

Analysis of Affecting Variables Actual Inflation Rate at Indonesia

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KEYWORDS

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loan interest rate; gross
domestic product rate;
actual inflation rate

ABSTRACT

The discussion in this empirical study is to find out what variables can influence the achievement of the actual inflation rate variable in Indonesia in the last ten years. The writer considers that achieving the actual inflation rate targeted by a Central Bank is not simply related to supply and demand imbalances for primary goods alone, but more broadly than that related to dynamic micro and macroeconomic conditions. The writer initially suspected that variables such as the inflation target rate, previous inflation rate, loan interest rate, and gross domestic product had a significant influence on fluctuations in the actual inflation rate in Indonesia. After statistical tests were carried out using the secondary data in the form of the rates of the four independent variables and the actual inflation rate in Indonesia as the dependent variable every year for the last ten years it's found that only the loan interest rate had a significant and positive effect on the actual inflation rate in Indonesia. which means that the higher the loan interest rate will also increase the actual inflation rate. The three other variables tested in this empirical study, namely the inflation target rate, the previous inflation rate, and the gross domestic product rate, did not have a significant effect.

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1. Introduction

Fluctuations in currency exchange rates (currency rates) that move to extremes as a result of uncontrolled movements in supply and demand for one country's currency with another are allegedly the main variable in causing inflation. Inflation itself is basically a reflection of a value gap when the increase in demand far exceeds the increase in supply for a number of primary goods/services, causing a simultaneous increase in the price of these products. If the accumulated increase in prices of a number of goods/services that are needed by society is greater than the accumulated decrease in prices of other goods/services in a country, it can be categorized as experiencing inflation (Alamsyah, 2008).

If you look at it that simply, the problem of inflation is only based on the balance of supply and demand for primary products in a country, of course the policy for dealing with inflation may not be

too complicated because the formula is very simple, namely when the prices of people's primary needs increase significantly, the government just needs to increase and increase supply. according to community needs. However, the problem is not that simple because there are many internal and external factors and conditions that are difficult for the Government to control in order to provide adequate supplies of goods and regulate the amount of people's needs. Apart from that, each country also has a different ideal level in determining its inflation target rate (Bodie et al., 2013).

It cannot be denied that in the current global economic and trade system the movement of each country's currency value is allegedly the main determinant in influencing the inflation rate. This condition is because in this global economy it will be very difficult not to depend on other countries as a place to buy or sell products. Thus, the scope of monitoring the movement of supply and demand for these products is not only limited to each country but to a global scope where purchase or sales transactions are carried out using the strength of the respective currency values which are exchanged for the currency of the destination/origin country. or convert first with a currency that is widely used and most trusted, such as the US Dollar (Case & Fair, 2007).

The stability of currency exchange rate fluctuations is the main point of attention (urgent notification spot) for the Central Bank of a country, especially in countries with open economies, in determining its monetary policy. In an open economy, a country certainly cannot be separated from international trade activities in the form of exports and imports, exchange of goods/services and foreign investment. In fact, the exchange rate and inflation can exchange roles where the exchange rate becomes a factor causing inflation, in other conditions inflation affects the exchange rate. With the implementation of inflation targeting policies in several developing countries (Firdaus & Ariyanti, 2009).

The implementation of inflation targeting in Indonesia actually started in 2000 when Indonesia was still in the stage of trying to get out of the 1998 economic and monetary crisis, but it was only formally implemented since July 1 2005 when the use of interest rates as an operational target was implemented, which was previously used. base money as target. This policy is an accumulation of strategies and implementation of monetary policy regarding quantitative targets or target ranges that are projected to be achieved for the inflation rate at several points in the future as well as a statement of the Government's commitment in its monetary policy to always control inflation at an ideal level (Hakim, 2016).

Until now, many parties feel that the implementation of inflation targeting in Indonesia has not provided optimal results even though Bank Indonesia has been given good instrument independence. There are still a number of internal and external problems and obstacles faced by Bank Indonesia in implementing the inflation targeting framework. Internally, it turns out that Bank Indonesia is still facing technical problems and has insufficient authority to determine the target inflation rate. As a result, the target rate and the actual rate are often far off. Externally, these are in the form of obstacles originating from Indonesia's macroeconomic conditions which have not been fully controlled due to global economic shifts such as the inflation rate of the previous period (Hubbard et al., 2014).

Inflation is an accumulated increase in the price of a combination of products/services that are dominantly needed by society, which are primary and difficult to replace by other products. Of course, price increases for a number of goods/services are not considered inflation as long as the increases are not widespread and massive and have a domino effect and result in price increases for other goods/services. The main cause of this happening is when demand (demand) exceeds the level of supply (supply) (Kemu & Ika, 2016). An increase in production costs certainly causes the price of the goods or services offered to increase. As stated by Keynes (Firdaus, 2011), Inflation is generally caused by an imbalance between public demand and the supply of goods or services or supplies, which creates a gap called the inflationary gap (Maggi & Saraswati, 2013).

From the other side, (Bodie et al., 2013) explain their theory regarding inflation which is defined as a condition of increasing prices of goods and services which causes a decrease in the value of money

(currency depreciation). Based on the quantity theory of money in the classical school, the main cause and perhaps the only cause of the decline in the value of money is too much money circulating in society which ultimately causes inflation. However, if the amount of money in circulation is too small, it is also very risky, which will cause economic activity and growth to slow down, for this reason it is necessary to determine/target the level of inflation and money circulation in society at a proportional level so that uncontrolled inflation or deflation does not occur (Mankiw & Ball, 2011).

In general, the government of a country immediately moves quickly to minimize the risk or negative impact of inflation after it occurs and only carries out curative anticipation. The steps taken to anticipate this usually include budget savings by cutting non-urgent costs, increasing taxes, creating open market policies, implementing discount policies, implementing fiscal and monetary policies, as well as other non-fiscal and monetary policies. Fiscal policy is a type of decision and regulation to maintain macro economic stability, while monetary policy is a policy for regulating the money supply (Pohan, 2008).

Monetary policy is one way to overcome inflation that is quite effective, and what is often done in this regard is reducing or increasing the money supply, setting interest rates and/or buying and selling securities owned by the Government. Among the monetary policies that are widely implemented to overcome inflation problems, including in Indonesia, is the inflation targeting framework (ITF), which projects the range of inflation targets to be achieved in the future and announces it to the public (Prasetiantono, 2000).

Hubbard & O'Brien (2013) said that the Inflation Targeting Framework is a policy that considers that inflation is very urgent to be controlled because it will have a negative and massive impact on the socio-economic conditions of society which will have a domino effect on other, more complicated problems. In implementing this policy, the Central Bank sets the inflation target rate as a benchmark for projections so that when deviations occur, adjustments can be made, such as adjusting the money supply or setting loan interest rates in an effort to stimulate the availability of supply to balance demand in order to achieve a balance to achieve the projected inflation rate. and expected.

(Kalalo, 2016) said that the implementation of inflation targeting policies varies greatly among countries that have implemented an inflation targeting framework as a framework for their monetary policy. There are five types of inflation targeting frameworks, namely:

1. Notification to the public regarding the medium-term inflation target;
2. Public confidence that the Government is committed to maintaining price stability and is serious about making every effort so that the inflation target set will be realized.
3. The strategy implemented is based on information regarding the movement of economic variables other than monetary aggregates which are input into monetary policy formulation;
4. Transparent in explaining policies openly to the public regarding plans, steps taken and the results;
5. The level of public confidence in the central bank in achieving the inflation target.

In implementing the strategy for determining the inflation target rate, apart from the projected value/number of the inflation target itself, there are also other variables that determine the success of the strategy, including the inflation value of the previous period, loan interest rates, and gross domestic product. Alamsyah (2008) said that inflation in the previous period is often used as the main consideration or determinant that influences actual inflation. This is because economic actors in Indonesia and other countries generally still behave or have a backward looking perspective which analyzes the actual inflation rate based on the inflation of the previous period. However, when economic conditions seem to move wildly and unpredictably (Nugroho & Basuki, 2012).

The next variable which is predicted to be very significant in causing inflation according to Hubbard (1997) is the loan interest rate which is regulated and determined by the Central Bank. Low interest rates will stimulate business actors to carry out their business activities in producing and/or

distributing the basic needs of society so that supply is generated to meet demand which can ultimately reduce prices to the desired price level.

Furthermore, a variable that has no less significant influence on inflation is Gross Domestic Product. According to (Pratama, 2014), all economic activities by business actors are to produce goods/services to meet demand. The accumulation of goods/services produced can of course be categorized as national product or national income which is defined as gross domestic product or GDP. So, national income is the total income of society received by a country's economy within a period of one year. Theoretically, the more the value of a country's gross domestic product increases, the stronger it will play to reduce the rate of inflation.

Based on theories regarding inflation targeting and other variables which are indicated to be determinants of achieving the targeted inflation value, the relationship scheme between the variables determined is as shown in the following figure:

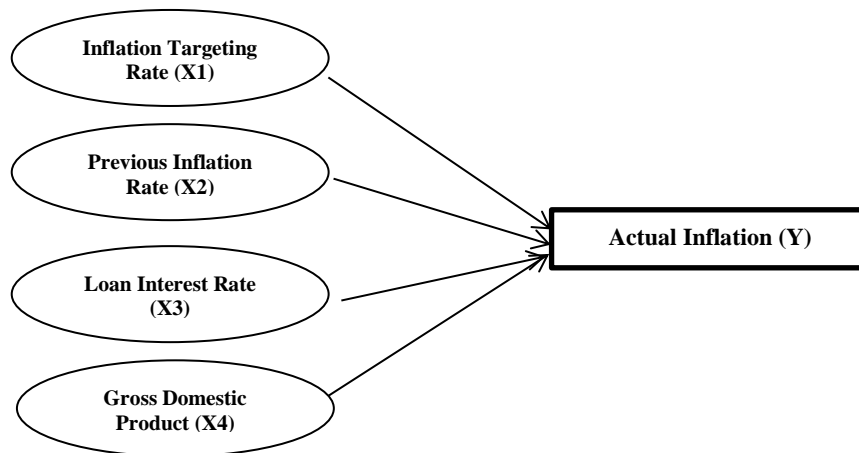


Fig 1. The relationship scheme between the variables determined

The relationship scheme between variables above forms a research hypothesis to obtain answers to the following reasons:

1. The Inflation Target Framework Policy (X1) is thought to have a significant influence on the inflation rate in Indonesia (Y).
2. Previous Period Inflation (X2) is thought to have significantly influenced the inflation rate in Indonesia (Y)
3. The Bank Indonesia interest rate (X3) is thought to have a significant influence on the inflation rate in Indonesia (Y)

Gross Domestic Product (X4) is thought to have a significant influence on the inflation rate in Indonesia (Y) (Rahmadeni & Wulandari, 2017)

2. Materials and Methods

The research method used in this research is a quantitative method which uses many mathematical and statistical operations starting from the data collection process to its interpretation to determine the effect of the inflation target rate, previous inflation rate, loan interest rates, and GDP on actual inflation in Indonesia. The numbers used are the rates of the 5 (five) variables tested in each quarter from 2012 to 2022 with the concept of time series analysis which is then processed to obtain multiple linear regression data processing output through the Eviews 8.0 program. by using the formula:

$$Y = f(X_1, X_2, X_3, X_4)$$

Next, the equation model formed is:

$$Y_t = \alpha + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + e_t$$

Where:

Y = Actual Inflation Rate

X1 = Inflation Target Rate

X2 = Previous Inflation Rate

X3 = Loan Interest Rate

X4 = Gross Domestic Product Rate

α = Intercept

β = Regression Coefficient

e = error

3. Result and Discussion

As previously stated, this research was conducted to test the influence of the inflation target rate, previous inflation rate, loan interest rate, and gross domestic product rate on the actual inflation rate in Indonesia in each quarter from 2012 to 2022. From the results of statistical data processing Multiple linear regression analysis in the Eviews 8.0 program obtained statistical data processing output.

Table 1: Statistical Data Processing Output

Regression

Dependent Variable: Inflation_rate

Method: Least Squares

Date: 06/14/2023 time 20:42

Sample (adjusted): 2012Q 1 2022Q4

Included Observation: 43 after adjustments

Convergence achieved after: 189 iterations

Variables	Coefficient	Std. Error	t-statistic	Prob.
C	-6.667414	3.052666	-1.994246	0.0542
Inflation_target	-0.059104	0.115811	-0.523425	0.6125
Previous_Inflation_Peroid	-0.042859	0.213710	-0.224445	0.7592
BI_Rate	1.730250	0.428919	3.542355	0.0006
GDP	0.140577	0.153255	0.745573	0.4036
AR (1)	0.622054	0.167868	4.138500	0.0004
R-Squared	0.782613	Mean dependent variable		5.832257
Qusted R-Squared	0.714437	SD dependent variables		3.044415
SE Of regression	1.377258	Akaike info criterion		2.998602
Sum of squared resid	60.23442	Schwarz criterion		3.451731
Log likelihood	-66.85328	Hannah-quin criterion		3.624833
F-Statistic	24.40137	Duntin-watson statistics		1.904157
Prob (F-statistic)	0.000000			
Inverted AR Roots	64			

Based on the statistical data processing output in Table 1 below, it can be seen that the correlation coefficient value of the inflation target rate variable (X1) to the actual inflation variable in Indonesia is -0.059104 with the t-statistic value being -0.523425, while for the previous inflation rate variable (X2) is -0.042859 and the t-statistic is -0.224445, the loan interest rate variable (X3) is 1.730250 with a t-statistic value of 3.542355, and finally the gross domestic product rate (X3) is

0.140577 and the t-statistic value is 0.745573. Compared with the t-table value with the condition $df(n, k) 0.05; 39$ which is 1.684, it can be seen that:

- There is no significant influence of the inflation target rate in Indonesia on the actual inflation rate because the t-statistic value is -0.523425 which is smaller than the t-table value of 1.684. There is a (-) value in the coefficient value (-0.059104), so it can be said that the inflation target rate in Indonesia has the potential to reduce the actual inflation rate, although it is not significant at the 95% confidence level.
- There is no significant influence of the previous inflation rate in Indonesia on the actual inflation rate because the t-statistic value is -0.224445, which is smaller than the t-table value of 1.684. There is also a (-) value in the coefficient value (-0.042859), so it can be said that the previous increase in the inflation rate in Indonesia had a negative (non-directional) effect, although not significant.
- There is a significant influence on loan interest rate against the actual inflation rate because the t-statistic value is 3.542355 which is greater than the t-table value of 1.684 and there is no (-) value in the coefficient value (1.730250), so it can be said that an increase in the loan interest rate has a significant positive effect on actual inflation rate.
- There is no significant influence of the gross domestic product rate in Indonesia on the actual inflation rate because the t-statistic value is 0.745573, which is smaller than the t-table value of 1.684. There is also a (-) value in the coefficient value (0.140577), so it can be said that the gross domestic product rate in Indonesia, although not significant at the 95% confidence level or it has a tendency to increase the actual inflation rate.

Based on the results of statistical calculations in Table 1, an F-calculation value of 24,401 was also obtained. If compared with the F-table value of 2.61, the result is that the calculated F-value > F-table, meaning that H_0 is rejected and it is known that in the regression equation the four independent variables tested simultaneously have a significant effect and explain variations in the movement of actual inflation rate fluctuations in Indonesia.

There are 4 (four) independent variables tested in this research, so to measure the coefficient of determination of these 4 (four) independent variables against 1 (one) dependent variable, the benchmark indicator is adjusted R². Still the data listed in Table 1 shows that the adjusted R² value is 0.714437. This shows that the inflation target rate, previous inflation rate, loan interest rate, and gross domestic product rate simultaneously explain ±71% variation in actual inflation rate movement and amounted to ±29% was influenced by other variables not tested in this study.

Table 2. Multicollinearity Results

Variance inflation factors

Date; 06/14/23 time 22:25

Sample: 2012Q1 2022Q4

Included observations: 43

Variables	Coefficient variance	Uncentered VIF	Centered VIF
C	126.2504	455.8505	NA
Actual_Inflation_Rate	0.013722	1.513942	1.058791
Previous_Inflation_Rate	0.052598	9.309034	3.178303
Rate_Sukubunga_Loan	0.215739	35.00114	2.050975
Rate_GDP	0.821827	504.5837	1.260953
AR (1)	0.031858	2.103853	2.023119

In the Uncentered VIF column, the variable value of the inflation target rate, previous inflation rate, loan interest rate, and gross domestic product rate obtained is smaller than 10, so it can be concluded that there is no correlation between one independent variable and another independent

variable so that it can It is said that there is no multicollinearity between the independent variables, and the TOL value is close to one, so it is increasingly believed that multicollinearity does not occur.

Table 3. Heteroscedasticity Results Heteroskedasticity Test Breusch-Pagan-Godfrey

F-statistics	0.595083	Prob. F(3.39)	0.7524
Obs*R-squared	1.748399	Prob. Chi-Square (3)	0.5972
Scaled explained SS	2.284773	Prob. Chi-Square (3)	0.5154

The test results show that there is no heteroscedasticity. These results show an Obs*R-squared value of 1.748399 and the probability value is 0.7524 (greater than $\alpha=5\%$), so it can be concluded that the data is not heteroscedastic.

4. Conclusion

Based on the results of data analysis and observations of the factors that influence fluctuations in the actual inflation rate in Indonesia in the last 10 (ten) years, several results can be concluded as follows:

There is no significant influence of the inflation target rate on the actual inflation rate, meaning that whatever rate is set by Bank Indonesia as the Central Bank, it has no significant effect and the results often do not correspond to fluctuations in the actual inflation rate. From the output of statistical data processing, there is a (-) sign in the correlation coefficient number, which means that the more the target inflation rate increases, the more the actual realized inflation rate will decrease.

There is no significant influence of the previous inflation rate on the actual inflation rate, meaning that whatever the previous inflation rate is, it does not significantly affect the actual inflation rate. This shows that in the last 10 (ten) years Indonesian economic actors are no longer as backward looking as before because they think that the economic situation and conditions in Indonesia are dynamic and unpredictable.

There is a significant and positive influence of the loan interest rate on the actual inflation rate in Indonesia, which means that increasing the loan interest rate will actually significantly increase the actual inflation rate. This shows that if loan interest rates are increased, business activity in Indonesia will decrease so that the supply of products/services for primary needs decreases, which in turn drives prices up, causing the actual inflation rate to also rise.

There is no significant influence of the rate of gross domestic product in Indonesia on the actual inflation rate, which means that whatever the rate of gross domestic product in the last 10 (ten) years in Indonesia has not had a significant effect on fluctuations in the actual inflation rate. However, even though it is not significant, an increase in the gross domestic product rate tends to suppress the actual inflation rate

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