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DYNAMIC MODEL OF THE IMPACT OF MACRO INDICATORS AND ISLAMIC MONETARY POLICY INSTRUMENTS ON THE DUAL BANKING SYSTEM

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Abstract

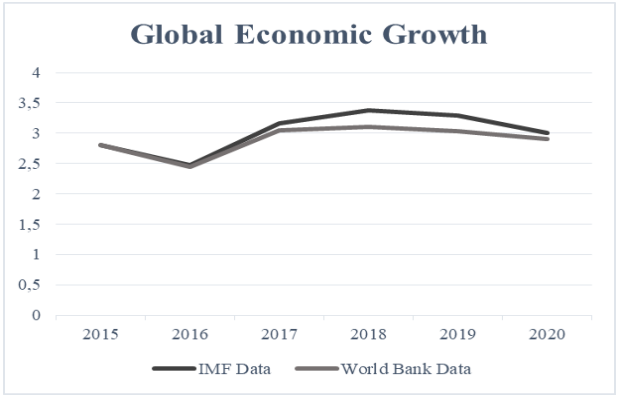
Indonesia is the largest Muslim country with a unique monetary system that in its development tries to juxtapose two monetary systems that have different philosophies and still need to be deepened on the extent of their impact and effectiveness on the economy. The study explores the impact of macro indicators and monetary policy instruments on economic output in Indonesia. Using the time series analysis method with the Vector Error Correction Model (VECM) approach, the model shows the results that the Macro Capital Market or Stock Market indicators have a positive impact on the economy both in the short and long term. At the same time, inflation responds positively to short-term behavior but becomes economic constraints in long-term action. Meanwhile, in the Monetary policy instruments' scope, the M1 variable consistently has positive implications both in the short and long term. In contrast, the M2 and SBIS variables give negative responses in the short time but become a driving force for the economy in the long term. Meanwhile, there is no positive correlation between Sharia, Monetary Operations with Economic Output. The research suggests focusing on innovating sharia monetary policy instruments by continuing to carry out monetary policy reforms in order to stimulate better economic conditions.

Keywords: Economic Output, Macro Indicators, Dual Banking Monetary Policy, SBIS, Sharia Monetary Operations

INTRODUCTION

The study of Macroeconomics is one of the main studies in the scope of Economics (Blaug, 1997). Economic production output is also a central indicator in macroeconomic studies because macroeconomic studies are always related to three main indicators, namely production output, unemployment, and inflation (Blanchard, 2017). must always be done. In the Masterplan for the Indonesian Islamic Economy 2019-2024, it is stated that the main focus of the implementation of the Islamic economy is real economic growth, especially those that contribute greatly to economic growth in aggregate. In a global scope (BAPPENAS, 2019).

Figure 1
World Economic Growth



However, in 2020, in this pandemic condition, United Nation stated that there is a potential for economic growth to shrink by -3.2% due to the effects of the global Covid-19 pandemic, so a study is needed that is able to explain alternative steps that can be taken and used in maintaining growth stability in the global economy. various conditions. Meanwhile, Indonesia as a country with the largest Muslim population in the world domestically based on data from the Central Statistics Agency has also experienced a decline, since the first quarter of 2020 with a figure of 2.97% and dropped drastically in the second quarter to -5.32% although in the second quarter there were recovery but still at -3.49%. Thus, attention to the assessment of factors capable of maintaining growth stability becomes urgent in these conditions.

In the financial system, based on Law no. 23 of 1999 concerning Bank Indonesia, it is known that Indonesia uses a dual banking system in its monetary practices and policies,

thus placing Islamic Economics and Conventional Economics as two financial systems side by side and over time, although philosophically these two systems have different philosophies, they still support development goals of the economy in Indonesia (Ascarya, 2014).

From the conventional banking perspective, the development point for deposit and credit interest rates is the SBI (Bank Indonesia Certificate) interest rate. The SBI interest rate will be transmitted to the interbank money market so that it will affect the interbank deposit rate and bank credit, then credit extended to the public will affect the economy in the real sector. Thus, the transmission from the financial sector affects the ultimate goal of monetary policy, namely inflation (Ascarya, 2012). Meanwhile, in sharia monetary policy, the BI rate is used as a reference in yields in the SBIS (Bank Indonesia Sharia Certificate). SBIS yields are transmitted to PUAS so that SBIS will affect the ROR (rate of return) on PUAS and affect TPF (Third Party Funds) as well as PLS (profit loss sharing) financing in Islamic banking. As with conventional banking, transmission from Islamic banking and the real sector can affect the ultimate target of monetary policy, namely inflation (Ascarya, 2012). Furthermore, SBIS is an important indicator of Islamic monetary economic policy, especially in Indonesia, considering that in a country with a dual banking system such as Indonesia, there are significant differences between Islamic and conventional monetary instruments. One of fundamental elements of Islamic monetary is the lawfulness of transactions and the avoidance of instruments from usury (interest) so its necessary to find an instrument that can accommodate this, SBIS is a monetary instrument developed on the basis of contracts or agreements taken from the treasures of Islamic economics such as wadi'ah and jualah (Ascarya, 2012), thus the existence of SBIS is an important thing in the course of the development of sharia monetary economic policy, especially in Indonesia.

In Macroeconomics, one of the main policies that play a role in controlling the direction of the economy in accordance with the objectives of the Macroeconomics is monetary policy. The policy held by the central bank of a country is the key in regulating economic stability which will also have an impact on the real condition of a country's economy (Muhammad et al., 2017). In several theories, such as that revealed by Chouwdury (2005) that the financial aspect (monetary) with real economic conditions in

the community cannot be separated because they have a very close relationship and are interrelated with each other.

Previous researchers have done a lot of analysis and concept development on how data macroeconomic factors become a forecasting medium in regulating the growth and stability of a country's economy, such as examining the relationship and relationship between the capital market or stock market and economic growth (Cave et al., 2020; Coşkun et al., 2017; Ho, 2018; Muharam et al., 2019; Nathaniel et al., 2020; Nguyen & Bui, 2019; Oprea & Stoica, 2018; Osaseri & Osamwonyi, 2019 ; Pradhan, 2018), inflation and economic growth (Abuoliem et al, 2019; Agbonlahor, 2014; Balk et al, 2020; Bayuni & Srisusilawati, 2018; Denbel et al, 2016; Fountas et al, 2002; Oliinyk et al, 2020; A. Uddin et al, 2019; Ullah et al, 2020), as well as currency exchange rates and economic growth (Babubudjnauth, 2020; Chan et al, 2019; Feriyantoa, 2020; Mlambo, 2020; Oliinyk et al., 2020; Park, Ryu, & Lee, 2019).

In addition, the researchers also conducted various deepening of the relationship between monetary policy and its instruments in influencing growth, both in conventional monetary policy on economic growth (Bhattacharya et al., 2009; Igharo et al., 2020; Khabo & Harmse, 2005; Mishchenko et al., 2018; Precious & Palesa, 2014; Twinoburyo & Odhiambo, 2018; Younsi & Nafla, 2019), Islamic monetary policy on economic growth (Bayuni & Srisusilawati, 2018; Octaviani & Al Arif, 2018; Wahid et al., 2020), as well as monetary policy in the dual banking system and its transmission mechanism for growth (Muhammad et al., 2017; Wisandani et al., 2017; Ascarya, 2012; Ascarya, 2014; Ayuniyyah et al., 2013; Muhammad et al., 2017; Rusydiana, 2009).

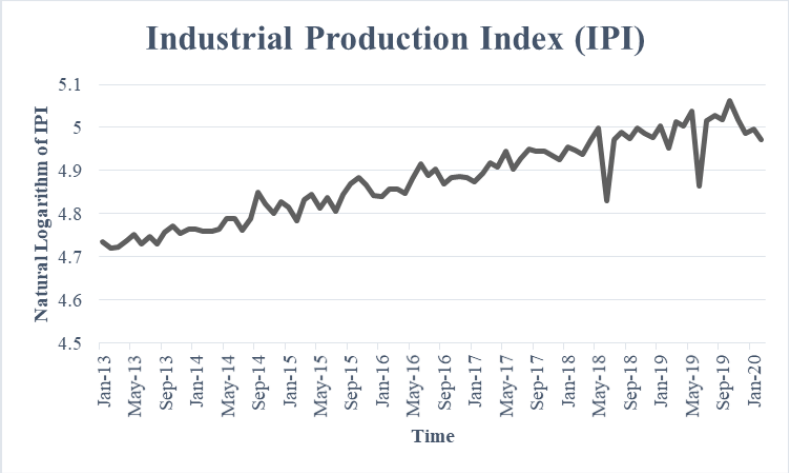
With a time series analysis model approach using the Error Correction Model, the study tries to explore the impact of macroeconomic indicators and monetary instruments in the dual monetary system in Indonesia on economic output, both from the point of view of short-term and long-term behavior into one model. More deeply, and through this model the researcher tries to explain the important position of Islamic monetary instruments in an economic system that adheres to a dual banking system like Indonesia.

REVIEW OF LITERATURE

Industrial Production Index (IPI)

One of the most important indicators to monitor the rise and fall of industrial sector output, including in Indonesia, is the Industrial Production Index (IPI). This index is also an important proxy used to describe a country's economic growth if you want to see data with a monthly frequency due to the absence of GDP data in that frequency (Ayuniyyah et al., 2013). Fountas et al. (2002) and Ascarya (2012) also use this index as a proxy that shows the real condition of the sector and real production output in a country's economy. Based on the need for a proxy that shows and describes the economic condition of a country with monthly data frequency, this study also uses IPI as a proxy for the real economy or production output in a country as a variable that will be predicted using macro indicator variables and monetary policy in dual banking system.

Figure 2
Movement of Indonesia's Economic Output



Capital Market and Economic Condition

Several previous studies have tried to find the relationship between the capital market or the stock market with economic growth. In general, it can be concluded that the capital market encourages and has a positive impact on economic growth (Osaseri & Osamwonyi, 2019; Cave et al., 2020;Oprea & Stoica, 2018;). Other researchers, for example, try to explore the causal relationship between the two variables where Pradhan (2018) states that the two variables are related both in one direction and reciprocally, while Muharam et al. (2019) states that the causal relationship will differ between the countries

studied as the results of his research on Indonesia and Malaysia. But according to Nguyen & Bui (2019), the economic crisis condition factor may change the impact to turn negative even though in general conditions the effect will have a positive impact. Coşkun et al., (2017) mentions that in aggregate the capital market has a positive effect, but there are also instruments that have a negative impact on growth, such as government bonds in the financial market.

The stock price index (stock composite index) in this study is a description of macroeconomic indicators from the financial market sector, namely the capital market or stock market as research conducted by Ho (2018) when examining the relationship between the stock market and economic growth. The research concluded that both in the short and long term, the composite index on the stock market in Hong Kong has a positive effect on economic growth.

Inflation and Economic Conditions

In economic theory, one of the things to be studied is the interpretation of the relationship between inflation and economic output. Inflation is indeed the most common indicator in the study of various economic aspects, ranging from exchange rate stability (Oliinyk et al., 2020) until special economic studies such as the green economy (Ullah et al., 2020). In the context of economic growth, one of the best known assumptions is that put forward by Milton Friedman (1977) that inflation has a negative impact on production output because inflation causes uncertainty in the real economy. In previous empirical research, it was stated that inflation has a negative relationship to growth (Denbel et al., 2016) and rising inflation will reduce the potential for economic growth and make the economy inefficient (Fountas et al., 2002).

Exchange Rates and Economic Conditions

In predicting the economic condition of a country, the exchange rate is also a commonly used macro indicator variable. Study by Rodrik (2008), Park et al., (2019), and Chan et al. (2019) states that the undervaluation of the value of a country's currency will encourage the country's economic growth. This is because of this undervaluation as described by Park et al. (2019) will encourage export activities and increase the value of a country's GDP. Meanwhile, using the FMOLS and PMG panel data approaches, Mlambo (2020) conclude that in general the exchange rate of a country will have a negative excess

on economic growth. These results are slightly different from other researchers such as Feriyantoa (2020) which states that the negative effect only occurs in short-term behavior, while in the long term it does not significantly affect economic conditions, in more detail Babubudjnauth (2020) detailing that in the short-term economic growth model, the exchange rate will contract growth and in the long run will expand growth, while specifically for the manufacturing sector, the opposite is true. However, it is simultaneously concluded that the exchange rate has a positive effect on the economy of a country in the long run.

Monetary Policy Transmission in the Dual Banking System

In several theories, it is stated that both conventional economics and Islamic economics have the same monetary objectives, the difference is in the application of transactions and usury policies in them (Muhammad et al, 2017). Monetary policy itself is a control over money supply and demand where in conventional economics it is done by manipulating and regulating interest rates while in islamic economics, interest which is another form of riba is strictly prohibited both in direct and indirect transactions (Khan, 2019; Priyono, 2022). Thus, the policy focuses on regulating other needed instruments and being able to maintain stability in local currency exchange rates, maintain stable growth, increase income, increase savings, maintain price stability (inflation), and reduce unemployment (MA Uddin & Halim, 2015). Meanwhile, Chapra (1985) emphasizes that the goal of Islamic monetary is to welfare (well-being) at the most optimal growth, distribution justice (distributive justice) and stabilization of the value of money. The ability of a monetary policy to regulate money supply and demand and its ability to have an impact on the ultimate goals of monetary policy through various channels is called monetary policy transmission (Mishkin, 2004; Bayuni & Srisusilawati, 2018).

Money Supply

Monetary Economics briefly studies about the nature, function and influence of money on economic activity. In conventional monetary theory, Tobin (1965) is known as the first economy to include the money variable and relate it to economic growth through capital accumulation. In short, money has many classifications. Based on its scope and liquidity, Bank Indonesia classifies money in a narrow and broad sense, currency in the hands of the public and demand deposits denominated in rupiah are money in a narrow

sense (M1) while quasi money and securities issued through the monetary system and owned by the private sector with a term of up to one year is money in the meaning of area (M2).

In a nutshell, as stated in the BPS data, M1 is the money supply in the form of currency and demand deposits, while M2 is the money supply in the form of quasi money and securities. Lestari & Puji (2014) stated that M1 is the most liquid money supply, while M2 is a type of money that is not as liquid as M1. Based on the theory of the monetary transmission mechanism, Money supply is the monetary indicator in influencing the real condition of the economy. Ascarya (2014) in his paper explains that in conventional the main channel of transmission of the impact of monetary policy from money supply is the interest rate and in this study offers the profit rate channel as an alternative channel in the dual banking system system such as in Indonesia. Puji (2014) stated that M1 is the most liquid money supply, while M2 is the type of money that is not as liquid as M1. Based on the theory of the monetary transmission mechanism, Money supply is the monetary indicator in influencing the real condition of the economy. Chaitip et al. (2015) in his research also confirms that Money Supply has a close relationship with the economic growth of a country.

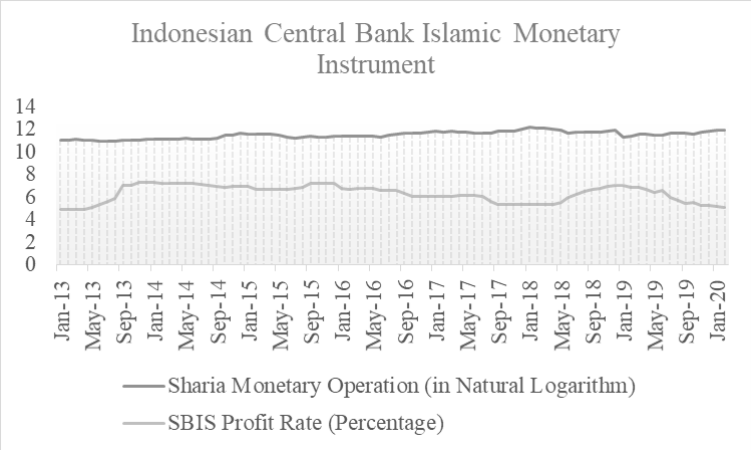
Sharia Monetary Operations (OMs)

In Bank Indonesia's explanation, sharia monetary operations include Sharia Open Market Operations and Sharia Standing Facilities. This sharia monetary operation is an aggregation of monetary policy based on sharia principles carried out by Bank Indonesia as the authority that runs the dual banking monetary system in Indonesia. As for Open Market Operations, in general, securities transactions are activities carried out by the Central Bank in the Financial Market. In Sharia Open Market Operations (OPTs), the instruments transacted are sharia securities instruments. several activities that have now been included in the OPTs include Bank Indonesia Syariah Certificates (SBIS) and BI Sukuk (SUKBI). This study uses Islamic monetary operations as a measuring variable for Islamic monetary policy in general.

Bank Indonesia Sharia Certificate (SBIS)

In the case of Indonesia, one of the sharia monetary instruments that are also included in the existing OPTs is the Bank Indonesia Sharia Certificate (SBIS) which has been officially established since it was stipulated through Bank Indonesia Regulation Number 10/11/PBI/2008, namely replacing the *Wadiah* Bank Indonesia Certificate into a Bank Indonesia Certificate. Sharia based on *ju'alah*. According to the Fatwa of the National Sharia Council No: 62/DSN-MUI/XII/2007, *ju'alah* is a promise or commitment (*iltizam*) to provide certain rewards (*'iwadh/ju'l*) for the results achieved (*natijah*) determined of a job. Previous empirical research on this instrument such as that conducted byAscarya (2012) that SBIS has a role in preventing inflation and encouraging Indonesia's economic growth, while empirical research by Muhammad et al. (2017) still have not found a significant relationship between SBIS and GDP. The study tries to see how the SBIS instrument is specifically and specifically able to play a role in the economy of a country.

Figure 3
Movement of Sharia Monetary Operations in Indonesia



RESEARCH METHOD

The research was conducted using a quantitative method with time series analysis with a Vector Error Correction Model (VECM) approach with data sourced from secondary data obtained from the website of Bank Indonesia and the Central Bureau of Statistics with a monthly data frequency from January 2013 to February 2020 so that there are 86 observations. The data used is using ratio data scale and processed using Eviews 10 software. The proxy and operational variables can be seen in the following table

Table 1
Operational Definition of Research Variables

Variable	Indicator	Operational Proxy	Scale data	Source data
Real Economic Output	Industrial Production Index (IPI)	LogIPI	Ratio	BPS
Indicator Macro	JCI	LogIHSG	Ratio	BPS
	Inflation	INF	Ratio	BI
	Middle Rate of Rupiah to USD	LogCurrency	Ratio	BI
Dual Banking System Monetary Policy	Amount of money supply (Cartal + Demand)	LogM1	Ratio	BPS
	Quasi Money + Securities	LogM2	Ratio	BPS
	SBIS	SBIS	Ratio	BI
	Sharia Monetary Operations	LogOMs	Ratio	BI

In order to see the impact of macro indicators and monetary policy on the dual banking system on the real output of the economy, the study builds an econometric model of time series analysis with the VECM model based on data fit. VECM is appropriate when the researcher aims to examine the impact and behavior of existing variables both in the short and long term in an econometric model that is preceded by knowing the stationarity of the research data. Thus, this study offers a VECM econometric model that includes short-term and long-term behavior based on the following equation:

$$\Delta Y_t = \beta_0 + \sum \beta_n \Delta X_{t-n} + \pi \mu'_{t-1} + \omega_t$$

ΔY_t = dependent variable I(1)
β_0 = ECM model constant
$\sum \beta_n$ = Coefficient of the –n variable
ΔX_{t-n} = All Independent Variables in period (t)
π = Error correction term
μ'_t = Long Term Behavior
ω_t = error

The long-term behavior obtained from the equations that arise from the cointegration results that occur are as follows:

$$\mu'_t = Y_t - \beta'_0 - \sum \beta'_n X_t$$

Y_t = dependent variable
β'_0 = Constants in the cointegration model (long-term behavior)
$\sum \beta'_n$ = Coefficient of the –nth independent variable in the cointegration model
X_t = Independent variable in period t

RESULTS AND DISCUSSION

Data Stationarity

In analyzing time series data, the first thing to do is to look at the stationarity of the data through the unit root test of each variable in the study. In this study, the authors conducted a Unit Root Test using the Augmented Dickey Fuller (ADF) Test method and the Phillip-Peron Unit Root Test method. And as a complement if there is a difference in results between ADF and Phillip-Peron, the researcher adds the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) unit root test as a complement. The results of the unit root test of the research variables can be seen in table 2 below:

Table 2
Output Unit Root Test (Unit-Root Test)

VARIABLES	LEVEL				1st DIFFERENCE					
	ADF	Prob	Philip-Peron	Prob	ADF	Prob	Philip-Peron	Prob	KPSS	Prob
Log IPI	Non Stationery	0.6198	Non Stationery	0.3222	Stationery	0.0000	Stationery	0.0001		
Log IHSG	Non Stationery	0.4359	Non Stationery	0.3813	Stationery	0.0000	Stationery	0.0000		
INF	Non Stationery	0.5614	Non Stationery	0.4977	Stationery	0.0000	Stationery	0.0000		
Log Kurs	Non Stationery	0.0809	Non Stationery	0.0725	Stationery	0.0000	Stationery	0.0000		
Log M1	Non Stationery	0.8129	Non Stationery	0.6891	Non Stationery	0.1365	Stationery	0.0001	Stationery	0.15729
Log M2	Non Stationery	0.1049	Non Stationery	0.1830	Non Stationery	0.4963	Stationery	0.0001	Stationery	0.30657
Log SBIS	Non Stationery	0.0792	Non Stationery	0.2210	Stationery	0.0030	Stationery	0.0000		
Log OMs	Non Stationery	0.4344	Non Stationery	0.4846	Stationery	0.0000	Stationery	0.0000		

From the table it can be concluded that the variables of this study are not stationary at the Level level and stationary at the first difference level so that they are suitable to be continued to the next stage in the development of the VECM model, namely knowing the optimum lag length and cointegration test.

Optimum Lag Length and Cointegration Test

After the unit root test was carried out, the researcher carried out a process to find the optimum lag length that could be used in making the VECM model. And based on this process, the optimum lag length can be seen in table 3 below:

Table 3
Optimum Lag Length Output (Lag Length Criteria)

Lag	LogL	AIC	SC
0	1260.673	-31.71324	-31.47330
1	1791,586	-43.53384	-41.37434*
2	1855.574	-43.53352	-39.45447
3	1912.101	-43.34432	-37.34572
4	1970,674	-43.20693	-35.28877
5	2052.826	-43.66648	-33,82877
6	2229,625	-46.52215	-34.76489
7	2371,320	-48,48911*	-34.81230

AIC: Akaike information criterion
SC: Schwarz information criterion

From the results of the process, researchers saw the optimum lag length through the two most commonly used criteria, namely the Akaike Criterion (AIC) and the Schwarz criterion (SC) at level I (0). From the table it is known that with the default lag provided by the statistical tool, AIC chooses lag 7 as the optimum lag while SC chooses lag 1 as the optimum lag. With the aim of making the model simpler and easier to interpret the model, it was decided to choose lag 1 as the optimum lag as offered by SC.

The next process is continued by conducting a cointegration test as an important part of the VECM approach, because this VECM approach uses data that is not stationary at the level and stationary at the 1st difference level but has cointegration. After testing, although the data is not stationary at the level level, it turns out to have cointegration at level I(0) as the results of cointegration testing using the Johansen Test using Trace statistics and Maximum Eigen-Value as a benchmark, it is known that there has been one cointegration in I (0) as shown in table 4.

Table 4
Johansen Test. Cointegration Test Output

Trace Test					Maximum Eigen Value Test			
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistics	0.05 Critical Value	Prob.**	Eigenvalue	Max-Eigen Statistics	0.05 Critical Value	Prob.**
None *	0.523066	186.3462	159.5297	0.0008	0.523066	62.19173	52.36261	0.0037
At most 1	0.397149	124.1545	125.6154	0.0612	0.397149	42.51122	46.23142	0.1189
At most 2	0.336690	81.64324	95.75366	0.3119	0.336690	34.48310	40.07757	0.1865

At most 3	0.207811	47.16014	69.81889	0.7548	0.207811	19,56821	33,87687	0.7858
At most 4	0.161389	27.59193	47.85613	0.8309	0.161389	14.78466	27.58434	0.7651
At most 5	0.090466	12.80727	29.79707	0.9002	0.090466	7.965151	21.13162	0.9058
At most 6	0.047463	4.842116	15.49471	0.8254	0.047463	4.084653	14.26460	0.8503
At most 7	0.008977	0.757463	3.841466	0.3841	0.008977	0.757463	3.841466	0.3841

Trace test and Max-eigen value indicate 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

From the results above, it is known that there is a cointegration model that can be used in the modeling to determine the long-term behavior of the VECM model to be formed.

VECM Models

After knowing that the data has met the requirements for the VECM modeling, then the VECM model estimation is carried out according to the optimum lag and the number of cointegrations with the linear intercept (no trend) model in CE and VAR and processed based on the basic VECM econometric equations, then a VECM model is formed at level I (1) which contains the following short-term and long-term behaviors:

$$\Delta LogIPI_t = 0{,}006103 + 0{,}151003LogIPI_{t-1} + 0{,}045509LogIHSG_{t-1} + 0{,}153979INF_{t-1} + 0{,}128329LogKURS_{t-1} + 0{,}037794LogM1_{t-1} - 0{,}725590LogM2_{t-1} - 0{,}210533SBIS_{t-1} + 0{,}078023LogOMs - 1{,}312077 + \mu'_{t-1}\omega_t$$

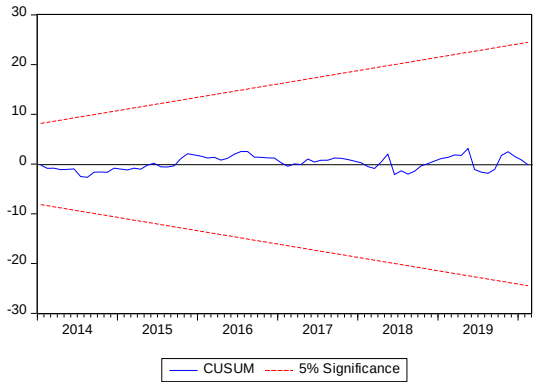
While the details of the long-term model of behavior are as follows:μ'_t

$$LogIPI_t = -1.915968 + 0.078947 - 0.102901 + 0.045257 + 0{,}200821 + 0.295208 - 0.028814LogIHSG_{t-1}INF_{t-1}LogKURS_{t-1} + +0{,}209490LogM1_{t-1}LogM2_{t-1}SBIS_{t-1}LogOMS_{t-1}$$

In the model, it can be seen that the Error correction term cointegration coefficient is negative (-1.312077) with a statistical t value of -7.886080 and is significant, this is evidenced by estimating the equation obtained with a simple least square model, the output probability is 0.0000 < from significance value of 0.05. The researcher added the model stability test with the CUSUM test and obtained the results as shown in Figure 4, and it can

be seen that the volatility of the shock is still within the stability critical line so that it can be concluded that the VECM model is stable.

Figure 4
Stability Test of Recursive Estimates with CUSUM Test



Furthermore, in this study, we tried to find out the combination of the effects of the variables contained in the model, the researchers tried to do a Wald test with a combination of several variables. First, we try to identify the effect of macroeconomic indicators by combining several proxies that represent macro indicators such as the JCI, inflation and exchange rates and obtained.

Table 5
Wald Test of Macroeconomic Indicator Variables

Statistics Test	Value	Df	Probability
F-statistics	0.212826	(3, 74)	0.8872
Chi-square	0.638478	3	0.8876

Null Hypothesis: C(3)=C(4)=C(5)=0
Null Hypothesis Summary:

Normalized Restrictions (= 0)	Value	Std. Err.
C(3) or LogIHSG_{t-1}	0.045509	0.107514
C(4) or INF_{t-1}	0.153979	0.502596
C(5) or LogKURS_{t-1}	0.128329	0.177184

Meanwhile, when trying to do a Wald test by combining proxies related to monetary policy instruments in the dual banking system, the following results were obtained:

Table 6
Wald Test of Monetary Policy Instrument Variables

Statistics Test	Value	df	Probability
F-statistics	2.682396	(4, 74)	0.0379
Chi-square	10.72958	4	0.0298

Null Hypothesis: C(6)=C(7)=C(8)=C(9)=0
Null Hypothesis Summary:

Normalized Restrictions (= 0)	Value	Std. Err.
C(6) or Log $M1_{t-1}$	0.037794	0.180871
C(7) or Log$M2_{t-1}$	-0.725590	0.448520
C(8) or $SBIS_{t-1}$	-0.210533	1.640256
C(9) or LogOMs_{t-1}	0.078023	0.028570

Restrictions are linear in coefficients.

From the two Wald test results above, we conclude that the combined macro indicator variables together have an F-Statistic probability of 0.8872 and a Chi Square Probability value of 0.8876 > = 0.05 so that it has no significant effect on output growth. while the combination of monetary policy variables in the dual banking system has a significant effect on economic output because it has an F-Statistic Probability value of 0.0379 and a Chi Square Probability of 0.0298 < = 0.05.

Discussion

Based on the existing VECM model, it is known that the IPI in the previous period had a positive impact on the IPI in the current period, besides the independent variables of Composite Stock Price Index, Inflation and Exchange Rates in the previous period as part of macro indicators in the short term also had a positive impact on a country's production output. In terms of monetary policy instruments, in the short term the variable M1 and Islamic Monetary Operations had a positive impact on output, while M2 and SBIS were found to have a negative impact on the output of economic production. In the long term, the

macro indicator variable inflation has a negative impact, while the JCI and the exchange rate consistently have a positive impact on growth output.

In this study, on the aspect of macro indicators in the long term, the resulting model tends to be consistent with previous studies. Stock market prices are still considered capable of predicting and encouraging economic growth (Osaseri & Osamwonyi, 2019; Cave et al., 2020; Ho, 2018). In the case of exchange rates, the study is in line with the results of the studyChan et al., (2019) that in the long term the strengthening of the domestic currency exchange rate or undervaluation will encourage the economy, because this will trigger export activities and trigger production activities so as to increase production output. Meanwhile, inflation in the short term looks as if it shows an improvement in the economy, but in the long term it will be corrected and become an indicator of economic inhibition if it continues to increase, so it is necessary to continue to carry out a targeted inflation strategy so as not to have negative implications for the economy.

While on monetary policy instruments, what needs to be highlighted in the short term is the impact of M2 and SBIS, because the short-term response of the economy is negative, in this case M2 with its not very liquid nature is indeed difficult to get a positive response in the short term, while the Profit Rate, A high SBIS will have a negative impact on real economic activity, so the best policy when economic conditions are down, the right policy is to reduce the SBIS profit rate in order to stimulate people to keep active in the real economy. Meanwhile, in the long term, it is recommended to support policies that support the effectiveness and control of money supply conditions both M1 and M2 as well as policy advice offered by Denbel et al., (2016) and Agbonlahor (2014). The focus of money supply policy in difficult economic conditions must focus on M1 which is more real and liquid in encouraging economic activity, given that based on the results in the model, M1 plays a major role in encouraging the economy in both the short and long term. It is also in line with the Islamic economic philosophy which focuses on the real economy. Meanwhile, the percentage of SBIS profit sharing in the long term will become an instrument that is able to strengthen the economy while still having to evaluate all sharia monetary operations in order to be able to print sharia instruments with new innovations in order to be able to encourage a stronger economy.

An interesting finding that strengthens the argument is that when testing the effect of joint variables partially using the Wald Test, it indicates that monetary policy has a significant effect on economic conditions, while macro indicators have no significant effect. In our analysis, based on the theory of monetary transmission, it is the policies that are under the control of the central bank that have an influence on economic conditions, because every policy is an implementation of a strategy to achieve economic goals, while macro indicators are part of the multiplier implications. of existing policies. Therefore, in the Indonesian context,

Robustness Test

To ensure the robustness of the model in this study, we tried to test the robustness of the model by using model variation techniques or using multimodels (Young & Holsteen, 2017) as explained by Neumayer & Plümper (2017) that this method is the best method and the most widely used in testing model resilience. The researcher tries to form a separate model between the macro indicator model and Islamic monetary instruments so that two long-term models are obtained with the Error Correction Model approach using the same stages as the previous VECM model process. Based on the results of running data obtained two models with the following results:

Model I Macro Indicators model

$$LogIPI_t = -0.317045 + 0.0281733 - 1.776182 + 0.235128 LogIHSG_{t-1} INF_{t-1} LogKURS_{t-1}$$

Model II Monetary Policy Model

$$LogIPI_t = -1{,}660023 + 0.292470 + 0.168769 + 0.566175 - 0.014471 LogM1_{t-1} LogM2_{t-1} SBIS_{t-1} LogOMs_{t-1}$$

When viewed from the two models, there is no difference in impact between the main research models, either by combining all proxies, or by separating these proxies into two different models in the long-term model using the ECM approach. In a separate model, it can be seen that each variable has strengthened in its coefficients, so that both the main Research Model, Model I Macro Indicator Model and Model II Monetary Policy Model are mutually reinforcing models.

CONCLUSION

In the short and long term, the Capital Market Variables (CSPI) and the exchange rate have a positive impact on economic output, while inflation has a positive impact on the short term but has a negative impact in the long term. in terms of macro indicators have not had a significant impact. Meanwhile, from the aspect of the dual banking monetary policy instrument, the M1 variable has a positive impact both in the short term and long term, while the M2 and SBIS variables have a negative impact in the short term but have a positive impact in the long term. has not provided a positive impact on the economy, both in the short and long term. From the research, it is suggested to policy makers to increase their attention to innovation in developing sharia monetary instruments and to reform monetary policy so that the impact of the policies carried out is more able to have a real impact in maintaining stability and encouraging the country's economic growth.

The research certainly has many limitations, including the lack of comprehensiveness of indicators from each group of variables so that the resulting model tends to be broader and more general, it is hoped that further researchers can focus more on researching and developing empirical studies of each existing indicator by adding other indicators. which is more relevant so as to be able to provide a more in-depth picture of each subject matter of the existing variables, both macro indicators and monetary policy instruments, especially indicators for Islamic monetary instruments.

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