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The Effect of Money Supply And Bank Indonesia Rate on Consumer Price Index in Indonesia 2018-2022

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ABSTRACT

The aim of this research is to determine the influence of the money supply and Bank Indonesia interest rates on the consumer price index in Indonesia for the period 2018 - 2022. The discussion of this research is related to the money supply, Bank Indonesia interest rates, and the consumer price index (CPI). In this regard, the approach taken is theories related to that field. This research was conducted in Indonesia. This type of research is quantitative research. The data used in this research is time series secondary data in the form of publications on the money supply, Bank Indonesia interest rates, and consumer price index from January 2018 to December 2022 obtained from the Central Statistics Agency (BPS) and Bank Indonesia. The research method used in this research is the explanatory method. The data analysis techniques in this research are descriptive analysis and multiple linear regression analysis. The research results show that both partially and simultaneously, there is an influence of the money supply and Bank Indonesia interest rates on the consumer price index.

Keywords : Money Supply, Bank Indonesia Rate, Consumer Price Index.

INTRODUCTION.

Inflation can be interpreted as a general and continuous increase in the prices of goods and services over a certain period of time. Deflation is the opposite of inflation, namely a general and continuous decrease in the price of goods. Inflation calculations are carried out by the Central Statistics Agency, link to SEKI-IHK metadata. An increase in the price of just one or two goods cannot be called inflation unless the increase extends (or results in an increase in prices) for other goods (bi.go.id, 2020).

Inflation is an economic condition where the price of a good continuously increases and the supply of labor is smaller than the demand. Based on quantity theory, it is revealed that the factors that cause inflation are caused only by the amount of money in circulation. This concept explains

that the increasingly high value of circulating money in society results in an increase in the prices of goods and services. Apart from that, Keynes's theory explains that inflation in society is due to the encouragement of people to want to live beyond their economic capacity. This condition illustrates that the demand for goods from the public is greater than the number of goods provided (Susmiati et al., 2021).

The consumer price index is an economic indicator which is an index number to measure the average price of goods and services consumed by households. The consumer price index is often used to measure a country's inflation rate and also as a consideration in adjusting wages/salaries and other income. To estimate the value of the consumer price index in the future. The consumer price index can be interpreted and described directly as a price index of the cost of a collection of consumer goods, each of which is weighted according to the proportion of public spending on the commodity in question. The consumer price index measures the price of a group of goods and services, of which only a few items can be included in the calculation, such as goods and services consumed by professional workers, self-employed workers, underprivileged citizens, the unemployed and retirees. Meanwhile, what is not included in the calculation of the consumer price index are goods and services consumed by armed forces, farmers, prisoners and mental hospital patients (Mankiw et al., 2013).

Inflation as measured by the CPI in Indonesia is grouped into 7 expenditure groups (based on the Classification of individual consumption by purpose – COICOP), namely the foodstuffs group, ready-made food, beverages and tobacco group, housing group, clothing group, health group, education and sports and transportation and communications groups (Macroeconomicdashboard, 2017).

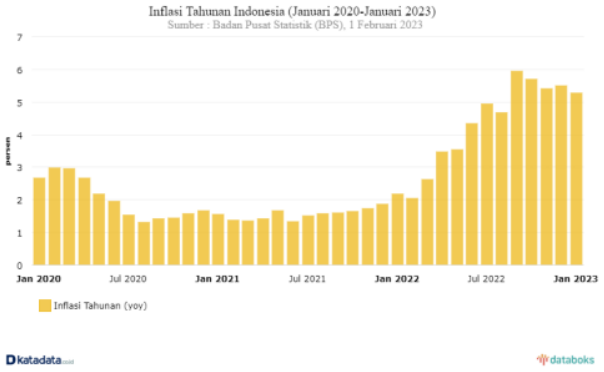

Figure 1. Indonesia's Yearly Inflation (January 2020 – January 2023)

The Central Statistics Agency reported that Indonesia experienced annual inflation of 5.28% (year-on-year/yoy) in January 2023. Even though it decreased compared to December 2022, inflation at the start of this year was still much higher than 2020-2021 as seen in the graph. The figure is also still far from the target of Bank Indonesia (BI), which wants to reduce the inflation rate to around 3 ± 1% in the first semester of 2023. According to BPS, commodities that had a large contribution to inflation at the beginning of this year were rice, red chilies, shallots, fresh fish, purebred chicken eggs, raw tofu, white cigarettes and filtered clove cigarettes. The inflation rate is also influenced by increases in house contract prices, PAM drinking water rates, household fuel, house rent, powder/liquid detergent soap, petrol, cars, air transport fares, city transport fares, academy/university tuition fees, rice with side dishes, and gold jewelry.

The following are details of the level of price increases or annual inflation rate in January 2023 based on expenditure groups, sorted from highest to lowest: transportation: 13.91% (yoy), personal care and other services: 6.15% (yoy), food, beverages and tobacco: 5.82% (yoy), provision of food and drinks/restaurants: 4.46% (yoy), supplies, equipment and routine household maintenance: 4.28% (yoy), housing, water, electricity and household fuel: 3.62% (yoy), health: 3.04% (yoy), recreation, sports and culture: 2.87% (yoy), education: 2.80% (yoy), clothing and footwear: 1.07% (yoy). There is only one group of expenditure whose prices fell or experienced annual deflation in January 2023, namely information, communication and financial services with deflation of 0.22% (yoy) (Ahdiat, 2023).

Interest rates are one of the most effective instruments in reducing inflation. When the central bank raises the benchmark interest rate, interbank interest rates will increase. The costs incurred by the bank become greater, this will be passed on to the debtor. This means that credit interest rates, both working capital loans, investment credits and consumption credits will increase. In addition, liquidity will tighten, so banks will usually increase deposit interest rates to increase third party funds. The increase in deposit interest rates will absorb more money in circulation. In economic theory, the money supply will affect inflation. The more money in circulation, the higher inflation. Conversely, when the amount of money in circulation decreases, inflation will also decrease. Then higher credit interest rates will cause the business world to expand so that consumption levels will decrease. This means that demand will decrease. For example, when interest rates on home ownership credit increase, demand will of course decrease. When demand for houses decreases while supply remains constant, property prices will decrease, meaning inflation will slow down (Pransuamitra, 2022).

The money supply is the total value of money in the hands of the public, consisting of currency and demand deposits. There are two meanings of the money supply which only consists of currency and demand deposits (Anas, 2006). Currency is money that is used as a legal means of

payment in society (M1). Demand deposits are money in circulation and act as legal means of payment in certain circles, but can affect the money supply (M2) (Solikin & Suseno, 2002).

The amount of money in circulation in a broad sense includes currency, demand deposits and controlled money (foreign currency rupiah savings belonging to residents which have temporarily lost their function as a medium of exchange). Controlled money is money that is not in circulation and consists of time deposits, savings and foreign exchange accounts belonging to the domestic private sector (Rahardja & Manurung, 2008).

The BI rate (Bank Indonesia interest rate) is a policy interest rate that reflects the monetary policy attitude or stance set by Bank Indonesia and announced to the public. The BI Rate is announced by the Bank Indonesia Board of Governors at every monthly Board of Governors Meeting (BankIndonesia, 2016).

Bank Indonesia will generally increase the BI rate if future inflation is expected to exceed the set target, whereas Bank Indonesia will reduce the BI rate if future inflation is predicted to be below the set target. Thus, the relationship between the BI rate and inflation has a negative relationship. If inflation is high, one way to reduce the inflation rate is to increase the BI rate because increasing the BI rate will have the effect of lowering the inflation rate.

Results of the analysis carried out (Jamlani et al., 2021) shows that the Money Supply has a positive and significant effect on Inflation in Indonesia. If the money supply increases then inflation will also increase. These results are different from the research conducted (Muhson, 2003) which shows that the money supply has no influence on inflation in Indonesia.

Results of research carried out (Setyaningrum & Sucipto, 2021) shows that the BI Rate has a positive and significant effect on inflation. This is different from research results (Mahendra, 2016) which reveal that interest rates have no influence on inflation.

The aim of this research is to determine the influence of the money supply and Bank Indonesia interest rates on the consumer price index in Indonesia 2018-2022.

METHOD

The research was conducted in Indonesia using two independent variables, namely the money supply, Bank Indonesia interest rates and one dependent variable, namely the consumer price index (CPI) from 2018 to 2022. The time of this research was carried out from May 2023 to September 2023. Implementation used in this research were obtained from Central Statistics Agency (BPS) publications via www.bps.go.id and www.bkpm.go.id.

The type of research that will be used is quantitative research. Where quantitative research is a type of research that produces discoveries that can be achieved using statistical procedures or

other means of quantification (measurement). Quantitative data is data in the form of numbers and analysis using statistics. The method used in this research is the explanatory method.

The population in this research is all data on domestic investment, foreign investment and economic growth in Indonesia published by the Indonesian Central Statistics Agency (BPS) for the period 2018 to 2022.

In this research, the data collected is secondary data. Where secondary data is data that we obtain from a second source and usually this data is ready to use. This secondary data is easy to obtain and is widely distributed in various sources, both economic data issued by the government from the Central Statistics Agency (BPS) and from BI (Bank Indonesia) are completely available. The types of data used are cross section data and time series data from 2018 to 2022.

To obtain research results that are in accordance with the research objectives, it is necessary to carry out technical data analysis. The collected data will be processed and analyzed. The data analysis techniques in this research are descriptive analysis and multiple linear regression analysis. To assess the validity of the data, a classical assumption test is needed before carrying out multiple linear regression analysis. Hypothesis testing in this research was carried out in two stages, namely partial testing (t-test) and simultaneous testing (F-test).

DISCUSSION

In this research the dependent variable used is the consumer price index. Meanwhile, the independent variables are the money supply in billions of Rupiah and the Bank Indonesia interest rate in percentage terms. The following are the results of descriptive statistical tests presented in table 1:

Table 1. Descriptive Statistics

	Money Supply (Rp billion)	BI Rate (%)	Consumer Price Index
Average	6.617.290,89	4,50	118,73
Median	6.517.959,26	4,25	111,33
Maximum value	8.528.022,31	6,00	139,07
Minimum value	5.351.650,33	3,50	104,33
Standard Deviation	909.837,7012	0,92	14,00439853
Number of observation	60	60	60

Table 1 shows a statistical summary which includes the average value, middle value, maximum value, minimum value, and standard deviation of data on money supply, Bank Indonesia interest rates, and the Consumer Price Index. The average value of money in circulation is IDR 6,617,290.89 billion. The median value is IDR 6,517,959.26 billion. The maximum value is IDR

8,528,022.31 billion. The minimum value is IDR 5,351,650.33 billion, with a standard deviation of IDR 909,837.7012 billion.

The average BI interest rate is 4.5%. The median value is 4.25%. The maximum value is 6%. The minimum value is 3.5%, with a standard deviation of 0.92%.

The average value of the consumer price index is 118.73. The mean value is 111.33. The maximum value is 139.07. The minimum value is 104.33, with a standard deviation of 14.00439853.

Before calculating multiple linear regression, normality, heteroscedasticity, autocorrelation and multicollinearity tests are first carried out.

Based on the normality test results, it was found that the Jarque-Bera Normality test statistic was 5.244144, with a probability value of 0.072652. Based on this, it can be explained that the empirical model used has residuals or confounding factors that are normally distributed, because the probability value with α = 5% is 0.072652 > 0.05. The following is a diagram of the data normality test results.

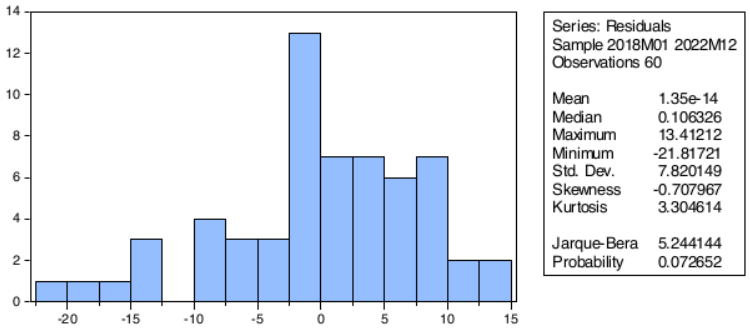

Figure 2. Normality Tests Results

n this research, testing the heteroscedasticity problem uses the Breusch-Pagan-Godfrey test with the following results.

Table 2. Breush-Pagan-Godfrey Test Results

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.645009	Prob. F(2,57)	0.2020
Obs*R-squared	3.274191	Prob. Chi-Square(2)	0.1945
Scaled explained SS	3.405018	Prob. Chi-Square(2)	0.1822

The probability of Obs*R-squared is 0.1945, this value is greater than 0.05 or 0.1945 > 0.05 which indicates that there is no heteroscedasticity problem in the model.

One method that can be used to detect whether there is autocorrelation is the Durbin–Watson Test (DW test) which is used for first order autocorrelation and requires the presence of an intercept (constant) in the regression model and no other variables among the independent variables. . Where the d value is compared with d table with a significance level of 5% with df = n - (k + 1). Decision making on whether there is autocorrelation can be seen from the following provisions (Santoso, 2012).

1. The DW number is below -2, which means there is positive autocorrelation.
2. The DW number is between -2 to +2, which means there is no autocorrelation.
3. The DW number is above +2, which means there is negative autocorrelation.

After correcting the autocorrelation problem, the autocorrelation test results were obtained as follows.

Table 3. Durbin-Watson Statistical Test

Durbin-Watson stat	**Conclusion**
0,391393	no autocorrelation

Based on table 3, it can be seen that the final Durbin-Watson value is 0.391393, which is between -2 and +2 (-2 < 0.391393 < +2). These results indicate that in the regression model there is no autocorrelation, thus the model meets the requirements for regression testing.

In this research. The multicollinearity problem was tested by looking at the VIF value, with the following results.

Tabel 4. Hasil Uji Multicollinierity Test Results

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	207.1895	196.3866	NA
X1	2.06E-12	87.16848	1.617310
X2	20172.72	40.33715	1.617310

In the table it can be seen that all variables X_1 and X_2 has a VIF value > 0.10 and VIF < 10. So it can be concluded that in this model there is no multicollinearity problem.

Table 5. Estimation Output

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	115.9333	14.39408	8.054233	0.0000
X_1	-0.00000544	1.44E-06	-3.791185	0.0004
X_2	862.5132	142.0307	6.072724	0.0000
R-squared	0.693379	Mean dependent var		118.7287
Adjusted R-squared	0.682620	S.D. dependent var		14.12258
S.E. of regression	7.956162	Akaike info criterion		7.034477
Sum squared resid	3608.129	Schwarz criterion		7.139194
Log likelihood	-208.0343	Hannan-Quinn criter.		7.075438
F-statistic	64.44862	Durbin-Watson stat		0.391393
Prob(F-statistic)	0.000000			

Based on the results of testing the coefficient of determination in table 5, it shows that the R2 value is 0.693379 or 69.3379%. From the tests carried out, it can be concluded that the variability of the consumer price index variable is explained by the independent variables, namely the money supply and the BI interest rate in this research, which is 69.3379%, while 30.6621% is explained by other factors that are not present. in the regression model in this research.

Based on table 5, the coefficient constant value can be seen, so that it can be formed in a multiple linear regression equation as follows:

$Y = 115{,}933 - 0{,}00000544\ X_1 + 862{,}5132\ X_2$

The above equation can be interpreted as follows:

- α is 115.933, which means that if the money supply and BI interest rate are zero, then the consumer price index is 115.933 units.
- The regression coefficient for the money supply variable is -0.00000544, which means that if there is a change in the money supply increase of 1 unit (assuming other variables are constant), then the consumer price index will decrease by 0.00000544 units.
- The regression coefficient for the BI interest rate variable is 862.5132, which means that if there is a change in the BI interest rate by 1 unit (assuming other variables are constant), then the consumer price index will increase by 862.5132 units.

Based on table 5, the p-value of the money supply variable is 0.0004. Due to the value of prob. (p-value) < 0.05 (5% significance level) or 0.0004 < 0.05, then H_0 is rejected and the conclusion is that the money supply has an effect on the consumer price index. The p-value of the BI interest rate variable is 0.00. Due to the value of prob. (p-value) < 0.05 (5% significance level) or 0.00 < 0.05, then H_0 is rejected and the conclusion is that the BI interest rate has an effect on the consumer price index.

Based on table 5, it is found that the value of prob. (F-statistic) of 0.0000 < 0.05; then H_0 is rejected, which means that the money supply and BI interest rates simultaneously have an influence on the consumer price index.

CONCLUSION

Based on the results of research on the influence of the money supply and BI interest rates on the consumer price index in Indonesia for the 2018-2022 period, conclusions can be drawn, namely, whether partially or simultaneously, the money supply and BI interest rates have an effect on the consumer price index. In future research, it is hoped that we can add and develop variables or use other variables to better understand the picture of the condition of the consumer price index in Indonesia.

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