

# Analysis of Conventional and Sharia Monetary Policies through Asset Prices on Inflation in Indonesia

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Abstract: This study aims to analyze the transmission mechanism of monetary policy in Indonesia in controlling inflation, both in terms of sharia and conventional terms. The data used in this empirical study is time series data during 2011:1-2017:4 originating from Bank Indonesia and the Central Statistics Agency (BPS). The analysis tool used is the Error Correction Model (ECM). This study analyzes the relationship between independent and dependent variables both in the short and long term. The results of this study indicate that from conventional monetary variable SBI (certifikat of bank indonesia) variables that have a positive and significant effect on inflation in the long-term. Whereas in the short term the variable money supply has a negative effect and variable interest rates on Bank Indonesia, bonds have a positive and significant effect on inflation. In Islamic monetary variables, SBIS have a positive and significant effect on inflation in the long-term. Islamic bond variables (Sukuk) have a negative and significant effect on inflation in the long-term. While in the short-term the variable money supply, Islamic interest rates, and Islamic bonds have a positive and significant effect on inflation.

## 1 INTRODUCTION

Monetary policy serves as a key to achieve macroeconomic goals within a country. The Government through the Central Bank as a monetary policy aksekutor keep trying to regulate the amount of money in circulation by trying to maintain the stability of the value of money from various internal and external factors. Those factors are not detached from the steps of the Government in setting and regulating interest rates, credit, asset prices, the company's balance sheet, the exchange rate and inflation expectations (Danar, 2016).

To reduce the impact of the global economy jolts to the economy in the country, it is a policy that is effective and efficient, good monetary policy or fiscal policy and other economic policies. The focus of the implementation of monetary policy in Indonesia according law No. 23-year 1999 amended in Act No. 3 of the year 2004 concerning the monetary policy of central bank Indonesia said that given the dual mandate as monetary authorities that

can run conventional monetary policy as well as the Sharia, then monetary policy that is using a dual monetary policy i.e. conventional and Sharia with the ultimate goal of monetary policy in Indonesia is to achieve and maintain the stability of the value of the the rupiah, that is the price (inflation) and the exchange rate of the rupiah.

Based on the PMK No. 93/PMK. 011/2014 Target of inflation in 2016, 2017, and 2018 the date 21 may 2014 target for inflation set by the Government for the period 2016 – 2018, respectively by 4%, 4% and 3.5% respectively with a deviation of  $\pm 1\%$ . (Bank Indonesia, 2018). As seen in the graph below:

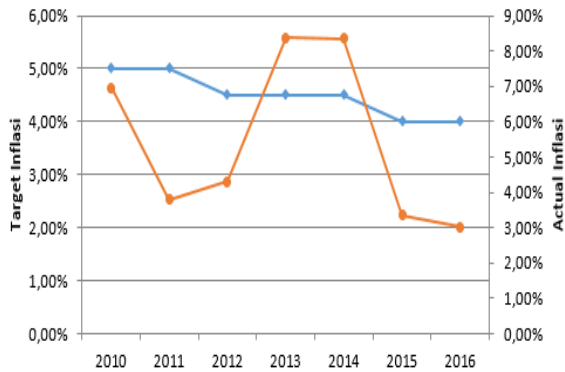


Figure 1: The growth of Inflation and actual inflation target

According to Mishkin (1995), the transmission mechanism of monetary policy is a complex process because in theory of monetary economics is often referred to as "Black box". This is because the transmission is much influenced by three factors, namely, the first change in the behavior of the central bank, banking and economic actors in a variety of financial and economic activity.

This research uses the variable bonds and Islamic bonds (sukuk), asset prices as an indicator of monetary policy through the asset price is a monetary policy which will also affect the development of the prices of other assets, whether such financial asset price yield bond and stock prices, as well as the physical assets of the particular property and stock prices of gold. The influence of price on the consumption of the asset investment also would affect aggregate demand and will ultimately determine the level of real output and inflation in the economy (warjiyo, 2004).

As the Monetary Authority, Bank Indonesia will usually accept and regulate the money supply to stabilize the monetary economy of the country. A stable money supply will hit the high inflation rate. Open market operation as an indirect monetary instruments can affect its operational objectives, namely the interest rate or the amount of circulating more effectively. By using the Certificates of Bank Indonesia (SBI) as monetary instruments accounting and Bank Indonesia Certificates (SBIS) Shariah as monetary instruments. With Bank Indonesia Certificate (SBI) and Bank Indonesia Certificates (SBIS) Shariah-compliant central bank buying and selling activities of securities with market participants, both at the primary or secondary markets that serve the main indirect operational instruments monetary control.

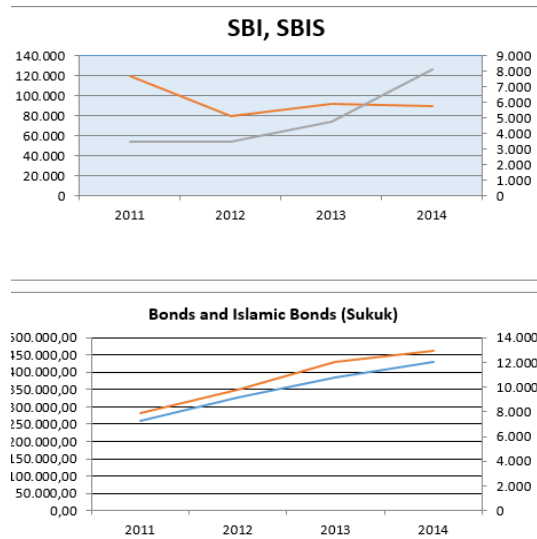


Figure 2: The growth of Bank Indonesia Certificates (SBI), Bank Indonesia Certificates sharia (SBIS), bonds and Islamic Bonds (Sukuk), Year 2011 – 2014 in (billion)

Source: Bank Indonesia and the financial services authority (OJK)

Based on the above graph shows the trend of the decline in the value of the SBI from year 2011 until 2014. Carried out in respect of article IBPA (Indonesia Agency) 2015, SBI tends to decline because the flow of funds banking on SBI receding more in line with the direction of the monetary policy of the central bank, where BI is deliberately reducing the absorption of funds through the SBI in order to the Bank is funneling more enterprising credit so that it will have an impact on the rupiah exchange rate remained stable. If the Fund's bank in SBI, BI has to accumulate increasingly bear the brunt of an increasingly large flowers.

Policies that central banks do so showing the value of SBIS decreases and SBIS increases, keep paying attention to the amount of money in circulation is also increasing every year. In addition, the development of assets such as bonds and Islamic bonds (sukuk) continues to increase, which means it can be said that investment with assets such as this demand by investors.

Like the previous explanation of inflation which remained persisted each year greatly affect the amount of money in circulation. Where in the year 2011 the money supply amounted to 2,877,220 Billion while in the year 2014 growing money supply followed by high inflation in that year reached 8.36% with the amount of money floating

around 4,170,731 billion. This greatly influenced the development of the price of other assets such as the SBI in 2012 and 2014 is declining while the SBIS in 2014 rising high in the follow with the development of conventional bonds and Islamic bonds.

## 2 THEORETICAL FRAMEWORK

The transmission mechanism of monetary policy is a process where a policy can affect economic growth and inflation in a country, the transmission channels of monetary policy is carried out through six channels namely interest rates, credit, the company's balance sheet, assets prices, exchange rates and expectations.

According to Dornbusch, et al (2004), the monetary policy affects the economy, first, by influencing interest rates then affect aggregate demand. The increase in the money supply lower interest rates, increasing investment spending and aggregate demand, and therefore increase the equilibrium output.

Indonesia began to adopt the dual banking system after the banking policy issued in 1998 Act No. 10 of the double-banking, (Dahlan Slamet, 2005:407). The dual banking system is the application and enforcement of this two banking systems (conventional or public bank system that operates with the flowers and the banks that operate with the Sharia system side by side), which generally also not limit of conventional commercial banks in providing Islamic services through mechanisms of islamic window by first forming the Syariah Business Units (UUS).

Specifically, Taylor, 1995 (in Warjiyo, 2004) stated that the mechanisms of monetary transmission to bijakan is "the process through which monetary policy decision are transmitted into changes in real GDP and inflation". This means that the transmission Mechanism of monetary policy is the paths traveled by the monetary policy to be able to influence the final target of monetary policy, namely national income and inflation.

Monetary policy through the price of the asset can be via two channels i.e. channel wealth (the wealth effect) and Tobin-q (Mishkin: 1955). Lines of wealth (the wealth effect) affects the level of consumption, and consumption affect aggregate demand, aggregate demand and further affect the output gap and ultimately affect the rate of inflation. Asset prices through the channels on the Tobin-q will affect the level of investment and the impact on aggregate demand and ultimately influence the inflation rate. In this context, the channel-a channel that gives the stress on the transmission mechanism

of monetary policy is Tobin's theory and the influence of wealth (the wealth effect) of consumption. Through Tobin's q theory, if q is defined as the relative market value of companies-companies that can purchase a variety of fixtures by simply issuing equities, and vice versa.

The role of asset price in the transmission mechanism of monetary policy is known theoretically, though difficult to illustrate empirically. Monetary policy shocks results in fluctuations in the price of assets with monetary policy can boost stock prices in two ways namely by making equities relatively more attractive for bond and an improvement in the Outlook for corporate earnings as a result of spending more households.

Thobin q theory describes the mechanism of monetary policy in a manner affecting the economy through its impact on equity valuations. (Asif Idres et al, 2005)

According to Edward and Khan (1985) there are two types of factors that determine the value of the interest rate i.e. the internal and external factors. Internal factors include the national income, the amount of money in circulation, and inflation. While the external factor is the foreign interest rate and the rate of foreign currency exchange rate changes are expected. (Neny Erawati,2002:99)

The mechanism works BI Rate until affect inflation is often referred to as the transmission mechanism of monetary policy. The mechanism describing the actions of Bank Indonesia through the vicissitudes of monetary instruments and operational targets affecting various economic and financial variables before ultimately influential to the end goal of inflation. (Bank Indonesia, 2015).

## 3 RESEARCH METHOD

This study uses secondary data runtun time (time series) in the form of a monthly period January 2011-December 2017. This research was conducted to look at variables-variables that affect the transmission of conventional monetary policy and asset prices through Sharia. Variables-variables that will be scrutinized is the SBI, SBIS, money supply, bonds, Islamic bonds (Sukuk) in Indonesia. Data obtained from Bank Indonesia (BI) and the financial services authority (OJK).

The estimation model used in this study is the analysis of dynamic model with the regression that is by using the model of error correction (Error Correction Model/ECM) Domowitz and granger. In the context of Economics, dynamic model specification is very important because it deals with

the establishment of the model of the economic system that is associated with the change in time both short term and long term. This study uses statistics programs help E-views Version 9.0..

## 4 ANALYSIS

### 4.1 Stationeritas Test

The first thing to do is to examine whether the data is stationary or not. This Stasioneritas test needs to be done because a regression analysis should not be did when the data used is not stationary and normally if it still done the resulting equations then are a spurious regression.

#### 4.1.1 Unit Root Test

A variable is said to be stationary if the mean value, variance, and kovariansnya always constant at any point in time. There are some proper ways can be done to measure the existence of stasionaritas, one of them is by using the Dickey Fuller (DF), i.e. If the absolute value larger than his statistics DF Mc Kinnon Critical Value (depending on the level of selected beliefs 1%, 5%, or 10%), then it can be inferred that such data stationary. In this research a critical value used was 5% which is not too low and not too high.

Table 2: Unit Root Test Results

Variables	Value ADF	Critical Value McKinnon ( $\alpha = 5\%$ )	Description
INF	-1.095811	-2.976263	Non Stationary
MS	-3.893595	-2.976263	Stationary
SBI	-2.638140	-2.981038	Non Stationary
BONDS	-2.403553	-2.976263	Non Stationary
SBIS	-2.638140	-2.981038	Non Stationary
ISLAMIC BONDS (SUKUK)	-1.497680	-2.976263	Non Stationary

#### 4.1.2 Integration Test

A test of the degree of integration is a continuation of the test unit and the roots are only required when

all the data has not been stationary at zero degrees or 1. A test of the degree of integration used to know at how data will be stationary. When the data have not been stationary at one, then testing must remain continued until each variable is stationary. This test is used to perform test Dickey Fuller (DF). Which table II explained that a variable (MS) on the level of the stationary level. Whereas in variable INF, SBI, BONDS, ISLAMIC BONDS (SUKUK) on the stage level not stationary then performed a test of the degree of intergrasi.

Table 3: Integration Test Results

Variables	Value ADF	Critical Value McKinnon ( $\alpha = 5\%$ )	Description
INF	-3.797454	-2.981038	Stationary
MS	-6.646262	-2.981038	Stationary
SBI	-2.595987	-2.981038	Non Stationary
OBL	-2.981038	-2.082098	Non Stationary
SBIS	-1.132217	-2.981038	Non Stationary
SUKUK	-6.589875	-2.981038	Stationary

Table 4: Integration Test Results

Variables	Value ADF	Critical Value McKinnon ( $\alpha = 5\%$ )	Description
INF	-5.089589	-3.004861	Stationary
MS	-9.099494	-2.986225	Stationary
SBI	-4.525525	-2.986225	Stationary
OBL	-3.476526	-2.986225	Stationary
SBIS	-3.466009	-2.991878	Stationary
SUKUK	-4.579899	-3.004861	Stationary

#### 4.1.3 Cointegration Test

In this research to test the residual method based on Granger test. Residual-based test methods using

statistical tests Augmented Dickey-Fuller (ADF) regression by observing the rest of Granger was stationary or not. The value of this residue will be tested using the test Augmented Dickey-Fuller (ADF) to find out whether the value of the remaining stationary or not. The results of this research show that the value of the ADF tests estimated > Critical Value  $\alpha = 5\%$  (-4.612624 > -2.981038). So it can be concluded that the empirical model used in this study are eligible to test Granger.

Table 5: Cointegration Test Results

Variables	Value ADF	Critical Value McKinnon ( $\alpha = 5\%$ )	Ket
ECT	-4.612624	0.0012	Stasionary

### 4.2 Estimation Error Correction Model (ECM)

Table 6: The Results of The Estimation of the Error Correction Model (ECM) Short-Term

Independent Variables	Coefficient	t-Statistic	Prob
D(LnMS)	-0.089649	-2.752699	0.0156
D(LnSBIS)	3.658554	4.032125	0.0012
D(LnSUKUK)	-0.493542	-4.528430	0.0005
ECT	1.287258	6.002274	0.0000
C	0.335769	1.166629	0.2628
R-squared		0.904034	
Adjusted R-squared		0.869760	
F-statistic		26.37686	
Prob(F-statistic)		0.000001	
Durbin-Watson stat		2.179223	

Equation Error Correction Model (ECM) for long-term periods are as follows:

$$\ln INF = 5.575499 + -5.089649 MS - 3.658554 SBIS + -0.493542 SUKUK$$

On the table are able to be known that the estimation of sharia monetary policies where MS, SBIS, and short-term variable are significant affected. Where MS is negative and significant influence of inflations as also for SUKUK variables. Only the SBIS is positive and significant influence on Indonesia's inflation.

Table 7: The Results of The Estimation of Error Correction Model (ECM) Long-Term.

Independent Variables	Coefficient	t-Statistic	Prob
D(LnMS)	-0.056966	-1.020440	0.3181
D(LnSBIS)	1.108118	3.0605074	0.0055
D(LnSUKUK)	-0.409202	-2.063630	0.0505
C	4.251129	2.601117	0.0160
R-squared		0.433574	
Adjusted R-squared		0.359692	
F-statistic		5.868482	
Prob(F-statistic)		0.003958	
Durbin-Watson stat		0.685553	

Table 8: The Results of The Estimation of the Error Correction Model (ECM) Short-Term

Independent Variables	Coefficient	t-Statistic	Prob
D(LnMS)	-2.642198	-3.116654	0.0071
D(LnSBI)	-0.064296	-3.045324	0.0082
D(LOBLIGASI)	-0.439834	-1.973081	0.0672
ECT	0.938950	5.140962	0.0001
C	0.714068	3.788115	0.0018
R-squared		0.756959	
Adjusted R-squared		0.675946	
F-statistic		9.343614	
Prob(F-statistic)		0.000335	
Durbin-Watson stat		1.834620	

Table 9: The Results of The Estimation of Error Correction Model (ECM) Long-Term.

Independent Variables	Coefficient t	t-Statistic	Prob
D(LnMS)	-2.642198	-3.116654	0.1617

D(LnSBI)	-0.064296	-3.045324	0.02 81
D(LOBLIGA SI)	-0.439834	-1.973081	0.13 75
C	0.938950	5.140962	0.02 16
	R-squared	0.367696	
	Adjusted R-	0.285221	
squared	F-statistic	4.458297	
	Prob(F-	0.013102	
statistic)	Durbin-	0.602493	
Watson stat			

### 4.3 Test Determination ( $R^2$ )

#### 4.3.1 F-Test (Simultaneous Test)T

F test or simultaneous test is conducted to see the effect of independent variables simultaneously or together on the dependent variable. From the results of the model estimation for inflation in the short term, the calculated F value is 26.37686 with a probability level of 0.000001. Then the variable is) the money supply (MS), sbi and sbis and bonds and sukuk in the short term which have a simultaneous significant effect on inflation (INF) in Indonesia.

From the results of the model estimation for inflation in the long run, the Fcount value is 7.664799 with a probability level of 0.001429. Then the variable is the money supply (MS), sbi and sbis and bonds and sukuk in significant simultaneous inflation (INF) in Indonesia.

## 5 RESULTS

### 5.1 Influence of The Money Supply on Inflation in Indonesia

According to Adiwarmarman (2010), the concept of money in the economy of islam is different with the concept of money in the economy. In economics, the concept of money is very clear and definite that money is money, money is not the capital. On the contrary, the concept of money expressed in conventional economic generalized back and forth, namely money as money and money as capital.

Based on the estimation of the long and short term of the dual policy, the money supply has a significant negative effect on the short term with a probability value of  $> 0.05\%$ . Whereas in the long run both monetary and sharia monetary policies have no significant effect. This is in line with Keynes's

theory that increases in the money supply can increase prices, but the increase in money supply is not always proportional to the increase in the price of goods.

### 5.2 Influence Of Sbi And SBIS On Inflation In Indonesia

The fact is that in this variable, the SBI and SBI influence inflation in the long and short term estimates for both conventional and sharia monetary policies both have a negative and significant effect. This identifies that variable inflation is strong in influencing sharia variables, that is, except for sharia policy rate variables or Indonesian bank sharia certificates (SBIS), and conventional SBI variables.

On the channel of asset prices through Tobin-q will affect the level of investment and have an impact on aggregate demand and ultimately affect the inflation rate. The problem is how monetary policy changes equity prices. If monetary policy takes place contractively, members of the public will get the fact that they have less money to spend. Furthermore, an increase in interest rates causes the cost of holding money more expensive, consequently (ceteris paribus), the acquisition of deposits is greater than equity, consequently the company's market value decreases. Thus the company's ability to carry out an expansion is experiencing congestion, investment is down, and economic growth stops. This situation will suppress the output gap, thereby reducing inflation.

### 5.3 Influence of Obligasi and Obligasi Syariah (sukuk) on Inflation in Indonesia

Through the estimation of the error correction model, it is known that the two double monetary variables in the SUKUK variable sharia monetary policy have a significant negative effect on inflation in Indonesia through the asset price path both long term and short term with a probability value  $> 0.05\%$ . Whereas in conventional monetary policy the asset price variable asset path in the short term has a significant negative effect, the long-term estimation of this variable reverses the previous estimation results because it does not affect inflation in Indonesia.

Monetary policy influences the development of prices of other assets, both the price of financial assets such as bond yields and stock prices, or the price of physical assets, especially the price of

property assets and gold. This transmission occurs because the investment of funds by investors in their investment portfolios is not only in the form of deposits in banks and other instruments in the rupiah and foreign exchange money markets, but also in the form of bonds, shares, and physical assets. Thus, changes in interest rates and exchange rates as well as the amount of investment in the rupiah and foreign exchange money markets will also affect the volume and price of bonds, shares and physical assets.

## 6 CONCLUSIONS

Based on the description stated, it can be concluded that in the short term the speed of transmission of monetary policy in conventional banks is relatively stronger compared to monetary policy in Islamic banking. Inflation is more influenced by variables in conventional banking. Most of the influence of inflation is influenced by SBI which in the long and the short term has a negative and significant effect while the MS variable has negative and significant influence and the BONDS has a significant negative effect on the short term while the long term is not significant in the transmission of monetary policy.

For variables sharia, which has a big effect on inflation and the effectiveness of a policy Monetary is influenced by SBIS variables. The implications of SBIS are increasing investment community in banking sharia, SBIS will go up and aggregate demand rises, then people's income will grow. Then, monetary policy for 'inflation reduction' with a pattern Sharia is more effective than pattern Conventional.

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