

The Influence of Macroeconomic Variables on Inflation After Inflation Targeting Framework Implementation in Indonesia

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Abstract: The global economic crisis that occurred in 1997, which led to the collapse of the rupiah exchange rate and soaring inflation, made the country realize the importance of economic stability. The problem was then responded by Bank Indonesia by implementing the Inflation Targeting Framework policy. The focus of this study is to observe the inflation condition in Indonesia after the implementation of the Inflation Targeting Framework policy. The purpose of this study is to see the influence of macroeconomic variables such as Gross Domestic Product (GDP), Interest Rates, and Exchange Rates on Inflation in Indonesia. The method used is Vector Error Correction Model (VECM) analysis with the research period from 2005Q4-2021Q4. The results found that GDP and interest rates have a positive effect on inflation. While the Exchange Rate has a negative effect on inflation in Indonesia.

Keywords: *GDP, Exchange Rate, Interest Rate, Inflation*

Introduction

Efforts to achieve economic stability are the main goals shared by countries around the world. Among the various macroeconomic indicators available, inflation serves as a valuable tool in assessing the stability of a country's economy. This is due to the large influence of inflation fluctuations on the trajectory of economic growth (Dewi, 2011). According to Mankiw (2016), Inflation is characterized by a general increase in the price level. The inflation rate, in turn, represents the percentage change observed in the overall price level, which shows significant variation over time and among different countries.

Inflation is very dangerous for the country's economy, as a clear example occurred in 1997-1998 where there was a global economic crisis that caused the value of the country's currency to decrease, especially in developing countries, especially in Indonesia. After the crisis, monetary policy in Indonesia underwent changes. The government continues to strive to restore the welfare of the nation in the midst of this crisis. The initiative to be undertaken is the implementation of Law Number 23 of 1999 concerning Bank Indonesia, which gives greater autonomy to the institution in fulfilling its responsibilities and objectives. This strategic step empowers Bank Indonesia to diligently implement its monetary policy, particularly to achieve the established inflation target, known as *Inflation Targeting* (Anggoro, 2017).

The Inflation Targeting Framework (ITF) is a framework in which monetary policy is directed towards achieving the future inflation target that is published transparently as a tangible form of central bank commitment and accountability (Warjiyo & Juhro, 2019). The Inflation Targeting Framework was introduced to Indonesia in 2000, following the implementation of Law No. 23 of 1999 dedicated to Bank Indonesia. The ITF was implemented gradually through a transition period and was officially implemented on July 1, 2005. Through the introduction and implementation of the Inflation Targeting

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Framework (ITF) as Indonesia's monetary policy framework, there is a promising opportunity to drive a major reduction in the existing inflation rate. To substantiate this claim, we need only take a quick look at the interesting data presented in Figure 1.1, which shows the important impact of inflation-targeting policies on the inflation rate in Indonesia.

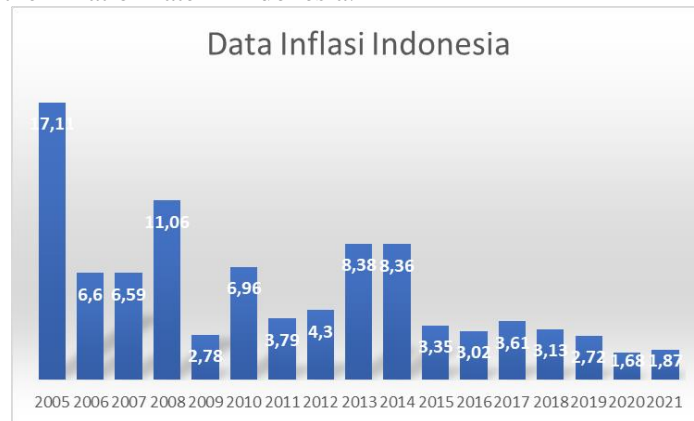


Figure 1. Indonesia Inflation Data

Source: Bank Indonesia Official Website

Based on the data in the chart above, the inflation rate in Indonesia is still fluctuating despite implementing the Inflation Targeting policy. It can be concluded that even though Indonesia has implemented the Inflation Targeting Framework policy to control the inflation rate, it does not mean that the inflation rate has immediately become low and stable. This is because the high or low inflation rate is also influenced by various macroeconomic factors. Therefore, it is important to know how macroeconomic factors affect inflation. This study aims to analyze the influence of macroeconomic factors such as Gross Domestic Product (GDP), exchange rates, and interest rates on inflation after the implementation of the Inflation Targeting Framework policy in Indonesia.

As for previous studies that have examined the effect of Gross Domestic Product (GDP) on inflation, namely by Chowdhury & Siregar (2004) found that GDP negatively affects Inflation. While, Anggraeni & Dwiputri (2022) found that GDP has a positive effect on inflation.

In addition to GDP, exchange rates also have an influence on inflation. This is proven in research Adim (2021) and Susmiati et al (2021) which found that exchange rates positively affect inflation. Meanwhile, Bugis et al (2023) and Yanti & Soebagiyo (2022) found the opposite, namely the exchange rate negatively affects inflation.

In other research conducted by Muhson (2003) found that interest rates have a negative impact on inflation. But Elvina et al (2021) and Amaliyah & Aryanto (2022) found conflicting results, where, interest rates have a positive influence on inflation.

From previous research, there were differences in results and did not examine specifically about inflation in the period after the implementation of the *Inflation Targeting Framework* policy in Indonesia. Therefore, this study tries to analyze the influence of macroeconomic variables on inflation in Indonesia with an observation period focusing after the ITF is applied. This study also uses a different analytical method from previous research, namely using the *Vector Error Correction Model* (VECM) to analyze macroeconomic factors that affect inflation.

Literature Review

Inflation

Inflation is a gradual increase in the price level that occurs as a whole, while the inflation rate is the percentage fluctuation that occurs in the overall price level and varies greatly from time to time and

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between countries (Mankiw, 2016). According to Greenlaw (2011) inflation is a general and sustained increase in price levels throughout the economy.

Keynes's Theory of Inflation

The relationship between inflation and economic growth is explained in Keynes's theory, where he underlines the occurrence of inflation as a result of a mismatch in the balance of supply and demand. This happens because when the economy grows it will increase consumption caused by an increase in individual income.

As individuals' incomes increase, society will tend to spend more money to meet their needs and wants. This can drive demand in various sectors of the economy, when the economy grows then aggregate demand will grow faster than the ability to provide goods and services, which results in an increase in the price of goods and services (inflation).

Purchasing Power Parity Theory (PPP)

The theory of purchasing power parity explains the relationship between exchange rate fluctuations and price level dynamics or inflation. It was first proposed by Gustav Caesal in 1920. According to this theory, the exchange rate between two countries should be aligned with the price level of each country. As a result, a decrease in domestic purchasing power, such as an increase in domestic prices or an increase in inflation, will lead to a depreciation of a country's currency in the global market. Conversely, an increase in domestic purchasing power marked by a decrease in the inflation rate will have an impact on the appreciation of the country's currency.

Fisher's Interest Rate Theory

Interest rates are the market prices at which resources are transferred between the present and the future through the return of savings and loans (Mankiw, 2016). Interest rates serve as a measure for a country's economic activity, and can affect inflation,

According to economist Irving Fisher, the demand and supply of capital determine the high and low of interest rates. Fisher's theory explains that higher interest rates encourage people to sacrifice or reduce consumption, which can increase the amount of savings and lower its follow-on effect, inflation. Instead, the interest rate will determine how much household savings and investments the business will make in the economy. When interest rates are low, people will be encouraged to borrow money and consume goods, resulting in an increase in the money supply which leads to rising inflation.

Theoretical Framework

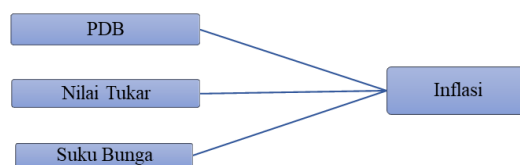


Figure 2. Theoretical Framework

The hypotheses in this study are:

H1: GDP has a positive influence on inflation after the implementation of *the Inflation Targeting Framework* in Indonesia.

H2: Exchange rates have a negative influence on inflation after the implementation of Indonesia's *Inflation Targeting Framework*.

H3: Interest rates have a negative influence on inflation after the implementation of Indonesia's *Inflation Targeting Framework*.

Methodology

Types of Research

This research is included in the classification of quantitative research, which is an approach using numerical measurements to test hypotheses or theories using mathematical or statistical analysis (Qoyum et al, 2021).

Data Types and Sources

The data used in this study are secondary data sourced from well-known publications of Bank Indonesia, especially data from Indonesian Economic and Financial Statistics (SEKI). In addition, data from the Central Statistics Agency (BPS) has also been included. The selected data includes quarterly *Time Series* data covering the fourth quarter of 2005 to the fourth quarter of 2021.

Analysis Methods

This study uses statistical and econometric analysis methodologies, by utilizing time series analysis techniques known as Vector Auto Regression (VAR) or Vector Error Correction Model (VECM). The selection of the VAR model is based on careful consideration of minimal theoretical assumptions, thus ensuring its ability to accurately capture complex economic dynamics. In general, the VAR model can be described generally as follows:

$$Y_t = A_0 + A_1Y_{t-1} + A_2Y_{t-2} \dots + A_pY_{t-p} + e_t$$

The variables observed in this study are 4 variables that have a possible reciprocal relationship. The variables in question are Inflation (Y1), GDP (Y2), Exchange Rate (Y3), and Interest Rate (Y4). The VAR model in this study was adopted from the study by Waluyo & Ulfah (2010) with modifications in the form of different observation variables. Meanwhile, the equation of the VAR model used in this study is as follows:

$$\begin{aligned} Inflation = c_1 + \sum a_1 Inflation_{t-1} + \sum a_1 GDP_{t-1} + \sum a_1 Exchange\ rate_{t-1} \\ + \sum a_1 Interest\ Rate_{t-1} + e_t \end{aligned}$$

Broadly speaking, the stages of VAR model analysis begin with testing data stationarity, then determining the optimal lag length, assessing the stability of the VAR model, testing Granger causality, then conducting cointegration testing, estimating the VAR model, analyzing the *Impulse Response Function* (IRF) and *Forecast Error Variance Decomposition* (FEDV). These stages can be seen in the picture below:

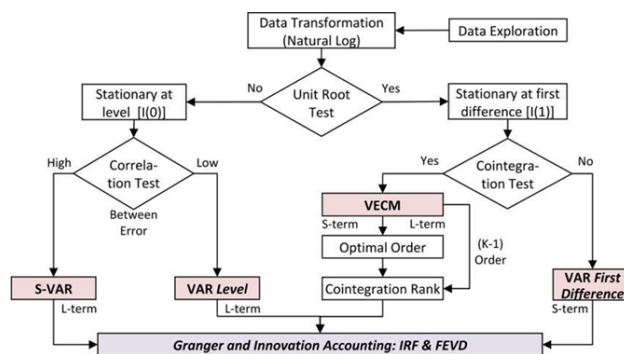


Figure 3. Stages of VAR Analysis
Source: Ascarya (2012)

Results and Discussion

Descriptive Analysis

Sumanto (2014) argued that descriptive analysis is an activity that includes collecting data to examine hypotheses relating to the state or condition of objects observed during research efforts. This is manifested in the form of statistical measures of minimum, average, maximum and also standard deviation values. Here are descriptive statistics of the variables under study processed using eviews.

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Table 1. Descriptive Statistical Data

	N	Minimum	Maximum	Mean	Std. Deviasi
Inflasi	65	1,43	17,79	5,60	3,62
BI_Rate	65	3,50	12,75	6,68	2,13
PDB	65	1514812	2846069	213219	419812
Kurs	65	8.590	14.989,86	11.559,54	2.236

Source: Processed Data Results (2023)

The findings presented in Table 1 above reveal a careful examination of 65 samples (N) for each variable. It should be noted that inflation, as the main variable of concern. The smallest measurement, only 1.43%. In contrast, the highest figure was 17.79%. The average inflation rate is quite good at 5.60%, accompanied by a standard deviation of 3.62%. For variable interest rates (BI rate), the minimum value is 3.5%. Meanwhile, the maximum value is 12.75%. The average value is 6.68% and the standard deviation is 2.13%.

Gross Domestic Product (GDP) which is an indicator of economic growth has an average value of Rp. 2,132 trillion with a standard deviation of 419,812. The minimum value is Rp. 1,514 Trillion and the maximum value is Rp. 2,846 Trillion. The average exchange rate is Rp. 11,559 and the standard deviation is 2,236. The minimum value is Rp. 8,590. Meanwhile, the maximum value is Rp. 14,989.

VAR/VECM Analysis

1. Data Stationarity Test

The test in this study is data stationarity test using root unit test. The different methods used are the famous Augmented Dickey Fuller (ADF) test and the Philips-Platform (PP) test. As for I present the test results obtained through the use of the Augmented Dickey Fuller and Philips Perron methods at the level in the table below:

Table 2. Level Stasionecity Test Results

Variabel	ADF		Philips-Perron	
	T-Statistik	Prob.	T-Statistik	Prob.
Inflasi	-1,507013	0,5230	-3,492555*	0,0113
PDB	0,216363	0,9715	-0,573272	0,8687
BI Rate	-3,651391*	0,0073	-2,077604	0,2542
Nilai Tukar (Kurs)	-0,678684	0,8441	-0,627283	0,8565
Test Critical Values (Mackinon)				
1% Level		-3,540198		-3,536587
5% Level		-2,909206		-2,907660
10% Level		-2,592215		-2,591396

Ket: * menunjukkan data stasioner pada tingkat level.

** menunjukkan data stasioner pada tingkat first difference.

Source: Processed Data Results (2023)

The test results above show that the data does not show stationarity at its current level. Therefore, it is very important to test at the next level, which is the first difference. Here are the test results obtained from that stage.

Table 3. First Difference Level Stasionecity Test Results

Variabel	ADF		Philips-Perron	
	T-Statistik	Prob.	T-Statistik	Prob.
Inflasi	-5,496843**	0,0000	-6,497095**	0,0000
PDB	-3,090410**	0,0326	-25,24431**	0,0001
BI Rate	-4,887093**	0,0001	-4,487869**	0,0006
Nilai Tukar (Kurs)	-6,316740**	0,0000	-6,233335**	0,0000
Test Critical Values (Mackinon)				
1% Level		-3,540198		-3,538362
5% Level		-2,909205		-2,908420
10% Level		-2,592215		-2,591799

Ket: * menunjukkan data stasioner pada tingkat level.
 ** menunjukkan data stasioner pada tingkat first difference.

Source: Processed Data Results (2023)

Findings in Table 3. shows that when using ADF and PP methods at the first difference level, each variable surpasses the Mackinnon critical value at significant levels of 1%, 5%, and 10%, with T-statistic values greater than -3.540198, -2.909206, and -2.592215. These results strongly suggest that all variables exhibit stationarity at the first level of difference.

2. Optimal Lag Length Test

The selection of optimal lag length is one of the weaknesses in the VAR/VECM model so further testing is needed to obtain it. The stages carried out to determine the most optimal lag are to pay attention to the lowest AIC, SC and HQ values. Below are the results of the optimum lag test:

Table 4. Optimal Lag Test Results

Lag	AIC	SC	HQ
0	5,987614	6,128464	6,042597
1	5,971842	5,971842	5,542503
2	5,355643	6,623293	5,850483
3	4,415576	6,246626	5,130343
4	3,873197	6,267647	4,807893
5	4,096242	7,054092	5,250867

* = lag optimal

AIC = Akaike Information Criterion, SC = Schwarz Information Criterion, HQ = Hannan-Quinn Information Criterion

Source: Processed Data Results (2023)

Table 4. shows that the most favorable values of the lowest indicators AIC and HQ are reached at lag 4, with outstanding values of 3.873197 and 4.807893, respectively. As a result, many indicators strongly favor lag 4 as the most optimal choice, thus leading to the conclusion that any interference in a particular variable will elicit a response from another variable after a time lag of exactly four intervals.

3. Granger Causality Test

The Granger causality test serves as a valuable tool in distinguishing the exact direction of the examined relationships between variables. This allows us to determine whether this relationship is unidirectional, reciprocal, or non-existent. The nature of this relationship is revealed through an examination of the probability values associated with each test, considering the most suitable time lag. These values can then be juxtaposed with significance thresholds of 1%, 5%, and 10%. Table 4.5 below shows the results of Granger causality testing:

Table 5. Granger Causality Test Results

Null Hypotesis H0	obs	Prob.	Hasil Pengujian
LNPDB does not Granger Cause Inflasi	61	0.0002*	Tolak H0
Inflasi does not Granger Cause LNPDB		0.6045	Terima H0
LNKurs does not Granger Cause Inflasi	61	0.0135*	Tolak H0
Inflasi does not Granger Cause LNKurs		0.0280*	Tolak H0
Inflasi does not Granger Cause BI-Rate	61	0.9430	Terima H0
BI-Rate does not Granger Cause Inflasi		0.0005*	Tolak H0


*- Nilai Prob < nilai signifikansi 1%, 5%, 10%

Source: Processed Data Results (2023)

Based on the results of the granger causality test, it shows that there is a one-way relationship from GDP to Inflation and from BI-Rate to Inflation. This means that every change in the GDP and BI-Rate variables will make changes in the Inflation variable. The exchange rate variable has a two-way causality relationship with inflation. This means that every change in the Inflation variable, it will make

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changes to the Exchange Rate variable. Vice versa, changes in exchange rate variables will make changes in inflation variables.

4. VAR/VECM Stability Test

After testing, the results of the VAR stability test showed that the VAR/VECM system built was stable. This can be seen from the modulus values which are all below one as shown in table 6. below:

Table 6. VAR/VECM Stability Test Results

Root	Modulus
-0.056363 – 0.924026i	0.925744
-0.056363 + 0.924026i	0.925744
-0.888130	0.888130
0.611181 – 0.617202i	0.868608
0.611181 + 0.617202i	0.868608
0.632386 – 0.446768i	0.774282
0.632386 + 0.446768i	0.774282
-0.562534 – 0.498712i	0.751770
-0.562534 + 0.498712i	0.751770
0.739735	0.739735
0.192763 – 0.577569i	0.608887
0.192763 + 0.577569i	0.608887
-0.390930 – 0.432864i	0.583265
-0.390930 + 0.432864i	0.583265
-0.506729	0.506729
0.372675	0.372675

Source: Processed Data Results (2023)

5. Cointegration Test

The study used a special test called the Johansen method to see if there was a long-term relationship. By looking at two numbers from the test results trace statistics and eigenvalues and comparing them with certain numbers. If the number is greater than a certain number, then there is a relationship between the things we learn. Also look at another number called probability value to help us figure this out. The test results are illustrated in the table as follows:

Table 7. Cointegration Test Results

Unrestired Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob**
None*	0.424400	57.10820	40.17493	0.0005
At most 1*	0.222199	24.52004	24.27596	0.0466
Unrestired Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob**
None*	0.424400	32.58816	24.15921	0.0029

*denotes rejection of the hypothesis at the 0.05 level

**Mackinon-Haug-Michelis (1999) p-value

Source: Processed Data Results (2023)

Table 7. is the result of the cointegration test. The value of the Trace statistic from the Trace test values of 57.10820 and 24.52004 are respectively greater than the critical alpha values of 5% which are 40.17493 and 24.27596. This explains that there are two equations that have a long-term relationship in the system. Meanwhile, the results of the Maximum Eigenvalue test, the max-eigenstatistic value of 32.58816 is greater than the critical value of 24.15921. This means that there is a cointegration of the equation being constructed. Means. All variables have a relationship with each other in the long run.

6. VECM Model Estimate

The analysis showed that the time difference of the variables observed in the VAR system did not really matter. In addition, it is difficult to understand the results of VECM analysis, so in order to see the influence of one variable on another variable, a test called the Impulse Response Function and Variance of Forecast Error Decomposition was carried out to understand the results.

7. Uji Impulse Response Function

Difficulties in interpreting the estimation results of the VECM model can be overcome by looking at the IRF output. The essence of using IRF analysis is to ascertain the great influence of a sudden disturbance or impact on a particular variable, both on the variable itself and on other variables in the existing system.

In the graph below, the vertical axis beautifully illustrates the value of standard deviation, a metric that remarkably quantifies the magnitude of a variable's response when it experiences a sudden interruption. At the same time, the horizontal axis elegantly depicts the timeframe in the future when this response is realized. If the response rises well below the horizontal axis, accompanied by a standard deviation value of 0.0, this indicates a sad negative impact caused by the shock. Conversely, when the response rises well above the horizontal axis, it will be seen that a positive influence is given. Proximity to 0 characterizes a small response, while a move away from 0 signifies a larger reaction. The following is an image of a graph of IRF test results with a response variable, namely inflation:

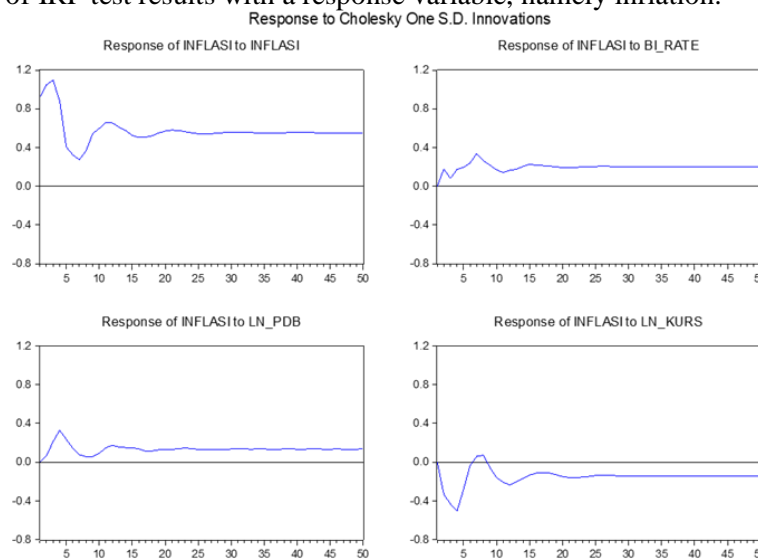


Figure 4. IRF Test Results

Source: Processed Data Results (2023)

The chart above, showing that the response to inflation due to its own shock in the coming period is overall positive. This can be seen from the observation line being above the 0.0 standard deviation line. In the initial period until the 24th period, there were fluctuations until finally the response stabilized until the final period of observation with a standard deviation of 0.553357. The inflation response due to shock from variable GDP in the coming period is overall positive. This can be seen from the observation line above the standard deviation line of 0.0. In the initial period until the 19th period there were fluctuations until finally, the response was stable until the final period with a standard deviation of 0.134792.

Then the IRF analysis then explains the inflation response to shocks from the BI rate variable. In the first to 15th period, there were fluctuations in the response of inflation. However, it stabilized in the next period until the end of the observation period with a standard deviation of 0.200496. Overall, the inflation response to the BI rate is positive, as can be seen from the observation line above the 0.0 standard deviation. The last IRF analysis is the inflation response due to shocks from exchange rate

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variables. The shock given by the exchange rate was responded negatively by inflation. There were fluctuations until the 19th period. Then it began to stabilize in the next period until the final period of observation at a standard deviation of -0.142528.

8. Forecast Error Decomposition Variance (FEDV)

The last analysis in the VECM method is Forecast Error Decomposition Variance (FEDV) which is useful to support the results of previous analysis. FEDV offers valuable insight into the extent to which a variable affects itself and other variables over several time periods in the future. Through the utilization of percentages, this analysis effectively highlights the variables that have the greatest influence on a particular variable. Below, you will find the results of the FEDV analysis:

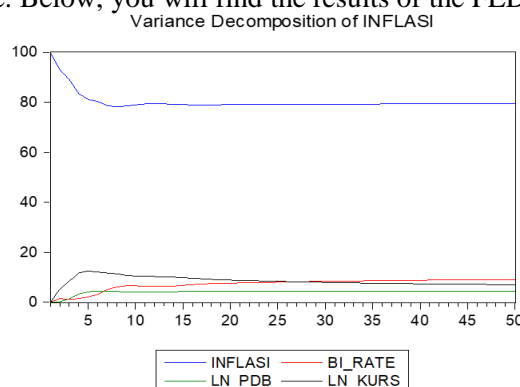


Figure 5. Variance Decomposition Test Results

Source: Processed Data Results (2023)

Based on the findings presented in Figure 5. It is clear that the main factor driving the fluctuation of the inflation variable is none other than inflation itself, with an average of 79.25%. In particular, at the initial stage, inflation had a very large effect of 100%, and gradually decreased to 79.36% by the end of the observation period. The second largest contribution came from the variable BI rate with an average contribution of 8.37%. The variable BI rate continues to increase every period with a contribution at the end of the period of 9.09%.

Furthermore, the third contribution that affects the inflation variable is the Exchange Rate with an average contribution value of 7.94%. At the beginning of the period the exchange rate contributed 0% then increased to 7.02% at the end of the period. The smallest contribution came from variable GDP with an average contribution of 4.42%. The variable contribution of GDP at the beginning of the period was 0% then increased until the end of the period contributed 4.52%.

Discussion

1. Impact of Gross Domestic Product (GDP) on Inflation

The first hypothesis (H1) of this study is that GDP has a positive effect on inflation. The proof of this hypothesis can be seen from the results of IRF and VD analysis. The results of IRF analysis show that the variable shock of GDP to the response of inflation is positive. There were fluctuations in the early period to the 19th period. However, the response then began to stabilize in the 20th period until the final period of observation. Then from the results of VD analysis, it was explained that the GDP variable contributed 4.42% on average from the observation period. The above results mean that the first hypothesis is accepted.

Sometimes, an increase in inflation can be caused by a strong economic expansion. If aggregate demand in an economy exceeds aggregate supply, this is bound to trigger a spike in the inflation rate. Accelerated economic growth triggers a rapid increase in demand that exceeds the capacity of firms to produce goods, thus pushing up prices. In addition, this evolving economic climate encourages job creation, thereby reducing the unemployment rate significantly. This decrease in unemployment, in turn, pushes up the wage rate, which ultimately contributes to increased inflationary pressures.

The findings of this study are in line with research conducted by OTahir et al., (2023) and Adekantari et al., (2022) which states that Gross Domestic Product (GDP) has a positive effect on inflation.

2. Impact of Exchange Rate on Inflation

The second hypothesis (H2) states that exchange rates negatively affect inflation. The IRF test results show that the inflation response to shock from exchange rate variables is negative. At the beginning showed fluctuations until the 19th period. It then stabilizes in the following period until the end of the observation. The average contribution of exchange rate variables to inflation variables based on the VD test is 7.94%. The results prove that the hypothesis is accepted.

When the exchange rate decreases in value or depreciates, it will cause an increase in the price of imported goods. This resulted in the price of domestic production of goods containing imports to increase which led to an increase in the inflation rate. Vice versa, if the exchange rate experiences a strengthening or appreciation, imports become cheaper and lead to a falling inflation rate.

The results of this study support the results of the study by Apriliani (2022) and Manoy et al., (2017) which found that exchange rates have a negative influence on inflation.

3. Impact of Interest Rates on inflation

The third hypothesis (H3) is that variable interest rates negatively affect inflation. Based on the results of IRF analysis, it is explained that shocks from variable interest rates represented by the BI rate have a positive effect on inflation. In figure 4.2 the IRF analysis shows a fluctuating response to inflation from the first period to the 15th period. Then it was stable and positive until the end of the observation period. The variable contribution of interest rates to inflation was 8.37% on average. The results explain that the hypothesis is rejected.

The results of the analysis that have been carried out are different from theory or not in line with theory. According to theory, if interest rates rise, it will cause inflation to fall. However, the results of the analysis show otherwise. This is suspected to happen because there have been several increases in the price of fuel oil (BBM) during the observation period, which caused an increase in the cost of producing goods and services so that the price of goods and services also rose. As a result, the expected decline in inflation through interest rates did not materialize, and inflation remained high.

The findings of this study support the results of the study Sri Lestari & Soebagiyo (2023) dan Elvina et al., (2021) which found that interest rates positively affect inflation.

Conclusion

After conducting research and analysis on the impact of macroeconomic factors such as GDP, Exchange Rates, and Interest Rates on inflation, important conclusions have been reached as outlined in the previous chapter.

Gross Domestic Product (GDP) has a positive influence on inflation in Indonesia (according to theory). GDP is an indicator that describes economic growth. So, when a country's economic growth increases it will cause the level of demand to grow faster than the supply of goods that can be provided by the company which results in an increase in prices (inflation).


Exchange rates negatively affect inflation in Indonesia. This is in accordance with the theory because an appreciated rupiah exchange rate will result in cheaper prices of imported raw materials which makes domestic production prices cheaper which results in a decrease in inflation. Vice versa, if the exchange rate depreciates it will have an impact on increasing the price of imported goods which causes the production price of goods containing imported raw materials to rise which results in increased inflation.

The BI rate has a positive influence on inflation in Indonesia (not in accordance with theory). This condition is believed to stem from the government's decision to deliberately increase the price of fuel oil (BBM) many times, causing an increase in the cost of producing goods and services. Unfortunately, although central banks have attempted to control inflation through interest rate hikes, the desired outcome to control inflation has still not been achieved as the inflation rate continues to rise.

Through the application of ITF, inflation variability is arguably more caused by *shocks* than the inflation variable itself, both in the short and long term. Shocks from other variables contribute with

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small values, ranging from 4% to 9%. This means that rising interest rates, strong or weak exchange rates, and increased economic growth contribute little to fluctuations in domestic inflation.

Suggestion

This research offers many important suggestions that require careful consideration. First, in controlling the inflation rate in Indonesia, the monetary authority, namely Bank Indonesia, needs to consider economic growth conditions reflected in an increase or decrease in Gross Domestic Product (GDP) because if the economy grows too fast, it will cause an increase in inflation. In addition, the role of interest rates and exchange rate stability is also important in keeping inflation under control.

Second, considering that the role of interest rates can only affect pressure from the demand side, controlling inflation cannot be imposed only on Bank Indonesia as the monetary authority. The role of the government is also needed because some of the policies carried out by the government can result in pressure on the supply side such as increasing fuel prices and electricity tariffs. Therefore, good coordination and synergy between monetary authorities, the government, and the public are needed to keep inflation low in the country.

Finally, it is expected that future researchers will have the opportunity to include additional variables and use diverse estimates, thereby increasing the scope of analysis and enabling a more comprehensive understanding of the factors impacting inflation.


References

- Adekantari, P., Amar B, S., & Satrianto, A. (2022). Analisis Pengaruh Variabel Makroekonomi terhadap Inflasi di ASEAN-5 : (Indonesia, Thailand, Philipina, Malaysia dan Singapura). *Jurnal Kajian Ekonomi Dan Pembangunan*, 4(1), 55–64. <http://ejournal.unp.ac.id/students/index.php/epb/index>
- Adim, A. (2021). Pengaruh Uang Beredar dan Nilai Tukar Rupiah (Kurs) Terhadap Inflasi (Periode Januari 2015-Desember 2019). *Jurnal Ekonomi Syariah Darussalam*, 2.
- Amaliyah, F., & Aryanto, A. (2022). Pengaruh Jumlah Uang Beredar dan Suku Bunga Terhadap Inflasi di Indonesia. *Owner*, 6(2), 1342–1349. <https://doi.org/10.33395/owner.v6i2.737>
- Anggoro, D. A. (2017). *Analisis Hubungan Variabel Moneter Di Indonesia Sebelum dan Sesudah Penerapan Kebijakan ITF Periode (1991.1-2010.4)*.
- Anggraeni, D., & Dwiputri, I. N. (2022). Variabel-variabel yang Mempengaruhi Inflasi di Indonesia. *Jurnal Ekonomi Pembangunan*, 11(2), 119–128. <https://doi.org/10.23960/jep.v11i2.490>
- Apriliani, D. (2022). *Analisis Pengaruh Variabel Makroekonomi Terhadap Inflasi Di Indonesia*. 4, 106–119.
- Ascarya, A. (2012). Alur Transmisi dan Efektifitas Kebijakan Moneter ganda di Indonesia. *Buletin Ekonomi Moneter Dan Perbankan*, 14(3), 283–315. <https://doi.org/10.21098/bemp.v14i3.360>
- Bugis, M., Louhenapessy, D., Siregar, N. C., & Tuasuun, S. (2023). Pengaruh Suku Bunga, Jumlah Uang Beredar dan Nilai Tukar Rupiah Terhadap Tingkat Inflasi Provinsi Sumatera Utara Tahun 2012-2021. *Public Policy*. <https://stia-saidperintah.e-journal.id/ppj>
- Chowdhury, A., & Siregar, H. (2004). Indonesia's Monetary Policy Dilemma: Constraints of Inflation Targeting. In *Source: The Journal of Developing Areas* (Vol. 37, Issue 2).
- Dewi, M. S. (2011). *Analisis Pengaruh Variabel Makroekonomi Terhadap Inflasi di Indonesia Sebelum dan Sesudah Diterapkannya Kebijakan ITF*. Wales.
- Elvina, M., Purnami, A. A. S., & Wulandari, I. G. A. A. (2021). Pengaruh Jumlah Uang Beredar (M1) dan Suku Bunga BI (BI Rate) Terhadap Tingkat Inflasi di Indonesia. *Warmadewa Economic Development Journal (WEDJ)*, 4(2), 47–52. <https://doi.org/10.22225/wedj.4.2.2021.47-52>
- Greenlaw, S. A., & Shapiro, D. (2011). *Principles of Macroeconomics*.
- Mankiw, N. G. (2016). *Macroeconomics*.
- Manoy, M. B., Rotinsulu, T. O., & Rompas, W. F. I. (2017). Pengaruh Variabel Makroekonomi Terhadap Perilaku Inflasi di Indonesia Periode 2007.1-2016.4. *Jurnal Berkala Ilmiah Efisiensi*, 17(02).

- Muhson, A. (2003). *Pengaruh Jumlah Uang Beredar, Tingkat Bunga, Nilai Tukar Rupiah, dan Pendapatan Nasional Terhadap Inflasi di Indonesia*.
- Qoyum, Abdul, Berakon, I., & Al-Hashfi, R. U. (2021). *Metodologi Penelitian Ekonomi dan Bisnis Islam* (Vol. 1).
- Sri Lestari, F. N., & Soebagiyo, D. (2023). Pengaruh Tingkat Suku Bunga, Uang Beredar, Nilai Tukar dan Cadangan Devisa Terhadap Tingkat Inflasi di Indonesia Periode 1998-2020. *SEIKO : Journal of Management & Business*, 6(1). <https://doi.org/10.37531/sejaman.v6i1.346>
- Sumanto. (2014). *Teori dan Aplikasi Metode Penelitian* (1st ed.). Center of Academic Publishing Service.
- Susmiati, S., Giri, N. P. R., & Senimantara, N. (2021). Pengaruh Jumlah Uang Beredar dan Nilai Tukar Rupiah (Kurs) Terhadap Tingkat Inflasi di Indonesia Tahun 2011-2018. *Warmadewa Economic Development Journal (WEDJ)*, 4(2), 68–74. <https://doi.org/10.22225/wedj.4.2.2021.68-74>
- Tahir, M., Ali, N. O., Naseem, I., & Burki, U. (2023). *Trade Openness and Inflation Rate in China: Empirical Evidence from Time Series Data*. <https://doi.org/10.3390/economies>
- Waluyo, J., & Ulfah, R. (2010). Peranan Variabel Ekonomi Makro Terhadap Inflasi Pascapenerapan ITF di Indonesia tahun 1999.1-2008.6. *Jurnal Ekonomi Pembangunan*, 11(1).
- Warjiyo, P., & Juhro, S. M. (2019). Inflation Targeting Framework: Concept and Implementation at Central Banks. In *Central Bank Policy: Theory and Practice* (pp. 223–260). Emerald Publishing Limited. <https://doi.org/10.1108/978-1-78973-751-620191012>
- Yanti, Y. W. T. F., & Soebagiyo, D. (2022). Analisis Pengaruh JUB, Suku Bunga, dan Nilai Tukar Terhadap Inflasi di Indonesia Tahun 2005-2021. *Jurnal Ekonomi Pembangunan*, 8(2), 265–277.

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