



The Analysis of The Influence of Monetary Indicators on Financial System Stability in Indonesia

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Abstract: *The money supply can affect other economic variables, such as output and prices, create stability in the economy and help achieve the ultimate goal of monetary policy, namely the stability of inflation and exchange rates. The level of the exchange rate by the monetary authority must be kept stable because an unstable exchange rate, especially one that experiences a sharp depreciation, can have financial crisis implications. This research approach was associative/quantitative research. The data used in this study are secondary data taken and processed from Bank Indonesia (BI) and the Central Statistics Agency (CSA) from 2013-2023 (11 years). Based on the results of regression analysis shows that the variable money supply, exchange rates, and interest rates simultaneously affect the inflation variable. Based on the results of regression analysis shows that the variable money supply has a positive and significant effect on inflation. Based on the results of regression analysis, the exchange rate variable has a negative and significant effect on inflation. Based on the regression analysis, the interest rate variable has no statistical effect on inflation.*

Keywords: Money supply, Exchange rates, Interest rates, Inflation.

1. INTRODUCTION

Financial stability is critical for all countries as it relates to the effective functioning of the market economy. A stable financial system is imperative for rational decision-making to allocate resources and improve the investment climate in any country. Financial stability has become a concern for central banks and governments in an effort to prevent crises in the financial sector, where financial crisis is a more modern term to describe banking panics, bank runs, and banking collapses. The topic of financial system stability is interesting enough to always be discussed because of its impact on economic growth.

Experience shows that an unstable financial system, especially if it results in a crisis, requires very high costs for rescue efforts. Indonesia learned a valuable lesson during the 1998 financial crisis, where the cost of the crisis was very significant. In addition, it took a long time to revive public confidence in the financial system. The 1998 crisis proved that the stability of the financial system is a very important aspect in shaping and maintaining a sustainable economy. In addition, in 2008 there was a phenomenon of the global financial crisis which resulted in the shaking of the economic system where at that time real GDP decreased by 4.3% and unemployment increased by 5% to 9.5%. Although not the most affected country, Indonesia as a developing country certainly felt the impact of the recession.

One of the monetary policy instruments is the money supply. According to Bank Indonesia, money supply can be divided into two, namely money supply in a narrow sense (M1) and money supply in a broad sense (M2). Controlling the money supply is important in macroeconomic policy.

The money supply can affect other economic variables, such as output and prices, create stability in the economy and help achieve the ultimate goal of monetary policy, namely the stability of inflation and exchange rates. Irving Fisher put forward the concept of money velocity theory which explains the relationship between the expenditure of goods and services and the money supply. This theory states that there is a balance between changes in the money supply and changes in prices.

The money supply has an influence on the stability of the exchange rate. An increase in the money supply will lead to an increase in the domestic price level and will lower the expected future exchange rate. This will result in a decrease in demand for rupiah assets due to the low rate of return on these domestic assets. Based on this theory, it can be concluded that the higher the domestic money supply will cause the domestic currency to depreciate.

The level of the exchange rate by the monetary authority must be kept stable because an unstable exchange rate, especially one that experiences a sharp depreciation, can have financial crisis implications. Bank Indonesia has a goal of stabilizing the rupiah exchange rate, in order to achieve this goal, Bank Indonesia must conduct sterilization in the foreign exchange market, especially when there is excessive exchange rate volatility. Bank Indonesia further emphasizes and appeals to the public in implementing regulations that require domestic transactions to use rupiah and bank Indonesia must continue to carry out strict control policies over dollar transactions in the foreign exchange market.

The results of research by Rahmadani & Aimon (2022) state that in the long and short term the money supply has a negative effect on price stability in Indonesia but has a positive effect on exchange rate stability in Indonesia; Bank Indonesia interest rates in the long term and short term have a positive effect on price stability and exchange rates in Indonesia. However, Hudaya & Firmansyah (2023) showed that the increase in interest rates began to be able to increase Indonesia's financial stability responsively in a period of four times, namely a one percent increase in interest rates can increase 0.4161 percent of financial stability in Indonesia. The inconsistency of previous research makes this research important as a research gap filler. This study aims to analyze the effect of monetary on financial stability in Indonesia.

2. LITERATURE REVIEW

1) Money Supply

Money supply is the amount of money circulating in an economy. What is meant by money supply is the total value of money in the hands of the public, while money in the hands of banks is not counted as money supply. The amount of money demanded by the public to conduct transactions depends on the price level of goods and services available. The higher the price level, the greater the amount of money demanded (Perlambang, 2010).

The money supply is the amount of money available in the economy and can be used to finance transactions carried out in society. Money in circulation in Indonesia includes currency, quasi-money, and securities other than shares. Each type of money in circulation affects each other. One factor that affects the money supply in Indonesia is the interest rate of Bank Indonesia Certificates or SBI. Bank Indonesia Certificates or SBIs are rupiah-denominated securities issued by Bank Indonesia (BI) as short-term debt recognition (less than one year). The SBI interest rate is the price that must be paid to BI for the loan received (SBI) (Rosyidah et al., 2017).

Money supply based on liquidity can be grouped into 3 (three) types, namely:

- a. M1: i.e. the money supply which includes currency in the hands of the public plus demand deposits. M1 is also called money in a narrow sense or known as narrow money.
- b. M2 : the money supply M1 plus savings deposits and time deposits at commercial bank institutions. M2 is also called broad money or broad money.
- c. M3 : the money supply M2 plus deposits at non-bank institutions. All deposits in banks and non-bank financial institutions are known as quasi money.

2) Exchange Rate

The exchange rate or exchange rate is the price of a currency against another currency, in this case the price of the Rupiah currency against the US Dollar currency that must be paid to buy the US Dollar currency. The difference in the price of these currencies makes the demand for goods also change because the price of goods will automatically change. This price change is what can eventually trigger inflation. Exchange rates play a very important role in spending decisions, as they allow us to translate prices from different countries into one common language. Exchange rates can appreciate and depreciate. Appreciation is an increase in the value of the foreign currency that can be purchased. Meanwhile, depreciation is a decrease in the value of

the currency as measured by the amount of foreign currency that can be (Panjaitan et al., 2021). The exchange rate is the price of a currency in the form of foreign currency. From the understanding of experts, it can be concluded that the exchange rate or exchange rate is the price of a currency against a foreign currency, how much a domestic currency is valued by a foreign currency (Ginting et al., 2016).

The changing behavior of the Indonesian rupiah against the US dollar is influenced by many factors. Basic or economic factors that may be affected include the inflation rate, interest rates, money circulation, capital inflows and outflows, the status of Indonesia's balance of payments, and monetary policies implemented by the government. In relation to the exchange rate, a country's high inflation rate may result in domestically produced goods becoming more expensive, thus decreasing their competitiveness in the international market. When the domestic inflation rate rises (relative to the foreign inflation rate), the demand for imports increases, so the demand for foreign currency (US dollars) increases, and the exchange rate of the Indonesian rupiah against the US dollar weakens or depreciates. In addition, other economic activities such as investment, will also be affected by changes in the exchange rate of the rupiah against the US Dollar. Investors often have to be observant in seeing the movement of the rupiah exchange rate against the US Dollar. This can affect the benefits that will be obtained later (Prasetyo et al., 2021).

3) Interest Rate

The interest rate is the price of a loan. Interest is a measure of the price of resources used by the debtor that must be paid to the creditor. Interest rate is one of the variables in the economy that is always closely watched because of its wide-ranging impact. It directly affects people's daily lives and has an important impact on the health of the economy. Usually interest rates are expressed as an annual percentage charged on money borrowed. Interest rates are essentially prices. Like prices, interest rates are at the center of markets, in this case the money and capital markets. Like prices, interest rates can be viewed as a mechanism for allocating resources and the economy. According to Samuelson (2004) Interest rates are payments made for the use of money. The interest rate is the amount of money that must be paid in a period of time as a percentage of the amount loaned. (Tiwa, Rumat, & Avriano, 2016).

3. METHODS

This research approach was associative/quantitative research. According to Rusiadi (2017), associative/quantitative research is research that aims to determine the degree of relationship and pattern/form of influence between two or more variables, where with this research a theory will be built that serves to explain, predict, and control a symptom. According to Sugiyono (2015), quantitative data is data in the form of numbers, or quantitative data that is scaled. This study aimed to examine how independent variables, such as Money Supply, Exchange Rate, and Interest Rate affect the dependent variable, namely Inflation.

This research uses secondary data obtained from Bank Indonesia (BI), as well as the Central Statistics Agency (CSA). The data collection technique used in this research is by means of documentation studies, namely collecting and processing data from previous information related to the problem under study. The data used in this study are secondary data taken and processed from Bank Indonesia (BI) and the Central Statistics Agency (CSA) from 2013-2023 (11 years). The data analysis technique uses descriptive statistics, classical assumption tests and hypothesis testing with multiple regression analysis methods.

4. RESULTS

Descriptive statistical research provides an overview or description of data through the average value (mean), standard deviation, variance, maximum, minimum, total, range, kurtosis, and skewness. In this study, the minimum, maximum, mean, and standard deviation values. The mean value for each variable is shown as the average value. The minimum value shows the smallest value obtained from the results of data processing and analysis of variable data, while the maximum value shows the largest value obtained from the results of data processing and analysis that has been carried out. The following is a descriptive statistical description of the data variables as a whole.

Based on the results of the descriptive analysis test, it can be seen that:

- a. The highest value of money supply (maximum) is 2675324.00 while the lowest (minimum) is 887083.50 and the average (mean) is 1632526.9764.
- b. The exchange rate (exchange rate) the highest value (maximum) is 15218.75 while the lowest (minimum) is 10562.67 and the average (mean) is 13565.3618.
- c. Interest rate the highest value (maximum) 7.54 is while the lowest (minimum) 3.52 and the average (mean) 5.4918.
- d. Inflation the highest value (maximum) 8.38 is while the lowest value (minimum) 1.68 and average (mean) 4.0218.

The results of the normality test with the One-Sample Kolmogorov-Smirnov test show a significance value of 0.866 greater than alpha 0.05, thus it can be concluded that there is no difference in the distribution of residuals with normal distribution or it can be said that the residuals are normally distributed.

Based on the multicollinearity test results in table 4.7. It can be seen that the VIF value of the Total Money Supply variable is $4.257 < 10.00$ and the tolerance value is $0.235 > 0.1$. The VIF value of the Exchange Rate variable is $3.448 < 10.00$ and the tolerance value is $0.290 > 0.1$. The VIF value of the Interest Rate variable is $1.863 < 10.00$ and the tolerance value is $0.573 > 0.1$. This indicates that no independent variable has a VIF value > 10.00 and a tolerance value < 0.1 so it is concluded that the regression model does not occur multicollinearity.

The regression model depicts data points spreading above and below or around zero. The distribution of data points does not form a clear pattern either wavy pattern or any form of pattern. So it can be concluded that there is no heteroskedasticity in the regression model and it is suitable for research.

Based on the Run Test results above, it is known that the Asymp. Sig. (2-tailed) value of 0.189, which means that the Asymp. Sig. (2-tailed) is > 0.05 so it can be concluded that there is no autocorrelation in this study.

The coefficient of determination test results in table 4.12 show the r square value of 0.788, this indicates that 78.8% of Inflation is influenced by the variables of Money Supply, Exchange Rate, Interest Rate and Inflation 21.2% is influenced by other variables not examined in this study.

In multiple regression testing shows the results of F-count of $8.682 > F$ -table of 4.06. Because F-count $8.682 > F$ -table 4.06 and a significant value of $0.009 < \alpha = 0.05$, then H_0 is rejected and H_a is accepted. This means that the variables of money supply, exchange rate, interest rate have a joint and significant influence on the Inflation variable.

The estimation model is as follows:

$$Y = 26.494 + 3.252E-006X_1 + (-0.002)X_2 + 0.602 X_3 + e$$

or $Y = 26.203 + 0.0008454 X_1 - 0.002 X_2 + 0.602 X_3 + e$

Description:

Y : Inflation Variable α : Constant

β_1 : Regression coefficient of Money Supply β_2 : Exchange Rate regression coefficient

β_3 : Interest Rate regression coefficient

X_1 : Variable Money Supply

X_2 : Exchange Rate Variable

X_3 : Interest Rate Variable e: Error / Remaining

From the above equation it can be explained that:

- a. The regression model has a constant 26.494, this means that if the independent variables of money supply, exchange rate and interest rate are assumed to be equal to zero, then inflation will increase by 26.494.
- b. The regression coefficient value of the variable money supply (X1) of 3.252E- 006 in this study can be interpreted that when the variable money supply (X1) increases by one percent, inflation will increase by 3.252E-006 or equivalent to 0.000845%.
- c. The regression coefficient of the exchange rate variable (X2) is -0.002. The coefficient is negative, which means that the direction of the relationship between the exchange rate variable (X2) and the inflation variable (Y) is not unidirectional, which means that if the exchange rate variable (X2) increases, the inflation variable decreases. This can be interpreted that when the exchange rate variable (X2) increases by one percent, then inflation will decrease by 0.002%.
- d. The regression coefficient value of the interest rate variable (X3) of 0.602 in this study means that when the interest rate variable (X3) increases by one percent, inflation will increase by 0.602%.

The results of the interpretation of the proposed research hypotheses (H1, H2 and H3) can be seen as follows:

1) The Effect of Money Supply on Inflation

The first hypothesis proposed in this study is that money supply is expected to have a positive and significant effect on inflation. Based on the regression analysis results presented in the summary table, thus $t\text{-count} > t\text{-table}$ ($2.454 > 1.895$), as well as a significant level of $0.044 < 0.05$ then H_0 is rejected and H_a is accepted. Thus it can be concluded that there is a positive and significant effect of money supply on inflation, thus H_1 is accepted.

2) The Effect of Exchange Rate on Inflation

The second hypothesis proposed in this study is that the exchange rate has a positive and significant effect on inflation. Based on the regression analysis results presented in the summary table, with $t\text{-count} > t\text{-table}$ and $t\text{-count}$ value accompanied by a negative sign ($-4.079 > 1.895$), as well as a significant level of $0.005 < 0.05$ then H_0 is accepted and H_a is rejected. Thus it can be concluded that there is a negative and significant influence between the exchange rate on inflation. Thus it can be concluded that H_2 is rejected.

3) The Effect of Interest Rate on Inflation

The third hypothesis proposed in this study is that interest rates have a positive and significant effect on inflation. Based on the results of regression analysis presented in the summary table, with $t\text{-count} < t\text{-table}$ ($1.448 < 1.895$), and the significant value is $0.191 > 0.05$ then H_0 is accepted and H_a is rejected. Thus it can be concluded that there is no statistical effect of interest rates on inflation. Thus it can be concluded that H_3 is rejected.

5. DISCUSSION

a. The Effect of Money Supply on Inflation (H1)

Hypothesis one (H1) is accepted because there is a positive and significant influence between the variable money supply on the inflation variable. This can be seen from the multiple linear regression results which show that the t test results, t count is greater than t table ($2.454 > 1.985$) while the significant value is $0.044 < 0.05$ regression results show that there is a positive and significant influence between the money supply on inflation. This shows that the higher the money supply of a country will trigger an increase in the inflation rate in the country. Conversely, if the money supply decreases, inflation will go down. Unstable inflation rates will certainly affect various sectors in the economy and indirectly lead to economic instability including instability in the financial system. The central bank has a very important role to control inflation through central bank policy in regulating the money supply in the community. Central banks generally control the money supply/interest rate in controlling the price level (Rangkuty & Nasution, 2018).

This study supports research conducted by Adrian and Fahmi (2012) entitled The Effect of Economic Factors on Inflation in Indonesia which suggests that the money supply has a positive effect on variations in Inflation in Indonesia. And this study is also in line with research conducted by Anggun (2020) entitled The Effect of Money Supply, Interest Rates, and Exchange Rates on Inflation in North Sumatra which states that there is a positive and significant influence between the money supply on inflation.

b. Effect of Exchange Rate on Inflation (H2)

The second hypothesis (H2) is rejected because the exchange rate has a negative and significant effect on inflation. Based on the regression analysis results presented in the summary table, with $t\text{-count} > t\text{-table}$ and t-count value accompanied by a negative sign ($-4.079 > 1.895$), and a significant level of $0.005 < 0.05$. Thus it can be concluded

that there is a negative and significant influence between the exchange rate on inflation. This shows that there is an unidirectional relationship between the exchange rate and inflation. The higher the exchange rate (appreciation), the lower the inflation rate. According to Iskandar Simorangkir (2004) If there is a decrease in the local exchange rate against foreign currencies or depreciation, the price of imported goods also increases. If prices abroad increase, then the price of domestic goods derived from imports also increases.

The research is in line with the research of Machtra (2016) which states that there is a significant influence between the exchange rate on inflation in several periods. According to Machtra & Fakhruddin (2016) the influence of the exchange rate is getting bigger and bigger in shaping inflation. Therefore, when the exchange rate depreciates, inflation will increase.

c. The Effect of Interest Rate on Inflation (H3)

The third hypothesis (H3) is rejected because there is no influence between interest rates on inflation. Based on the regression analysis results presented in the summary table, with $t\text{-count} < t\text{-table}$ ($1.448 < 1.895$), and the significant value is $0.191 >$ from 0.05 . Thus it can be concluded that there is no statistical effect of interest rates on inflation. This indicates that if interest rates increase, it will not necessarily have a direct effect on inflation.

This study supports research conducted by Mahendra (2016) entitled The Effect of Money Supply, SBI Interest Rates, and Inflation in Indonesia which states that the exchange rate has no statistically significant effect on inflation. The results of the Partial Test of Interest Rates on inflation show that there is no influence of the interest rate variable on inflation, this is indicated by there are variables that mediate interest rates and inflation, namely the money supply.

This study contradicts previous research conducted by Adrian Sutawijaya and Zulfahmi (2012) which states that in partial tests interest rates have a positive effect on inflation. In theory, interest rates affect inflation, Keynes' theory states that interest rates are a monetary phenomenon. This means that interest rates are determined by the supply and demand for money (in the money market). The policy of increasing deposit interest rates will cause people to save rather than invest or consume (Perlambang, 2010).

6. CONCLUSION

Based on the analysis and discussion above, the following conclusions can be drawn:

- a. Based on the results of regression analysis shows that the variable money supply, exchange rates, and interest rates simultaneously affect the inflation variable. An increase in inflation will cause an increase in the price of goods and services so that the effect is on an increase in the expenditure budget. An increase in the expenditure budget will reduce other budgets such as savings and others and this will potentially disrupt future financial plans.
- b. Based on the results of regression analysis shows that the variable money supply has a positive and significant effect on inflation. This is because the higher the money supply in the hands of the public will trigger an increase in demand for goods so that when demand rises the price of goods also increases.
- c. Based on the results of regression analysis, the exchange rate variable has a negative and significant effect on inflation. This indicates an opposite relationship between the exchange rate and inflation so that when the exchange rate of the rupiah against the USD dollar appreciates, inflation will decrease.
- d. Based on the regression analysis, the interest rate variable has no statistical effect on inflation. But in theory interest rates have a close relationship to inflation. The author concludes that this happens because the relationship between interest rates and inflation is mediated by the money supply in society so that interest rates do not directly affect inflation.

LIMITATION

With the implementation of this research, the government is expected to pay more attention to inflation issues for the welfare of the broader community. It is necessary to further stabilize the exchange rate against the USD because a depreciated exchange rate triggers an increase in the inflation rate. Financial institutions and the government need to pay more attention to interest rate policies. In the case of a decrease or increase in the benchmark interest rate, it will take approximately 6 months for other interest rates to follow the SBI interest rate. Therefore, financial institutions and the government might consider implementing policies to shorten the time it takes for other interest rates to align with the benchmark interest rate.

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