THE INFLUENCE OF MACROECONOMIC VARIABLES ON TRADING OF SUKUK NEGARA DURING PANDEMIC: CASE OF INDONESIA

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Abstract
The year 2020 and 2021 became an unprecedented challenge due to the covid pandemic affecting many aspects around the world, including the economy. On the other side, over the past decade has the global Sukuk market become an increasingly prominent funding source for companies, financial institutions, and governments. For handling the pandemic in Indonesia, the Ministry of Finance has repeatedly issued Sukuk Negara. The objective of study is to analyze the short-term and long-term impact of macroeconomic variables on the sukuk trade in Indonesia and to see the impact of these macroeconomic variables on the stability of the Sukuk Negara Trade and the contribution of these variables during the pandemic to the Sukuk Negara. It was found that the exchange rate and inflation have a significant positive effect on the trading of sovereign sukuk in the secondary market. The most variable contribution is sovereign sukuk trade itself, followed by the Exchange rate.

Keywords: VAR VECM, Sovereign Sukuk, Sukuk Negara, Pandemic
JEL Classification: C15; E44; E62; H30

I. INTRODUCTION

The year 2020 became an unprecedented challenge due to the covid pandemic which began to spread at the end of 2019 in Wuhan, China. This certainly affects many aspects around the world, including the economy. This upheaval and uncertainty caused the recession in 42 countries around the world including Indonesia (www.cnbcindonesia.com). Indonesia experienced a contraction with economic growth of minus 2.07% YoY in 2020, the worst since the 1998 crisis (BPS, 2021). To save the condition of the Indonesian economy, an economic stimulus from the government is needed from the state budget. However, this resulted in a wider fiscal deficit and a significant increase in funding requirements. It was noted that the realization of the 2020 State Revenue and Expenditure Budget (APBN) deficit reached IDR 956.3 trillion or 6.09 percent of Gross Domestic Product (GDP) equivalent to 82.9 percent of the target set in Presidential Regulation 72 of 2020 which amounted to IDR 1,039. ,2 trillion. The deficit was because state revenues were under considerable pressure with state revenues collected amounting to Rp. 1,633.6 trillion, down 16.7% compared to 2019. Again, the IMF predicts that the government's budget deficit in 2021 will reach 6.1% of gross domestic product (GDP) is the same as in the previous year.

On the other hand, one of the sources of state budget revenue, taxes, has also decreased due to the pandemic. However, it is unfortunate that tax revenues fell to minus 19.7% in 2020. This is because the direction of economic movement is in line with tax performance. This is because the size of the tax payment is highly dependent on the economic capacity (income and purchasing power) of the taxpayer and the state debt. As is known, the economic condition of the community also experienced a decline so that income decreased due to many being laid off and losing their jobs. Amid very difficult conditions, the government must find other sources of revenue such as issuing debt securities.

Over the past decade, the global Sukuk market has become an increasingly prominent funding source for companies, financial institutions, and governments. Also, sukuk has become a special attraction among corporations, banks, and customers as a solution for conventional bonds (Uddin & Hamat,2019). According to Rating agency Fitch (2020) , Sukuk expects to represent a sizable proportion of

the funding mix-up to 25% across the GCC, Malaysia, Indonesia, Turkey, and Pakistan. According to the International Islamic Finance Market Sukuk Report (IIFM) (2020), total Sukuk issuance during 2001-2019 reached USD 680.7 billion, or 54.58% of all global Sukuk issuances during that period. In 2019, sovereign Sukuk issuances represented 59% of domestic emissions and 30% of international issuances.

In Indonesia, Sukuk plays an important role. Based on data from the finance ministry, an increase in the number of issuances and contributions of Sukuk Negara to APBN financing, with an average of about 30 percent of the total funding of State Securities (SBN) each year. The total accumulated issuance of Sukuk Negara until October 2018 has reached more than Rp950 trillion (USD 63 billion) with an outstanding as of October 25, 2018, of Rp. 657 trillion. In the period 2013-2018, the total allocation of Project Sukuk has reached Rp62.4 trillion spread across 34 provinces. Projects financed through the Sukuk Project include the construction of roads and bridges, construction of railway lines, construction of water resources projects (dams, irrigation, groundwater supply, and management), construction and development of lecture halls, development and revitalization of hajj dormitories, construction and rehabilitation Office of Religious Affairs and Hajj Manasik, construction of National Parks (Baluran, Gunung Gede Pangrango, Aketajawe-Lolobata/Halmahera), construction and development of madrasas, as well as construction and development of laboratories. In addition, issuance of Sukuk Negara for individual investors Indonesian Citizens regularly since 2009 as an effective financial inclusion instrument. And there are many other things that the Sukuk instrument has achieved in Indonesia.

Not only Indonesia, some country such as nigeria, ṣukūk as an alternative to other interest-bearing financial instruments can effectively finance budgetary and infrastructural deficits and complement in achieving developmental objectives in Nigeria. Also, ṣukūk has the potential of promoting fiscal sustainability of the Nigerian economy. It is therefore recommended that the federal government should integrate ṣukūk as part of its fiscal strategic policies for financing budgetary and infrastructure deficits (Mustafa, 2019).

For handling the pandemic in Indonesia, the Ministry of Finance has repeatedly issued Sukuk Negara, the Ministry of Finance auctioned 5 series of State Sharia Securities (SBSN) or Sukuk Negara on January 27, 2021. From the auction, the government managed to pocket funds of Rp. 7 trillion. The total bids that went through the auction were worth Rp8.15 trillion. This auction fund is used to meet the financing for handling the pandemic in the APBN. However, several factors influence investors to participate in the sukuk auction, one of which is the condition of the Indonesian economy.

In addition, some literature reveals the positive influence of Sukuk on economic growth. For example, Yıldırım and Yıldırım (2020) indicated that there is a long-term cointegration relationship between the development of the Sukuk market and economic growth. Furthermore, research in Indonesia itself conducted by Mitsaliyandito, Arundina, and Kasri (2017) shows that, in aggregate, the Sukuk market has a positive effect on Indonesia's GDP. While partially, the domestic Sukuk market has a more significant influence on Indonesia's GDP than the corporate market. Therefore, in improving the Indonesian economy, Sukuk can be regarded as an effective financial instrument. Nechi (2017) also concludes that the development of the Sukuk market may have encouraged financial inclusion by removing the adverse effects of religious self-exclusion, which stimulated investment and economic growth.

The main problem or obstacle is seen from the condition of the financial market is to see these conditions, it is necessary to analyze the economy as a whole, both internally and externally. And Also, to reduce the risk in investing, investors can make offers according to the prevailing economic conditions. According to Mishkin (2008), based on portfolio choice theory, the factors that influence the demand for securities or shares include the exchange rate, expected interest rates, expected inflation, risks that may be borne, stock returns and liquidity of securities. Meanwhile, the supply is influenced by expected profitability, expected inflation, and government activity. The wealth and liquidity of securities have a positive effect on the demand for these securities, while the expected interest rate, expected inflation, and risk of securities have a negative effect on the demand for share.

However, from the supply side, these three variables have a positive effect on stock prices. So, when there is inflation which causes stock prices to fall, this will affect the number of offers made. Other economic indicators will certainly have different impacts in influencing investment supply.

Several empirical studies also show several factors that influence Sukuk, by Said and Grassa (2013) which examines several macroeconomic variables. The result is that macroeconomic factors have a positive effect on the development of sukuk. A number of studies have shown that an increase in interest rates has an effect on a decrease in the value of bonds, and interest rates increase bond prices. Inflation will affect the ability of investors to buy bonds, (Haymans, 2010). If the rupiah weakens against the dollar in an effort to increase banking liquidity, Bank Indonesia will increase the BI rate. Furthermore, Manab (2016) states that interest rates and yields have a significant effect on the price of Sovereign sukuk. While inflation, GDP together affect the price of Sovereign sukuk. Smaoui and Khawaja (2016); The result is that large economies of scale, large Muslim population, attractive investment profile, and good control over corruption will strengthen the development of sukuk.

According to explanation above, the authors are interested in conducting research taken from the point of view of demand side. So, in this study, the author will conduct research related to the effect of inflation, the BI rate and the rupiah exchange rate on the sukuk trade during the pandemic in Indonesia.

The purpose of this study is to analyze the short-term and long-term impact of macroeconomic variables on the sukuk trade in Indonesia and to see the impact of these macroeconomic variables on the stability of the sovereign shariah securities trade and the contribution of these variables during the pandemic to the sukuk negara.

2. LITERATURE REVIEW

2.1 Sukuk Negara

Sovereign Shariah Securities (SBSN) or Sukuk Negara are Government Securities issued based on sharia principles, as evidence of the share of participation in SBSN assets both in rupiah and foreign currencies (Article 1 Paragraph 1 Law

No.19 of 2008). SBSN assets are SBSN financing objects and or state-owned goods that have economic value, in the form of land funds or buildings or other than land or buildings, which in the framework of issuing 5 SBSNs are used as the basis for issuing SBSN (Article 1 Paragraph 3 of Law No. 19 of 2008) . Sovereign Shariah Securities (SBSN) are different from Government Bonds (SUN) because they are issued in a Sharia manner as explained in the Fatwa of DSN MUI Number 76/DSN-MUI/VI/2010 concerning SBSN Ijarah Assets to be Leased.

The characteristics of sukuk with conventional bonds have basic differences, among others, the structure of sukuk which is based on tangible assets using underlying assets as the basis for issuance. In practice, sukuk is carried out based on contracts in accordance with sharia principles. Investors get returns in the form of a ratio or margin according to the type of contract that has been agreed. All elements used must be free from non-halal elements such as type of industry and income.

Table 1. Differences between Sukuk and Bonds

Description	Sukuk	Bond
Publisher	Corporation, government	Corporation, government
instrument properties	Certificate of ownership/involvement of an asset	debt instruments
Yield	Profit sharing, reward, margin	Cuopon rate
Underlying Asset	yes	no need
Stakeholders	Obligors, Trustees, investors, SPV	Investor, obligor/issuer
Investors	Syariah, Konventional	Konventional

Source: Directorate of Sharia Financing, DJPU, Ministry of Finance (2010)

The Purpose of Issuance of Sovereign Shariah Securities (SBSN) is to finance the State Budget (APBN), including financing project developments (such as infrastructure projects in the energy, telecommunications, transportation, agriculture, manufacturing industries, public housing funds). According to Sutedi (2009), SBSN is also needed by the Government, among others, to:

1. Strengthen and enhance the role of the domestic sharia-based financial system.

2. Expanding the financing base for the state budget of revenues and expenditures.

3. Creating benchmarks for Islamic financial instruments in both domestic and international Islamic financial markets.

4. Expanding network and diversifying the investor base

5. Developing alternative investment instruments for both domestic and foreign investors seeking sharia-based financial instruments

6. Encouraging the growth of the Islamic financial market in Indonesia

The State Revenue and Expenditure Budget deficit (APBN) encourages the government to issue bonds, which aim to attract public funds and support the APBN. The higher the level of need for funds to support bonds, the more bonds that will be issued. The role of determining interest rates for bonds issued in the near future will affect the issuance of bonds in the next period. The limited sources of APBN financing apart from taxes, prompted the government to increase bond interest rates to attract investors to invest their funds in this instrument. The higher the interest rate, the higher the demand for bonds (Mishkin, 2007). Sukuk are also included in bond instruments, so the higher the level of need for funds the more sukuk that are likely to published.

2.2 Previous Study

A number of researchers have previously conducted research on the effect of macroeconomic variables on Sukuk Negara. The inflation variable has an influence on purchasing power, where if inflation rises, purchasing power will decrease because people prioritize consumption over investment, so that the purchasing power of bonds or debt securities also decreases. According to Rakhman (2017) The result of his study using panel data analysis indicate that inflation have a significant effect on the price of Retail Sukuk. Rahman, Paminto, Nadir (2016), Inflation Rate and BI Rate on Demand Levels Retail Sovereign sukuk Series SR-005. By using Multiple Linear Regression Analysis, the results of the study indicate that the price variable for Retail Sovereign sukuk SR-005 and the inflation rate have an insignificant negative effect on the demand for Retail Sovereign sukuk SR-005. This research is supported by Elkarim (2012). Using Regression method, he examine Factors influence Sukuk and conventional bonds in Malaysia , the result shows there is a negative effect and significant relationships between GDP,

inflation rate and interest rate with Sukuk issuance. However, for conventional bonds, only GDP shows a significant negative effect on the relationship. Albugasem et al (2015). The results of their research stated that the money supply and inflation had a positive effect on the growth of Sovereign sukuk, while the exchange rate and world oil prices had a negative effect. Furthermore, In the long term, there are research conducted by Suciningtias (2019), the long-term change in sukuk return in Indonesia is influenced by changes in exchange rates, inflation and changes in world gold prices. The inflation rate in the longterm has an insignificant negative effect on the demand for sovereign sukuk (Rahman, et al; 2016). Also, research conducted by Sujianto (2016), from his research states, in the long term inflation has a negative effect on the issuance of sukuk, while the money supply has a positive effect.

Meanwhile, other research based on empirical studies shows that inflation has a positive and insignificant effect on state bond prices (Widajati, 2009). Also, Ardiansya and Lubis' research (2017) inflation has a positive (significant) effect on the growth of corporate sukuk. Other research by Efendi and Tamrin (2020) conducted research on corporate sukuk indicate that inflation have no significant effect on the number of corporate sukuk offered. This research supported by Hadiyanto (2017) with same result. Still on research by Efendi and Tamrin (2020) the BI Rate have no significant effect on the number of corporate sukuk offered. This research supported by same result by Rakhman (2017) show that the BI Rate, and exchange rates have no significant effect on Retail Sukuk prices. This is different from the research conducted by Rahman, Paminto & Nadir (2016), Meanwhile, the BI Rate variable has a significant negative effect on the demand for Retail Sovereign sukuk SR-005.

The fluctuations in the value of the rupiah are very influential on investors' decisions to invest because the position of the rupiah against foreign currencies can describe the condition of a country. based on Supardi's research (2015) and Efendi and Tamrin (2020) the exchange rate has a significant effect on Sukuk, while Rakhman's (2016), Basyariah, Kusuma, and Qizam (2021) research is the opposite. The significant effect is because stock investors tend to wait for information about the Rupiah exchange rate, because according to Mishkin (2011) when a country's

currency appreciates, goods produced by that country abroad become more expensive and foreign goods in that country become more expensive. cheap (assuming constant domestic prices in both countries), and vice versa. The reason is that the exchange rate can have a dominant influence on stock prices. The relationship between the exchange rate and bond prices tends to be negative (Shabir, 2005) This is also supported by the results of Ardiansya and Lubis (2017), Albugasem et al (2015), Witadi (2018). The other side the contrary to the statement of Tandelilin (2010) that an increase in the exchange rate has a positive effect on investment development so that this can affect the sukuk trade in the secondary market to tend to fluctuate due to the fluctuating rupiah exchange rate. In this case, the BI Rate can have an influence on the number of trading Sovereign Sukuk. It could be affected either negative or positive.

3. METHODOLOGY

3.1 Data

This research was conducted using secondary data obtained from the Directorate General of Financing and Risk Management, Bank Indonesia and Statistics Indonesia. The data are Amount of Sukuk Negara daily average Trading , inflation, BI7DaysRR, and exchange rates. The data used is monthly data based on the time period March 2020 - July 2021.

3.2 Research Methodology

This study uses quantitative data that focuses on macroeconomic indicator variables consisting of Inflation (INF), BI Rate (BR), and Rupiah Exchange Rate (ER) on the Sovereign Sukuk Trade. This research is a type of causal association research that aims to see the effect of the dependent variable on the independent variable, namely the influence between selected macroeconomic variables and the Trading of Sovereign Sukuk.

This study uses a vector autoregression (VAR) analysis tool, a system of dynamic equations in which the relationship between economic variables tested using minimal assumptions about the underlying economic structure/theory (Gujarati & Porter, 2009). VAR is applied in this study because VAR has an

impulse response analysis, in which endogenous variables will respond to a shock from other endogenous variables. If the data at the level does not show data stationarity but has a cointegration relationship, then the VECM model is used (Gujarati & Porter, 2009; Gujarati, 2012). According to Ascarya and Rusydiana (2009), The Vector Autoregression or VAR method is a non-structural approach (as opposed to a structural approach, such as a simultaneous equation) that describes a "causal" relationship between variables in the system. This method was developed by Sims in 1980, who assumed that all variables in the model were endogenous (determined in the model), so that this method was called an a-theoretical model (not based on theory). This is done because there are often situations where economic theory alone cannot capture (not rich enough to provide specifications) accurately and completely the dynamic relationship between variables. Similar to the VAR method, the VECM method will also produce an Impulse Response Function (IRF) and Forecast Error Decomposition of Variances (FEDV) analysis (Lutkepohl, 2005).

Then according to Ascarya (2009); Tanjung & Devi (2013), all data estimated using the VAR method, if the original data is in nominal form (such as incoming bids and exchange rates) must be transformed in real form and converted into natural logarithm (ln). For data in the form of percent (such as inflation, interest rates, and GDP) there is no need to change. The reason for this change is to facilitate the analysis because both in Impulse Response Function (IRF) and Forecasting Error Variance Decomposition (FEVD), the effect of shock is seen in percentage terms. The Research is using Eviews 9 as a tools to running the data.

Then, The general equation of VAR according to Lütkepohl, Krätzig, & Phillips (2004) are expressed as below:

$$y_t = A_0 + A_1 y_{t-1} + \cdots . + A_p y_{t-p} + u_t$$

Meanwhile the VECM general equation are:

$$\Delta y_t = \pi y_{t-1} + r y_{t-1} + \cdots + r_{p-1} \Delta y_{t-p+1} + u_t$$

In this study, data will be used to determine the effect given on the average daily SBSN trading, using the variables TSBSN = SBSN Trading, INF = Inflation,

BIR = BI Rate, ER = Rupiah Exchange Rate and WTI = West Texas Intermediate.

Where the equation is as follows:

$\ln TSBSN_t = \beta_0 + \beta_1 BIR_t + \beta_2 \ln ER_t + \beta_3 INF_t + \varepsilon_t$

Thus, the equation of the VAR model is as follows:

$$\begin{bmatrix} lnPSBSN_t \\ BIR_t \\ lnER_t \\ INF_t \end{bmatrix} = \begin{bmatrix} \beta_{10} \\ \beta_{20} \\ \beta_{30} \\ \beta_{40} \end{bmatrix} + \begin{bmatrix} \beta_{11}\beta_{12}\beta_{13}\beta_{14}\beta_{15}\beta_{16} \\ \beta_{21}\beta_{22}\beta_{23}\beta_{24}\beta_{25}\beta_{26} \\ \beta_{31}\beta_{32}\beta_{33}\beta_{34}\beta_{35}\beta_{35} \\ \beta_{41}\beta_{42}\beta_{43}\beta_{44}\beta_{45}\beta_{46} \end{bmatrix} \begin{bmatrix} lnBSBSN_{t-1} \\ BIR_{t-1} \\ lnER_{t-1} \\ INF_{t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \end{bmatrix}$$

If the data show stationary at first and there is cointegration between variables, then the VECM equation is as follows:

$$\begin{bmatrix} \Delta lnPSBSN_t \\ \Delta BIR_t \\ \Delta lnER_t \\ \Delta INF_t \end{bmatrix} = \begin{bmatrix} \beta_{10} \\ \beta_{20} \\ \beta_{30} \\ \beta_{40} \end{bmatrix} + \begin{bmatrix} \beta_{11}\beta_{12}\beta_{13}\beta_{14}\beta_{15}\beta_{16} \\ \beta_{21}\beta_{22}\beta_{23}\beta_{24}\beta_{25}\beta_{26} \\ \beta_{31}\beta_{32}\beta_{33}\beta_{34}\beta_{35}\beta_{35} \\ \beta_{41}\beta_{42}\beta_{43}\beta_{44}\beta_{45}\beta_{46} \end{bmatrix} \begin{bmatrix} \Delta lnBSBSN_{t-1} \\ \Delta BIR_{t-1} \\ \Delta lnER_{t-1} \\ \Delta INF_{t-1} \end{bmatrix} + \lambda \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \end{bmatrix}$$

Steps in testing using the var/vecm method (Wulandari, 2021)

1. Data Stationarity Test
2. Optimal Log Test
3. Stability Test of VAR Model
4. Cointegration Test
5. Decision Model Estimation -- VAR/VECM/SVAR/VAR1st Diff
6. Estimation of Selected Model
7. Impulse Response Function
8. Forecast Error Variance Decomposition

So, the procedure used in the estimation of the VAR/VECM model, the following figure explains how the systematics of data processing using VAR/VECM:
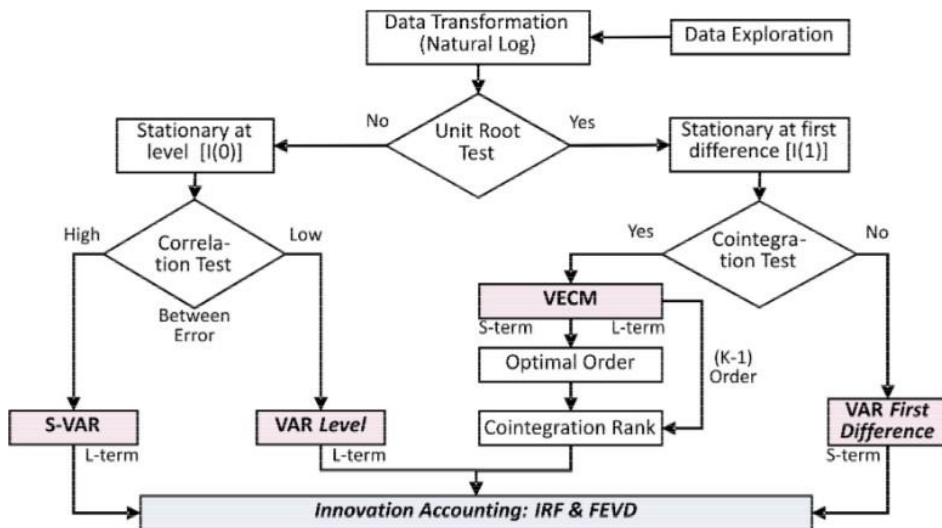
Figure 1. var/vecm analysis process
source: Ascarya(2009)

4. RESULT AND DISCUSSION

4.1 Pretest VAR/VECM

Stationarity Test

Data The first step in the VECM method is to test the stationarity of the data. The form of economic data that is time series tends to show a trend that is not stationary. The data has a high chance of spurious regression problems which are characterized by high termination coefficients, R2, and t-statistics which cannot be interpreted economically but have significant values so that a stationarity test must be carried out (Harris and Sollis 2005). The test statistic used in this study is the Augmented Dickey-Fuller (ADF) test. If the critical value is greater than the ADF value, then the data is declared stationary

VAR Stability Test

VAR stability condition check is done by calculating the roots of the polynomial function or known as the roots of characteristic polynomial. If all the roots of the polynomial function are in the unit circle or if the absolute value is <1 then the VAR model is considered stable so that the Impulse Response Function (IFR) and Forecast Error Variance Decomposition (FEVD) generated are considered valid (Firdaus,2011)

Optimum Lag Testing

In using the VAR model, one of the important steps that must be taken is determining the optimal amount of lag used in the model. Optimal lag length testing

can take advantage of some information, namely using the Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn Criterion (HQ) (Firdaus, 2011).

Cointegration Test

Cointegration test aims to determine whether the non-stationary variables are cointegrated or not. The concept of cointegration was proposed by Engle and Granger (1987) as a linear combination of two or more variables that are not stationary will produce a stationary variable. This linear combination is known as a cointegration equation and can be interpreted as a long-term equilibrium relationship between variables (Firdaus, 2011). An equation is considered cointegrated if the trace statistic > critical value. Thus H0 = non-cointegration with the alternative hypothesis H1 = 16 cointegration. If the trace statistic > critical value, we reject H0 or accept H1 which means cointegration occurs. After the number of cointegrated equations has been known, the analysis stage is continued with the analysis of the Vector Error Correction Model (Firdaus,2011).

Impulse Response Function (IRF) and Forecast Error Decomposition of Variances (FEDVs)

VECM analysis will produce two functions, namely IRF and FEDV. IRF is useful for knowing the response of endogenous variables to a particular shock or shock. This is because shocks in a variable, for example the j-variable, do not only affect the j-th variable, but also affect all other endogenous variables in the system through the lag structure in the VECM. Therefore, IRF can be used to measure the impact of a shock at a certain time on endogenous variables both at that time and in the future. Meanwhile, FEDVs are useful for knowing how changes in a variable are affected by other variables in the VECM model (Firdaus, 2011)

4.2 Empirical Results

In this chapter will be described about the data and the results of data processing accompanied by a discussion of the parameters in an effort to answer the research problems.

Data Stationarity Test Results

The test method used in this study is the ADF (Augmented Dickey Fuller) test using a five percent (5%) significance level. If the t-ADF value is less than the MacKinnon critical value, it can be said that the data is stationary. This test is carried out from the level to the first difference level.

In this study, there are data that are stationary and some are not stationary at the level level. After the first difference is done, then all data is stationary (does not contain unit roots). The data that is stationary at the level is the Exchange rate and Sukuk trading. While the other variables are only stationary at the first difference. The results of the unit root test can be seen in table 1. below.

Table 2. The Unit Root Test Result

	ADF		McKinnon	
	level	first different	level	first different
TRADING OF SUKUK NEGARA	**-4.474.803**	-4.163.006	-3.081.002	-3.144.920
BIR	-1.388.152	-3.688.448	-3.065.585	-3.081.002
LNER	**-5.693579**	-4.253289	-3.065585	-3.081002
INF	-3.021.736	-3.455.676	-3.081.002	-3.098.896

VAR Model Stability Test Results.

From the above model, after that the stability test of the VAR model was carried out. If the largest modulus value is less than 1 and is at the optimal point, then the composition is already in the optimal position and the VAR model is stable. In this research, the model is stable at lag 1 2. Here are the results:

Table 3. VAR Model Stability Test Result

Model	Kisaran Modulus	*Lag*
LTSBSN	0.130818-0.884024	2

The table above shows the results that the modulus is less than 1 for lag 1-2. This means that the var model is stable until lag 2.

Optimal Lag Test Results.

Determination of the optimal lag used in this study is based on the shortest lag using the Akaike Info Criterion (AIC). The results obtained in the model experience an optimal point at lag 1. Here are the results:

Table 4. Optimum Lag Results

Lag	AIC	SC	HQ
0	3.424.832	3.617.980	3.434.723
1	0.416261*	1.381997*	0.465715*

Cointegration Test Results.

To be able to find out the long-term relationship between variables that have met the requirements during the integration process where all variables are stationary at the same degree, it is necessary to carry out a cointegration test. Long-term information is obtained by determining the cointegration rank in advance to find out how many systems of equations can explain the entire existing system. The results of the cointegration test are as follows:

Table 5. Cointegration Test Result

MODEL TRADING OF SUKUK NEGARA		
Hypothesized No. of CE(s)	**Trace Statistic**	**Critical Value 0,05**
None *	86.88585	47.85613
At most 1	26.80996	29.79707
At most 2	12.63141	15.49471
At most 3	2.465255	3.841466

Note: an asterisk (*) indicates the number of cointegrations

The cointegration test results based on the trance statistic states that the TRADING OF SUKUK NEGARA model has a cointegration rank at a critical value of 5%. This shows that in addition to the short-term relationship there is also a long-term relationship between variables in the model. Thus, further research using the VECM model can be carried out.

Correlation Test Results

According to Asrana (2004), the need for a sequence of variables according to the causality test only occurs if the correlation value between variables in the

majority system (more than 50%) exceeds 0.2. If the majority of the correlation values between the variables are above 0.2, then the specification of the order of the variables in accordance with economic theory or causality tests needs to be carried out. If the result is the other way around then the exact form of the order need not matter. In this study there are variables whose values are above 0.2. Here are the results:

Table 6. Correlation test Result

	TRADING OF SUKUK NEGARA	BIR	LNER	INF
LNTSBSN	1.00000000	**0.42558914**	0.07298207	0.10380236
BIR	**0.4255891**	1.00000000	**0.4651028**	-0.14627454
ER	0.0729820	**0.46510283**	1.0000000	-0.92734346
INF	0.1038023	-0.14627454	-0.9273434	1.00000000

Note: The bold indicates that the number is above 0.

Granger Causality Test Results

Granger Causality Test aims to determine the causal relationship between the variables tested. After knowing the optimal lag in the VAR system, the test can be carried out. A variable can be said to have a significant causal relationship with other variables if the probability value is less than alpha (using the strictest 10% restriction), but in this study using 5% and 10% alpha. The results of the test can be seen in the following figure
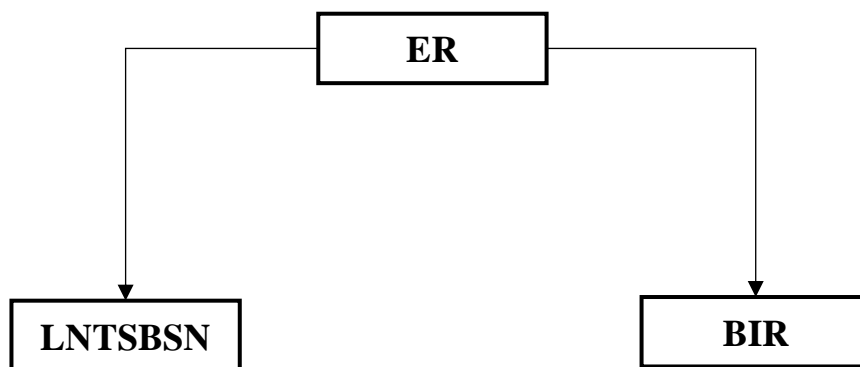
Description:

Figure 2. Granger Causality Test Result

From the picture above, it can be seen that the macroeconomic variables that influence each other in this study are Exchange Rate on the Sukuk Negara Trading and ER (exchange Rate) on the BI Rate with a significant level (5%). Based on the results of the Granger causality test above, it can be concluded that there is no two-way relationship or mutual influence between the variables proposed in the VECM model.

VECM Test Results. After conducting the cointegrity test, it was found that the model in this study has one rank of cointegration so that it can be continued to the Vector Error Correction Model (VECM) test. The simulations for the long-term and short-term VECM analysis in this research model are as follows:

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After conducting the cointegrity test, it was found that the model in this study has one rank of cointegration so that it can be continued to the Vector Error Correction Model (VECM) test. The simulations for the long-term and short-term VECM analysis in this research model are as follows:

Table 7. VECM Estimate Result

SHORT-TERM		
VARIABEL	**KOEFISIEN**	**T-STATISTICS**
CointEq1	-0.125267	**[-2.42482]**
D(LNTSBSN (-1))	0.041178	[0.22680]
D(BIR(-1))	-82.37316	[-1.28885]
D(LNER(-1))	-1.52246	[-0.57462]
D(INF(-1))	0.318909	[0.55558]
LONG-TERM		
VARIABEL	**KOEFISIEN**	**T-STATISTICS**
BIR(-1)	39.34415	[-1.30729]
LNER(-1)	99.36737	**[-15.1382]**
INF(-1)	19.04188	**[-20.8699]**
C	928.1114	

Note: data thickening shows significant variables (> 2.144)

The results of the VECM test above are obtained in the form of the VECM equation as follows:

$$\Delta lnTbsbsn = \alpha_0 + \alpha_1 \Delta bir_{t-1} + \alpha_2 \Delta lner + \alpha_3 \Delta inf_{t-1} - \lambda(lnTbsbsn - bir - lner - inf) + \varepsilon$$

If the coefficient values are entered into the equation, then the VECM equation is obtained as follows:

$$\Delta lnTbsbsn = \alpha_0 - 82.37316\Delta bir_{t-1} - 1.52246\Delta lner + 0.3189\alpha_3\Delta inf_{t-1} - 0.125267(lnTbsbsn + 39.344bir + 99.367lner + 19.042inf) + \varepsilon$$

The results of the vecm test in this study can be said to be towards long-term equilibrium, this can be seen in the value of cointeq which is negative (-) and significant. The macro variables that affect the sovereign sukuk trading significantly in the long term are the exchange rate variable, and inflation.

Inflation affects trading of sukuk negara variable positively by 19.04 . This means that if there is an increase of 1 percent in inflation, the trading of Sukuk Negara variable will increase by 19.04 percent. This shows that when inflation rises, investors do not hesitate to place their money in instruments that have fixed income and have a lower risk level such as sbsn, so that purchases in trading sovereign sukuk in the secondary market can be made.

The Exchange rate variable positively affects trading of Sukuk Negara by 99.367 . This means that if there is an increase of 1 percent in Exchange rate, it will increase the tbsbsn variable by 99.367 percent. In this case, the exchange rate is related to exports and imports. This is because when the rupiah exchange rate appreciates, the cost of imported raw materials or products related to imported products will decrease. This causes lower or lower production costs so that the company's profits increase, so that the dividend rate can be distributed and the return offered will increase. This increase in return causes the price of sukuk in the market to rise so that it can attract investors to make purchases of sukuk.

In the short term, there is not a single macroeconomic variable during the pandemic. So it can be concluded that, macroeconomic variables only affect the sukuk trade in the long term.

What is the impact of each macroeconomic variable on the Sukuk Trading in the short and long term during the pandemic?

In longterm, from the results of the VECM test in this study can be said to be towards long-term equilibrium, this can be seen in the value of CointEq which is

negative (-) and significant. The macro variables that affect the Sovereign Sukuk Trading significantly in the long term are the Exchange rate variable, and Inflation.

From the investor's perspective, fluctuations in the value of the rupiah greatly affect investors' decisions to invest because the position of the rupiah against foreign currencies can describe the condition of a country. The relationship between the exchange rate and bond prices tends to be negative (Shabir, 2005) so this can affect the sukuk trade in the secondary market tends to fluctuate due to fluctuations in the rupiah exchange rate. However, based on the existing results it turns out that, in the long term, an increase in the exchange rate can increase sukuk trading in the secondary market. when the exchange rate strengthens, what will happen is that domestic goods tend to be cheaper, the value of exports is more expensive, and the value of imports is cheaper, it will show reduced trade competitiveness. Where will have a positive influence on investment in a region.

Another factor that affects sukuk is inflation, which has a significant positive value in the long term. This research is supported by Witadi (2019) which shows the same thing. This is contrary to Cherif Anda Gazdar (2010) who stated that another macroeconomic variable that is a factor in volatility is inflation, which has a negative impact on financial developments. This shows that sukuk trading as part of financial developments shows the opposite. This can be because inflation has a positive effect on investment because it can cause an increase in production. The reason is that in a state of inflation, usually the increase in the price of goods precedes the increase in wages so that the profits of entrepreneurs increase. This increase in profits will encourage an increase in production. Therefore, entrepreneurs will invest when inflation occurs. In accordance with Mishkin's (2006) statement that inflation occurs continuously (long term) that can affect individuals, companies, and governments. The current inflation is due to natural factors, namely the pandemic, in accordance with Maqrizi's theory about the causes of inflation, When the disaster occurred, various foodstuffs and other agricultural products experienced crop failure, so the supply of these goods experienced a drastic decline and scarcity occurred.

Meanwhile, in the short term, there are no macroeconomic variables that affect sukuk trading in the secondary market. Research from Efendi and Tamrin (2020) shows the same results for corporate sukuk.

Another Variable, the BI Rate, does not affect both the long-term and the short-term to the sukuk trade in Indonesia. This is in stark contrast to some existing investment theories. This rejects the classical theory which states that there is a close relationship between interest rates and investment which states that the higher the interest rate, the lower the desire of an investor to invest their money, on the contrary, the lower the interest rate, the higher the investor's desire to invest their money. As we know, BI lowered its benchmark interest rate from 4.5% in early 2020 to 3.5% in mid-2021 due to the pandemic. However, this did not affect the rate of rise and fall of sukuk trading in the secondary market.

Impulse Response Function (IRF) Analysis Result and discussion

There are two main forms of analysis in VECM, namely Impulse Response Function (IRF) and Forecast Error Variance Decomposition (FEVD). IRF is a vector moving average application that aims to see the traces of the current and future response of a variable to the shock of a particular variable. While the function of the FEVD is to predict the contribution of each variable to shocks or changes in certain variables (Ascarya, 2009). The following is a picture of the response of the TRADING OF SUKUK NEGARA model to shocks on macroeconomic variables:
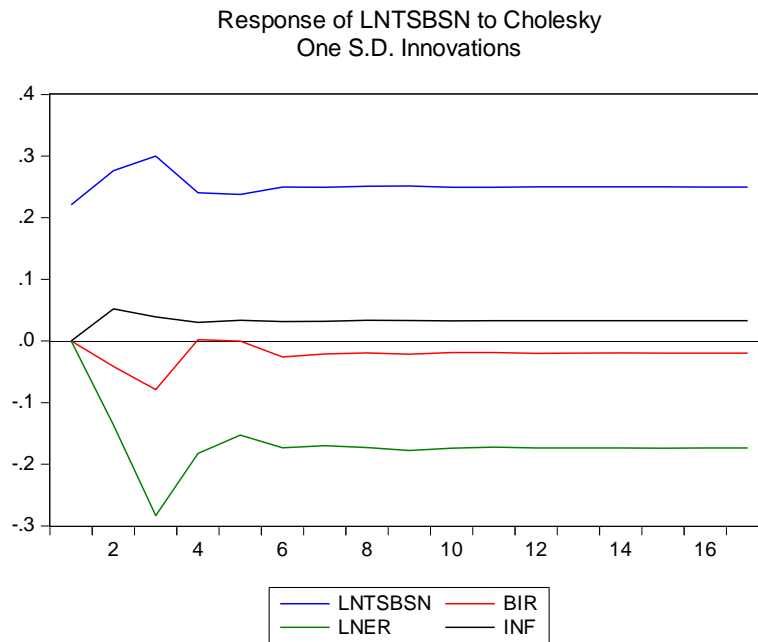
Figure 3. Response TRADING OF SUKUK NEGARA to Macroeconomic variables

The results of impulse response processing in the picture above show that at first the macroeconomic variables were not responded to by the trading of sukuk negara but in the second period and so on, it showed that the sovereign sukuk trade responded to macroeconomic variables. The non-response of macroeconomic variables in the first period during the pandemic was evidenced by ordering retail sukuk purchases that exceeded the predetermined target (djppr, 2020) amid economic uncertainty due to the impact of the pandemic. An increase of 1 standard deviation (s.d) in the inflation index will be responded with an increase in the trading of sukuk negara index, and in the 2nd and 3rd months, respectively, an increase of 0.05 and 0.04 standard deviations. Thus so on until the 4th month and trading of sukuk negara began to stabilize again in the 5th month. Increase in inflation causes an increase in the ln trading of Sukuk Negara index in the short term (0-4 months early). This shows that there is a positive relationship in the short term between inflation and trading in sovereign sukuk. This study is in accordance with research conducted by manab (2016) who conducted research on the relationship between inflation and the price of sovereign sukuk. This also supports mishkin's (2008) portfolio choice theory from a demand perspective.

While the other two variables, namely exchange rate and BI Rate, responded negatively by trading of sukuk negara. The exchange rate variable causes the ltrading of Sukuk Negara response to go up and down significantly and stable in the 10th period. The lowest point occurred in the 2nd period of -0.028. Meaning, an increase of 1 standard deviation in the exchange rate will be responded to by a decrease in the trading of sukuk negara variable of 0.028. Then it increases again until it reaches a new equilibrium point in the 10th period. This shows that the exchange rate affects sukuk trading in the short term (0-10 months). Then for the shock of the BI Rate variable, trading of sukuk negara responded negatively in the second period of 0.041. The shock began to stabilize in the 13th period and tended to bring trading of sukuk negara to a negative response in its long-term balance. In general, the above variables tend to bring trading of sukuk negara to a new equilibrium point. This indicates that there is a short-term relationship that affects sukuk trading in the secondary market in terms of macroeconomic variables. This could be due to economic uncertainty in the midst of a pandemic that occurred even though during the initial period of the pandemic, macroeconomic variables did not affect sukuk trading in the secondary market. The stability shown in the 10-12 period indicates a process of economic recovery, as evidenced by the issuance of sukuk in january 2021 to stimulate the indonesian economy due to the pandemic that occurred.

Forecast Error Variance Decomposition (FEVD) analysis.

After analyzing dynamic behavior through impulse response, then the characteristics of the model will be seen through forecast error variance decomposition. Variant decomposition is another method of dynamic system using VAR/VECM analysis. If the response to shocks shows the effect of a policy (shock) on endogenous variables on other variables, the variance decomposition (forecasting variety), will reduce innovation on an endogenous variable to variable shocks in the VAR. The following is a picture of the FEVD results on the TRADING OF SUKUK NEGARA model:
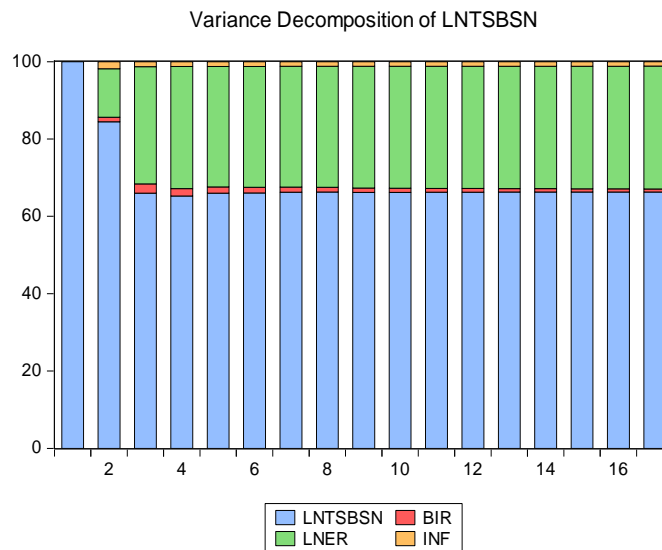
Figure 4. FEVD of TRADING OF SUKUK NEGARA

The figure above describes the variance decomposition of the trading of sukuk negara variable, namely what variables and how much these variables affect the trading of sukuk negara variables. In the first period the trading of sukuk negara variable was influenced by the variable itself (100%). However, in the second period the variables that have the biggest influence on trading of sukuk negara apart from the variables themselves are BI Rate which has an effect of 1.15%, exchange rate of 12.79%, and inflation of 1.84%. The influence of this variable then experienced a spike in the third period so that the influence of trading of sukuk negara decreased on the variable itself and so on to itself so that it became 66%. The variable that gave the biggest influence in the third period was exchange rate at 30.2%, an increase of 18% compared to the previous period, followed by BI Rate and then inflation, at 2.4% and 1.3%, respectively. This effect then because the contribution (share) of each macro variable is relatively large, it can be said that the trading of sukuk negara is significantly influenced by the existing macro variables.

5. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

In this study, there are three main points,

1. Based on the results of the VECM test, in the short term there are no macroeconomic variables that significantly affect the sukuk trading in the

secondary market. whereas, in the long term, only the interest rate variable does not affect the trading of sovereign sukuk. while the other two variables, namely, the exchange rate and inflation have a significant positive effect on the trading of sovereign sukuk in the secondary market.

2. Based on the results of the Impulse response (IRF), the TRADING OF SUKUK NEGARA variable responds to the BI RATE and EXCHANGE RATE variables negatively and is quite significant in the short term. This is indicated by the fluctuating shock response shown by the TRADING OF SUKUK NEGARA variable to the impulse variable and reaching a new equilibrium point in period 10. This indicates that there is a short-term relationship that affects sukuk trading in the secondary market in terms of macroeconomic variables. this could be due to economic uncertainty in the midst of a pandemic that occurred even though during the initial period of the pandemic, macroeconomic variables did not affect sukuk trading in the secondary market. The stability shown in the 10-12 period indicates a process of economic recovery, as evidenced by the issuance of sukuk in January 2021 to stimulate the Indonesian economy due to the pandemic that occurred.

3. Based on the variance decomposition, it shows that the largest contribution that affects the sukuk trade is the sukuk itself, followed by the exchange rate which has a share of 30% or one-third of the sukuk trade itself. this indicates a macroeconomic role in sovereign sukuk trading activities in the secondary market. this is also supported by the results of the Granger causality test which shows the effect of the exchange rate on sovereign sukuk trading.

5.2 Suggestion and recommendations

As for some suggestions and recommendations that were shown to several parties concerned including the government as a regulator, market players who carry out activities in the Islamic capital market, as well as the wider community who are new to wanting to become investors who are interested in investing in sukuk and helping our country, as well as for academics and researchers who intend to increase further research on sukuk. The following suggestions and recommendations that the author can convey are as follows:

1. For the Government, it is hoped that it can control macroeconomic variables, especially the rupiah exchange rate, because this can have a positive impact on sukuk trading in the secondary market.

2. For investors who want to include sukuk instruments in their portfolio selection, they can consider macroeconomic variables, especially the exchange rate and inflation because in the long term these two macroeconomic variables have a positive impact on sukuk trading in the secondary market.

3. For the wider community, judging from the response given by the offering of sukuk to macroeconomic factors in achieving balance, sukuk can be a recommendation for beginners in investing with a low and safe level of risk, of course based on the conformity of the sharia with muamalah. This is because when macroeconomic shocks and global financial market uncertainty occur, sukuk can achieve stability in a relatively fast period.

4. For the next researcher, so that the research period can be extended and use more varied test variables, of course by using different methods such as panel data analysis, so as to provide more accurate research results. or, can use qualitative research to support this research. The research can be in the form of an analysis that influences investors' choices in choosing their portfolios. 5. In addition, there is a need for in-depth understanding and competence by Islamic Economics HR, be it regulators, scholars, practitioners and actors as well as the wider community regarding the principles and practices allowed in the Islamic financial market, especially in Sukuk Negara.

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