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# Analysis of Macroeconomic Variables on Demand for Money in Indonesia

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**ABSTRACT**
*This research aims to determine the influence of macroeconomic variables on the demand for money in Indonesia. The research applies the broad money variable (M2) as the dependent variable, this includes M1, quasi money (including savings, time deposits in rupiah and foreign currency, as well as current accounts 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. The research uses time-series data from 1993-2023 and the OLS method. The research results show that exports influence the demand for money, a positive coefficient value indicates that increasing exports will increase the money supply. The GDP variable has a negative effect on the money supply in Indonesia, the higher the GDP, the money supply will decrease which can be caused by a decrease in people's purchasing power, the transfer of "wealth" to other instruments and the role of money which is used more as savings by the public. Depreciation of the exchange rate causes the prices of imported goods to become more expensive. Apart from that, it can affect the condition of the domestic economy which causes a decrease in people's purchasing power so that it can reduce the money supply and inflation has no effect on the money supply in Indonesia. The implication of the research is that government policies are needed that encourage people's purchasing power and exchange rate stability to improve the domestic economy.*

***Keywords***: *Broad Money; OLS; Exchange rate.*

## INTRODUCTION

Money plays an important role in the economy, apart from being a transaction tool, as the economy develops, the function of money, which originally only functioned as a payment medium, developed into a calculating tool and a means of collecting wealth (Bahmani-Oskooee & Rehman, 2005). Keynes said that money directly influences real economic activity and inflation. Meanwhile, monetarists state that money does not influence economic growth but only influences inflation, so that monetary policy is implemented only to control inflation and does not actively influence the real economy. Currently, the role of money has become more complex, such as the importance of stability in the demand for money to maintain the domestic economy (Kurniawan, 2020), stability in the demand for money for market players (Levy-Orlik, 2023), stability in the demand for money to reduce financial market shocks (Choudhry, 2023) .

The money demand theory developed by Friedman is based on wealth. The demand for money depends on three things, namely the total wealth owned, the price and profit from each form of wealth and the tastes or preferences of the wealth owner (Mankiw, 2007). Friedman's analysis focuses on marginal benefits from the process of substitution of wealth such as money, bonds, shares, securities and other forms of wealth. The theory developed by Friedman is in line with the definition of money in a broad sense (M2), where wealth can be substituted in the form of securities, deposits, etc. The advantage you get if you have this is the income per period whose nominal value is fixed and increases in accordance with applicable regulations. This is different if wealth is in physical form, which will provide benefits not only in the form of (money) but in the form of a flow of goods and services consumed, the price of the goods or services is adjusted to current price developments. Thus, the advantage of holding money is a form of physical wealth according to current prices (Yudawisastra et al., 2022).

The money supply cannot be separated from monetary policy. Cioran (2014) states that monetary policy is a policy used by the monetary authorities in each country to adjust the amount of money in the economy with the ultimate goal of maintaining price stability. He (2017) argues that monetary policy is the steps taken by monetary authorities to influence the amount of money in circulation and purchasing power.

Operationally, monetary policy has several instruments, such as open market operations, discount policies, minimum reserve ratios, and maximum credit limits, all of which are expected to have an impact on changes in the amount of money in circulation (Warjiyo, 2004). Operational monetary control through monetary programs by setting monetary targets (base money) in accordance with the economy's liquidity needs based on conditions of domestic inflation, economic growth and other related variables (Agustantira et al., 2024).

Research on the demand for money in Indonesia has been widely developed by previous researchers, such as Narayan (2007) who stated that the demand for money in Indonesia is unstable. Kurniawan (2020) supports previous research that the demand for money in Indonesia is unstable, which supports that the monetary target is not an absolute policy from Bank Indonesia. Widodo's research (2015) applies macroeconomic variables and analyzes their influence on the demand for money in Indonesia, and finds that macroeconomic variables play an important role in the demand for money in Indonesia. Melati & Kurniawan (2023) apply business cycle variables in research as a proxy for income and show that income influences the demand for money in Indonesia. Apart from that, Putra & Kurniawan (2021) found using the SVAR method that there was a negative response from the demand for money when domestic inflation shocks occurred. The results of these studies show overall that macroeconomic variables play an important role in the demand for money in Indonesia.

Several other studies apply economic uncertainty variables in the money demand model, such as Choudhry (2023) who states that economic uncertainty has a negative effect on the overall definition of money demand. Kurniawan et al (2022) applied the VAR method and found that economic uncertainty shocks were responded to negatively by the money demand variable in Indonesia. This research aims to determine the influence of macroeconomic variables on the demand for money in Indonesia. The research applies the broad money variable (M2) as the dependent variable, this includes M1, quasi money (including savings, time deposits in rupiah and foreign currency, as well as current accounts 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. The advantage of applying macroeconomic variables in the money demand model can provide a more comprehensive picture of money demand conditions (Bahmani-Oskooee & Rehman, 2005).

## METHOD

The research uses monthly time-series data from 1993-2023. The research uses data sources from Bank Indonesia, the Central Statistics Agency and world bank. The research uses the broad money (M2) proxy for money demand variable as the dependent variable. Independent variables include exports, inflation, exchange rates and gross domestic product. This research uses the Ordinary Least Square (OLS) method, which functions to determine the influence of the independent variable on the dependent variable. The OLS method equation is as follows:

$$Y = \beta_0 + \beta_1 LnX_1 + \beta_2 LnX_2 + \beta_3 LnX_3 + \beta_4 X_4 + \varepsilon$$

Where $Y$ are demand for money on broad money (M2), $X_1X_1$ is total value of exports, $X_2X_2$ is gross domestic product, $X_3X_3$ is the rupiah exchange rate against the US dollar, $X_4X_4$ is the inflation, $\beta_0\beta_0$ is the constanta value, $\beta_1 - \beta_1 - \beta_6\beta_6$ is the coefficient value of the independent variable, $\varepsilon_t\varepsilon_t$ is the error term. To fulfill the BLUE concept (*best linier unbiased estimator*) then the research applies classical assumption tests consisting of normality, autocorrelation, multicollinearity and heteroscedasticity. The advantages of the regression method in research are generalizing and extracting from certain data patterns, being able to acquire knowledge even though there is no certainty, and being able to carry out calculations in parallel so that the process is shorter (Amrin, 2016). The research applies the level-log method where the independent variables are transformed in the form of logarithma.

## RESULT AND DISCUSSION

In Gauss-Markov theory, regression is BLUE (*best linier unbiased estimator*) estimator who has variance smallest among the unbiased and linear estimators of the observed outcome variables (Wooldridge, 2010), which means that the model is free from classical assumption problems. Based on the normality test results in table 1, it shows that the data test results using the Jarque-Bera approach on the money demand model in Indonesia have a value of 0.827 > 0.05, which means that the data distribution in the model used is normally distributed. The multicollinearity test on the model uses the Variance Inflation Factors (VIF) approach which can be said to be a model free from multicollinearity problems if the average VIF value is < 10. The VIF results show that the average VIF is 2,781, which means that the selection of independent variables does not interfere with the model overall regression so that there are no multicollinearity problems in the model (Wahono & Magfiroh, 2024).

**Table 1.** Result of Multiple Regression

| Variable | Coefficient |
|---|---|
| C | -8960142<br>(-5.556916) |
| X1 | 993540.2<br>(5.191130)** |
| X2 | -94075.13<br>(-2.868964)** |
| X3 | -25427.13<br>(-2.642036)** |
| X4 | -115842.7<br>(-0.589910) |
| Classical Assumption | |
| Normality | 0.827 |
| Autocorrelation | 0.275 |
| Heteroscedasticity | 0.178 |
| Multicollinearity | Mean VIF 2.781 |

Source: data processed

In Gauss-Markov theory, the variance value of the residual has a constant value. To test the variance of the residuals, the study applied the White approach heteroscedasticity test. The probability value in the heteroscedasticity test shows a prob value > 0.05, which means that the model does not have heteroscedasticity problems. The research model uses time-series data so it needs to be tested for autocorrelation. The results of the autocorrelation test show a prob value > 0.05, which means that the model does not have an autocorrelation problem.

**Discussion**

Table 1 shows that exports have a t-count value > t-table, which means that exports influence the demand for money. A positive coefficient value indicates that increasing exports will increase the money supply. Exports as international trade can stimulate an increase in the amount of money in circulation, especially in rupiah, where there are provisions through which several purchases of exported goods use rupiah or dollars which will be converted into rupiah in large amounts, this can increase the amount of money in circulation. This finding is in line with Widodo's (2015) research that exports have a positive effect on the amount of money circulating through the real sector and the financial sector in Indonesia.

The GDP variable has a negative effect on the amount of money circulating in Indonesia. This is shown by the t-count > t-table value and the negative coefficient value. The higher GDP, the money supply will decrease. A decrease in the money supply when there is an increase in GDP can be caused by several things, a). deflation occurs due to a shortage of money in circulation which causes people's purchasing power to fall; b). Some of the causes of deflation include a decrease in the amount of money circulating in society because people tend to keep their money in banks; and c). the occurrence of restrictions on consumption and the transfer of "wealth" into other instruments such as gold or property related to domestic and global economic uncertainty (Kurniawan et al., 2022).

The use of exchange rates in research is to determine global influences on domestic economic conditions, exchange rates are responsive to changes in global economic conditions. A negative coefficient value indicates that if the exchange rate depreciates, the money supply will decrease. Depreciation of the exchange rate causes the prices of imported goods to become more expensive, besides that it can affect the condition of the domestic economy which causes a decrease in people's purchasing power so that it can reduce the money supply (Agustantira et al., 2024), besides that, depreciation of the exchange rate also makes people divert some or much of the "wealth" in other instruments such as gold and property (He, 2017).

Table 1 shows that the inflation variable has a negative coefficient value and the t-value < t-table, this indicates that inflation has no effect on the money supply. In the last decade, average inflation has been around 3 - 4 percent, which shows the stable value of inflation, but low inflation is also caused by people's purchasing power falling so that there is no change in demand for domestic goods and services which causes no its influence on the demand for money in Indonesia.

## CONCLUSIONS

Money plays an important role in the economy, apart from being a transaction tool, as the economy develops, the function of money, which originally only functioned as a payment medium, developed into a calculating tool and a means of collecting wealth. Currently, the role of money has become more complex, such as the importance of stability in the demand for money to maintain the domestic economy, stability in the demand for money for market players and stability in the demand for money to reduce financial market shocks. This research aims to determine the influence of macroeconomic variables on the demand for money in Indonesia. The research applies the broad money variable (M2) as the dependent variable, this includes M1, quasi money (including savings, time deposits in rupiah and foreign currency, as well as current accounts 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.

The research uses time-series data from 1993-2023 and the OLS method. The research results show that exports influence the demand for money, a positive coefficient value indicates that increasing exports will increase the money supply. The GDP variable has a negative effect on the money supply in Indonesia, the higher the GDP, the money supply will decrease which can be caused by a decrease in people's purchasing power, the transfer of "wealth" to other instruments and the role of money which is used more as savings by the public. Depreciation of the exchange rate causes the prices of imported goods to become more expensive. Apart from that, it can affect the condition of the domestic economy which causes a decrease in people's purchasing power so that it can reduce the money supply and inflation has no effect on the money supply in Indonesia. The implication of the research is that government policies are needed that encourage people's purchasing power and exchange rate stability to improve the domestic economy.

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