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Exploring Monetary Policy Effectiveness in Indonesia's Inflation: Conventional and Islamic Perspective

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Abstract

This study aims to compare the effectiveness of Islamic and conventional monetary policies in addressing inflation in Indonesia. This research is driven by the lack of comprehensive examination of the effectiveness and nuances of the dual monetary system. Additionally, the dynamics of dual monetary policies become the research gap that needs to be addressed for a more nuanced understanding of Indonesia's monetary landscape. Using the Vector Autoregression/Vector Error Correction Model and analyzing time series data from January 2013 to December 2021, the research reveals that neither sharia nor conventional instruments have immediate effects on inflation. However, specific sharia financial instruments substantially impact inflation dynamics in the long term. The study delves into the intricate relationship between these monetary instruments and inflation, shedding light on their nuanced contributions to the economic landscape. This comprehensive analysis contributes valuable insights for policymakers, economists, and stakeholders seeking a nuanced understanding of the dynamics between monetary policy and inflation in Indonesia.

Keywords: *Inflation; Monetary Systems; Monetary Policy*

INTRODUCTION

The national central bank shapes monetary policy with an emphasis on long-term interest rates, genuine exchange rates, and maintaining price stability.

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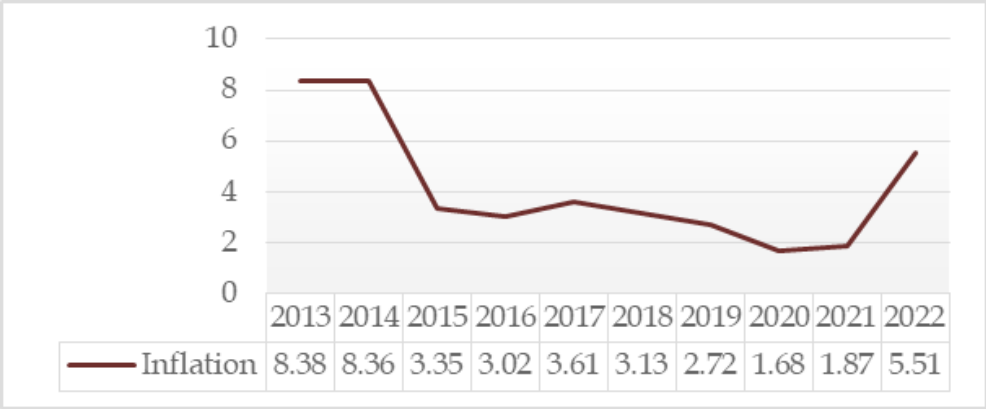
Additionally, it addresses objectives such as economic growth, achieving full employment, mitigating economic fluctuations, and preventing financial crises. Various instruments, including interest rate policy, bank reserves, lending rates, and open market operations, are employed as tools to impact a country's economic growth (Islam et al., 2022). Inflation has become a major problem faced by a country that can reduce the demand for bank loans, reduce purchasing rates, reduce investment levels, and ultimately lead to a recession or economic depression (Sutawijaya, 2012). The inflation rate also has a negative impact because it can reduce income levels, creating uncertainty in economic decision-making (Septiatin et al., 2016) and putting pressure on the currency rate when inflation in one country is greater than in another (Amrial et al., 2019). This condition occurred in 2013 when the rupiah weakened to around 18 percent (Alfado Agustio, 2018) while inflation during 2013 reached 8.38 percent and was recorded as the highest inflation after 2008 due to the impact of the global economic crisis (Hendaru Purnomo, 2014).



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Inflation	8.38	8.36	3.35	3.02	3.61	3.13	2.72	1.68	1.87	5.51

Figure 1. Inflation Rate 2013 – 2022

Source: (Bank Indonesia, 2024)

Based on Figure 1., it can be seen that the inflation rate in 2013 reached 8.38 percent, which was influenced by the impact of rising food prices and subsidized fuel prices as well as declining global commodity prices (Bank Indonesia, 2021b).

However, the inflation rate can be controlled from 2015 to 2021 at 1.87 percent. The inflation rate in 2021 is a result of effective collaboration between the Central Government, Regional Governments, and Bank Indonesia in order to uphold price stability during the pandemic. This has been achieved through the implementation of various policies, including the execution of market operation schemes (Haryo Limanseto, 2022). In addition, Bank Indonesia will also maintain a benchmark interest rate of 3.5 percent at the end of 2021 (Safyra Primadhyta, 2021) and enact a monetary stimulus policy such as gradually imposing disincentive provisions in the form of Current Accounts to encourage lending (Bank Indonesia, 2021b).

Monetary policy carried out by the government must adjust between the types of policies implemented and their consequences for economic conditions to make effective monetary policies to maintain economic stability and strengthen economic resilience (Ahwal & Danur, 2021). Monetary policy is also the main determinant of investment, where interest rates on loans from banks and ease of access to loans are components of monetary policy that determine the amount of investment (Mehar, 2023). In addition, monetary policy can also develop the real sector, as seen from the Industrial Production Index (IPI).

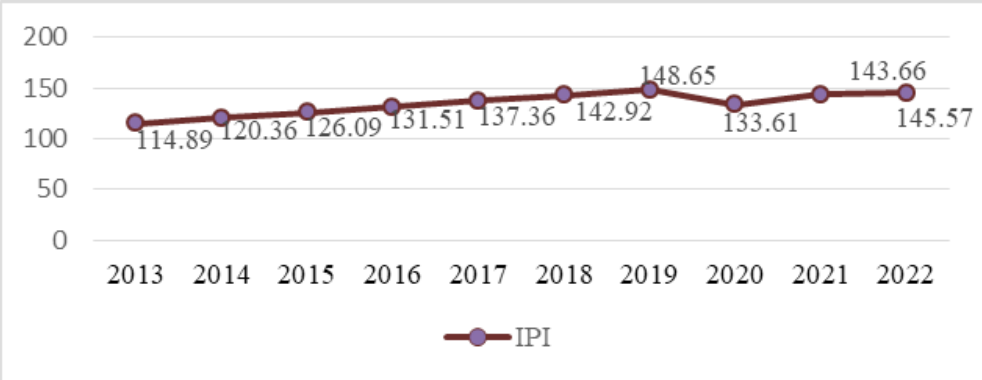


Figure 2. Index Industry Production (IPI) 2013 – 2022

Source: (Badan Pusat Statistik, 2024)

Figure 2 shows that Indonesia's industrial production index is increasing every year, which means that industrial conditions in Indonesia are experiencing

growth supported by the success of monetary policy. However, in 2020, the industrial production index decreased due to a decrease in purchasing power; thus, industrial companies were exacerbated by the burden of inputs from imports and increased exchange rate pressures, resulting in a significant decline in industrial output (Caesar Akbar, 2020). Through an accommodative monetary policy in support of national economic recovery in 2021, the industrial production index level in 2021 will increase again (Kementerian Keuangan, 2022). Several monetary policies implemented to support industrial production included lowering lending rates (Bank Indonesia, 2021a). Mehar (2008) found that interest rate is an effective mechanism influencing the success of the monetary policy.

Apart from this monetary policy, Indonesia has a dual financial system. Therefore, Bank Indonesia also applies the sharia monetary policy with different instruments. In the sharia perspective, the operationalization of monetary instruments must be related to actual projects in the real sector. In contrast, the conventional perspective on monetary operation stipulates that monetary expansion should not be directly related to actual projects or business activities (Ismal, 2011). In addition, Indonesia also applies a dual monetary policy transmission channel; therefore, it does not only look at interest rates, bank loans, or Government Bonds issued but also looks at Islamic monetary policy instruments that prohibit the concept of interest, Sharia SBIs that use sales contracts and Islamic bonds (Sudarsono, 2017). The development of the Islamic market offers a new avenue for investors to gain the benefits of diversification. One of the targets of investors to invest is to gain profit by properly selecting the investment instruments. Muslim investors, especially, take into account the investment benefits and pay attention to the conformity of investments to the value of Islamic tenets. As part of the world's modern economy, Islamic capital market mechanisms are different from their conventional counterparts (Tatiana et al., 2015). Islamic capital market abides by the prevailing rules outlined in the Holy Qur'an, which are free from elements of interest (riba), uncertainty (gharar), and gambling (maysir). The rules influence the decision behavior of Muslims to invest in Islamic bond (sukuk) markets (Suriani et al., 2021)

The monetary policy transmission mechanism (MTKM) can be regulated through two indicators: calculating the speed (time lag) or calculating the power of variables in responding to shocks to achieve a stable inflation rate.

The calculation of these two indicators must go through the Impulse Response Function (IRF) Test and the Forecast Error Variance Decomposition (FEVD) Test in the Vector Error Correction Model (VECM) (Natsir, 2008).

Based on previous research, the monetary policy transmission mechanism explains changes in monetary policy instruments that affect macroeconomic variables to realize monetary policy objectives (Natsir, 2008). Widodo (2017) found that the interest rate on conventional monetary policy in Indonesia does not affect inflation, while Islamic monetary policy instruments have proven effective in reducing the inflation rate. Likewise, according to findings from Fikri (2018), Islamic monetary policy is more effective than conventional monetary policy but still has the potential to increase inflation. Fauziyah et al. (2015) also found that the Islamic monetary policy transmission mechanism through the asset price channel can produce a better mechanism than conventional monetary policy transmission mechanisms. Meanwhile, Zulkhibri and Sukmana (2016) found that the transmission mechanism of Islamic monetary policy on banking financing channels is weak.

Based on the author's aforementioned literature presentation, there remains only a limited amount of research regarding an in-depth examination of conventional and Islamic monetary policies. Additionally, various countries worldwide are currently in the process of developing Islamic monetary instruments. Therefore, it is imperative to study the effectiveness of Islamic monetary policies as a means to control inflation and ensure stability.

In light of the given framework, the objective of this study is to provide a comprehensive, holistic, and profound analysis of conventional and Islamic monetary policies, with a specific focus on areas where research on Islamic monetary policy remains limited. Consequently, this study is anticipated to bridge existing gaps and offer new insights into Islamic economic scholarship, specifically within the realm of Islamic monetary economics for inflation control. Furthermore, this research aims to shed light on the effectiveness of Islamic monetary policies as instrumental tools in achieving inflation targets and maintaining economic stability in Indonesia. This, in turn, is expected to benefit Bank Indonesia and other relevant policymakers by aiding in the formulation of strategies and policies that integrate Islamic monetary practices with conventional approaches.

LITERATUR REVIEW

In this part, the literature review will be provided as the foundation of the study. Furthermore, this part will analyze the relationship between variables.

Inflation

Inflation is related to the uncertainty of economic conditions that can impose costs on real economic output because it makes the price mechanism less effective in efficiently allocating resources (Chowdhury, 2014). In addition, inflation is also an economic phenomenon that concerns various parties, not only the general public. However, it is also of concern to the business world, Bank Indonesia, and the government. Financial risks also arise due to inflation (Wahyuni et al., 2020). The inflation rate is calculated for different analysis purposes so that there is an inflation rate to calculate changes in the prices of goods and services consumed by the public based on the Consumer Price Index (CPI) figure and other types of inflation rates that can be calculated based on the Cost of Living Index (IHB) or Price Index Manufacturer (IPB) (Bank Indonesia, 2009). Meanwhile, according to Al Maqrizi, inflation is a phenomenon that does not occur due to natural factors alone but also due to human errors; thus, inflation is divided into two parts, namely natural inflation and human error inflation. Natural inflation is caused by factors that cannot be avoided by humans, such as natural disasters, resulting in a significant decrease in the availability and quality of food and other agricultural commodities (Fadilla, 2017). Meanwhile, human error inflation is caused by mistakes made by humans, as stated in Q.S. Ar-Rum (30:41):

يَرْجِعُوْنَ لَعَلَّهُمْ عَمِلُوْا الَّذِيْ بَعْضَ لِيُذِيْقَهُمْ النَّاسِ اَيْدِى كَسَبَتْ بِمَا وَالْبَحْرِ الْبَرِّ فِى الْفَسَادُ ظَهَرَ

> *"Corruption has flourished on land and sea as a result of people's actions and He will make them taste the consequences of some of their own actions so that they may turn back" (The Qur'an, 2004).*

Monetary Policy

The role of conventional monetary policy on economic development has been extensively discussed in the economic literature and has been tested by various previous studies. The determination of interest rates, access to credit financing, measures of financial inclusion in the economy, the volume of credit to the private sector, the effect of monetary policy on inflation and economic growth, and the effect of interest rates on income distribution are among those topics that have been discussed in the academic literature (Mehar, 2023). The monetary policy instruments implemented by Indonesia are open market operations, discount facilities, and minimum statutory reserves (BI Institute, 2008). The monetary transmission mechanism is the effect of changes in a policy instrument. Usually, the stock of money or the short-term interest rate has aggregate variables such as inflation, output, consumption, and investment (Bilbiie, 2008). The scope of the monetary transmission mechanism is limited to monetary policy, that is, the actions that are typically carried out by a central bank. However, this description does not give an exhaustive account of all the policy actions involved because monetary policy usually has fiscal consequences: it affects the value of government debt, debt servicing costs, and primary (Caramp & Silva, 2023). In addition, the monetary policy transmission mechanism has multiple channels, where the impact of each channel is determined by country-specific factors such as economic structure, regulatory guidelines, market formation, and financial configuration (Hafidh, 2021).

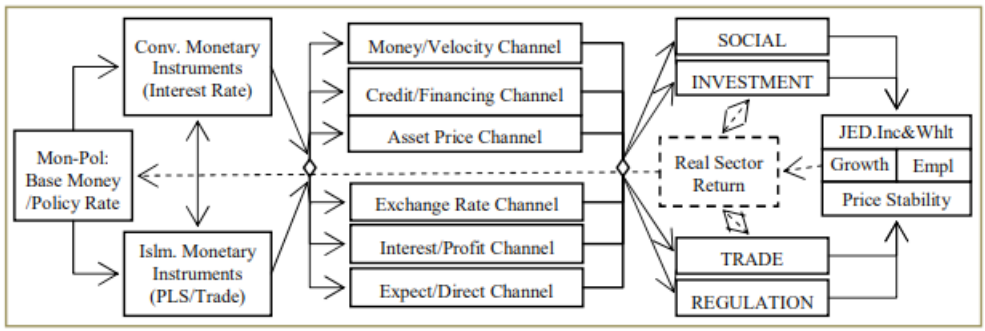


Figure 3. Mechanism Transmission of Monetary Policy in Dual Banking System

Source: (Ascarya, 2014)

Meanwhile, monetary policy in Indonesia that implements a dual financial system does not only have conventional instruments but also Islamic monetary policy. However, the transmission mechanism of monetary policy in contemporary Islamic monetary policy has not been developed explicitly. Therefore, countries that develop Islamic monetary policies in their current conventional system are moving towards implementing a full dual monetary system (Ascarya, 2014).

In order to control the amount of money circulating in society, the central bank will carry out monetary policy with the following two approaches (Murni, 2013).

1. Quantitative monetary policy

   Generally, this policy consists of three main instruments: open market operations, interest rate policy, and reserve requirement policy.

2. Qualitative monetary policy

   This policy aims to implement credit selectively. Apart from that, this policy takes the form of moral suasion, namely persuading and appealing to economic actors and the public to follow and comply with the monetary policy that has been set by the central bank.

In general, the objectives of conventional and Islamic monetary policy are not different, namely, to maintain currency stability so that equal economic growth can be achieved. The difference is the monetary policy instrument used. In this research, the effectiveness of conventional and Islamic monetary policy instruments will be tested. These policy instruments are in the form of quantitative policy instruments. The following are the instruments that will be analyzed for their effectiveness on inflation in Indonesia:

Certificate of Bank Indonesia (SBI)

Certificates of Bank Indonesia are money market instruments that aim to control economic liquidity by ensuring that there is an optimal amount of money in circulation and to prevent an increase in the demand for funds by the public and businesspeople for transaction purposes. In the short term, this SBI becomes

a benchmark for government banks as well as national, private, and international bank companies to determine the level of deposits or loans and savings interest rates (Adam et al., 2013).

Certificate of Bank Indonesia Syariah (SBIS)

SBIS are securities based on sharia principles, short term in rupiah currency issued by Bank Indonesia in order to improve the effectiveness of monetary mechanisms with sharia principles (Daniar, 2016)

Loan

The loan is a bank disbursement in the form of credit with the principle of interest. The principle of interest is a principle that is based on a percentage of the funds lent at the beginning of the transaction regardless of the profit or loss that occurs later (Ascarya et al., 2008)

Financing in Sharia Bank (FINC)

Islamic banks are equity- or asset-based and are delinked from interest rates, so the Islamic banking system is shielded from interest rates (Ibrahim & Sufian, 2014). Unlike conventional, Islamic banking has basic principles, such as risk-sharing; money becomes the actual capital only when it joins hands with other resources to undertake a productive activity; prohibition of speculative behavior; and shariah approved activities that only those business activities that do not violate the rules of shariah (Zulkhibri, 2018). Financing products in Islamic banks are profit-sharing based and has several contracts, such as *musyarakah*, *mudharabah*, *qardh hasan*, *wakalah*, *hawalah*, *murabahah*, *istishna*, *bai' al salam*, and *ijarah* (Seibel et al., 2006).

Asset Price

This monetary policy can influence the movement of asset prices, be it the price of financial assets such as stocks, bonds, and *Sukuk*. A change in interest

rates, exchange rates, or the amount of investment in the money market can affect the volume and price of the bonds, shares, or Sukuk (Fauziyah et al., 2015).

Government Bonds (SUN)

State bonds are securities in the form of debt acknowledgments whose interest and principal payments are guaranteed by the Republic of Indonesia in accordance with their validity period (Direktorat Jenderal Pengelolaan Utang, 2018).

State Sukuk (SBSN)

The issuance of state Sukuk is one of the government's steps to reduce the money that has been circulating to return to the central bank (Daniar, 2016). State Sukuk (SBSN, *Surat Berharga Syariah Negara*) is State Sharia Securities issued based on Sharia principles as evidence of the share of participation in SBSN assets, both in rupiah and foreign currencies (Direktorat Jenderal Pengelolaan Utang, 2018).

Index of Industrial Production

The index of industrial production refers to the measurement of the production capacity of a country's key sectors, which can also be defined as changes in the production levels and the key sectors of the economy (Kalumba et al., 2023).

RESEARCH METHOD

In order to comprehensively assess the intricate dynamics of monetary policy within Indonesia's dual-system banking, this study employs an empirical methodology, specifically utilizing the Vector Auto Regression (VAR) and Vector Error Correction Model (VECM) frameworks. The VAR model is employed to capture the interdependencies and dynamic relationships among various monetary instruments over time, providing a robust analysis of the short-term effects. Additionally, the VECM is utilized to explore the long-term equilibrium

relationships between these instruments, considering potential deviations from this equilibrium and the speed of adjustment following any disruptions.

The monthly foundational data encompassing financial variables from both conventional and Islamic perspectives are subjected to rigorous scrutiny through these time-series models. This comprehensive approach allows a nuanced understanding of how the monetary instruments interact within the dual-system banking framework.

Data sources for this study include reputable institutions such as Bank Indonesia (BI), the Ministry of Finance (Kemenkeu), the Central Bureau of Statistics (BPS), and the Financial Services Authority (OJK). The chosen period, spanning from January 2013 to December 2021, is strategic, capturing the aftermath of the global recession of 2008 and providing insights into the subsequent monetary policy landscape.

This research adopts a quantitative descriptive method, utilizing the VAR/VECM approach, with the analysis conducted using EViews 9. The effectiveness assessment employs the Impulse Response Function (IRF) and Forecast Error Variance Decomposition (FEVD) tests. These tests not only gauge the immediate impact of policy changes but also unravel the intricate dynamics of how the monetary system adjusts and responds over the short and long term.

The utilization of VAR and VECM in this study enhances the depth of analysis, allowing for a robust examination of the multifaceted relationships between monetary instruments and inflation dynamics within the unique context of Indonesia's dual-system banking. This detailed approach aims to provide valuable insights for policymakers, economists, and stakeholders seeking a thorough understanding of the nuanced dynamics between monetary policy and inflation in Indonesia.

RESULTS AND DISCUSSION

Preliminary Analysis

The initial analysis performed was a stationary test, stability test, and optimum lag test. The stationarity test aims to determine the level of stationarity of each variable using the ADF procedure. The following are the results of the stationary test in this study:

Table 1. Stationary Test Result

Variable	Level			First Difference		
	t-statistic	Prob	Status	t-statistic	Prob	Status
Inflasi	1,178	0,217	Not Stationer	8,176	0.000**	Stationer
SBI	0,575	0,466	Not Stationer	6,658	0.000**	Stationer
SBIS	0,608	0,451	Not Stationer	7,377	0.000**	Stationer
LnLoan	1,188	0,939	Not Stationer	1,827	0,065***	Stationer
LnFin	3,632	0,999	Not Stationer	2,365	0.018**	Stationer
SBSN	0,555	0,475	Not Stationer	9,768	0.000**	Stationer
SUN	0,29	0,579	Not Stationer	13,607	0.000**	Stationer
IPI	0,705	0,866	Not Stationer	10,626	0.000**	Stationer

Source: EViews Test Result

Stationarity test results at the level indicate that all variables are not stationary because the t-ADF value (1.659) is smaller than the critical value of 5%. The data in this study were then tested again at the first difference level, where the stationary test results showed that all variables at the first difference level were stationary.

Lag Optimum Test

A component of VAR or VECM analysis is the lag optimum test. Establishing this ideal latency is crucial for VAR or VECM models. In order to acquire the dynamics of the system to be simulated, the length of lag needs to fall into the adequate category. If the lag is too long, it will result in more parameters that must be estimated to reduce the ability to reject H0 because too many additional parameters will reduce the degrees of freedom. Based on Akaike Information Criterion (AIC) calculations, the optimal lag in this study is at lag one. The following are the results of the optimum lag test:

Table 2. Lag Optimum Test

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1266.356	NA	12.57568	25.23478	25.44191*	25.31863*
1	-1174.355	167.6068	7.250461*	24.68029*	26.54453	25.43499
2	-1124.955	82.16906	9.897383	24.96941	28.49076	26.39496
3	-1058.965	99.31215	10.08428	24.93000	30.10846	27.02639
4	-1004.904	72.79555	13.77318	25.12681	31.96237	27.89404
5	-927.9561	91.42287*	12.99041	24.87042	33.36309	28.30849
6	-856.8842	73.18291	15.48885	24.73038	34.88016	28.83930

Source: EViews Test Result

The LR value of 91.42287* indicates that the model tested has good statistical significance in describing patterns in the data. Meanwhile, the FPE result of 7.250461* shows that the model can predict the data accurately. The AIC value of 24.68029* indicates that the model has an appropriate level of complexity to provide accurate information. The SC result of 25.44191* shows that this model meets the Schwarz criteria well, and the NQ result of 25.31863* shows that the model has fulfilled the Hannan-Quinn criteria well, so from the SC and NQ values, it can be seen that the model can explain the data.

VAR Stability Test

The models are deemed stable if every coefficient in the VAR and VECM models is less than 1. A polynomial function's roots are computed via the VAR stability test. The VAR and VECM models are declared stable if all the coefficients are less than 1. The VAR stability test is used to calculate the roots of a polynomial function. The stationary modulus is smaller than one and lies inside the unit circle, so the VAR model is considered valid. The following are the results of the stability test:

Table 3. Stability Test Result

Root		Modulus	Root		Modulus	Root		Modulus
-0.487356 0.859901i	+	0.988405	-0.802864 0.499509i	-	0.945568	-0.248139 0.861943i	-	0.896950
-0.487356 0.859901i	-	0.988405	-0.930703 0.166477i	+	0.945475	-0.680275 0.578995i	+	0.893314
-0.976916		0.976916	-0.930703 0.166477i	-	0.945475	-0.680275 0.578995i	-	0.893314
-0.550415 0.806706i	+	0.976592	0.468921 0.820427i	+	0.944980	-0.103528 0.876825i	-	0.882916
-0.550415 0.806706i	-	0.976592	0.468921 0.820427i	-	0.944980	-0.103528 0.876825i	+	0.882916
-0.642503 0.728072i	+	0.971029	-0.860707 0.365960i	+	0.935277	0.864242 0.171938i	-	0.881179
-0.642503 0.728072i	-	0.971029	-0.860707 0.365960i	-	0.935277	0.864242 0.171938i	+	0.881179
0.931518 0.267811i	+	0.969251	0.293175 0.886128i	-	0.933367	-0.873588 0.110190i	+	0.880509
0.931518 0.267811i	-	0.969251	0.293175 0.886128i	+	0.933367	-0.873588 0.110190i	-	0.880509
-0.238508 0.937862i	+	0.967715	0.654471 0.658025i	+	0.928078	0.298135 0.822313i	+	0.874691
-0.238508 0.937862i	-	0.967715	0.654471 0.658025i	-	0.928078	0.298135 0.822313i	-	0.874691
-0.019238 0.967138i	-	0.967330	0.037608 0.926837i	+	0.927600	0.471191 0.713695i	-	0.855208
-0.019238 0.967138i	+	0.967330	0.037608 0.926837i	-	0.927600	0.471191 0.713695i	+	0.855208
0.459742 0.848263i	+	0.964838	0.923491 0.065358i	+	0.925801	-0.707606 0.345285i	+	0.787356
0.459742 0.848263i	-	0.964838	0.923491 0.065358i	-	0.925801	-0.707606 0.345285i	-	0.787356
0.824063 0.489006i	+	0.958231	0.842304 0.381005i	+	0.924468	-0.365302 0.675809i	-	0.768221
0.824063 0.489006i	-	0.958231	0.842304 0.381005i	-	0.924468	-0.365302 0.675809i	+	0.768221
-0.782118 0.551263i	-	0.956870	-0.868949 0.304561i	+	0.920777	-0.321150 0.564105i	+	0.649116
-0.782118 0.551263i	+	0.956870	-0.868949 0.304561i	-	0.920777	-0.321150 0.564105i	-	0.649116
-0.421186 0.854918i	-	0.953038	0.696829 0.597598i	+	0.917984	0.117349 0.527050i	+	0.539956
-0.421186 0.854918i	+	0.953038	0.696829 0.597598i	-	0.917984	0.117349 0.527050i	-	0.539956
0.634275 0.703961i	+	0.947558	-0.911885		0.911885	-0.248139 0.861943i	+	0.896950

0.634275 0.703961i	-	0.947558	0.803609 0.402274i	-	0.898672	-0.248139 0.861943i	-	0.896950
0.160007 0.933566i	+	0.947179	0.803609 0.402274i	+	0.898672	-0.680275 0.578995i	+	0.893314
0.160007 0.933566i	-	0.947179	-0.802864 0.499509i	+	0.945568	-0.680275 0.578995i	-	0.893314
-0.802864 0.499509i	+	0.945568	-0.248139 0.861943i	+	0.896950			

Source: EViews Test Result

Cointegration Test

In the VAR/VECM analysis, a cointegration test must be carried out to determine and ensure long-term cointegration using the Johansen cointegration test. If these variables show cointegration results, then the research can proceed to VECM. Following are the results of the cointegration test that has been carried out:

Table 4. Johansen Cointegration Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.494470	252.0703	159.5297	0.0000
At most 1 *	0.407742	179.7627	125.6154	0.0000
At most 2 *	0.296908	124.2386	95.75366	0.0002
At most 3 *	0.284390	86.89829	69.81889	0.0012
At most 4 *	0.194865	51.42857	47.85613	0.0222
At most 5	0.137642	28.45351	29.79707	0.0708
At most 6	0.099552	12.75655	15.49471	0.1240
At most 7	0.015362	1.641032	3.841465	0.2002

Source: EViews Test Result

The cointegration test results above indicate long-term cointegration at the 5% confidence level because the statistical value is higher than the critical value, so that the VECM model can be applied to this study.

Vector Error Correction Model

After testing cointegration in the previous VAR model, the results show cointegration in this research model. Thus, the analysis of the responsiveness of inflation in Indonesia to macroeconomic variables in this study was designed using the VECM model. The VECM model provides two estimation outputs: cointegrating or the long-term balance relationship between variables and error correction, namely the speed at which the variables move towards their long-term balance. The VAR-VECM model can provide short-term and long-term relationship information between variables. The following are the results of VECM estimation in this study:

Table 5. Short-Term VECM Test Result

Error Correction:	D(INFLASI)	Decision
CointEq1	0.008754	
S.E.	(0.01247)	Not significant
t-Statistic	[0.70226]	
D(INFLASI(-1))	0.213597**	
S.E.	(0.10325)	Significant
t-Statistic	[2.06864]	
D(SBSN(-1))	0.046344	
S.E.	(0.09402)	Not significant
t-Statistic	[0.49292]	
D(SUN(-1))	0.006836	
S.E.	(0.11394)	Not significant
t-Statistic	[0.06000]	
D(SBIS(-1))	0.150082	
S.E.	(0.63045)	Not significant
t-Statistic	[0.23806]	
D(SBI(-1))	0.000831	
S.E.	(0.69779)	Not significant
t-Statistic	[0.00119]	
D(LNLOA(-1))	-0.080635	
S.E.	(0.07048)	Not significant
t-Statistic	[-1.14408]	

D(LNFIN(-1))	0.000719	
S.E.	(0.00065)	Not significant
t-Statistic	[1.10151]	
D(IPI(-1))	-4.08E-05	
S.E.	(0.00807)	Not significant
t-Statistic	[-0.00505]	
C	-0.032976	
S.E.	(0.07260)	Not significant
t-Statistic	[-0.45420]	

Source: Eviews Test Results

***Critical Value at 5%: 1.983972*

Based on the test results, in the short term, only one variable influences inflation in Indonesia, namely the inflation variable itself. In comparison, other variables do not have a significant effect on inflation. This happens because a variable reacting to another variable takes time (lag), and in general, the reaction to another variable occurs in the long term (Firdaus, 2020). The long-term test results are as follows:

Table 6. Long-Term VECM Test Result

Cointegrating Eq	CointEq1	Decision
INFLASI(-1)	1.000000	
SBSN(-1)	11.96932**	Significant
S.E.	(1.24992)	
t-Statistic	[9.57605]	
SUN(-1)	-7.476352**	
S.E.	(1.39346)	Significant
t-Statistic	[-5.36531]	
SBIS(-1)	-28.43477 **	
S.E.	(7.54644)	Significant
t-Statistic	[-3.76797]	
SBI(-1)	23.33857 **	
S.E.	(7.34063)	Significant
t-Statistic	[3.17937]	

LNLOA(-1)	0.447162 **	
S.E.	(0.19190)	Significant
t-Statistic	[2.33017]	
LNFIN(-1)	-0.003225**	
S.E.	(0.00152)	Significant
t-Statistic	[-2.12677]	
IPI(-1)	0.006604-	
S.E.	(0.09187)	Not Significant
t-Statistic	[0.07189]	
C	-547.9335	

Source: Eviews Test Results

Based on the long-term test results using the VECM method from 2013 to 2021, there is only one variable that does not significantly affect inflation in Indonesia: the IPI variable. At the same time, the rest has a significant influence on inflation in Indonesia at a significance level of 5%. Therefore, both conventional and sharia monetary instruments have a significant impact on inflation in Indonesia in the long term.

SBSN has a positive and significant effect on inflation with a coefficient of 11.96932. This means that when there is an increase of one percent in SBSN, inflation in Indonesia will increase by 11.97 percent in the long run. The results of this study are in line with research conducted by (Dwihapsari et al., 2021), which revealed that SBSN has a positive and significant effect on inflation in Indonesia in the long run. SBSN is currently an alternative for government project development financing, as stated in Law No. 19 of 2008. Compared to conventional bonds, SBSN is a newly developed instrument in Indonesia. The results of a positive relationship with inflation indicate that SBSN has not become the main instrument for controlling inflation in Indonesia, but SBSN is used as an alternative instrument for government financing.

The results of subsequent tests show that SUN has a negative and significant effect on inflation with a coefficient of -7.476352. This indicates that in the long term, every one percent increase in SUN will reduce inflation in Indonesia by 7.48 percent. This research aligns with the objective of open market operations carried out by the central bank to control the amount of money circulating

through buying and selling central bank securities, government securities, or money market securities.

One of the Sharia monetary instruments in Indonesia, namely SBIS, shows a negative and significant effect on inflation in Indonesia with a coefficient of -28.43477. This means that every one percent increase in SBIS will reduce the inflation rate in Indonesia by 28.43% in the long run. On the contrary, SBI has a positive and significant influence on inflation in Indonesia of 23.33857, which means that when SBI increases by one percent, it will increase inflation in Indonesia by 23.33%. This is in line with Larasati and Amri (2017), who state that BSI affects inflation positively and significantly in the long term. The results of this study can be used as a reference for controlling inflation in Indonesia.

The LnLOA variable shows a positive and significant influence on inflation in Indonesia with a coefficient of 0.447162, meaning that every one percent increase in LOAN will increase inflation in Indonesia by 0.44 percent. This is by the general condition that the amount of money circulating in society increases with the distribution of credit by banks. On the contrary, the results of this study indicate that the financing variable has a negative and significant effect on inflation in Indonesia of -0.003225, meaning that when financing increases by one percent, inflation in Indonesia will decrease by 0.003 percent in the long term. However, the effect is quite small so the potential to increase inflation still exists.

Impulse Response Function

The provided figure elucidates the Impulse Response Function (IRF) of the analyzed system, a crucial tool in time series analysis for illustrating how the system responds to an impulse or a change in a specific variable over time. This graph visually portrays the system's reaction to the factor of time or other independent variables characterizing its dynamic behavior. Each element's temporal changes following a particular impulse or change are depicted by the IRF lines, with increases or decreases indicating the magnitude and duration of the system's response. Therefore, this figure serves as a vital instrument for comprehending the dynamics influenced by the factor of time or other relevant variables.

Analyzing the IRF results in this study reveals stable and positive movements of SBSN and Finance on Inflation at 6 months, SUN at 5 months, SBIS and SBI at 8 months, LOAN at 7 months, and IPI at 11 months.

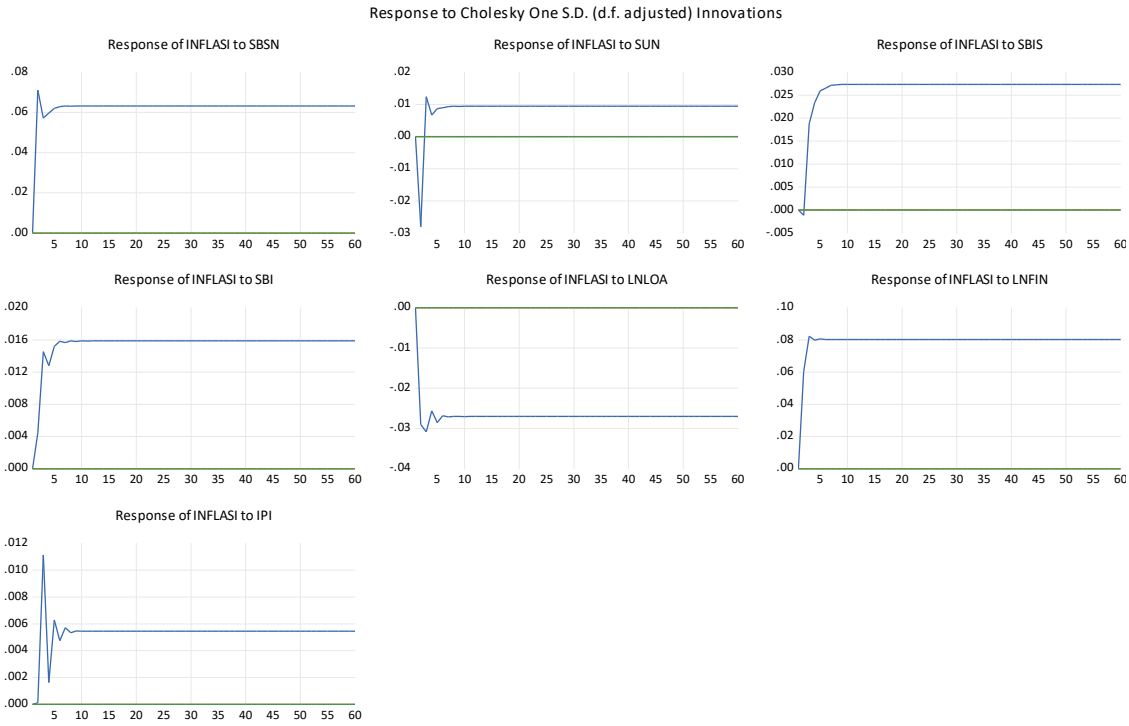


Figure 4. Impulse Response Function

The peak inflation in 2013 significantly impacted society, leading to heightened purchase prices, and affecting lending and borrowing activities in the financial industry, particularly in terms of accessibility and the cost of loans. Government responses to inflation involve policies to increase the BI Rate, subsequently raising interest rates (Simanjuntak & Sirait, 2018). Previous research indicates that a contractionary monetary policy, reducing the circulating money in the market, can effectively lower inflation (Caramp & Silva, 2023). In this context, inflation poses risks by distorting the decision-making process of bank executives regarding financing or disbursing credit (Tinoco et al., 2022). In fact, any excess liquidity that is not being used for financing purposes can be allocated to SBIS (Syahputri & Pimada, 2023).

Conversely, if the inflation rate decreases, individuals tend to delay purchases, leading to reduced economic activity and a slowdown in economic growth (Oner, 2022). The study findings indicate that credit (loans) has a positive influence on the inflation rate; an increase in credit results in a higher inflation rate as people opt to

spend rather than save. This aligns with the demand-pull inflation theory, which suggests that inflation occurs when the supply of money and credit increases, stimulating overall demand for goods and services to outpace production capacity, causing an aggregate price increase (Fernando, 2023).

CONCLUSION

In the short term, it is observed that only the inflation variable itself affects inflation in Indonesia, while other macro variables, including both sharia and conventional instruments, do not exhibit a significant impact. This underscores the time lag in the reaction of variables to one another, emphasizing that these effects become more pronounced in the long term. The findings reveal a distinctive influence of SBSN, SUN, SBIS, SBI, Loan, and Financing on inflation in the long run. Specifically, SBSN, SBI, and Loans demonstrate a positive effect, contributing to inflation, while SUN, SBIS, and Financing exert a negative influence, mitigating inflationary pressures.

In considering these outcomes, policymakers and relevant authorities are urged to adopt a nuanced approach to monetary policy. Both Islamic and conventional instruments play significant roles in influencing inflation over the long term. Policymakers should consider the distinct impact of each instrument and formulate comprehensive strategies that incorporate both sharia and conventional monetary policies. This balanced approach would enhance the effectiveness of inflation management in Indonesia, aligning with the objectives of the central bank and contributing to overall economic stability.

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