchange reserves are utilized to manipulate the exchange rate, which causes them to decline.

Research [38] that demonstrates that the short- and long-term factors of the Rupiah exchange rate versus foreign exchange reserves are negative in the long-term connection supports the study's findings. According to the regression results, which are known to show that the exchange rate has a negative and considerable impact on Indonesia's foreign currency reserves, [39] studies Indonesia's foreign exchange reserves and the factors that affect them. According to [40] foreign exchange reserves are actually significantly impacted by the rupiah's exchange rate.

The Impact of External Debt from 2001 to 2020 on Indonesia's Foreign Exchange Reserves

A cursory look at the external debt variable reveals that it significantly increases Indonesia's foreign exchange reserves. This is because as Indonesia's foreign debt rises, so will the size of its capital account. This is so because Indonesia's capital account includes its foreign debt. The increase will have an impact on the balance of payments. The improvement in the balance of payments will result in an increase in Indonesia's foreign assets. It raises the reserve currency in this situation.

Research on the variables influencing Indonesia's foreign exchange reserves lends credibility to the study's findings. According to some research findings [6] foreign debt affects foreign exchange reserves in a favorable and significant way. [41] that outlines the significant relationship between a nation's foreign debt and foreign exchange reserves. [42] also discovered that from 2011 to 2020, Indonesia's foreign exchange reserves were positively impacted by external debt.

Indonesia's Foreign Exchange Reserves and FDI Between 2001 and 2020

The lack of significant foreign investment is a result of the government's inability to foster an environment that is conducive to investment. Additionally, FDI has a medium- to long-term impact but has no immediate impact in the short term. This is due to the lengthy payoff period of one type of investment, specifically foreign investment (PMA).

Research [43] that indicated FDI had no impact on Indonesia's foreign exchange reserves between 2001 and 2020 supports the findings of the study. [44] which contends there is no discernible relationship between foreign investment and a nation's foreign exchange commerce. Additionally, [45] discovered that FDI had no impact on Indonesia's foreign exchange reserves from 1991 to 2022.

Indonesia's Foreign Exchange Reserves and Interest Rate Impact from 2001 to 2020

The study's findings contradict the original theory, as it turns out that over the years 2001 to 2020, interest rates had no impact on Indonesia's foreign exchange reserves. This illustrates how foreign exchange reserves are influenced by factors other than interest rates, which means that interest rates have little impact on foreign exchange reserves.

Research findings are confirmed by research [38] which discovered that Indonesia's foreign exchange reserves were unaffected in the short term by the BI benchmark interest rate (BI Rate). [32] also discovered that Indonesia's foreign exchange reserves had no impact on interest rates between 2009 and 2019. [46] discovered that from 1990 to 2016, interest rates had little impact on Indonesia's foreign exchange reserves.

6 Conclusion

The results of this study show that the value of exports and foreign debt have a positive and considerable impact on Indonesia's foreign exchange reserves. Exchange rate effects have a negative impact on foreign reserves. Foreign investment or interest rates have little impact on the nation's foreign exchange reserves.

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