THE INFLUENCE OF GROSS DOMESTIC PRODUCT, IMPORTS AND THE EXCHANGE RATE ON FOREIGN EXCHANGE RESERVES IN INDONESIA
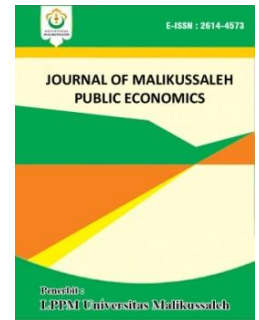
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A R T I C L E I N F O R M A T I O N

A B S T R A C T

This research aims to analyze the influence of gross domestic product, imports and the exchange rate on foreign exchange reserves in Indonesia in the short and long term. This research uses secondary data obtained from World Bank publications for 32 years (1991-2022). To achieve the results of this research, Autoregressive Distributed Lag (ARDL) dynamic model analysis was used using the Eviews program. The results of this research in the short term show that the gross domestic product variable has a positive and insignificant effect, imports have a negative and insignificant effect, while the exchange rate has a positive and significant effect on foreign exchange reserves. In the long term, the results of this research show that the gross domestic product and exchange rate variables have a positive and significant effect on foreign exchange reserves, while imports have a negative and significant effect on foreign exchange reserves in Indonesia.

1. INTRODUCTION

The Indonesian economy in the era of globalization continues to grow rapidly, improving the welfare of its people through various development activities in various sectors. One very important aspect in supporting national development is foreign exchange reserves. Foreign exchange reserves are a vital indicator that reflects the development of a country's international trade and shows the fundamental strength or weakness of its economy. With globalization, the dynamics of the Indonesian economy are increasingly connected to international markets, making foreign exchange reserve analysis a relevant and crucial approach.

At the global level, foreign exchange reserves not only reflect the economic stability of a country, but are also a determining factor in gaining investor confidence and maintaining external economic balance. Monitoring foreign exchange reserves is not only useful in measuring national development progress, but also provides an overview of the extent to which Indonesia can adapt and compete in the dynamics of an increasingly integrated global economy (Agustina, 2014).

Considering the important role of foreign exchange reserves in financing development of a country, then every country tries to maintain it position of foreign exchange reserves held, and even trying to increase them. In the last decade,

Indonesia's foreign exchange reserves have experienced significant fluctuations. In general, Indonesia's foreign exchange reserves have increased. In Fitria's research (2021), there are several supporting indicators related to increasing foreign exchange reserves, including oil and gas foreign exchange, exports, foreign debt and capital investment (portfolio investment). Below is presented data related to the development of Indonesia's foreign exchange reserves.
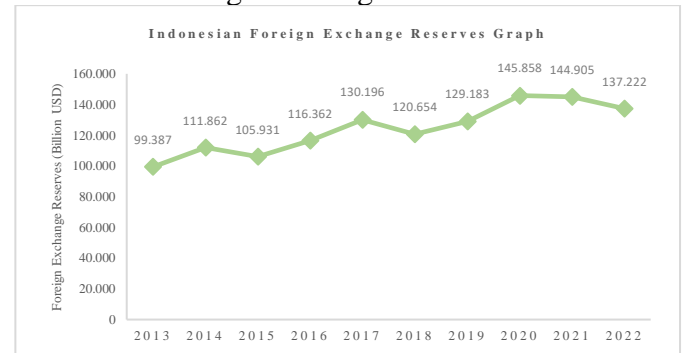
Source: World Bank (2023)
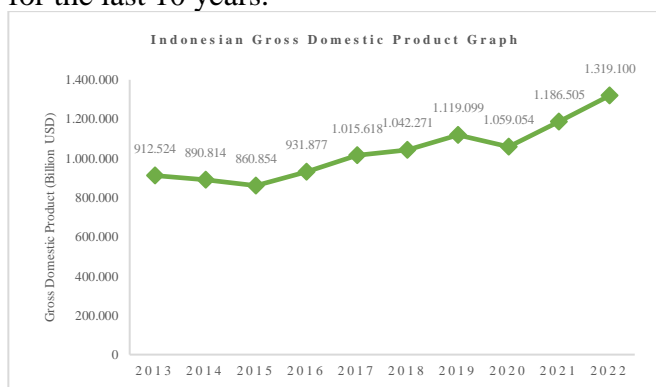**Figure 1: Indonesia's Foreign Exchange Reserves 2013 – 2022 (Billion USD)**

Based on Figure 1, Indonesia's foreign exchange reserves in 2013 - 2022 experienced fluctuations but tended to increase, in 2013 Indonesia's foreign exchange reserves amounted to 99.387 billion USD and increased in 2014 reaching 111.862 billion USD which was influenced by

foreign exchange receipts from oil and gas exports, withdrawals from government foreign loans. and other government revenues in foreign currency which exceed expenditures for payment of government foreign debt and foreign exchange needs in the context of stability of the rupiah exchange rate and decreased again in 2015 to reach 105.931 billion USD due to increased expenditure for payment of government foreign debt and the use of foreign exchange for stabilization purposes. rupiah exchange rate. The following year Indonesia's foreign exchange reserves increased again until in 2017 the value of foreign exchange reserves reached 130.196 billion USD. This increase was mainly influenced by foreign exchange receipts, including from the government's issuance of global bonds as well as the government's portion of oil and gas export tax and foreign exchange revenues.

The role of foreign exchange reserves is important in supporting the country's economy because foreign exchange reserves can be used to maintain the stability of the country's economy when external and internal pressures occur which have an impact on macroeconomic resilience. Having sufficient foreign exchange reserves is important for a country to carry out international trade activities (Fitria, 2021).

One of the factors that can encourage a surplus in foreign exchange reserves is Gross Domestic Product (GDP), gross domestic product is a measure of national income for a country's economy in a certain period (usually one year). The evaluation process involves the amount of added value at each stage of production of all final commodities that are produced by a country in a certain period of time in monetary terms (Ardianti, 2018).

Below is presented data related to the development of Indonesia's gross domestic product for the last 10 years.
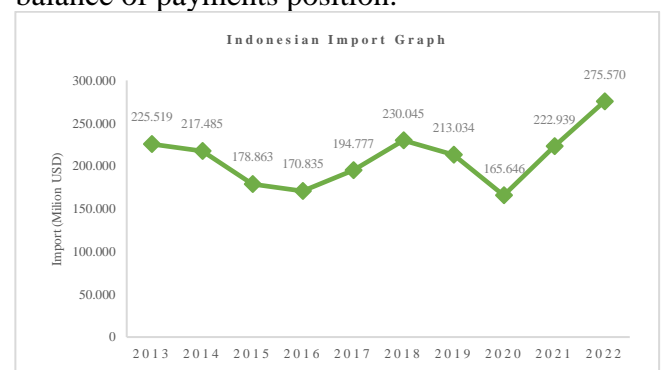

Source: World Bank (2023)
Figure 2: Indonesia's Gross Domestic Product 2013 – 2022 (Billion USD)

Based on Figure 2 above, it shows that Indonesia continues to recover and revive economic enthusiasm by implementing various economic policies. One of the policies implemented by the government is to simplify and accelerate the import process. Prioritizing import acceleration for leading traders, simplification of funds to reduce import restrictions, and import services through the national logistics ecosystem (Ministry of Finance, 2021). Astuty's research (2020) shows that gross domestic product has a positive and significant effect on Indonesia's foreign exchange reserves.

The next indicator that influences foreign exchange reserves is import activity. The link between imports and foreign exchange reserves is that imports are determined by the availability of commodities that compete with foreign commodities. A company that imports will need a larger amount of foreign exchange to pay for the transaction (Salsabila & Sumantri, 2022).

Imports have both positive and negative impacts on a country's economy and society. According to Ekananda (2014), to protect weak domestic producers, a country usually limits the amount (quota) of imports. Apart from protecting domestic producers, import restrictions also have a wider impact on a country's economy. The positive impact of import restrictions in general is increasing love for domestic products, reducing foreign exchange outflows abroad, reducing dependence on imported goods, strengthening the balance of payments position.
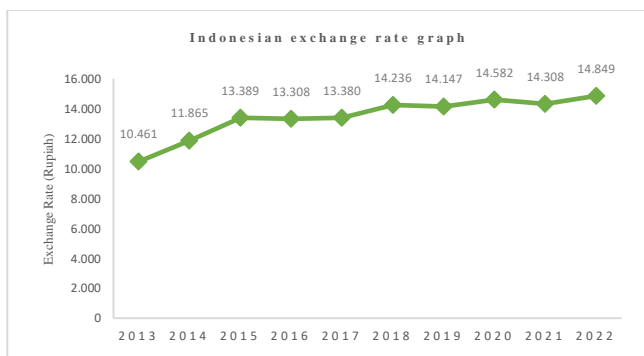

Source: World Bank (2023)
Figure 3: Indonesia's Import 2013 – 2022 (Billion USD)

Figure 3 above shows that in 2013 Indonesia's imports amounted to 225,519 million USD and continued to decline until 2016 amounting to 170,835 million USD. This reflects efforts to reduce dependence on imported goods and services or the impact of changes in economic policy. Then in 2018, the import value increased to reach 230,045 million USD. This is due to demand for public consumption, fulfillment of raw materials

for industry and capital goods for infrastructure projects. 2020 recorded a significant decline in imports with a value of 165,646 million USD, which was due to the impact of the Covid-19 pandemic which disrupted global trade. Imports in 2021 and 2022 will increase again to 275,570 million USD, indicating that there is global economic recovery activity after Covid-19.

In research conducted by Benny (2013), imports have a negative and significant effect on foreign exchange reserves, meaning that if imports increase, the position of foreign exchange reserves will decrease. Likewise, research conducted by Rianda (2020) shows that imports have a negative and significant effect on foreign exchange reserves in Indonesia.

In making payments for international trade transactions, namely imports, a universally accepted currency unit is required, namely the United States dollar, so Indonesia must pay attention to the exchange rate to avoid a budget deficit (Yanti, 2016). Exchange rates (exchange rates) that experience changes can affect the price of products produced to increase or decrease, so that the exchange rate is used as an intermediary to increase competitiveness (Andriani, 2015).

Source: World Bank (2023)
Figure 4: Indonesia's Exchange Rate 2013 – 2022 (Rupiah)

Figure 4 shows that the development of the Indonesian exchange rate for 2013 to 2022 experienced fluctuations but tended to increase. In 2013, the Rupiah had a strong value, 1 USD was equivalent to 10,461 Rupiah. However, in the following years the rupiah experienced significant depreciation, with the peak of depreciation occurring in 2022 when 1 USD was worth 14,849 Rupiah. These trends reflect stress and instability in currency markets, which can be influenced by internal and external factors, such as monetary policy, global events or economic crises. Despite some annual fluctuations, the rupiah exchange rate has remained low relative to the United States dollar over the past decade, which can have a significant impact on exports, imports, inflation,

and investment in the Indonesian economy. Changes in currency exchange rates are an important indicator in understanding economic conditions and economic policies in Indonesia.

In Dani's research (2020), the exchange rate has a positive and significant effect on foreign exchange reserves. An increase in the rupiah exchange rate will affect an increase in foreign exchange reserves. The rupiah exchange rate will remain strong and foreign exchange reserves will increase if the economy is stable. Likewise, in Dananjaya's (2019) research, the rupiah exchange rate has a significant and positive effect on Indonesia's foreign exchange reserves. If the rupiah exchange rate rises against the USD, foreign exchange reserves will increase. This research is in accordance with research by Juniantara (2012), that the exchange rate has a positive and significant effect on foreign exchange reserves.

The relationship between the exchange rate and foreign exchange reserves is that the more foreign currency owned by the government and residents of a country means the greater the country's ability to carry out international economic and financial transactions, thus strengthening the value of the currency. On the other hand, the stronger the country's currency exchange rate, shows that the stronger the economy of the country concerned, so that it can obtain more foreign exchange (Agustina, 2018).

Research related to factors that influence foreign exchange reserves has been widely studied by previous researchers, but the research gap provides different results, such as research conducted by Juliansyah (2020) with the title the influence of exports, imports, the rupiah exchange rate and the inflation rate on reserves. Indonesian foreign exchange. The research results show that exports, imports, the rupiah exchange rate and the inflation rate have an influence on Indonesia's foreign exchange reserves. Furthermore, research was conducted by Khusnatun & Hutajulu (2021) with the title analysis of factors that influence Indonesia's foreign exchange reserves. The research results show that what influences foreign exchange reserves is the BI Rate and External Debt (ULN), and the short-term balance influences the long-term balance. Research conducted by Fitria (2021) entitled analysis of factors that influence foreign exchange reserves in Indonesia. The research results show that non-oil and gas exports and the exchange rate have a positive relationship and have a significant effect in the short and long term, while external debt and inflation have a negative relationship and have no significant effect.

Research conducted by Dananjaya (2019) entitled the influence of exports, imports, the rupiah exchange rate, and the inflation rate on Indonesia's foreign exchange reserves for the 1999-2018 period. The research results show that exports and the exchange rate have a positive and significant effect on foreign exchange reserves.

The difference in this research with previous research is that on average previous research only used export and import variables, but in this research it focuses on gross domestic product, imports and the exchange rate so that the development of economic activity in a country and the value of money can be observed further. Furthermore, this research uses time series data with a period of 32 years. The analysis method used in previous research on average used the multiple linear regression method, while in this study the dynamic method was used, namely Autoregressive Distributed Lag (ARDL). Furthermore, with this method the author can find out the short and long term influence of variable x on variable y. Based on the explanation above, the author is interested in researching and discussing further the phenomena that occur in gross domestic product, imports, exchange rates and foreign exchange reserves under the research title "The Influence of Gross Domestic Product, Imports and Exchange Rates on Foreign Exchange Reserves in Indonesia".

2. THEORETICAL STUDIES
Foreign Exchage

Foreign exchange reserves are foreign currency deposits by central banks and financial institutions. These deposits are central bank funds held in various reserve currencies such as dollars, euros, or yen, and are used to support its liabilities, namely local currency issues and bank reserves held at the central bank by the government or financial institutions. Theoretically, foreign exchange reserves are foreign assets that meet the following criteria: (1=) liquid, (2) denominated in a major foreign currency, (3) controlled by a financial institution, and (4) can be immediately used to settle international transactions (Arista , 2018)

According to Hady in Sonia and Setiawina (2016), foreign exchange reserves are foreign funds owned by the government and banks for international transactions. Foreign exchange reserves are used as an important indicator that shows the extent to which a country can participate in international trade, and as a reference for the strengths and weaknesses of the country's main economic indicators.

Gross Domestic Product

According to Eber da Griffin, what is meant by gross domestic product refers to the total value of all goods and services produced within a given period by a national economy through domestic factors of production. Gross national product is the value of all goods and services produced by an economic system in a year regardless of where the factors of production are located (Murhadi, 2009).

Gross domestic product can be interpreted as the value of goods and services produced in a country in a particular year. In an economy, in developed and developing countries, goods and services are produced not only by companies owned by residents of that country but also by residents of other countries. Multinational companies operate in various countries and help increase the value of goods and services. produced by national production originating from abroad. These multinational companies provide capital, technology and experts to the countries where the company operates. Its operations help increase goods and services produced within the country, increasing the use of labor and income which often also helps increase exports (Sukirno, 2012).

Import

Imports are the purchase of foreign goods or services from one country to another. The reason for imports is a lack of domestic production, in this case the country has to buy goods or services from other countries. In the process of purchasing goods or services, what is used as a means of payment is foreign currency originating from foreign exchange reserves (Sonia and Setiawina, 2016).

Imports are one of the leakage variables in a country's economy, meaning that if a country's imports increase, the country's national income decreases. This is due to the existence of a multiplier process in the economy (Chalid, 2008).

Exchange Rate

The exchange rate or exchange rate is a means of payment in the form of foreign currency which is used to finance economic transactions and international transactions (Hermawati, 2018). International payments require the exchange of one country's currency for another country's currency, which is called foreign exchange. In general, the exchange rate is a comparison between one country's currency and another country's currency. For the economy, the exchange rate is a very important component in carrying out international transactions.
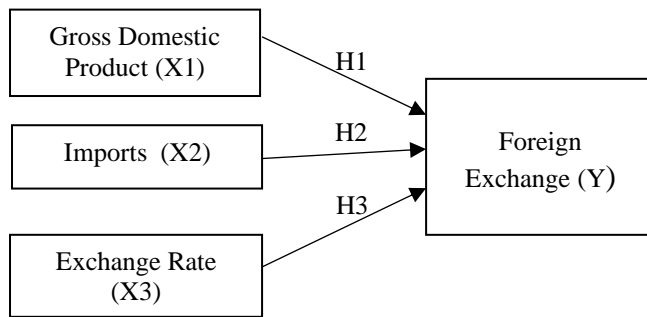
Conceptual Framework

Figure 5 : Conceptual Framework

Hypothesis

H_1:   It is suspected that gross domestic product has a positive and significant effect on foreign exchange reserves in Indonesia in the short and long term.

H_2 :   It is suspected that imports have a negative and significant effect on foreign exchange reserves in Indonesia in the short and long term.

H_3 :   It is suspected that the exchange rate has a positive and significant effect on foreign exchange reserves in Indonesia in the short and long term.

3. RESEARCH METHODS

Time and place of research

The time used in the study was 32 years starting in 1991-2022. The location of the study was conducted in Indonesia.

Data Types And Sources

The type of data used is secondary data obtained through the publication of the book Statistics Indonesia and World Bank.

Operational Definition Of Variables

1. Foreign exchange reserves are pure rupiah funds that are spent in the form of foreign currency to finance the procurement of goods and services originating from abroad, to measure this using Billion USD units.
2. Gross Domestic Product is the total value added to goods and services produced by various production units in a country within a year. In this research, GDP is used based on current prices in USD.
3. Import is the activity of bringing goods into the customs area or the activity of purchasing products (goods or services) from abroad. The data used is in the form of Million USD.
4. Exchange rate is the price or exchange rate of a country's currency or currency with

another country's currency and to measure it using Rupiah units.

Data Analysis Methods

This research uses a quantitative analysis method using the ARDL method with time series data. By using quantitative data analysis, the ARDL method in processing data, you can find out how the independent variable (independent variable) can influence the dependent variable (dependent variable). The ARDL (Autoregressive Distributed Lag) model is a combination of the AR (Auto Regressive) and DL (Distributed Lag) models. The AR model is a model that uses one or more data from the past from the dependent variable among the explanatory variables. The DL model is a regression involving data at present and past time (lagged) from explanatory/independent variables (Gujarati & Porter, 2012).

Data Stationarity Test

Stationarity test / unit Root test (Unit Root Test) is performed to determine whether or not a variable is stationary.

Classical Assumption Test

The OLS (Ordinary Least Squares) assumption test is carried out to determine whether the regression results of a model produce an estimator that is BLUE (Best Linear Unbiased Estimator). The way to find out is to carry out a normality test, autocorrelation test and heteroscedasticity test.

Determination of Optimum Lag

Lag serves to describe past dependencies and allows researchers to capture relationships between variables that occur over time. for example, in time series regression analysis.

Cointegration Test (Bound Test Cointegration)

Carry out a cointegration test, which is a test used to determine whether there is long-term balance between the variables in the model as desired by economic theory. In other words, if the variables in the model are cointegrated, then there is a long-term relationship (Rahmawati & Laila, 2020).

ARDL (Autoregressive Distributed Lag) Model Estimation

This research uses the Autoregressive Distributed Lag (ARDL) model specification. The general model of ARDL is expressed in the following equation (Jumhur 2020)::

$$Y_t = \alpha + \sum_{i=0}^{n} \beta_i X1t_{-1} + \sum_{i=0}^{m} \gamma_i X2_{t-i} + \sum_{i=0}^{p} \varphi_i X3_{t-i} + \epsilon_t$$

Information:

Y_t : Dependent variable year t
$X1_{t-i}$: Independent variable first year to year $t - i$
$X2_{t-i}$: Independent variable second year to year $t - i$
$X3_{t-i}$: Independent variable third year to year $t - i$
α : Constant
$\beta_i \gamma_i \varphi_i \varnothing_i$: Regression Coefficient
ϵ_t : Error term

ARDL (Autoregressive Distributed Lag) Model Stability

The ARDL model stability test in this study used the CUSUM test with a confidence level of 95%. The stability test in the Autoregressive Distributed Lag (ARDL) model aims to ensure that the model estimates remain stable in both the short and long term.

4. RESEARCH RESULTS AND DISCUSSION

ARDL (Autoregressive Distributed Lag) Stationarity Test

Table 1
Stationary Test Results

| Variabel	Unit Root	ADF T – Statistic	Critical Value (5%)	Probability ADF	Information
Foreign Exchange	1st Difference	-5.009218	-2.963972	0.0003	Stationary
Gross Domestic Product	1st Difference	-5.630188	-2.963972	0.0001	Stationary
Imports	1st Difference	-4.949375	-2.963972	0.0004	Stationary
Exchange Rate	1st Difference	-4.328407	-2.976263	0.0022	Stationary

Source: Research Results, 2024

Based on Table 1 above, it can be concluded that the variables of foreign exchange reserves, gross domestic product, imports and the exchange rate are stationary at the 1st difference level. This is based on the provisions of the stationarity test of the probability value at a level greater than 0.05. Apart from that, it can be seen from the probability provisions at the level that it is smaller than 0.05. So it can be concluded that all variables are stationary at the 1st Difference level.

Classical Assumption Test

In this research, the classical assumption tests used are the normality test, autocorrelation test and heteroscedasticity test. This test aims to ensure that the data obtained does not have any problems so that the data in this study is normally distributed and worthy of research. The results of the classical assumption test in this research are as follows:

Normality Test
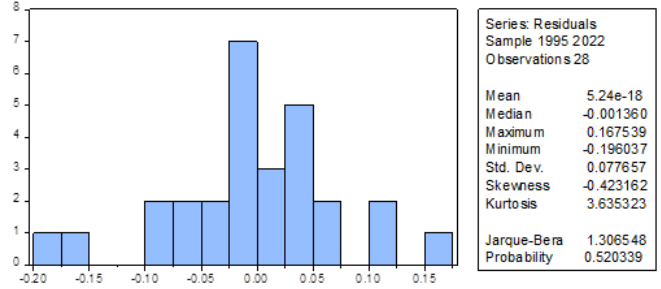
Source: Eviews 10, 2024
Figure 6
Normality Test Results

Based on Figure 6 above, it can be concluded that in this study the Jarque-Bera value is 1.306 with a Chi Squere Table with df (4) at 5% of 9.488 so 1.306 < 9.488 therefore the residual data in this research model is normally distributed. This can also be seen from the Jarque-Bera probability of 0.520 > 0.05, so this value is the Jarque-Bera probability greater than 0.05, which means this model is normally distributed.

Autocorrelation Test

Table 2
Autocorrelation Test Results

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.209956	Prob. F(2,15)	0.8130
Obs*R-squared	0.762489	Prob. Chi-Square(2)	0.6830

Source: Research Results, 2024

Based on Table 2, it shows that Obs*R-square is 0.76 and Chi-Square (2) table at α=5% is 5.99. So, 0.76 < 5.99 then in this model it is free from indications of autocorrelation. This can also be seen from the Chi-Square Prob of 0.683 > 0.05

Heterodesity Test

Table 3
Heterodesity Test Results

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.563453	Prob. F(10,17)	0.8212
Obs*R-squared	6.970188	Prob. Chi-Square(10)	0.7283
Scaled explained SS	3.385556	Prob. Chi-Square(10)	0.9708

Source: Research Results, 2024

Based on Table 3, the results show that the Obs*R-Square value is 6.9701 and the Chi-Square (10) table at α=5% is 33.924. So, 6.9701<33.924 means that in this model it is free from indications of hetroscedasticity. This can also be seen from the Chi-Square prob of 0.7283> 0.05.

Optimum Lag Determination

Akaike Information Criteria (top 20 models)
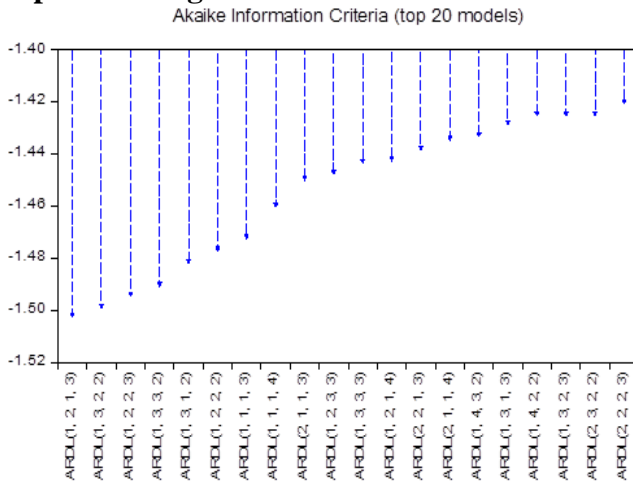
Source: Research Results, 2024

Figure 7

Optimum Lag Determination Test Results

In the selection summary criteria graph model used with the Akaike Information Criterion method (top 20 models) selected in ARDL (2,2,2,3) because seen in Figure 7 the lowest dotted line is on that line, on average The number that appears frequently is 1 so the optimum lag is 1.

Cointegration Bound Test

Table 4
Cointegration Bound Test Result

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	9.147426	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66
Actual Sample Size	28		Finite Sample: n=35	
		10%	2.618	3.532
		5%	3.164	4.194
		1%	4.428	5.816
			Finite Sample: n=30	
		10%	2.676	3.586
		5%	3.272	4.306
		1%	4.614	5.966

Source: Research Results, 2024

Based on Table 4 above, the results show that cointegration occurred in this research. This can be seen from the F-statistic value of 9.15 which is greater than I (0) and I (1) at the 1%, 5% and 10% significance levels.

ARDL Model Estimation Results

Short Term Testing

Table 5
Short Term ARDL Estimation Results

ECM Regression				
Case 2: Restricted Constant and No Tren				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNPDB, 2)	0.699928	0.576183	1.214767	0.2411
D(LNPDB(-1), 2)	0.459650	0.366470	1.254266	0.2267
D(LNIMP, 2)	-0.260306	0.155414	-1.674924	0.1122
D(LNKURS, 2)	0.446858	0.404735	1.104075	0.2849
D(LNKURS(-1), 2)	0.866653	0.368336	2.352891	0.0309
D(LNKURS(-2), 2)	0.217928	0.072996	2.985473	0.0083
CointEq(-1)*	-1.213208	0.161404	-7.516569	0.0000

Source: Research Results, 2024

Based on Table 5, the ARDL short-term test results can be formulated

$$\Delta CD_t = 0.699\Delta PDB_t + 0.456\Delta PDB_{t-1} - 0.260 IMP\Delta_t + 0.446\Delta KURS_t + 0.866\Delta KURS_{t-1} + 0.217\Delta KURS_{t-2} - 1.213\, Ect\,(-1)$$

Based on Table 5, the estimation results of the model above can be seen that the CointEq (-1)/Ect (-1) value is -1.213208 with a probability of 0.0000, this shows that every 100.25% error or disequilibrium that occurs will be corrected at every time period (one month).

Gross domestic product at lag 0 has a coefficient of 0.69, which means that if gross domestic product in the current year increases by 1%, it will increase foreign exchange reserves in the current year by 0.69%. This variable is not significant at the 5% level with a probability value of 0.24 > 0.05, so gross domestic product has a positive and insignificant effect on Indonesia's foreign exchange reserves.

Gross domestic product in the previous year had a coefficient value of 0.456, which means that gross domestic product in the previous year increased by 1%, which would increase foreign exchange reserves in the current year by 0.456%. This variable is not significant at the 5% level with a probability value of 0.22 > 0.05, gross domestic product at lag 1 has a positive and insignificant effect on Indonesia's foreign exchange reserves.

Imports at lag 0 have a coefficient of -0.260, which means that imports in the current year

increasing by 1% will reduce foreign exchange reserves in the current year by 0.26%. This variable is not significant at the 5% level with a probability value of 0.112 > 0.05, so imports have a negative and insignificant effect on Indonesia's foreign exchange reserves.

The exchange rate at lag 0 has a coefficient of 0.446, which means that the exchange rate in the current year strengthens by 1%, which will increase foreign exchange reserves in the current year by 0.446%. This variable is not significant at the 5% level with a probability value of 0.28 > 0.05, so the exchange rate has an effect positive and not significant to Indonesia's foreign exchange reserves.

The exchange rate in the previous year had a coefficient value of 0.866, which means that the exchange rate in the previous year increased by 1%, which would increase foreign exchange reserves in the current year by 0.866%. This variable is significant at the 5% level with a probability value of 0.03 < 0.05, the exchange rate product at lag 1 has a positive and significant effect on Indonesia's foreign exchange reserves.

The exchange rate in the previous 2 years had a coefficient value of 0.217, which means that the exchange rate in the previous 2 years strengthened by 1%, which will increase foreign exchange reserves in the current year by 0.217%. This variable is significant at the 5% level with a probability value of 0.0083 < 0.05, so exchange rate imports at lag 2 have a positive and significant effect on Indonesia's foreign exchange reserves.

Long Term Testing

Table 6
Long Term Testing Result

Levels Equation				
Case 2: Restricted Constant and No Tren				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNPDB)	2.251452	0.570647	3.945438	0.0010
D(LNIMP)	-0.910393	0.342622	-2.657136	0.0166
D(LNKURS)	0.924492	0.282673	3.270532	0.0045
C	-0.081749	0.047370	-1.725770	0.1025
EC = D(LNCDV) - (2.2515*D(LNPDB)		-0.9104*D(LNIMP) + 0.9245		
*D(LNKURS) -0.0817)				

Source: Research Results, 2024

Based on Table 6 above, the long-term test results using the ARDL model in this table can be formulated as follows:

$$\Delta CDV_t = -0.082 + 2.251\Delta PDB_t - 0.9103\Delta IMP_t + 0.092\Delta KURS_t$$

A constant value of -0.082 means that if gross domestic product, imports and the exchange rate are constant (fixed) in the long term, then foreign exchange reserves are -0.082.

The gross domestic product coefficient value is 2,251, meaning that if gross domestic product in the long term increases by 1%, then foreign exchange reserves will increase by 2.25%. The gross domestic product variable has a positive and significant effect on Indonesia's foreign exchange reserves at the 5% level, because the probability value is 0.0010 < 0.05.

The import coefficient value is -0.910, meaning that in the long term imports increase by 1%, then foreign exchange reserves will decrease by 0.91%. The import variable has a negative and significant effect on Indonesia's foreign exchange reserves at the 5% level, because the probability value is 0.0166 < 0.05.

The coefficient value of the exchange rate is 0.924, meaning that in the long term the exchange rate increases by 1%, then foreign exchange reserves will increase by 0.924%. The exchange rate variable has a positive and significant effect on Indonesia's foreign exchange reserves at the 5% level, because the probability value is 0.0045 < 0.05.

Model Stability Testing
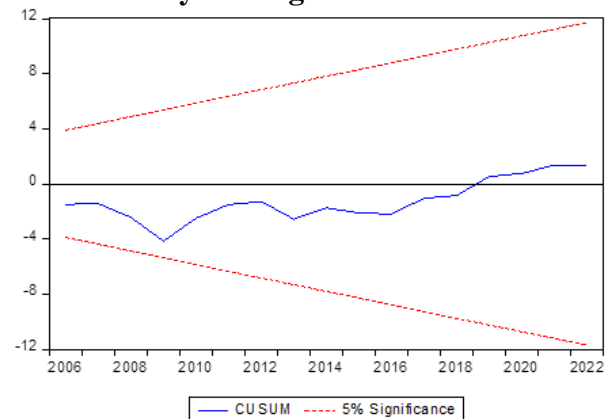
Source: Research Results, 2024
Figure 8
QUSUM Test Results
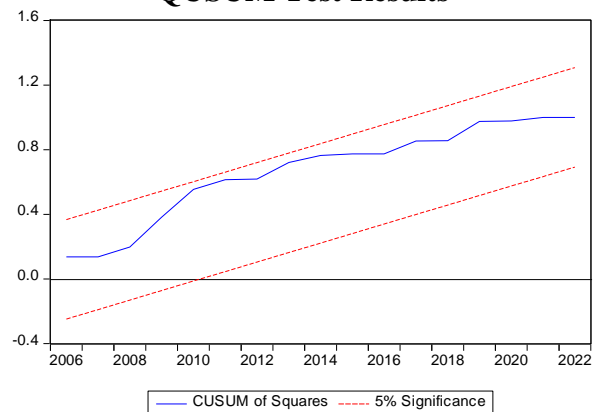
Source: Research Results, 2024
Figure 9
QUSUMQ Test Results

Based on Figure 8 and Figure 9 above, the CUSUM test results can be concluded that at the 5% level the blue line does not cross the dotted red line, indicating that the model is stable. Furthermore, from the CUSUMQ test results it can be concluded that at the 5% level the blue line does not cross the dotted red line, indicating that the model is well stable.

DISCUSSION

The Influence of Gross Domestic Product on Foreign Exchange Reserves in Indonesia

The gross domestic product variable in the short term has a positive and insignificant effect on Indonesia's foreign exchange reserves. This means that if gross domestic product increases, foreign exchange reserves will not increase. This happens because gross domestic product is one method for calculating national income. Increasing income will increase the tendency to increase consumption of goods and services. High demand is due to increasing consumption of goods and services and production which continues to require countries to import to meet domestic needs. Imports are carried out in order to maintain economic stability in the country (Ardianti 2018). The results of this research are in line with research conducted by Hidayah (2022), concluding that in the short term gross domestic product has a positive and insignificant effect on foreign exchange reserves.

In the long term, gross domestic product has a positive and significant effect on foreign exchange reserves. This means that if gross domestic product increases, Indonesia's foreign exchange reserves will increase. This is in accordance with the theory and research hypothesis. The results of this research are also in line with research conducted by Astuty (2020), concluding that in the long term gross domestic product has a positive and significant effect on Indonesia's foreign exchange reserves. Furthermore, research conducted by Ardianti (2018), stated in his research that gross domestic product in the long term has a positive and significant effect.

The Effect of Imports on Foreign Exchange Reserves in Indonesia

The import variable in the short term has a negative and insignificant effect on Indonesia's foreign exchange reserves. This means that if imports increase, in the short term Indonesia's foreign exchange reserves will not decrease. This happens because when importing, the Indonesian government will finance these imports with Indonesian foreign exchange reserves, where if the amount of imports increases, the value of foreign exchange reserves will decrease. However, the increase in imports was triggered by strong domestic demand for imported goods followed by cheaper raw materials in Indonesia and cheap labor costs, thus attracting investors to invest foreign capital in Indonesia by building factories for goods that are always imported so that capital flows flow. Foreign entry will result in a surplus in Indonesia's trade balance so that foreign exchange reserves will also increase Rianda (2020). The results of this research are in line with research conducted by Agustina (2014), concluding that imports have no effect on foreign exchange reserves.

In the long term, imports have a negative and significant effect on Indonesia's foreign exchange reserves. This means that if imports increase, Indonesia's foreign exchange reserves will decrease. This is in line with research conducted by Benny (2013) which states that imports have a negative and significant effect on Indonesia's foreign exchange reserves.

The Influence of the Exchange Rate on Foreign Exchange Reserves in Indonesia

The exchange rate variable in the short term has a positive and insignificant effect on Indonesia's foreign exchange reserves. This means that if the exchange rate strengthens it will not cause Indonesia's foreign exchange reserves to increase. This is because the higher or stronger the value of the domestic currency, the more valuable it will be when exchanged for US dollars, which is the currency usually used as foreign exchange reserves. This means that when rupiah is exchanged for dollars, the number of dollars that will be received will increase (Pratiwi 2018). The results of this calculation are in accordance with current conditions in the field, in 2014 the exchange rate was 11,865 rupiah with total foreign exchange reserves of 111,862 billion USD. In 2015, the exchange rate decreased to 13,389 rupiah, due to its positive influence, foreign exchange reserves also decreased to 105,931 billion USD.

This research is in line with research conducted by Agustina (2014), concluding that in the short term the exchange rate has no effect on Indonesia's foreign exchange reserves. At lags 2 and 3, the exchange rate variable (exchange rate) has a positive and significant effect at the 5% level on foreign exchange reserves in Indonesia. This means that if the exchange rate strengthened in the previous 2 years it would increase Indonesia's foreign exchange reserves.

In the long term, the exchange rate variable has a positive and significant effect on foreign exchange reserves. This means that if the exchange rate variable increases in the long term, foreign exchange reserves will increase. The results of this research are in line with research conducted by Islami (2018), which states that the exchange rate has a positive and significant effect on foreign exchange reserves in Indonesia.

5. CONCLUSIONS AND SUGGESTIONS
Conclusion

Based on the research results presented above, a conclusion can be drawn, namely:

1. In the short term, gross domestic product has no effect on foreign exchange reserves in Indonesia. This means that if gross domestic product increases, foreign exchange reserves will not increase, while in the long term, gross domestic product has an effect. positive and significant to foreign exchange reserves. This means that if gross domestic product increases, Indonesia's foreign exchange reserves will increase.

2. In the short term, imports have no effect on foreign exchange reserves in Indonesia. This means that if imports increase foreign exchange reserves will not decrease, whereas in the long term imports have a negative and significant effect on foreign exchange reserves. This means that if imports increase, Indonesia's foreign exchange reserves will decrease.

3. In the short and long term the exchange rate has a positive and significant effect on foreign exchange reserves. This means that if the exchange rate increases, foreign exchange reserves will increase.

Suggestions

1. In gross domestic product, it is hoped that the government and related agencies can develop and support policies that support the creation of good domestic production, so that economic activities can run well and smoothly to increase state income, with good economic conditions from year to year it will increase Indonesia's foreign exchange reserves.

2. Establishing import policies can be suppressed and reducing dependence on imports. This can be achieved by increasing domestic productivity with good quality and instilling an attitude of love for domestic products for all Indonesians. Using domestic products will reduce dependence on imports, and foreign exchange reserves can be maintained. .

3. The government and society must work together to carry out export activities and increase domestic investment so that the exchange rate in Indonesia can strengthen so that foreign exchange reserves can increase.

REFERENCES

Agustina, A. (2014). Pengaruh Ekspor, Impor, Nilai Tukar Rupiah, dan Tingkat Inflasi terhadap Cadangan Devisa Indonesia. *Jurnal Wira Ekonomi Mikroskil*, *4*(2), 61-70.

Ardianti, D. A. M., & Swara, W. (2018). Pengaruh Ekspor Neto, Kurs, PDB dan Utang Luar Negeri terhadap Cadangan Devisa Indonesia 1997-2016. *Jurnal Ekonomi Pembangunan Unud*, *7*(6), 1199-1227

Arista, J. (2018). Foreign Exchange Reserves. *All Fall Down*, *23*, 98–100. https://doi.org/10.4337/9781788119498.00023

Astuty, F. (2020). Pengaruh produk domestik bruto, ekspor dan kurs terhadap cadangan devisa di Indonesia. *JPEK (Jurnal Pendidikan Ekonomi Dan Kewirausahaan)*, *4*(2), 301-313.

Benny, J. (2013). Ekspor dan impor pengaruhnya terhadap posisi cadangan devisa di Indonesia. *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis Dan Akuntansi*, *1*(4).

Chalid, N. (2008). Fungsi Impor dalam Perekonomian Indonesia. 73-69 ,(1)49

Dananjaya, I. putu A. B., Jayawarsa, A. A. K., & Purnami, A. A. S. (2019). Pengaruh Ekspor, Impor, Kurs Nilai Tukar Rupian, Dan Tingkat Inflasi terhadap Cadangan Devisa Indonesia periode 1999-2018. *Warmadewa Economic Development Journal (WEDJ)*, *2*(2), 64–71.

Ekananda. (2014). Ekonomi Internasional. Jakarta: Erlangga.

Fitria, N., Soelistyo, A., & Susilowati, D. (2021). Analisis Faktor-Faktor yang Mempengaruhi Cadangan Devisa di Indonesia. In *Jurnal Ilmu Ekonomi (JIE)* (Vol. 5, Issue 3).

Gujarati, P. (2013). *Dasar-Dasar Ekonometrika*. Jakarta: Salemba Empat.

Hermawati, F. (2018). Analisa Pemanfaatan Dan Permasalahan Hutang Luar Negeri Indonesia Tahun 2013-2017. *4*(4), 1–20.

Islami, H., & Rizki, C. Z. (2018). Pengaruh suku bunga, kurs dan inflasi terhadap cadangan devisa Indonesia. *Jurnal Ilmiah Mahasiswa Ekonomi Pembangunan*, *3*(1), 1-10

Juliansyah, H., Moulida, P., & Apridar, A. (2020). Analisis Faktor-faktor yang Mempengaruhi Cadangan Devisa Indonesia Bukti (Kointegrasi dan Kausalitas). *Jurnal Ekonomi Regional Unimal*, *3*(2), 32. https://doi.org/10.29103/jeru.v3i2.3204

Jumhur, J. (2020). Penerapan autoregressive distributed lag dalam memodelkan pengaruh inflasi, pertumbuhan ekonomi, dan FDI terhadap pengangguran di Indonesia. Jurnal Ekonomi Bisnis Dan Kewirausahaan, 9(3), 250-265.

Juniantara, putu kusuma, & Budhi, Made Kembar Sri. (2011). Pengaruh Ekspor, Impor dan Kurs Terhadap Cadangan Devisa. *Jurnal Ilmiah Rekayasa Pertanian Dan Biosistem*, 32–38.

Khusnatun, L. L., & Hutajulu, D. M. (2021). Analisis Faktor-Faktor Yang Mempengaruhi Cadangan Devisa Indonesia. *Ekono Insentif*, *15*(2), 79-92.

Murhadi, W.R *Analisis Saham Pendekatan Fundamental,* (Jakarta: PT Indeks,(2009),h. 19

Pratiwi, D. S., Busairi, A., & Junaidi, A. (2018). Pengaruh ekspor dan nilai tukar rupiah serta tingkat inflasi terhadap cadangan devisa indonesia. *Jurnal Ilmu Ekonomi Mulawarman (JIEM)*, *3*(4).

Salsabila, & Sumantri. (2022). Pengaruh Ekspor, Impor dan Tingkat Inflasi terhadap Cadangan Devisa Indonesia Periode 2017-2021. *Jurnal Pendidikan Tambusai*, *6*(2), 10718–10724.

Sonia, A. P., & Setiawina, N. D. (2016). Pengaruh Kurs , Jub Dan Tingkat Inflasi Terhadap Ekspor , Impor Dan Cadangan Devisa Indonesia. *E-Jurnal EP*

Sukirno Sadono (2016), *Makroekonomi Teori Pengantar,* (Jakarta: Rajawali Pers, 2012), h. 35.