JIET (Jurnal Ilmu Ekonomi Terapan)

https://e-journal.unair.ac.id/JIET/index

TRANSMISSION MECHANISM OF MONETARY POLICY THROUGH ASSET PRICE AND EXCHANGE RATE CHANNEL IN INDONESIA

Arvin Kurniawan[1]
Rini Dwi Astuti*[2] iD

[1,2] Faculty of Economics and Business, UPN "Veteran" Yogyakarta, DIY, Indonesia

ABSTRACT

Many studies have been related to monetary policy transmission toward economic growth targets. However, research on monetary policy transmission by including bond yields as a channel has never been done in Indonesia. Therefore, this study will analyze the effectiveness of monetary policy transmission through bond yields compared to monetary policy transmission through asset price and exchange rate channels. This study uses secondary data obtained from the Central Bureau of Statistics (BPS), the Indonesia Stock Exchange (IDX), the Indonesian Economic and Financial Statistics (SEKI) of Bank Indonesia, and the website investing.com. The analysis technique used in this study is Vector Autoregression (VARs). Based on research results, a relatively effective monetary policy transmission channel is the stock asset price channel. It is because the variables in the channel of stock asset prices only take one month to respond permanently to monetary policy, but the contribution between variables is still low. In the bond yield and exchange rate channel, the response shown is only temporary, and the contribution between variables is still weak, so the two channels are ineffective in transmitting monetary policy with the target of economic growth in Indonesia.

Keywords: Indonesia Stock Exchange, Bond Yields, Exchange Rates, Economic Growth, Monetary Policy Transmission

ABSTRAK

Penelitian berkaitan dengan transmisi kebijakan moneter terhadap sasaran pertumbuhan ekonomi telah banyak dilakukan. Namun, penelitian tentang transmisi kebijakan moneter dengan memasukan imbal hasil obligasi sebagai salah satu jalur yang belum pernah dilakukan di Indonesia. Oleh karena itu, penelitian ini akan menganalisis efektivitas dari transmisi kebijakan moneter melalui imbal hasil obligasi jika dibandingkan dengan transmisi kebijakan moneter melalui jalur harga aset dan jalur nilai tukar. Penelitian ini menggunakan data sekunder yang diperoleh dari Badan Pusat Statistik (BPS), Bursa Efek Indonesia (BEI), Statistik Ekonomi dan Keuangan Indonesia (SEKI) Bank Indonesia, dan situs web investing.com. Teknik analisis yang digunakan dalam penelitian ini adalah Vector Autoregression (VAR). Berdasarkan hasil penelitian jalur transmisi kebijakan moneter yang relatif efektif adalah jalur harga aset saham. Hal tersebut, karena variabel dalam jalur harga aset saham hanya membutuhkan waktu 1 bulan dalam merespon secara permanen kebijakan moneter, namun kontribusi antar variabel masih rendah. Pada jalur imbal hasil obligasi dan nilai tukar respon yang ditunjukan hanya bersifat sementara dan

kontribusi antar variabel masih lemah, sehingga kedua jalur tersebut tidak efektif dalam mentransmisikan kebijakan moneter dengan sasaran pertumbuhan ekonomi di Indonesia.

Kata Kunci: *IHSG, Imbal Hasil Obligasi, Nilai Tukar, Pertumbuhan Ekonomi, Transmisi Kebijakn Moneter*

JEL : E0; E2; E4

Introduction

The government's role in making policies is urgently needed to overcome a weakening economy through the central bank, namely Bank Indonesia. According to Law No. 3 of 2004 concerning amendments to Law No. 23 of 1999 concerning Bank Indonesia, Bank Indonesia aims to achieve and maintain stability in the rupiah value by establishing a monetary policy that considers the inflation rate target. In several studies, monetary policy can affect financial stability (Dell'Ariccia et al., 2014; Ioannidou et al., 2015; Tong, 2017; Valencia, 2014). High inflation will adversely affect economic performance in Indonesia.

Monetary policy is illustrated by setting policy interest rates, which can influence interbank money market interest rates, then transmitted to banking interest rates, asset prices, and exchange rates (Warjiyo, 2004). There is a time lag in monetary policy transmission, and the complexity of the monetary policy transmission channel is challenging to achieve the final target (Astuti & Hastuti, 2020).

Tabel 1: Economic Growth, and *BI-7 Days Reserve Repo Rate*

Year	Quarter	Economic Growth (%)	Benchmark Interest Rate (%)
2018	I	5.07	4.25
	II	5.27	5.25
	III	5.17	5.75
	IV	5.18	6.00
2019	I	5.06	6.00
	II	5.05	6.00
	III	5.01	5.25
	IV	4.96	5.00
2020	I	2.97	4.50
	II	-5.32	4.25
	III	-3.49	4.00
	IV	-2.17	3.75

Source: Bank Indonesia (2020)

The movement of the reference interest rate as a monetary policy instrument in responding to developments in economic growth can be seen in Table 1. In the second quarter of 2020, Bank Indonesia implemented an expansionary monetary policy by lowering the benchmark interest rate to 4.25 percent. It was done to support economic recovery from COVID-19, which caused a contraction in economic growth of 5.32 percent. A decrease in interest rates will reduce lending rates so that the business world and household consumption

can respond by increasing demand for bank credit. Decreasing lending rates will also reduce the company's cost of capital to invest. It can increase consumption and investment so that the economy becomes enthusiastic.

In the last two decades, the monetary policy transmission mechanism in developing countries has become a topic of much research. Can et al. (2020) researched the transmission of monetary policy in Turkey using the Structural Vector Autoregression (SVAR) model by including world commodity price indices as a potential influence on economic growth and price stability. The results show that the asset price channel, money supply, and liquidity are the most determining factors in actual output in Turkey.

Various studies regarding monetary transmission in India generally find that its effectiveness is weak on economic growth but significant on loans (Das, 2015; Mishra et al., 2016). In research conducted by Rossi et al. (2019) using the Bayesian Vector autoregression (BVAR) model, it was concluded that in Brazil, stocks and bonds are not proven to be included in the wealth effect, so they do not play a role in the transmission of monetary policy through asset price channels.

In this study, researchers added the bond variable, where previous research has proven that bond market developments influence bond markets and real GDP growth in several African countries (Kapingura & Makhetha-Kosi, 2014). Furthermore, Pradhan et al. (2016) found that the development of the bond market stimulated GDP per capita growth in several G20 countries during the 1990–2011 period. Furthermore, Fanta & Makina (2017) reported that the bond market positively impacted economic growth in South Africa from 1990 to 2011.

In this situation, the study aims to analyze the effectiveness of monetary policy transmission through the asset price channel, exchange rate channel, and bond yields with the economic growth target. The objects in this study are stocks, bond yields, and exchange rates. Researchers use the VAR model in their research. The VAR model is a model that can analyze the interdependence of time series variables. This model was put forward by Sims, (1980) in his article entitled "Macroeconomics and Reality" as an alternative model to the multiple equation model.

Using the VAR model is appropriate for analyzing how effective monetary policy transmission is, whereas the VAR model can use impulse response function analysis and variance decomposition. Impulse response function (IRF) analysis can track the response of endogenous variables in the VAR system due to shocks or changes in disturbance variables. At the same time, variance decomposition (VD) helps predict the contribution of the percentage variance of each variable due to changes in certain variables (Widarjono, 2018).

Literature Review

Monetary Policy Transmission

The monetary policy transmission mechanism generally describes the flow of monetary policy pursued by the central bank, which influences economic and financial activity to achieve the stated goals (Warjiyo, 2004). The monetary policy transmission mechanism has three channels: interest rate, asset prices, and credit (Mishkin, 2016). However, according to Bank Indonesia, there are six monetary policy transmission channels: money, credit, interest rates, exchange rates, asset prices, and expectations.

In Figure 1, there is a black box which is a monetary policy transmission mechanism or the channel passed by a monetary policy until the ultimate goal of monetary policy is achieved. The monetary policy transmission mechanism begins when the central bank changes its instruments to influence targets such as operational, intermediate, and final targets. Changes to the SBI interest rate instrument will affect PUAB interest rates, deposit rates, lending rates, asset prices, exchange rates, and inflation expectations. The changes signify that monetary transmission has worked and impacts investment, consumption, exports, and imports of aggregate demand (Kemu & Ika, 2016).
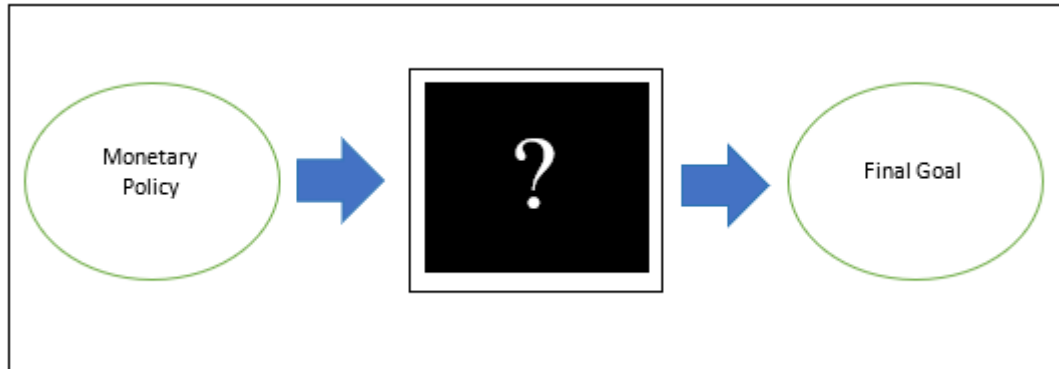
Figure 1: Monetary Transmission Mechanism as a "Black Box"
Source : Warjiyo (2004)

Asset Price Channel

Franco Modigliani explained the flow of influence of monetary policy with the target of economic growth through the transmission of monetary policy on asset prices through the effects of wealth on consumption. Consumption expenditure is determined by the consumer's lifetime resources, including human capital, real capital, and financial wealth. The main component of financial wealth is stock (Mishkin, 2016).

$$r = P = Wealth = Consumption = Y \tag{1}$$

Bond Yield Channel

According to Mishkin, bond prices and yields have an inverse relationship. If the market price of bonds rises, the yield will decrease, and vice versa. One factor that affects the increase or decrease in a bond price is the interest rate. A decrease in interest rates triggers an increase in bond prices. It is because, at that time, the bond coupon will be higher than the deposit coupon, so it will attract investors to buy it. Increased demand for bonds will increase bond prices (Rahardjo, 2003).

From the point of view of the issuer, namely the government, the existence of an expansive monetary policy whereby Bank Indonesia will lower the benchmark interest rate will benefit borrowers or bond issuers where bond interest is low so that the government as the bond issuer will issue more bonds which means a source of government spending (government expenditure) increase. An increase in government spending will impact aggregate demand, which will also increase, encouraging economic growth (Mishkin, 2016).

Exchange Rate Channel

In the first stage, the central bank's monetary policy will directly or indirectly influence the development of exchange rates in the foreign exchange market. The direct effect occurs

due to the supply of foreign exchange by the central bank, which is related to monetary control operations through foreign currency sterilization or intervention in achieving exchange rate stabilization. Meanwhile, the indirect effect is caused by monetary policy, which will affect the development of interest rates in the market, and, therefore, the difference between domestic and foreign interest rates (interest rate differential), which then affects the amount of foreign fund flows as well as demand and supply, on the foreign exchange market. The foreign currency exchange rate channel will involve the effect of the reference interest rate (Mishkin, 2016).

$$r = R = NX = Y \tag{2}$$

Research Methods and Data Analysis

This study uses secondary data in quantitative data in the form of months from January 2017 to December 2021. Secondary data is obtained indirectly, while quantitative data is actual data in a collection of numbers. The data obtained comes from Indonesian Economic and Financial Statistics (SEKI), as well as from the Central Bureau of Statistics (BPS), investing. com, and the Indonesia Stock Exchange (IDX). The data used in this study is time series data, namely RBI (Reference Interest Rate), RPUAB (Interbank Money Market Interest Rate), JCI (Composite Stock Price Index), OB (Bond Yield), KURS (Value Exchange), and PE (Economic Growth).

The analytical tool used in this study is the Vector Autoregression (VAR) model. VAR is used to identify balance in the short and long term. However, the VAR equation model cannot be used in this study. The stock asset price channel must use the Vector Error Correction Model (VECM) because the variables in the channel are stationary at the first difference and have a long-term relationship. The bond yield and exchange rate channel uses the first difference VAR because the variables in the model are stationary at the first difference and have no long-term relationship (Gujarati, 2003). The model equation of the three channels is:

a) Stock price channel transmission mechanism

$$\Delta RBI = ae_{t-j} + \sum_{j=1}^{k} \beta_j RBI_{t-j} + \sum_{j=1}^{k} y_1 RPUAB_{t-j} + \sum_{j=1}^{k} \theta_j IHSG_{t-j} + \sum_{j=1}^{k} \lambda_j PE_{t-j} + e_1 \tag{3}$$

$$\Delta RPUAB = ae_{t-j} + \sum_{j=1}^{k} \beta_j RBI_{t-j} + \sum_{j=1}^{k} y_1 RPUAB_{t-j} + \sum_{j=1}^{k} \theta_j IHSG_{t-j} + \sum_{j=1}^{k} \lambda_j PE_{t-j} + e_2 \tag{4}$$

$$\Delta IHSG = ae_{t-j} + \sum_{j=1}^{k} \beta_j RBI_{t-j} + \sum_{j=1}^{k} y_1 RPUAB_{t-j} + \sum_{j=1}^{k} \theta_j IHSG_{t-j} + \sum_{j=1}^{k} \lambda_j PE_{t-j} + e_3 \tag{5}$$

$$\Delta PE = ae_{t-j} + \sum_{j=1}^{k} \beta_j RBI_{t-j} + \sum_{j=1}^{k} y_1 RPUAB_{t-j} + \sum_{j=1}^{k} \theta_j IHSG_{t-j} + \sum_{j=1}^{k} \lambda_j PE_{t-j} + e_4 \tag{6}$$

b) Bond yield channel transmission mechanism

$$\Delta RBI = \Delta a + \sum_{j=1}^{k} \beta_j RBI_{t-j} + \sum_{j=1}^{k} y_j RPUAB_{t-j} + \sum_{j=1}^{k} \theta_j OB_{t-j} + \sum_{j=1}^{k} \lambda_j PE_{t-j} + e_1 \tag{7}$$

$$\Delta RPUAB = \Delta a + \sum_{j=1}^{k} \beta_j RBI_{t-j} + \sum_{j=1}^{k} y_j RPUAB_{t-j} + \sum_{j=1}^{k} \theta_j OB_{t-j} + \sum_{j=1}^{k} \lambda_j PE_{t-j} + e_2 \tag{8}$$

$$\Delta OB = \Delta a + \sum_{j=1}^{k} \beta_j RBI_{t-j} + \sum_{j=1}^{k} y_j RPUAB_{t-j} + \sum_{j=1}^{k} \theta_j OB_{t-j} + \sum_{j=1}^{k} \lambda_j PE_{t-j} + e_3 \tag{9}$$

$$\Delta PE = \Delta a + \sum_{j=1}^{k} \beta_j RBI_{t-j} + \sum_{j=1}^{k} y_j RPUAB_{t-j} + \sum_{j=1}^{k} \theta_j OB_{t-j} + \sum_{j=1}^{k} \lambda_j PE_{t-j} + e_4 \tag{10}$$

c) Exchange rate channel transmission mechanism

$$\Delta RBI = \Delta a + \sum_{j=1}^{k} \beta_j RBI_{t-j} + \sum_{j=1}^{k} y_j RPUAB_{t-j} + \sum_{j=1}^{k} \theta_j KURS_{t-j} + \sum_{j=1}^{k} \lambda_j PE_{t-j} + e_1 \quad (11)$$

$$\Delta RPUAB = \Delta a + \sum_{j=1}^{k} \beta_j RBI_{t-j} + \sum_{j=1}^{k} y_j RPUAB_{t-j} + \sum_{j=1}^{k} \theta_j KURS_{t-j} + \sum_{j=1}^{k} \lambda_j PE_{t-j} + e_2 \quad (12)$$

$$\Delta KURS = \Delta a + \sum_{j=1}^{k} \beta_j RBI_{t-j} + \sum_{j=1}^{k} y_j RPUAB_{t-j} + \sum_{j=1}^{k} \theta_j KURS_{t-j} + \sum_{j=1}^{k} \lambda_j PE_{t-j} + e_3 \quad (13)$$

$$\Delta PE = \Delta a + \sum_{j=1}^{k} \beta_j RBI_{t-j} + \sum_{j=1}^{k} y_j RPUAB_{t-j} + \sum_{j=1}^{k} \theta_j KURS_{t-j} + \sum_{j=1}^{k} \lambda_j PE_{t-j} + e_4 \quad (14)$$

Information:

RBI   = Benchmark interest rate

RPUAB = Interbank money market interest rate

JCI   = Composite stock price index

PE   = Economic growth

t   = Time

j   = Number of lags

Stationarity Test

The results of the stationary test show that the RBI, RPUAB, JCI, OB, EXCHANGE, and PE variables are stationary at first difference. With this in mind, a further test, namely the cointegration test, is needed to see if there is a long-term relationship (Widarjono, 2018, p. 343).

Table 2: Unit Root Test Results for Approach Research Variables Augmented Dickey-Fuller

Variable	ADF Statistics	Probability
RBI	-0.821375	not stationary on level
RPUAB	-0.487689	not stationary on level
IHSG	-1.812898	not stationary on level
OB	-1.875757	not stationary on level
KURS	-3.081281	not stationary on level
PE	-1.695301	not stationary on level
Variable	**ADF Statistics**	**Probability**
RBI	-4.503207	Stasionary at *First Difference*
RPUAB	-7.416296	Stasionary at *First Difference*
IHSG	-6.340617	Stasionary at *First Difference*
OB	-7.422830	Stasionary at *First Difference*
KURS	-8.602854	Stasionary at *First Difference*
PE	-6.648615	Stasionary at *First Difference*

Optimal Lag Determination

Based on Table 3, the optimal lag in the stock asset price channel model is at lag 1, the bond yield line is at lag 0, and the exchange rate line is at lag 0. The Akaike Information Criterion (AIC) value is small compared to the AIC value at other lags.

Table 3: Optimal Lags

Channel	AIC	Lag
Stock Asset Price	5.564471	1
Bond Yields	-7.770665	0
Exchange Rate	6.659480	0

Stability Test

The stability test results in Table 4 show that the model of the channel of stock asset prices, bond yields, and exchange rates has been declared stable. It is because the modulus value generated from the three models is less than 1 (modulus < 1).

Table 4: Stability Test

Value	Stock Asset Price	Bond Yields	Exchange Rate
	0.489295	0.512441	0.497705
Modulus	0.408987	0.397360	0.394794
	0.201928	0.111672	0.123048
	0.030772	0.058175	0.087471

The stability test results in Table 4 show that the model of the channel of stock asset prices, bond yields, and exchange rates has been declared stable. It is because the modulus value generated from the three models is less than 1 (modulus < 1).

Cointegration Test

Table 5 shows the cointegration test results of the three models. In the stock asset price channel model, the value of the trace statistic > critical value (49.85085 > 47.85613) means that the model has a long-term relationship between variables. The line of bond yields trace statistic value < critical value (46.69326 < 47.85613). It is the same as the cointegration test results on the exchange rate channel where the trace statistic value is <critical (39.71384 <47.85613), so the two channels do not have a long-term relationship between variables.

Table 5: Cointegration Test

Value	Stock Asset Price	Bond Yields	Exchange Rate
Trace Statistic	49.85085	46.69326	39.71384
Critical Value	47.85613	47.85613	47.85613

Discussion

Impulse Response Function (IRF) Analysis

Stock Asset Price Channel

The influence of changes in the benchmark interest rate on interbank money market rates, stock prices, and actual output explains monetary policy transmission through the asset price channel. Based on Table 6, the response of interbank money market interest rates to reference interest rate shocks is permanently positive. It means that when the benchmark

interest rate increases or decreases, it will be followed by interbank money market interest rates with the same movement in the short or long term.

Table 6: Stock Asset Price Channel IRF Analysis

Shock Variable	Responding Variable	Respon	Start Period
Benchmark Interest Rate	Interbank Money Market Interest Rate	Positive	1st Month
Interbank Money Market Interest Rate	IHSG	Negative	1st Month
IHSG	Economic Growth	Positive	1st Month

The composite stock price index (IHSG) responded negatively to changes in interbank money market rates quickly, namely in the first month. This response is permanent, which means that the JCI responds to changes in interbank money market interest rates in the short and long term. The negative response from the JCI illustrates that a decrease in the interbank money market interest rate will push up share prices. It is because stock yields are more attractive than other financial assets that provide interest-rate returns, such as deposits. An increase in demand for shares will lead to an increase in share prices.

Changes in the JCI can be responded to positively quickly by economic growth. An increase in share prices signals an improvement in the performance of companies listed on the Indonesia Stock Exchange. An increase in stock prices will increase the wealth of investors. Increased investor wealth will affect consumption spending, which will increase. Investors will use the capital gains from selling high-priced shares to buy goods or services. It encourages economic growth due to the increased purchasing power of the people. This finding follows the theory Franco Modigliani put forward, which explains how monetary policy affects economic growth through the wealth effect. It is also supported by previous research by Can et al. (2020), which states that the asset price channel is the factor that most determines actual output in Turkey.

Bond Yield Channel

Based on Table 7, interbank money market interest rates respond positively to shocks in the benchmark interest rate. This response occurred from the first month, but the interbank money market of interest rates movement returned to the balance point in the seventh month. It shows that if the benchmark interest rate increases, the interbank money market interest rate will increase and vice versa. However, the effect is only temporary or has a short period.

In the 7th to 12th months, the interbank money market interest rate does not respond to shocks in the benchmark interest rate. It is because the interbank money market interest rate is influenced by Indonesia's benchmark interest rate and the Singapore Interbank Offered Rate. (SIBOR). SIBOR is the average interest rate in Singapore set by eight leading banks in Singapore. SIBOR is one of the references when Bank Indonesia requires dollars for specific purposes (Nurfadilah et al., 2018).

Table 7: Bond Yield Channel IRF Analysis

Shock Variable	Responding Variable	Respon	Start Period
Benchmark Interest Rate	Interbank Money Market Interest Rate	Positive	Month 1 – 7, then no effect
Interbank Money Market Interest Rate	Bond Yields	Positive	Month 1 – 7, then no effect

Shock Variable	Responding Variable	Respon	Start Period
Bond Yields	Economic Growth	Positive	Month 1 – 7, then no effect

In the first month, bond yields did not respond to the interbank money market interest rate shocks. The bond issuer needed time to calculate other risks in increasing or decreasing bond yields. In the second month, the bond yield response showed a positive response, which means that an increase in money market interest rates between banks issuing bonds will increase bond yields and vice versa. The reason is that investors will expect higher yields compared to deposit interest rates, thus making issuers increase the yields provided (Yuliawati & Suarjaya, 2017). However, the following month, the movement of bond yields returned to the balance point, meaning that the bond yield response only lasted for the short term. It happens because bond yields are influenced by interest rates and are affected by the maturity date and rating of the bonds (Nelmida, 2018).

Economic growth responds positively to shocks in bond yields. The response was positive from the first month, but in the second to 12th months, economic growth returned to a balance point, meaning that economic growth responds to bond yields in the short term. This positive response indicates that increased bond yields will increase economic growth. However, according to Sutoyo (2022), high yields cause the government to be burdened with paying these debts, so only some results are obtained from the state expenditure revenue budget (APBN) used for development.

Exchange Rate Channel

Based on Table 8, the exchange rate does not respond to shocks in interbank money market interest rates. It shows that the exchange rate is not affected by the interbank money market interest rate, but other macroeconomic variables, such as inflation, can affect the exchange rate. According to Wijaya (2020), inflation can describe the average price of goods and services. When inflation increases, the exchange rate will experience a depreciation. An increase in the price level of domestic goods when compared to the price of goods from abroad causes people to be interested in buying foreign products, so that demand for imports increases, resulting in demand for foreign currencies also increasing, which in turn depreciates the rupiah.

Economic growth in Indonesia positively responded to the shock in the exchange rate in the first month. However, this response was only temporary because, in the third month, the movement of economic growth returned to a balance point, which meant that it only responded in the short term. This positive response shows that when the domestic currency weakens, economic growth will increase. The weakening of the rupiah makes goods in Indonesia relatively cheaper compared to other countries. This weakening makes it attractive for foreign consumers to buy goods or services in Indonesia. With increasing foreign demand, Indonesia's exports have increased. The increase in exports will improve the trade balance and encourage economic growth (T.Y., 2016). This finding differs from research (Astuti & Hastuti, 2020), which states that exchange rate monetary policy transmission only affects the exchange rate and has not been able to influence exports which will drive economic growth.

Table 8: Exchange Rate Channel IRF Analysis

Shock Variable	Responding Variable	Respon	Start Period
Benchmark Interest Rate	Interbank Money Market Interest Rate	Positive	Month 1 – 7, then no effect

Shock Variable	Responding Variable	Respon	Start Period
Interbank Money Market Interest Rate	Exchange Rate	No Response	Throughout the period
Exchange Rate	Economic Growth	Positive	Month 1 – 7, then no effect

Variance Descomposition Analysis

Stock Asset Price Channel

Based on Table 9, the variance decomposition results on the stock asset price channel obtained a shock contribution in the 12th month, where the benchmark interest rate (RBI) influenced the movement of the interbank money market interest rate (RPUAB) by 94.820%. The RPUAB influenced the movement of the composite stock price index (JCI) by 3.610% and the contribution of JCI to economic growth (PE) by 5.370%.

These findings indicate that the performance of the monetary policy transmission mechanism through the asset price channel for 2017 M.1 – 2021 M.12 is ineffective. In monetary policy transmission through the share asset price channel, only the RBI dominates the RPUAB. This finding differs from the results of research by Can et al. (2020), where the asset price channel is the factor that most determines actual output in Turkey.

Table 9: Variance Decomposition Analysis of Stock Asset Price Channel

Variance Decomposition of RPUAB	RBI	RPUAB
Period 12	94.82043	4.41789
Variance Decomposition of IHSG	**RPUAB**	**IHSG**
Period 12	3.61079	89.29975
Variance Decomposition of PE	**IHSG**	**PE**
Period 12	5.37027	69.89885

Bond Yield Channel

The results of the variance decomposition of the bond yield channel can be seen in Table 10. The benchmark interest rate (RBI) contributed to the variability of interbank money market interest rates (RPUAB) of 34.394%, then RPUAB in influencing the movement of bond yields (OB) of 0.836%, and OB contribution to economic growth (PE) of 4.328%.

Table 10: Variance Decomposition Analysis of Bond Yield Channel

Variance Decomposition of RPUAB	RBI	RPUAB
Period 12	34.394350	62.448500
Variance Decomposition of OB	**RPUAB**	**OB**
Period 12	0.836997	96.899290
Variance Decomposition of PE	**OB**	**PE**
Period 12	4.328819	93.920090

These findings conclude that the performance of the monetary policy transmission mechanism through the bond yield channel for the period 2017 M.1 – 2021 M.12 is not effective and is only able to influence the RPUAB where the RBI contributes dominantly to the RPUAB, while the value of the contribution influences interbank money market interest rates (RPUAB) on the variability of bond yields (OB) is low, which means that other variables affect the variability of bond yields, where according to research results (Nelmida, 2018) bond yields are not only influenced by interest rates but also affected by maturity the maturity and rating of the bonds.

Exchange Rate Channel

The variance decomposition of the exchange rate channel is presented in Table 11, where the reference interest rate (RBI) contributes to the interbank money market interest rate (RPUAB) variability of 33.997%. The RPUAB to the exchange rate (KURS) is 0.054%, and the KURS contributes to the movement of economic growth of 0.877%. These findings indicate that the exchange rate channel with the monetary instrument of the RBI reference rate needs to work better in transmitting monetary policy to encourage economic growth. The reason is that the RPUAB only has a small contribution to the KURS, so the RBI can only influence the RPUAB. This finding differs from the research results (Togatorop & Pratomo, 2014), which state that the exchange rate channel is effective in Indonesia in achieving the ultimate goal of economic growth.

Table 11: Variance Decomposition Analysis of Exchange Rate Channel

Variance Decomposition of RPUAB	RBI	RPUAB
Period 12	33.99750	61.81167
Variance Decomposition of KURS	**RPUAB**	**KURS**
Period 12	0.054573	98.57145
Variance Decomposition of PE	**KURS**	**PE**
Period 12	0.877476	97.64154

Conclusion

Based on empirical findings, the stock asset price channel is relatively effective compared to other channels, where the stock asset price channel only requires a short time, namely a time lag of 1 or a period of 1 month, and is permanent in transmitting monetary policy to achieve the targets of the policy. Monetary economic growth. However, from the results of the variance decomposition channel, the share asset price can only affect the RPUAB.

Monetary policy transmission through the bond yield channel has not been effective in encouraging economic growth in Indonesia. It is because the response shown by each variable on the bond yield channel is only temporary. The results of IRF show a positive response of economic growth to shocks from bond yields, where if interest increases, it will reduce bond issuance. As a result, the increase in government spending will decrease. The results of the variance decomposition analysis also indicated that the bond yield channel was not running effectively. It is due to the small contribution of the effect of interbank money market interest rates (RPUAB) on the variability of bond yields (OB). The monetary policy transmission through the bond yield channel can only affect interbank money market interest rates.

Monetary policy transmission through the exchange rate channel could have been more effective in transmitting monetary policy toward economic growth. In IRF analysis, the exchange rate does not respond to interbank money market interest rate shocks. In the response of economic growth to exchange rate shocks, it only has an effect in the short term. The variance decomposition analysis shows that the exchange rate channel could run more effectively. It is because interbank money market interest rates only have a small contribution to exchange rate variability. Monetary policy transmission through the exchange rate channel can only influence interbank money market interest rates, thereby failing to boost economic growth.

References

Astuti, R. D., & Hastuti, S. R. B. (2020). Transmisi Kebijakan Moneter di Indonesia [Monetary Policy Transmission in Indonesia]. *Jurnal Ekonomi-Qu*, *10*(1), 1–22. https://doi.org/10.35448/jequ.v10i1.8576

Bank Indonesia. (2020). *Statistik Ekonomi dan Keuangan Indonesia [Indonesian Economic and Financial Statistics]*. Bank Indonesia Institute. https://www.bi.go.id/id/statistik/ekonomi-keuangan/seki/default.aspx

Can, U., Bocuoglu, M. E., & Can, Z. G. (2020). How does the monetary transmission mechanism work? Evidence from Turkey. *Borsa Istanbul Review*, *20*(4), 375–382. https://doi.org/https://doi.org/10.1016/j.bir.2020.05.004

Das, M. S. (2015). *Monetary Policy in India: Transmission to Bank Interest Rates* (No. 2015; 129). https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Monetary-Policy-in-India-Transmission-to-Bank-Interest-Rates-43018

Dell'Ariccia, G., Laeven, L., & Marquez, R. (2014). Real interest rates, leverage, and bank risk-taking. *Journal of Economic Theory*, *149*, 65–99. https://doi.org/https://doi.org/10.1016/j.jet.2013.06.002

Fanta, A. B., & Makina, D. (2017). Equity, Bonds, Institutional Debt and Economic Growth: Evidence from South Africa. *South African Journal of Economics*, *85*(1), 86–97. https://doi.org/https://doi.org/10.1111/saje.12122

Gujarati, D. N. (2003). *Basic Econometrics* (4th ed.). McGraw-Hill Companies.

Ioannidou, V., Ongena, S., & Peydró, J.-L. (2015). Monetary Policy, Risk-Taking, and Pricing: Evidence from a Quasi-Natural Experiment. *Review of Finance*, *19*(1), 95–144. https://doi.org/10.1093/rof/rfu035

Kapingura, F., & Makhetha-Kosi, P. (2014). The Causal Relationship between the Bond Market Development and Economic Growth in Africa: Case Study of South Africa. *Mediterranean Journal of Social Sciences*, *5*(3), 126. https://www.mcser.org/journal/index.php/mjss/article/view/2125

Kemu, S. Z., & Ika, S. (2016). Transmisi BI Rate sebagai Instrumen untuk Mencapai Sasaran Kebijakan Moneter [BI Rate Transmission as an Instrument to Achieve Monetary Policy Targets]. *Kajian Ekonomi Keuangan*, *20*(3), 261–284. https://doi.org/10.31685/kek.v20i3.208

Mishkin, F. S. (2016). *The Economics Of Money, Banking, And Financial Markets* (11th ed.). New York: Pearson Education : Harlow.

Mishra, P., Montiel, P., & Sengupta, R. (2016). *Monetary transmission in developing countries: Evidence from India* (No. 2016; 167). https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Monetary-Transmission-in-Developing-Countries-Evidence-from-India-44176

Nelmida. (2018). Faktor-Faktor Yang Menentukan Yield To Maturity Obligasi Korporasi [Factors That Determine the Yield to Maturity of Corporate Bonds]. *Seminar Nasional Sistem Informasi (SENASIF)*, *2*(1), 1345–1357. https://jurnalfti.unmer.ac.id/index.php/senasif/article/view/133/109

Nurfadilah, K., C, F. R., & Kasse, I. (2018). Peramalan Tingkat Suku Bunga Pasar Uang Antar Bank (PUAB) dengan Vector Autoregressive Exogenous (VARX) [Forecasting the Interbank

Money Market (PUAB) Interest Rate with Vector Autoregressive Exogenous (VARX)]. *Jurnal Matematika Dan Statistika Serta Aplikasinya*, *6*(1), 51. https://doi.org/10.24252/msa.v6i1.5194

Pradhan, R. P., Arvin, M. B., Bennett, S. E., Nair, M., & Hall, J. H. (2016). Bond Market Development, Economic Growth and Other Macroeconomic Determinants: Panel VAR Evidence. *Asia-Pacific Financial Markets*, *23*(2), 175–201. https://doi.org/10.1007/s10690-016-9214-x

Rahardjo, S. (2003). *Panduan Investasi Obligasi [Bond Investment Guide]*. Jakarta: Gramedia Pustaka Utama.

Rossi, J. L., Delmondes de Carvalho Rossi, M., & Carvalho Cunha, D. (2019). Transmission of monetary policy through the wealth channel in Brazil: Does the type of asset matter? *Research in International Business and Finance*, *50*, 279–293. https://doi.org/https://doi.org/10.1016/j.ribaf.2019.06.009

Sims, C. A. (1980). Macroeconomics and Reality. *Econometrica*, *48*(1), 1–48. https://doi.org/10.2307/1912017

Sutoyo, S. (2022). Pengaruh Surat Berharga Negara (SBN) Terhadap Pertumbuhan Ekonomi Indonesia [Effect of State Securities (SBN) on Indonesia's Economic Growth]. *Lentera : Jurnal Ilmiah Sains, Teknologi, Ekonomi, Sosial, Dan Budaya*, *6*(2), 86–89. http://journal.umuslim.ac.id/index.php/ltr2/article/view/1193

T.Y., R. L. (2016). Analisis Pengaruh Suku Bunga, Pendapatan Nasional Dan Inflasi Terhadap Nilai Tukar Nominal : Pendekatan Dengan Cointegration Dan Error Correction Model (ECM) [Analysis of the Effect of Interest Rates, National Income and Inflation on Nominal Exchange Rates: An Approach to the Cointegration and Error Correction Model (ECM)]. *Jurnal Riset Akuntansi Dan Keuangan*, *4*(1), 911–926. https://doi.org/10.17509/jrak.v4i1.7715

Togatorop, R., & Pratomo, W. A. (2014). Analisis Perbandingan Peranan Jalur Suku Bunga dan Jalur Nilai Tukar pada Mekanisme Transmisi Kebijakan Moneter di ASEAN : Studi Komparatif (Indonesia, Malaysia, Singapura) [Comparative Analysis of the Role of the Interest Rate Channel and the Exchange Rate Channel in Monetary Policy Transmission Mechanisms in ASEAN: Comparative Study (Indonesia, Malaysia, Singapore)]. *Jurnal Ekonomi Dan Keuangan*, *2*(4), 236–248. https://media.neliti.com/media/publications/14791-ID-analisis-perbandingan-peranan-jalur-suku-bunga-dan-jalur-nilai-tukar-pada-mekani.pdf

Tong, E. (2017). US monetary policy and global financial stability. *Research in International Business and Finance*, *39*, 466–485. https://doi.org/https://doi.org/10.1016/j.ribaf.2016.09.001

Valencia, F. (2014). Monetary policy, bank leverage, and financial stability. *Journal of Economic Dynamics and Control*, *47*, 20–38. https://doi.org/https://doi.org/10.1016/j.jedc.2014.07.010

Warjiyo, P. (2004). *Mekanisme Transmisi Kebijakan Moneter di Indonesia [Monetary Policy Transmission Mechanism in Indonesia]*. https://www.bi.go.id/id/bi-institute/policy-mix/core/Pages/Mekanisme-Transmisi-Kebijakan-Moneter-di-Indonesia.aspx

Widarjono, A. (2018). *Econometrics* (5th ed.). Yogyakarta: UPP STIM YKPN.

Wijaya, E. (2020). Analisis Faktor-Faktor yang Mempengaruhi Nilai Tukar Rupiah Periode

1999Q1-2019Q2 [Analysis of Factors Affecting Rupiah Exchange Rate 1999Q1-2019Q2 Period]. *Jurnal Samudra Ekonomi Dan Bisnis*, *11*(2), 197–209. https://doi.org/10.33059/jseb.v11i2.1919

Yuliawati, D., & Suarjaya, A. A. G. (2017). Pengaruh Umur Obligasi, Tingkat Suku Bunga, Dan Inflasi Pada Imbal Hasil Obligasi Pemerintah Di BEI [Effect of Bond Age, Interest Rates, and Inflation on Government Bond Yields on the IDX]. *E-Jurnal Manajemen Universitas Udayana*, *6*(11), 6187–6215. https://udayananetworking.unud.ac.id/lecturer/publication/2761-anak-agung-gede-suarjaya/pengaruh-umur-obligasi-tingkat-suku-bunga-dan-inflasi-pada-imbal-hasil-obligasi-pemerintah-di-bei-3165