

## **ANALYSIS OF FACTORS AFFECTING INTEREST RATE IN INDONESIA**

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### *Abstract*

*The interest rate is the cost of borrowing or the price paid for borrowed funds. The interest rate is one of the important aspects in the banking world. This study aims to examine the influence of factors related to interest rate fluctuations set by Bank Indonesia. To examine the factors that affect interest rates in the short and long term. By using the independent variables of inflation, exchange rate, and also the money supply M2. The study was conducted using the Error Correction Model (ECM) method and secondary data for the period from 2019 to 2021. The results showed that all independent variables affected in the short and long term.*

**Keywords:** Exchange Rate, Inflation, Interest Rate, Money Supply

### **1. INTRODUCTION**

Fluctuations in interest rates that occur at a certain time are a sure thing to happen to control the economy. The determination of interest rates through monetary policy, especially loan interest carried out by the central bank, in this case, namely Bank Indonesia, is very crucial to maintain stability and also support domestic economic growth .

Determination of interest rates through monetary policy is very important. In setting the interest rate, of course, it is closely related to controlling the money supply and controlling the inflation rate. Because the determination of interest rates cannot be determined arbitrarily, it is necessary to consider other factors. If prices rise which causes inflation to exceed what was previously expected, of course people need more money to meet their daily needs. In time there will be too much money in circulation. Raising interest rates or the BI Rate is a policy taken to suppress excessive money circulation and trigger higher inflation. With this policy, it is hoped that the public can save their money back in the bank so that it can reduce excessive circulation of money. On the other hand, Bank Indonesia can lower the BI Rate if inflation is below the target set, this indicates maximum economic growth and also less money circulating in the community.

Inflation is one of the most important economic indicators, its rate of change must always be kept low and stable in order to prevent macroeconomic diseases that will lead to economic instability. The rate of inflation is high and subject to change, as it reflects the general trend of continuously rising prices of goods and services over a given time period. People's purchasing power will decrease as a result of this price increase, and as a result, producers will not increase their investment or sell all of the goods they produce. If the level of investment is reduced, the national income will fall. This is an illustration of economic growth, which ultimately affects the stability of an economy's activities, as represented by the development wheel.

Money will never be separated from the economic activities of the state. The money supply influences the flow of monetary transactions. Quantitative shifts Various sectors of the economy will be affected by the money supply. In the long run, an increase in the money supply can stifle economic growth by causing prices (high inflation) to rise above the level anticipated. If, on the other hand, the growth rate of the money supply is too low, a recession will ensue. If this continues, the overall welfare of society will decline.

According to Beureukat (2022) The interest rate itself is the government's control for the running of the economy itself. With well-controlled interest rates, the economy will run well. Not only inflation, the exchange rate is one of the factors in determining interest rates and plays an important role in an economic and banking transaction between countries (Putra et al., 2017). In this study, it will be seen how the influence of inflation, exchange rate and money supply factors related to interest rate fluctuations in Indonesia which is the reference set by Bank Indonesia.

## **2. LITERATURE REVIEW**

### **2.1. Interest Rate**

Interest rate is the amount of money paid in return or borrowed use (Mariam, 2021). And it is also used as a reference in the application of monetary control operations which is to direct that the weighted average of 1-month SBI interest rates as a result of open market operation auctions is around the BI rate. banks and longer-term interest rates. Changes in the BI rate (1 month tenor SBI) are set consistently.

The BI rate is determined by the board of governors using and considering the following:

- 1) The BI rate recommendation obtained by the policy reaction function on the example of the economy for achieving the inflation target.
- 2) Various other kinds of information such as macroeconomic indicators, field information, expert opinions, economic research results, etc.

Bank Indonesia employs the SBI interest rate as a tool for controlling inflation. Bank Indonesia will increase the SBI interest rate to combat rising inflation if inflation is perceived as being relatively high. Changes to the SBI interest rate will influence the capital market and financial markets. If the interest rate increases, the interest expense will rise directly. The increase in interest rates will have a substantial effect on corporations with high leverage.

This increase in interest rates has the potential to reduce the company's profitability and impact its stock price. In addition to rising interest costs, high SBI interest rates can entice investors to move funds into time deposits. The reason for this is because commercial banks monitor the increase in SBI interest rates and raise deposit rates accordingly. If the deposit interest rate is equal to or greater than the rate of return desired by investors, investors will naturally move their funds into deposits. Investing in one's own deposits is also a risk-free form of investment. The redistribution of funds from the capital market to investor deposits will undoubtedly trigger a massive sell-off that will result in a decline in the stock index.

Based on their classification, interest rates are separated into nominal and real interest rates. The nominal interest rate is the interest rate set in the value of money, so that this interest rate can be known or read in general. This interest rate shows a number of currency values for one currency value (eg dollars or rupiah) invested. While the real

interest rate is the interest rate that is corrected for inflation events and is interpreted as the nominal interest rate minus an inflation rate. Due to the dynamic nature of real interest rates, these interest rates will always change in line with changes in economic conditions and inflation (Muttaqim et al., 2019).

There are several theories related to interest rates, namely interest rates according to the classical theory proposed by Adam Smith and Keynes's theory of interest rates. According to the classical theory which says that bank interest rates affect savings and investment. The higher the interest rate, the public's desire to save will be greater but it will decrease to invest and vice versa. So that investment is a function of interest rates where there is a negative or inverse relationship between loan interest rates and investment. This shows that if the interest rate on loans through monetary policy is increased, there will be a decrease in investment because business actors get capital for their business by making loans to banks by paying interest on the loan which is the cost of capital. Another theory, namely the theory put forward by Keynes which says that there are three reasons people hold cash, namely transaction, precautionary and speculation motives, then these three motives affect the demand for money that generally people want with these motives to remain liquid to fulfill these three motives. the demand for money for speculative purposes is influenced by the size of the interest rate, if the interest rate is small then the demand for money by the public will be large due to the reduced desire of the people to save, but on the contrary if the interest rate is large then the demand for money will decrease. So that by lowering the interest rate, investment can be stimulated to increase the national product (GNP). Thus this is done at least for the short term,

## **2.2. Inflation**

Inflation is a condition characterized by sustained and rapid price increases. Inflation is a macroeconomic variable that can have both positive and negative effects on society and the business world. In simple terms, inflation is defined as a general and persistent rise in prices. An increase in the price of one or two goods does not constitute inflation unless it extends to (or causes price increases in) other goods (Bank Indonesia). Investment must be stimulated by some level of inflation. Inflation is defined in various ways by economists, but they all have the same essence: prices that tend to continue to rise. An increase in the price of one or two goods cannot be considered inflation if the price increase does not affect the prices of the vast majority of other goods. An increase in commodity prices is not inflation, which is typically caused by seasonal factors (e.g., just before a major holiday) or occurs only occasionally (without further impact). Varieties of Inflation Inflation can also be identified as the cause of rising commodity prices when external or internal factors are given greater weight. From a source perspective, inflation can be separated into two distinct parts.

- 1) Inflation that occurs within a country (internal inflation).

This inflation was caused by pressure from internal macro variables that pushed up commodity prices.

- 2) Inflation from abroad (import inflation).

Inflation caused by external factors (external factors). The effect may be inflation (inflation) in other closely related countries, thereby increasing the cost of imported goods. This effect causes a direct increase in the consumer price index and an indirect increase in consumer prices due to a rise in production costs. By its very

nature, inflation can be divided into three categories. NS. Stagnant Inflation Having an annual inflation rate of less than 10 percent. Over a relatively extended period of time, prices increase at a modest rate.

3) Average Inflation (Rapid Inflation)

Indicated by a significant price increase (typically in the double or triple digits) that sometimes occurs in a relatively brief period of time and accelerates. In other words, the price this week/month is higher than it was last week/month, etc. It has a greater impact on the economy than inflation. Extreme Inflation (Hyperinflation) Inflation is the most severe repercussion. Prices have increased five to sixfold. People no longer desire to save. The falling value of money necessitated its exchange for goods. The velocity of money is accelerating, and prices are rising at a rapid rate. Typically, this occurs when the government incurs a budget deficit (for instance, as a result of a war) that is spent and closed by printing money.

### **2.3. M2 Money Supply**

Cash is the common name for this form of currency anywhere in the world. Demand deposits and currency are included. To put it another way, the population has access to the money, and it can be utilized for whatever purpose it pleases at this point. The term "currency" can also be used to refer to "cash." Therefore, banknotes and coins are the components that make up money. These banknotes and coins are issued by the monetary authority, and then they are distributed to the general population. The use of cash is not restricted by community payments. Massive payments can be made through the use of checks. In fact, checks require a commercial bank account. A savings account that allows for withdrawals to be made at any time to a commercial bank is known as a current account.

A checking account can also be used in place of currency, albeit in a manner that is more analogous to cash. Therefore, the user will initially be required to key in the desired amount before the check can be printed. A checking account is a type of account that customers of commercial banks use to store their money. Savings or savings in the form of savings and/or time deposits or time deposits in banks. Withdrawals cannot be made at any time, for example withdrawals can only be made by agreement after 1 month or 3 months. Therefore, payment of a deposit or time deposit cannot be made directly during the payment process, and you will have to wait until the due date in the savings or deposit account. Therefore, deposits and money in savings accounts are referred to as quasi-money. Bank Indonesia defines currency or money supply in a narrow and broad sense. As explained earlier, the money supply differs in the following ways:

- 1) M1 is money supply in a narrow sense consisting of or money that can be used directly as a means of payment. Consists of currency and demand deposits.
- 2) M2 is money supply in a broad sense. Consists of currency, demand deposits and quasi money. in other terms M2 consists of M1 plus quasi money (savings and time deposits). The definition of money in each country is different, such as the United States which uses the definition of M1, M2, and M3 money. Meanwhile, Indonesia uses the definition of M1 and M2 money.

The money supply is the total value of money in the hands of the public, including currency and demand deposits. People usually know money as cash or currency that

includes paper money and demand deposits, in other words money in society is ready to use at any time and ready to be spent in large amounts at any time.

Previous research conducted by Ambalau et al. (2019) The money supply variable has a negative and statistically significant effect on the BU loan interest rate directly and the money supply has a negative effect on the BU loan interest rate indirectly through the BI 7-day repo rate.

#### **2.4. Exchange rate**

The exchange rate is the value of a foreign currency expressed in terms of the local currency. The exchange rate or exchange rate between two countries is the price level at which residents of the two countries agree to conduct trade. If the exchange rate weakens, this is referred to as depreciation or a decline in the value of the domestic currency compared to foreign currencies. A strengthening of the exchange rate is known as an appreciation or a rise in the value of the domestic currency (Ambalau et al., 2019).

An increase in the exchange rate of the local currency is regarded as an appreciation of the domestic currency (the cheaper the foreign currency, the higher the value of the domestic foreign currency). A decrease in the exchange rate is called a devaluation of the local currency (foreign currency becomes more expensive, meaning the domestic currency depreciates). There are four types of exchange rates or exchange rates in various foreign currency transactions, namely:

- 1) Selling rate, which is the rate determined by the bank to sell a certain currency a certain amount of foreign currency at a certain price. Certain time.
- 2) Average exchange rate, which is the average exchange rate between buying and selling foreign currencies against local currencies determined by the Central Bank at a certain time.
- 3) Purchase rate, namely the exchange rate determined by the bank to buy a certain amount of foreign currency at a certain time.

Fixed exchange rate, which is the rate that applies to the buying and selling of banknotes and tourists, when promotions and other portals have been taken into account in this rate.

### **3. RESEARCH METHODS**

This research was conducted using descriptive quantitative analysis method to analyze the effect of the BI Rate, Exchange Rate, and the Money Supply on inflation in Indonesia. The variables used in this study amounted to four variables consisting of:

- 1) Interest Rate which is the dependent variable (dependent variable)
- 2) Inflation becomes the independent variable (independent variable)
- 3) Exchange rate or exchange rate becomes the independent variable (independent variable)
- 4) The money supply becomes the independent variable (independent variable)

The multiple linear regression analysis model used to test the hypothesis is as follows:

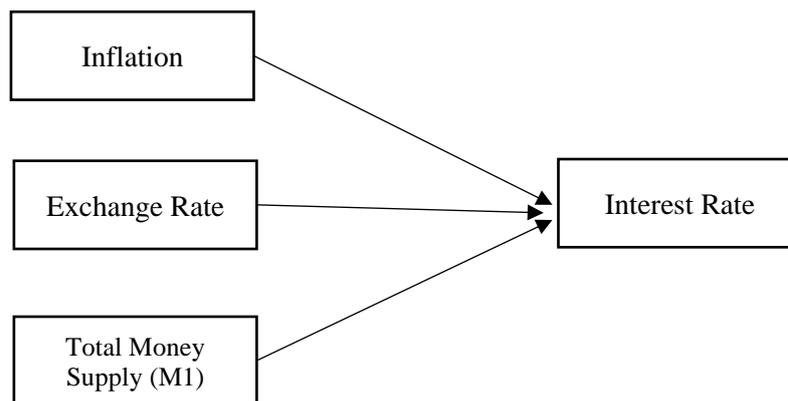
$$Y = b_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + et$$

Information:

- Y = Interest Rate  
 $X_1$  = Inflation  
 $X_2$  = Exchange rate  
 $X_3$  = Total Money Supply (M1)

The dependent variable (Y) is the variable that the independent variable (X) explains or influences. In contrast, the independent variable (X) is a variable that serves as an indicator of the influence of the dependent variable or the independent variable (Y).

This study utilizes secondary data from Bank Indonesia and the Central Statistics Agency (BPS) for each month of 2019 through 2021. The official website of Bank Indonesia ([www.bi.go.id](http://www.bi.go.id)) as well as the official website of the Central Statistics Agency (BPS) ([www.bps.go.id](http://www.bps.go.id)) served as data sources. This study's sampling technique consisted of collecting time series or time series samples for the years 2019 to 2021.



**Figure 1. Framework of Thinking**

The analytical method used is the Multiple Linear Regression method. The method consists of several stages of testing that must be carried out first, which include:

1) Unit Root Test

This test is used to determine whether the data to be utilized is stationary, thereby preventing spurious regression. If there are erroneous regression results, autocorrelation issues will arise, making it impossible to generalize the regression results across time periods. A unit root test is used to determine whether the time series data used is stationary or not. Using the Dicky Fuller (DF) method, the unit root test was conducted.

2) Cointegration Test

The cointegration test is used to provide an initial indication that the employed model demonstrates a long-term relationship (cointegration relation). The results of a cointegration test are obtained by regressing the independent variable onto the dependent variable using ordinary least squares.

3) Error Correction Model (ECM)

If the data series has passed the cointegration test, the error correction model (ECM) modeling technique is employed. Error correction model is used to determine the likelihood of structural changes, specifically the nature of the long-term equilibrium relationship between the independent variable and the dependent variable. This data analysis technique is used for variables that have an imbalance effect on the macro economy, so it is necessary to see the effect in the long term. This time lag means that policy makers need to be aware of what is really going on with the determination of policies that are actually needed by the macro-economy of the community.

In this study, when analyzing data with Microsoft Excel and processing data with EViews 10. This is done so that the results can see more clearly the different effects of each variable on the state of primary equilibrium.

#### **4. RESULTS AND DISCUSSION**

As a catalyst for a country's development, the interest rate plays a crucial role in overcoming the peaks and valleys of inflation and the exchange rate. Inflation, currency exchange rates, and money supply are all considered to have an impact on interest rates. Error Correction Model (ECM) is an econometric model used to determine the long-term equilibrium regression equation.

**Table 1. Stationarity Test Results**

Variable	Stationarity Level			
	Level		First Difference	
	Prob	Information	Prob.	Information
BI Rate	0.5456	Not Stationary	0.0000	Stationary
Inflation	0.2521	Not Stationary	0.0000	Stationary
M2	0.8855	Not Stationary	0.0026	Stationary
Exchange rate	0.0873	Not Stationary	0.0000	Stationary

Source: Data processed, 2022

The variables to be tested are all stationary in the unit root test. At the level level, all variables have numerical values above 0.05 so they are still not stationary at the level level. Furthermore, it is entered at the 1st difference level where all variables are below 0.05 meaning all variables are stationary at that level.

**Table 2. Cointegration Test Results**

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.626301	122.8806	47.85613	0.0000
At most 1 *	0.499104	66.77525	29.79707	0.0000
At most 2 *	0.275110	27.36786	15.49471	0.0005
At most 3 *	0.146493	9.028912	3.841466	0.0027

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level  
\* denotes rejection of the hypothesis at the 0.05 level  
\*\*MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.626301	56.10530	27.58434	0.0000
At most 1 *	0.499104	39.40739	21.13162	0.0001
At most 2 *	0.275110	18.33895	14.26460	0.0107
At most 3 *	0.146493	9.028912	3.841466	0.0027

Max-eigenvalue test indicates 4 cointegrating eqn(s) at the 0.05 level  
\* denotes rejection of the hypothesis at the 0.05 level  
\*\*MacKinnon-Haug-Michelis (1999) p-values

Source: processed data, 2022

In the above test that the independent variable has an indication that there is a long-term relationship with the probability value above which has a number below 0.05, thus cointegration testing can be continued for testing the ECM model.

**Table 3. Granger Causality Test Results**

Pairwise Granger Causality Tests  
Date: 06/11/22 Time: 02:30  
Sample: 2015M01 2019M12  
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
D INFLASI does not Granger Cause D BI RATE	57	0.41968	0.6595
D BI RATE does not Granger Cause D INFLASI		0.11663	0.8902
D JUB does not Granger Cause D BI RATE	57	1.49853	0.2329
D BI RATE does not Granger Cause D JUB		2.99463	0.0588
D KURS does not Granger Cause D BI RATE	57	0.94598	0.3949
D BI RATE does not Granger Cause D KURS		2.10208	0.1325
D JUB does not Granger Cause D INFLASI	57	0.52774	0.5931
D INFLASI does not Granger Cause D JUB		1.72092	0.1889
D KURS does not Granger Cause D INFLASI	57	2.36751	0.1037
D INFLASI does not Granger Cause D KURS		1.09481	0.3422
D KURS does not Granger Cause D JUB	57	0.07509	0.9278
D JUB does not Granger Cause D KURS		0.96144	0.3890

Source: Data processed, 2022

The long-term relationship of each variable can be seen from the probability value above which can explain that each variable studied is related to other variables related in this study. That all independent variables affect interest rates with different values and influences for each variable. Inflation variable affects interest rates or the BI Rate up to

6.59% so that in the long term inflation affects more than 5% of all existing factors on interest rate fluctuations that occur in Indonesia.

These results are in line with research conducted by Kalalo (2016) on “*Analisis Faktor-faktor yang mempengaruhi Inflasi di Indonesia periode 2000-2014*”, Julitawaty (2015) regarding “*Inflation Analysis and Interest Rate in Indonesia*”, and Handayani (2019) challenge “*Analisis Variabel Yang Mempengaruhi Tingkat Inflasi Di Indonesia Periode 1999-2018*” which indicates that the BI Rate variable has a positive and significant effect on the inflation rate in Indonesia. The BI Rate tends to follow the movement of inflation. The increase in the inflation rate will be followed by an increase in the BI Rate. High inflation will encourage the monetary sector to increase the BI Rate, if prices increase it will reduce people's purchasing power and will encourage people to save their money in banks so that it will reduce the amount of money circulating in the community and there will be no surge in demand for manufactured goods and services. to anticipate the occurrence of the Inflationary Gap.

Furthermore, the money supply in this study uses M2 data related to the money supply variable used. The money supply has an influence of 2.32% on interest rates. In the long term, the M2 money supply has a smaller effect than the above inflation effect.

In theory, the money supply (M1) has an effect on interest rates, the results of this study are contrary to research Polontalo et al. (2018) and Sutoto (2019) where the money supply (M1) affects the interest rate. This can happen because when there is an increase in interest rates or Bank Indonesia raises interest rates, people do not immediately deposit their money in banks. Usually people already have a financial plan for consumption and other purposes and do not directly save it in the bank and only a few of the people save it in the bank, usually the money is idle money.

Theoretically, inflation has a significant impact on the money supply (M1) due to the fact that prices influence the growth of the money supply in the community. However, in previous research by Polontalo et al. (2018) and Sutoto (2019) found that the inflation rate has no significant effect on the money supply. This can happen if people do not spend their money for consumption when inflation rises and choose to spend their money on consumption when inflation has dropped or it could be when inflation rises people do not directly demand money.

Interest rates are influenced by the exchange rate variable with an influence value of 3.49% which can have an effect in the long term. The results of this study are in line with Bano & Valentika (2022) which shows that exchange rate affects interest rates. According to classical economic theory, investment is dependent on the interest rate. The greater the interest rate, the lower the motivation to invest. Savings is also dependent on the interest rate; the greater the interest rate, the greater the desire to save. At a higher interest rate, individuals will be forced to reduce their spending in favor of consumption. In the meantime, Keynes' theory dictates that the interest rate is determined by the supply and demand for money. According to Keynes, money is one form of a person's wealth (portfolio), in addition to savings in banks, stocks, and other securities. People's decisions regarding the form of components of their wealth will greatly determine the high interest rate (Nopirin, 1996: 91-92 in Akbar, (2008)). That way all the variables studied experienced the influence of each other variable.

## 5. CONCLUSION

The interest rate is the amount of money paid in return or borrowed use. Fluctuations in interest rates that occur at a certain time are a sure thing to happen to control the economy. The determination of interest rates through monetary policy, especially loan interest carried out by the central bank in this case, namely Bank Indonesia, is very crucial to maintain stability and also support domestic economic growth. The results obtained in this study have a significant influence on fluctuations in interest rates in Indonesia. Other influences that will be affected are certainly outside of the variables in this study.

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