



Analysis of BI7DRR's Relationship to Inflation 2018-2023: Case Study on Granger Causality

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Received: 05-06-2024 Reviewed: 20-06-2024 Accepted: 05-07-2024

Abstract

An assessment of a nation's economic health may be made by examining its rate of inflation. Good economic conditions can be said if the inflation rate is low or at the predetermined inflation target position. A new reference rate called BI7DRR is transactional, meaning it is exchanged on the market, and it promotes the depth of the financial markets. It also has a higher correlation with money market interest rates. The aim of this research is to find a reciprocal relationship (causality) between BI7DRR and inflation and to analyze the characteristics used in determining interest rates. This study employed a quantitative approach using techniques from descriptive analysis. The data used in this research is BI7DRR historical data for 2018-2023 and historical inflation data for 2018-2023. The data was tested using the Granger Causality test with the help of Eviews 12 software. The results of the Granger Causality Test showed an Inflation Probability value of 0.0457 0.05 (5%) and a BI7DRR Probability value of 0.2788 0.05 (5%). So it can be said that the Inflation variable has a relationship with the BI7DRR variable and the BI7DRR variable has no relationship with the Inflation variable. According to the research description given above, the following conclusions can be drawn: The BI7DRR variable has no relationship or influence on the inflation variable and the inflation variable has a significant relationship or influence on the BI7DRR variable. This means that there is a one-way relationship between the inflation variable and BI7DRR for 2018–2023.

Keywords: inflation, bi7drr, backward-looking, granger causality, economics.

Introduction

Every country, one of which is Indonesia as a developing country, wants its domestic economy to be in good and stable condition. Success in stabilizing the domestic economy can improve the welfare of the people. Measuring a nation's economic growth is one way to assess the effectiveness of its economic development (Nurdin & Fuady, 2021). An assessment of a

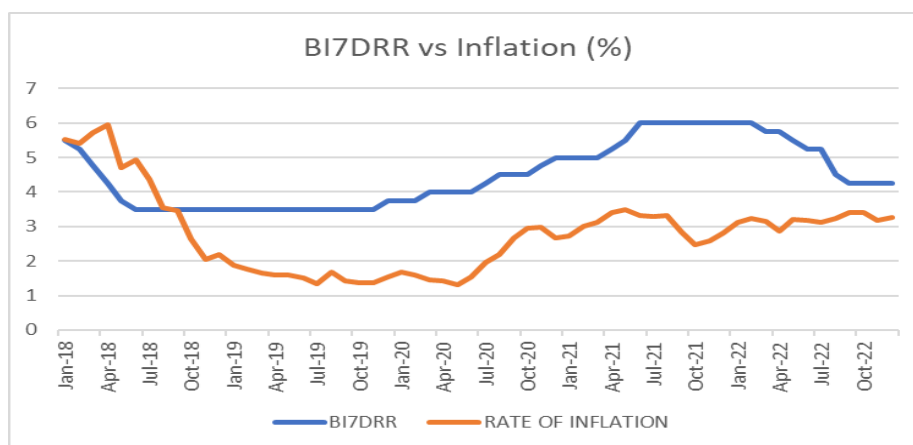
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nation's economic health may be made by examining its rate of inflation Quoted from Kalsum A. (2017), Sukirno defines inflation as the process of increasing prices in an economy. Meanwhile, according to Susmiati (2021), inflation is a development in the economy, where prices and salaries increase, demand for labor exceeds supply and the quantity of money in use significantly rises. Inflation is one of the variables in economic issues and part of the indicators of economic stability so it is the center of attention for developing countries, especially Indonesia (Lubis, 2022).

Good economic conditions can be said if the inflation rate is low or at the predetermined inflation target position. The government may control the rate of inflation, unemployment, employment opportunities, and economic growth through the use of monetary policy (Prasasti & Slamet, 2020). In keeping with its current monetary policy stance, Bank Indonesia is fortifying the monetary operations framework as part of its efforts to control inflation. This includes the introduction of a new reference rate, or policy interest rate, the BI 7-Days Repo Rate (BI7DRR), which replaces the BI rate (Susilowati & Wahyuningdyah, 2018). Bank Indonesia claims that BI7DRR is a new reference rate that is transactional or traded on the market, has a closer relationship to money market interest rates, and promotes the development of the financial system, particularly the use of repo instruments. As a result, one of the economic factors with a wide impact is interest rates on the country's economy and can influence the welfare of society in general, therefore interest rates are closely monitored (Luhfiana et al., 2022).

The interest rate policy implemented to maintain the rate of inflation is monetary policy implemented by Bank Indonesia. Monetary policy in Indonesia is directed at achieving a single target, namely the stability of the value of the rupiah, known as the inflation targeting framework which has been effective since 2005 by adopting a free-floating exchange rate system (Susilowati & Wahyuningdyah, 2018). However, in implementing the Inflation Targeting Framework, there are two characteristics, namely backward looking and forward looking, which are used in determining interest rates.

Figure 1 Comparison Graph between BI7DRR and Inflation



Source: Bank Indonesia (processed)

From this figure, it shows that the rate of the BI7DRR graph is in line with the rate of the Indonesian inflation rate graph. It can be seen that when the interest rate graph decreased from early January 2018 to August 2018, the inflation graph also decreased following the interest rate movement. Likewise in the following period. From the phenomenon mentioned above, the aim of this research is to find a reciprocal relationship (causality) between BI7DRR and inflation and to analyze the characteristics used in determining interest rates. Every paragraph should have a 1 cm indentation on the first line. A thorough literature review or a description of the findings should be avoided in favor of clearly stating the goals of your study and providing sufficient background. Clearly identify the gap in the literature that indicates the importance of your study.

Literature Review

Reference Interest Rate

According to Pindyck (Pindyck & Rubinfeld, 2005), The amount that the borrower must pay the lender is known as the interest rate. Interest rates are influenced by supply and demand for loanable money, much like market pricing.

BI7DRR

The BI7DRR instrument is a new reference rate that has stronger link to money market interest rates, nature transactional or traded in the market, and encourage deepening financial markets, especially the use of repo instruments (Bank Indonesia, 2020). Furthermore, Bank Indonesia (Bank Indonesia, 2020) also explained that, By using the BI7DRR instrument as the policy interest rate new, there are three main impacts that are expected, namely:

1. Strengthening monetary policy signals with BI7DRR as a reference major in financial markets.
2. strengthening the transmission of monetary policy's efficacy by influencing changes in interest rates in the banking and money markets.
3. The development of more profound financial markets, particularly those pertaining to transactions and interest rate structures in the Interbank Money Market (PUAB) during a period of three to twelve months.

Inflation

According to the quantity theory of money, A doubling of the money supply in an economy results in a doubling of the price level, then all things will be considered the same (Hasbi et al., 2024). Based on this, the amount of money in the economy will have a large influence on economic activity itself. So according to Barone in the book written by Hasbi et al. (2024), changes in the level of money in circulation cause changes in the price level or changes in the supply of goods and services, or both.

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ITF (Inflation targeting Framework)

The Inflation Targeting Framework (ITF) is a policy framework monetary through setting explicit targets based on projections and a specific inflation target announced to the public and believed to be possible help central banks achieve and maintain price stability (Warjiyo, 2003, p. 53). In the context of implementing monetary policy, the Bank Indonesia as a central bank faces a number of problems originating from changes in the strategic environment at the global, national and regional levels.

Granger Causality Test

According to Gujarati (1995) written in the journal Khilmi (2018) explains that "The Granger Causality Test is a method for knowing where a dependent variable (dependent variable) can be influenced by other variables (independent variables) and on the other hand variables the independent variable can occupy the position of the dependent variable.

Research Method

This study employed a quantitative approach using techniques from descriptive analysis. Quoted from Abdullah et. al. (2022), quoted Sugiyono (2009:14) defines quantitative research as a positivist-based research methodology that is used to study specific populations or samples. Sampling techniques are typically random, research instruments are used for data collection, and data analysis is quantitative and statistical in nature with the goal of testing preconceived hypotheses. Quoted from Nasution, L. (2017), Descriptive analysis is a type of research data analysis used to evaluate the generalizability of findings based on a single sample, according to Hasan (2004:185).

The data used in this research is BI7DRR historical data for 2018-2023 and historical inflation data for 2018-2023. Both data were obtained from the official website of Bank Indonesia which was published publicly. Next, the data obtained was tested using the Granger Causality test with the help of Eviews 12 software.

Result and Discussion

Stationarity Test

Figure 2 Stationarity Test Results

Variable	Prob.*	Level
BI7DRR	0.0022	First Diference
Inflation	0.0392	First Diference

Source: Eviews 12 (processed)

The stationarity test results show a probability value for the BI7DRR variable of 0.0022 < 0.05 (5%) and the Inflation variable shows a probability value of 0.0392 < 0.05 (5%) at the

First Difference level, which means that both variable data are stationary and can be used in subsequent tests.

Determination Of Optimum Lag

Figure 3 Results of Determining the Optimum Lag

VAR Lag Order Selection Criteria
 Endogenous variables: D(BI7DRR) D(INFLASI)
 Exogenous variables: C
 Date: 06/10/24 Time: 20:53
 Sample: 2018M01 2023M12
 Included observations: 65

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1.142415	NA	0.003776	0.096690	0.163594	0.123088
1	17.60599	35.76619	0.002399	-0.357107	-0.156395*	-0.277913*
2	20.84539	5.980425	0.002457	-0.333704	0.000817	-0.201714
3	26.29062	9.717652*	0.002353*	-0.378173*	0.090157	-0.193387
4	29.63078	5.755348	0.002405	-0.357870	0.244268	-0.120288
5	30.51291	1.465693	0.002656	-0.261936	0.474011	0.028442
6	33.51301	4.800158	0.002750	-0.231170	0.638585	0.112005

Source: Eviews 12

The results of determining the optimum lag show the 3rd lag, because these results show the smallest AIC value of -0.378173. Apart from that, there are more asterisks (*) which indicate that the 3rd lag is the lag size used in the next test.

VAR Stability Test

Figure 4 VAR Stability Test Results

Roots of Characteristic Polynomial
 Endogenous variables: D(BI7DRR)
 D(INFLASI)
 Exogenous variables: C
 Lag specification: 1 3
 Date: 06/10/24 Time: 20:59

Root	Modulus
0.796016 - 0.082280i	0.800257
0.796016 + 0.082280i	0.800257
-0.361452 - 0.554390i	0.661813
-0.361452 + 0.554390i	0.661813
-0.132145 - 0.479509i	0.497385
-0.132145 + 0.479509i	0.497385

Source: Eviews 12

The VAR Stability Test results show that all modulus values are < 1, therefore meeting the stability requirements. This means that all data is stable and can be used in subsequent tests.

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Granger Causality Test

Figure 5 Granger Causality Test Results

Pairwise Granger Causality Tests
Date: 06/10/24 Time: 21:00
Sample: 2018M01 2023M12
Lags: 3

Null Hypothesis:	Obs	F-Statistic	Prob.
INFLASI does not Granger Cause BI7DRR	69	2.82874	0.0457
BI7DRR does not Granger Cause INFLASI		1.31128	0.2788

Source: Eviews 12

The Granger Causality Test results show that the Inflation Probability value is $0.0457 < 0.05$ (5%) and the BI7DRR Probability value is $0.2788 > 0.05$ (5%). So it can be said that the Inflation variable has a relationship with the BI7DRR variable and the BI7DRR variable has no relationship with the Inflation variable. This means that the relationship between inflation and BI7DRR is one directional.

Basically, interest rates are determined to keep interest rates under control. The process of determining the reference interest rate, however, includes two components: it is done by looking at past inflation statistics (backward looking) and projecting the future using influencing factors (ahead looking). In an effort to maintain stability, Bank Indonesia created a monetary policy framework which was implemented in the form of the Inflation Targeting Framework. According to Bank Indonesia, the ITF is a monetary policy framework regarding the estimated inflation target to be achieved in the next few periods which is announced to the public as a signal and commitment from Bank Indonesia as the central bank. In the ITF regime, monetary policy is forward looking towards future inflation, and this has the implication that future inflation must be maintained in line with the targets that have been set (Juhro et al., 2009, p. 3). This means that this policy does not only refer to current economic conditions but also takes into account using economic indicator approaches in projecting future economic conditions, especially inflation. Therefore, in order to strengthen the effectiveness of monetary policy, Bank Indonesia established the BI 7-Day Reverse Repo Rate (BI7DRR) as the policy interest rate which represents a response signal in controlling inflation in line with targets.

Furthermore, the results of other Granger Causality tests show the value of Prob. BI7DRR against Inflation $0.2788 > 0.05$ (5%). This means that BI7DRR has no relationship to the inflation variable. This shows that during the Covid-19 pandemic, the inflation rate remained at its lowest level even though there was a global economic crisis. This was caused by shocks that occurred which influenced inflation, such as low domestic demand. Various indicators of domestic demand are still slowing, which indicates that people's purchasing power is also low. In the Inflation Analysis Report issued by Bank Indonesia, it is stated that throughout 2020 domestic demand continued to decline due to low economic activity in line with the implementation of Large-Scale Social Restrictions (PSBB) in several regions.

Conclusion

Based on the research description above, in conclusion, there is The BI7DRR variable has no relationship or influence on the Inflation variable because during the Covid-19 pandemic period, there was a shock or external influence in the form of a decline in domestic demand, maintained global commodity prices which resulted in the value of the rupiah being maintained due to the policy of restricting public treatment or PPKM to prevent the spread of the virus.

The inflation variable has a significant relationship or influence on the BI7DRR variable. This is because Bank Indonesia has established a monetary policy framework in the form of ITF (Inflation Targeting Framework) which is forward looking and is realized in the form of establishing BI7DRR as a response signal to economic actors and society.

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