# ANALYSIS OF MONEY SUPPLY, FOREIGN EXCHANGE RESERVES AND EXCHANGE RATE ON ECONOMIC GROWTH IN INDONESIA

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***ABSTRACT***

***Purpose:***This research aims to analyze several variables that influence Indonesia's economic growth during the 2018-2022 period. The influencing variables are limited to only three, namely the money supply (JUB), foreign exchange reserves and the exchange rate, Methods: This research uses quantitative data in the form of monthly data collected from 2018 to 2022., Analysis data: The population in this study is the entire time series data on the money supply (JUB), foreign exchange reserves, exchange rate, and Indonesian economic growth. The data analysis used is multiple linear regression analysis., Results and discussions: The results of data analysis in this study show that variables consisting of money supply (JUB), foreign exchange reserves and exchange rates simultaneously have a significant effect on Indonesia's economic growth. , Conclusion: Partially, the money supply (JUB) has a significant effect on Indonesia's economic growth. Foreign exchange reserves have a significant influence on Indonesia's economic growth. The exchange rate has a significant effect on Indonesia's economic growth.

*Keywords:* ***Money supply, foreign exchange, reserve exchange rates, Economic growth in Indonesia***

## INTRODUCTION

Economic growth in a country requires very large costs. One of the production factors used to finance economic growth activities is capital. On the other hand, developing countries do not have sufficient costs to meet the needs of their country's economic growth, because productivity levels are still low and consumption is high.(Humanities, 2020).

**(Table 1. Economic Growth Data)**

| Year Economic Growth % | |
|---|---|
| 2013 | 5.06% |
| 2014 | 4.09% |

| | |
|---|---|
| 2015 | 7.73% |
| 2016 | 5.02% |
| 2017 | 5.50% |
| 2018 | 6.30% |
| 2019 | 5.09% |
| 2020 | 5.02% |
| 2021 | 5.01% |
| 2022 | 5.31% |

*Source: BPS, processed data*

One of the factors that influences economic growth is that money in circulation is all types of money in the economy, namely the amount of currency in circulation plus demand deposits in commercial banks. (Aprileven, 2017)Too much money circulating in society will have the effect of creating a lot of demand, and conversely too little money held by the public will result in low demand in society which will result in low production activities which can result in an economic recession. So the stability of money in circulation means economic stability for high and sustainable economic growth (Desy Tri Anggarini, 2016).

JUB in Indonesia is often translated into the concept of narrow money, because many people still think that controlled money is only part of liquidity. If government spending increases, the money supply should also increase, because government spending is financed with the value of the rupiah. If foreign exchange reserves increase, the money supply should also increase, because existing foreign exchange reserves are usually spent on expenses that year and exchanged for rupiah. Meanwhile, the relationship with the money multiplier number is that an increase in the money multiplier number has an effect on an increase in the money supply (Sonia & Setiawina, 2016).

The factors that influence economic growth, namely foreign exchange reserves, can be used as an important indicator to see the extent to which a country carries out international trade and to see how strong or weak a country's economy is (Uli, 2016).

Foreign exchange reserves are an important part of the economy, especially for countries that adhere to an open economic system, namely carrying out international relations such as exports and imports with other countries so that people's basic needs can be met. Foreign exchange reserves are a means of payment in international trade in the form of foreign currency managed by the domestic central bank which can be used to maintain monetary stability, national savings and debt payments (Khusnatun & Hutajulu, 2021).

The relationship between foreign exchange reserves and the exchange rate is that the more foreign exchange or foreign exchange owned by the government and residents of a country means the greater the country's ability to carry out international economic and financial transactions and the stronger the currency value (Kuswantoro, 2017).

Factors that can help international finance from economic growth are through exchange rates or exchange rates. The exchange rate is the amount of domestic money needed, namely the number of rupiah needed to obtain 1 unit of foreign currency (Afriyanti, 2020). The exchange rate is one of the important variables in an open economy, because this variable influences other variables such as prices, interest rates, balance of payments and current transactions (Leonufna et al., 2016). As explained in the Mundell-Fleming theory (in Mankiw 2003: 306-307) which states that there is a negative relationship between the exchange rate and economic growth, where the higher the exchange rate, the lower the net exports (the difference between exports and imports), this decrease will have an impact on the amount of output decreasing and will cause GDP (economic growth) to decrease.

Exchange rate is defined as a means of payment used to carry out international economic and financial transactions and usually has an official exchange rate at the Central Bank or Bank Indonesia. The exchange rate is also used as a determinant of the purchasing power of traded goods. Changes in exchange rates affect the prices of goods being bought and sold. If there is an appreciation in a country's exchange rate, the price of the country's export goods will decrease and conversely the price of imported goods will increase. The higher a country's exchange rate, the stronger the country's economy, so it can obtain more foreign exchange reserves. Large foreign exchange reserves indicate that the country has great capabilities in carrying out international economic (export) and financial transactions (Pridayanti, 2013).

## THEORETICAL BASIS

### Economic growth

Economic growth is a tool to explain or measure the achievements of the development of an economy. In actual economic activity, economic growth means the fiscal development of the production of goods and services that applies in a country, such as increasing the production of the service sector and increasing the production of capital goods. However, by using various types of production data it will clearly provide a picture of the economic growth achieved (Ambarwati et al., 2021).

Economic growth is also a significant increase in national income (with increasing per capita income) in a certain calculation period. Economic growth is a long-term increase in a country's ability to provide more and more types of economic goods to its population where this ability grows in accordance with technological progress, and the institutional and ideological adjustments it requires (Ambarwati et al., 2021).

**The amount of money in circulation**

Money Supply can be defined in a narrow sense (M1) and in a broad sense (M2). M1 includes currency held by the public and demand deposits (demand deposits denominated in Rupiah), while M2 includes M1, quasi money (including savings, time deposits in rupiah and foreign currency, as well as demand deposits in foreign currency), and securities issued by the monetary system owned by the domestic private sector with a remaining term of up to one year.

Theoretically, the money supply will influence the value of money implemented at price and product levels. If the amount of money in circulation is greater than the production of goods and services, this will have the impact of increasing prices and also mean the value of money will fall. On the other hand, if the money supply is smaller compared to the production of goods and services, this will result in a decrease in the price level. This is what will then influence how much or how little money circulates in society (Luwihadi & Arka, 2017).

The money supply is the product of base money by the money multiplier. The amount of money circulating in society can be described as a market process. The amount of money circulating is also related to deposit interest rates, the more money circulating in society, the more attractive investment becomes compared to saving in the form of savings (Ambarwati et al., 2021).

H1: Money in circulation (JUB) has a significant effect on economic growth.

**Foreign exchange reserves**

In Indonesia, foreign exchange reserves are accounted for by Bank Indonesia as stipulated in Law No. 3 of 2004 concerning Bank Indonesia. Bank Indonesia plays an important role in managing the economy in Indonesia, especially the country's foreign exchange. Bank Indonesia can carry out various foreign exchange transactions and can receive loans (Adhitya, 2021).

Foreign exchange reserves are a very important monetary indicator that shows the strength or weakness of a country's economic fundamentals. Apart from that, sufficient foreign exchange reserves are a guarantee of achieving monetary and macroeconomic stability in a country (Sayoga & Tan, 2017).

ManThe benefit of foreign exchange reserves owned by a country can be used to maintain exchange rate stability and can be used to finance deficits in the balance of payments. In its development, the Indonesian national economy has known two terms of foreign exchange reserves, namely official foreign exchange reserves and country foreign exchange reserves, each of which has a different scope. First, it is the state's foreign exchange reserves which are managed, administered and administered by the central bank, in accordance with the duties assigned by Law no. 13 of 1968. Second, it includes all foreign exchange held by bodies, individuals, institutions, especially national financial institutions which are monetarily part of national wealth (Benny, 2013).

H2: Foreign exchange reserves have a significant effect on economic growth.

**Exchange rate**

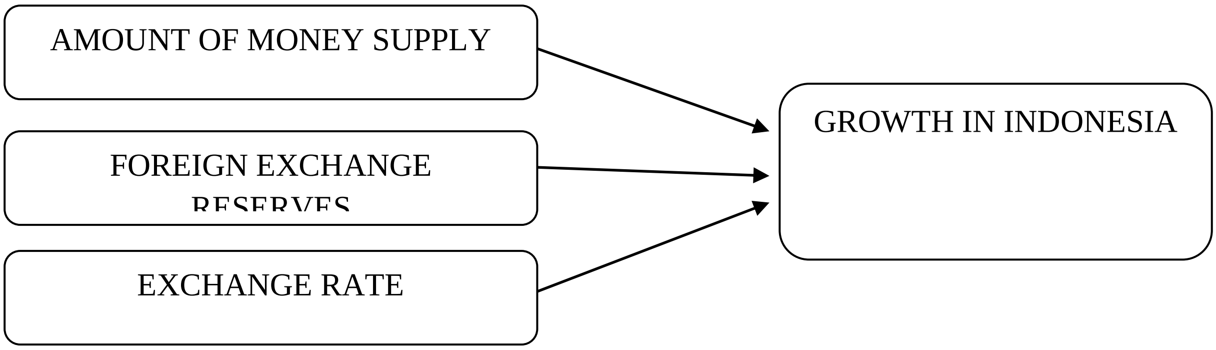
Exchange rate is the price or exchange rate of local currency against foreign currency. Players in international markets are very concerned about determining foreign exchange rates, because foreign exchange rates will influence the costs and benefits of "playing" in trading goods, services and securities. (Dewi Sartika et al., 2019)

The exchange rate or exchange rate is the amount of domestic money needed, namely the number of rupiah needed to obtain 1 unit of foreign currency. The exchange rate is one of the important variables in an open economy, because this variable influences other variables such as prices, interest rates, balance of payments and current transactions. (Pridayanti, 2013)

NThe exchange rate is managed to remain flexible and provide room for appreciation, but is maintained so that it does not deviate too far from the fundamental exchange rate (overvalued). Management of the exchange rate in line with fundamental conditions is carried out through symmetrical intervention in the foreign exchange market, which provides room for appreciative movement in the event of high foreign capital flows. On the monetary policy side, the complexity of monetary policy through interest rates can be partially resolved by implementing macroprudential policy. (Syarifuddin, 2015)

H3: The exchange rate has a significant effect on economic growth.

## HYPOTHESIS




The hypotheses in this research are:

H1:The amount of money in circulation (JUB) has a significant effect on economic growth.

H2:Foreign exchange reserves have a significant effect on economic growth.

H3: The exchange rate has a significant effect on economic growth.

H4: Money supply, foreign exchange reserves and exchange rates have a significant effect on economic growth in Indonesia

## METHOD

This research uses quantitative time series data (Nugroho, 2016) in the form of monthly data collected from 2018 to 2022 with contemporary considerations and at that time it could represent the latest dynamics of the Indonesian economy. The population used in this research is all data on money supply, foreign exchange reserves, exchange rates and economic growth. The data sources obtained from each variable are the Central Statistics Agency, Bank Indonesia, journals, news articles and other sources related to the topic of the research. Then analyzed using multiple linear regression analysis techniques.

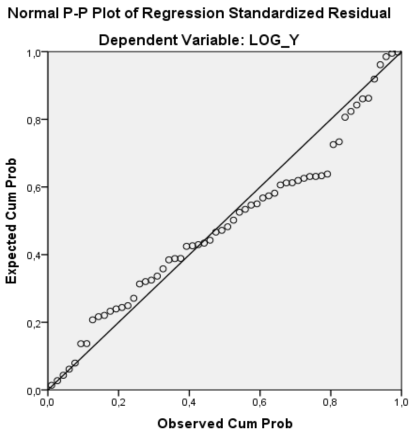
## RESULTS AND DISCUSSION

### Classic assumption test

*Normality test*

The normality test is needed to determine the distribution of data, whether it is normally distributed or not. In this study, the normality test was carried out using the Histogram-Normality table (Asnawi & Fitria, 2018).

**(Table 2. Normality test results)**




Source: Data processed (2023)

Based on the Normal pp Plot of Regression Standardized Residual graph, it shows that the points are spread around the line and follow the diagonal line, so the data can be said to be normally distributed.

*Multicollinearity Test*

The multicollinearity test was carried out to see whether there was a perfect correlation between the independent variables used in this research. The test was carried out through the tolerance value and also the VIF value, if the tolerance value is less than 0.10 or the VIF value is more than 10 then it indicates the presence of multicollinearity (Marta et al., 2016)

**(Table 3. Multicollinearity Results)**

| Model | | Collinearity Statistics | |
|---|---|---|---|
| | | Tolerance | VIF |
| 1 | (Constant) | | |
| | LOG_X1 | ,298 | 3,351 |
| | LOG_X2 | ,374 | 2,677 |
| | LOG_X3 | ,695 | 1,439 |

a. Dependent Variable: LOG_Y

Source: data processed 2023

Based on the output results above, it is known that the tolerance value for the JUB variable is 0.298, Cad.Foreign Exchange is 0.374, the exchange rate is 0.695 and (VIF) for the JUB variable is 3.351, Cad.Foreign Exchange is 2.677 and the exchange rate is 1.439, thus the tolerance value is 0 .1 or VIF less than 10, it is concluded that there is no multicollinearity between the independent variables in the regression model.

*Heteroscedastic Test*

The graphic analysis method is carried out by observing a scatterplot where the horizontal axis depicts the studentized residual values. If the scatterplot forms a certain pattern, this indicates that there is a heteroscedasticity problem in the regression model being formed. Meanwhile, if the scatterplot spreads randomly then this shows that there is no heteroscedasticity problem in the regression model formed (Agusmianata et al., 2018).

**(Table 4. Heteroscedastic test results)**

| Model | | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|
| | | | | Tolerance | VIF |
| 1 | (Constant) | -2,086 | ,042 | | |
| | LOG_X1 | 5,451 | ,000 | ,298 | 3,351 |
| | LOG_X2 | -,441 | ,661 | ,374 | 2,677 |
| | LOG_X3 | -,040 | ,969 | ,695 | 1,439 |

Source: data processed 2023

Based on the test results shown, it can be seen that the significant value of 0.042 is greater than alpha 0.05, so it can be concluded that the regression model does not contain heteroscedasticity.

*Results of Multiple Linear Regression Analysis*

Multiple linear regression is an explanatory equation model relationship between one dependent variable/response (Y) and two or more independent variables/predictor (X1, X2,…Xn). The aim of the multiple linear regression test is to predict the value of the dependent variable/response (Y) if the values of the independent variables/predictor (X1, X2,..., Xn) are known. Apart from that, it is also possible to find out the direction of the relationship between the dependent variable and the independent variables (Yuliara, 2016).

**(Table 5. ResultsMultiple Linear Regression Analysis)**

| Model | | Unstandardized Coefficients | |
|---|---|---|---|
| | | B | Std. Error |
| 1 | (Constant) | -19,018 | 9,117 |
| | LOG_X1 | 3,503 | ,643 |
| | LOG_X2 | -,521 | 1,182 |
| | LOG_X3 | -,063 | 1,593 |

a. Dependent Variable: LOG_Y

Source: data processed 2023

From the results of the regression analysis above, the regression equation can be prepared as follows:

Y =-19,018+ 3.503 X1 – 0.521 X2 – 0.063 X3

Based on the values of b1, b2, b3, a multiple linear regression line equation is obtained between the money supply, JUB, Cad. Foreign exchange and exchange rates on economic growth provide information that:

- The constant value is -19.018, meaning that if X1, X2 and X3 remain constant, Y will grow by -19.018.
- The coefficient value of the money supply variable is 3.503, meaning that if foreign exchange reserves and the exchange rate are considered constant, an increase in the money supply of 1 billion rupiah will be followed by an increase in economic growth of 2,961,919,000.
- The coefficient value of the foreign exchange reserves variable is negative 0.521, meaning that if the money supply and exchange rate are considered constant, an increase in foreign exchange reserves will be followed by a decline in economic growth.
- The coefficient value of the exchange rate variable is positive 0.063, meaning that if the money supply and foreign exchange reserves are considered constant, an increase in the exchange rate will be followed by an increase in economic growth.

**Data analysis**

Data analysis is the process of arranging the sequence of data, organizing it into patterns, categorization and basic units of description. (Situmorang, 2014)

*F test*

This test is used to find out whether the independent variables together have a significant effect on the dependent variable (MARDIATMOKO, 2020).

**(Table 6. Results**F test)

**ANOVAa**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 2,291 | 3 | ,764 | 29,551 | ,000b |
| | Residual | 1,447 | 56 | ,026 | | |
| | Total | 3,738 | 59 | | | |

a. Dependent Variable: LOG_Y
b. Predictors: (Constant), LOG_X3, LOG_X2, LOG_X1
Source: data processed 2023

Based on the results of the F test, it can be concluded that the calculated F value = 29.551 compared to the F table value = 2.77, so it turns out the calculated F value is greater than the F table value. So it can be concluded that the money supply, foreign exchange reserves and exchange rate influence economic growth in Indonesia.

*t test*

The partial test or t test is a test of the partial regression coefficient, to determine the partial significance or each independent variable of the dependent variable (Sahir, 2021).

**(Table 7. T(test) Test Results)**

**Coefficientsa**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -19,018 | 9,117 | | -2,086 | ,042 |
| | LOG_X1 | 3,503 | ,643 | ,830 | 5,451 | ,000 |
| | LOG_X2 | -,521 | 1,182 | -,060 | -,441 | ,661 |
| | LOG_X3 | -,063 | 1,593 | -,004 | -,040 | ,969 |

a. Dependent Variable: LOG_Y
Source: data processed 2023

- The influence of the money supply on economic growth in Indonesia can be concluded that the value
  Tcount = 5.451 compared to the Ttable value = 2.00
  5,451 > 2.00 (money supply has a positive and significant effect on economic growth in Indonesia)

- The influence of foreign exchange reserves on economic growth in Indonesia can be concluded that the value
  Tcount = 0.441 compared to the Ttable value = 2.00
  0.441 > 2.00 (foreign exchange reserves have a positive and significant effect on economic growth in Indonesia)
- The influence of the exchange rate on economic growth in Indonesia can be concluded that the value
  Tcount = 0.040 compared to the Ttable value = 2.00
  0.040 > 2.00 (the exchange rate has no positive and significant effect on economic growth in Indonesia)

## DISCUSSION

### The Influence of the Money Supply (JUB) on Economic Growth

Based on the research results, it is known that the regression coefficient value is 3.503. This means that hypothesis 1 has been proven true or that the amount of money in circulation has a significant effect on economic growth. And the regression coefficient value is positive. The results of this research provide the meaning that the higher the amount of money in circulation, the higher the economic growth will be. So the results of the analysis above show that the money supply variable has a positive and significant effect on economic growth. These results provide evidence that as the amount of money in circulation increases, economic growth also increases. With an increase in the amount of money in circulation, people will place some of their funds for consumption, thereby making producers produce more goods and then the demand for production factors increases. This will have an effect on increasing consumption, entrepreneur productivity, and per capita income which will then increase economic growth. The results of this research are in line with research conducted by(Wijaya, 2019),(Asnawi & Fitria, 2018)(Ardiansyah et al., 2023),(Tiwa et al., 2016)which shows that JUB has a significant effect on economic growth. However, the results of this study are not in line with research conducted by(Meri & Siburian, 2019),(Nanda, 2021)which shows that JUB has no significant effect on economic growth.

### The Effect of Foreign Exchange Reserves on Economic Growth.

Based on the research results, it is known that the regression coefficient value is 0.521. This regression coefficient value is negative. These results provide evidence that as foreign exchange reserves increase, economic growth will decrease. The results of this research are in line with research conducted by(ANDIARTO, 2019)And(Sindu Bagas

Kurniawan, Tri ratnawati, 2016)which shows that foreign exchange reserves have a significant effect on economic growth. The Effect of Exchange Rates on Economic Growth.

Based on the research results, it is known that the regression coefficient value is 0.063. This means that the hypothesis is accepted or the exchange rate has a significant effect on economic growth. Meanwhile, the regression coefficient value is positive. The results of this research provide the meaning that the higher the exchange rate, the higher the economic growth will be. The results of this research are in line with research conducted by(Sianipar, 2019),(Dewi, 2020)which shows that the exchange rate has a significant effect on economic growth. However, the results of this study are not in line with research conducted by(Syamsuyar, 2017),(Dewi, 2020),(Susanto, 2018)which shows that the exchange rate has no significant effect on economic growth.

**The Influence of Money Supply (JUB), Foreign Exchange Reserves, and Exchange Rates on Economic Growth.**

Based on the results of the F test, it can be informed that the F value is calculated-19,018and sig 0.00. This means that together the money supply, foreign exchange reserves and exchange rate simultaneously influence economic growth in Indonesia. The results of this research are in line with research conducted by(Ambarwati et al., 2021)which shows that the Money Supply (JUB), Foreign Exchange Reserves, and Exchange Rates have a significant effect on economic growth.

## CLOSING

Based on data analysis and discussion as well as from the hypotheses that have been prepared and tested in the previous section, it can be concluded that the influence of independent variables on economic growth is; The amount of money in circulation has a positive and significant effect on economic growth with a regression coefficient of 3.503. This means that the higher the money supply, the higher the economic growth. Foreign exchange reserves have a negative effect on economic growth with a regression coefficient of 0.521. This means that the higher the foreign exchange reserves, the more economic growth will decline. The exchange rate has a positive effect on economic growth with a regression coefficient of 0.063. The results of this research provide the meaning that the higher the exchange rate, the higher the economic growth will be.

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