



## PENGARUH SERTIFIKAT BANK INDONESIA, INFLASI, NILAI TUKAR, SERTA PENDAPATAN DAN BELANJA PEMERINTAH TERHADAP PERMINTAAN IMBAL HASIL SUKUK RETAIL

*The Effects of Bank Indonesia Rate, Inflation, Exchange Rate, Government Revenue, and Expenditure Towards Yield Retail Sukuk*

Dearsya Herdayanti<sup>1</sup>, & Eri Hariyanto<sup>2</sup>

### Info Artikel

<sup>1</sup> IAI Tazkia, Bogor  
Dearsyaherdayanti11@gmail.com  
<sup>2</sup> BPPK, Kementerian Keuangan,  
Jakarta  
Eri\_hariyanto@kemenkeu.go.id

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### Abstract

*This study discusses the effects of Bank Indonesia Rate, Inflation, Exchange Rate, Government Revenue and Expenditure toward Yield Retail Sukuk SR008 using the Vector Auto Regression (VAR) – Vector Error Correction Model (VECM) method. Based on the VECM test result, it can be concluded significant variables that positively influence yield in the short term are Inflation and Government Revenue. These variables affect the yield requested by investors. The government will respond to inflation fluctuations by changing Bank Indonesia Rate, and finally this will affect yield. Declining government revenue will cause issuance of SBN increase, and based on the law of demand and supply this will affect yield. While in the long term, the variables that having positive affects are the Bank*

*Indonesia Rate, Inflation, and Government Revenue which then affect yield. The variable that affects negatively is the Government Expenditure. As in the short term, long term government spending does not affect the SR008 yield but rather inflation and state income.*

**Keywords:** *Macroeconomic Indicators, Sukuk Negara, Retail Sukuk Yield, Vector Auto Regression – Vector Error Correction Model.*

### Abstrak

Penelitian ini membahas tentang pengaruh Tingkat Suku Bunga Bank Indonesia, Inflasi, Nilai Tukar, Penerimaan Negara, dan Belanja Negara terhadap Yield Sukuk Ritel SR008 dengan menggunakan metode Vector Auto Regression (VAR) – Vector Error Correction Model (VECM). Hasil penelitian ini berdasarkan hasil pengujian VECM dapat disimpulkan bahwa variabel signifikan yang berpengaruh positif terhadap imbal hasil dalam jangka pendek adalah variabel Inflasi dan Penerimaan Negara. Dalam jangka pendek, inflasi dan pendapatan pemerintah memengaruhi imbal hasil yang diminta investor. Fluktuasi inflasi akan direspons oleh bank sentral dengan mengubah Tingkat Suku Bunga Bank Indonesia, yang pada akhirnya akan memengaruhi imbal hasil. Penurunan penerimaan negara akan menyebabkan peningkatan penerbitan SBN, dan hal ini dalam hukum permintaan dan penawaran akan mempengaruhi imbal hasil. Sedangkan dalam jangka panjang variabel yang berpengaruh signifikan secara positif adalah Tingkat Suku Bunga Bank Indonesia, Inflasi, Penerimaan Negara. Seperti dalam jangka pendek, inflasi dan pendapatan pemerintah memengaruhi hasil dalam jangka panjang.

Kemudian variabel yang berpengaruh negatif adalah Belanja Pemerintah. Seperti dalam jangka pendek, pengeluaran pemerintah dalam jangka panjang juga tidak memengaruhi hasil SR008. Seperti dalam jangka pendek, inflasi dan pendapatan negara memengaruhi imbal hasil.

**Kata kunci:** Indikator Makroekonomi, Sukuk Negara, Yield Sukuk Ritel, Vector Auto Regression – Vector Error Correction Model.

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## **1. INTRODUCTION**

Islamic Sharia-based finance (Islamic Finance) is currently experiencing rapid growth, accepted and adopted not only by Islamic countries in the Middle East region, but also by various countries in Asia, Europe, and America. This was marked by the establishment of different Islamic financial institutions and the issuance of various Islamic financial instruments. The main principles in Islamic financial transactions include an emphasis on fair agreements, recommendations for profit sharing, and the prohibition on usury, gharar, and maysir. (Maghyereh & Awartani, 2016)

One of the Islamic financial instruments that has been widely issued by large corporations and state governments is sukuk in terms of publishers' or issuers' volume. Regarding this issue, Indonesian Government, one of the countries with largest Muslim populations, is trying to catch up with Islamic finance so that it can develop rapidly by encouraging the Indonesian House of Representatives to pass Law Number 19 of 2008 concerning State Sharia Securities (SBSN). So far, the issuance of State Sukuk has shown an excellent progress. In August 2008, the Government initiated the publication of State Sukuk with a value of Rp. 4.8 trillion.

The number of State Sukuk issuances increasing year by year, in line with the nominal growth of the APBN. In July 2019, the total issuance of State Sukuk had reached Rp. 1,143.5 trillion, with an outstanding value of Rp. 645.9 trillion. (Hariyanto, 2020). One of the objectives of the SBSN issuance is to expand alternative sources of financing for the state budget while developing the Islamic financial market. State Sukuk plays an important role not only as an APBN financing instrument but also as a catalyst for Islamic financial industry development, both domestically and internationally.

The Government, through the Ministry of Finance of Republic of Indonesia, diversified sharia financial instruments for Indonesian citizens as the target who already have a National Identity Card (KTP) in the form of a Retail Sukuk instrument. Retail Sukuk was first issued in 2009 and subsequently issued annually with a tenor of 3 years except for SR-004 with a 3.5-year term. The process of issuing Retail Sukuk requires some stages, starting from Sales Agents and Legal Consultants selection, pre-marketing, marketing, allotment, and settlement. By 2020, the government has issued twelve Sukuk Retail issuances.

The government offers investment instruments to the public, which is SR008 retail sukuk, with a coupon rate or yield of 8.3 percent. The minimum order is IDR 5 million and a maximum of IDR 5 billion for people who want to buy it. The offer period is from February 19 to March 4, 2016. People interested in buying SR008 Retail Sukuk can contact 26 selling agents or the distribution partner appointed by the government. The SR008 Retail Sukuk uses an ijarah or lease agreement, and then sukuk is tradable after the coupon period.

As a form of securities, investors expect this SBSN to be liquid or easily traded. In every trade in securities, there will always be yield and price. The level of liquidity influenced yield. Liquidity in a bond can be seen from the circulation, the frequency of buying and selling in the secondary market, and the total outstanding or the total remaining volume of bonds that are still ongoing and are not yet in the due date or so. As the yields for investors and prospective SBSN investors, they need to see the development of this yield by the time. The way to see the progress of yields is to look at yield movement data or yield curves by viewing all series of SBSN at a certain point of time such as daily, monthly, and so on.

Hidayat's research (2004) finds that monetary authorities will respond to an increase in inflation by issuing a contractionary economic policy by raising the BI rate. With the rise in BI rate, conventional banks will save their funds in BI rate to get high deposit interest rates with low risk. The high-interest rate of conventional banks causes investors to choose conventional banks because of the more attractive return rate. As for Islamic banking, the influence of BI RATE itself is also stated by Karim (2004) in the Theory of Connected Vessels, just like a hooked vessel, if the profit-sharing return is higher than interest, then funds flow from conventional banking to Islamic banking and vice versa. (Wibowo, 2006).

## 2. LITERATURE REVIEW

### Sukuk

Sukuk can be interpreted as a document or certificate. The term sukuk comes from Arabic, which is from the word صكوك (sukuk) plural form of صك (sakk), which means a legal instrument, charity, and check.

Currently, the structure of sukuk approaches the concept of conventional securities, where the ownership of underlying assets is transferred to a number of investors through certificates that show the proportion of the value of the assets (Nathif & Abdulkader, 2004). In this provision, sukuk is referred to as sukuk investment because it is issued for investment purposes in the context of generating real interest.

Based on AAOFI Sharia Standards, sukuk are defined as Rate of equal value that represent a portion of ownership that is not divided into tangible assets, assets value, and services or for assets purchase of a particular project or investment activity. However, this representation can only be done after issuance period end. The funds from the issuance of sukuk began to be used for the sukuk insurance itself.

### Government Sharia Securities (SBSN)

The SBSN Law defines State Sukuk (State Sharia Securities) as Government Securities issued based on sharia principles, as evidence of participation in SBSN assets, both in rupiah and foreign currencies. Under the SBSN Law, domestic SBSN issuance can be done with or without an SBSN Issuer Company or can be called as a Special Purpose Vehicle (SPV). In this case, several countries have issued sukuk directly without SPV, including Malaysia and Bahrain. Issuance of SBSN on the international market is done through the SBSN Issuer Company (SPV).

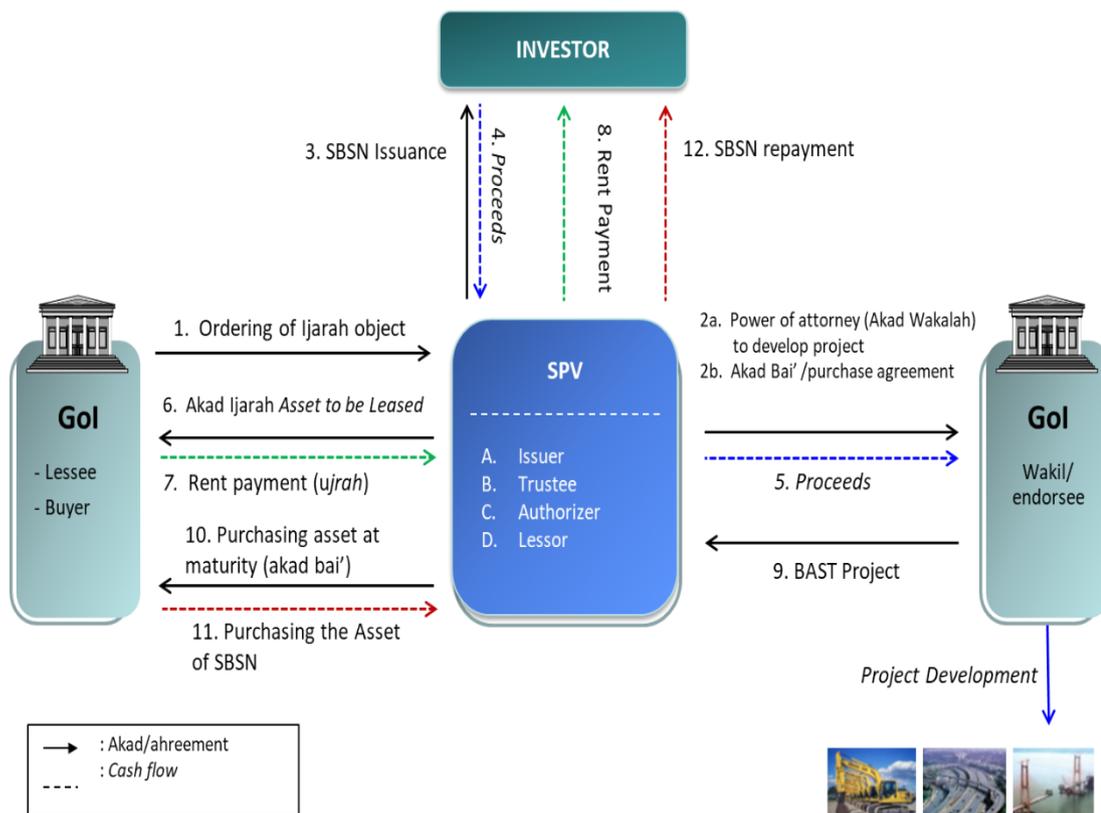
### Yield

In investment, investors expect a specific rate of return, which is often referred to as return or yield. In stock investments, sometimes, there are dividends, but the primary income from shares is generated from price rising. The word returns include all investment income from

dividends and the difference in price increases. The term yield is more often used in bonds because the yield of bonds is usually fixed which does not reduce the principal value. Explicitly, the yield of SBSN, stated in the PMK SBS Auction (PMK 75 / MK.08 / 2009), is a real interest expected by investors in the form of a percent per year.

**Retail Sukuk**

Retail Sukuk are sold to individual investors through a Selling Agent with a minimum purchase of 1 million Rupiah. Retail Sukuk Coupons are fixed, paid monthly, and can be traded. To broaden the base of retail investors while optimizing the domestic market, the government issued a series of State Sukuk intended explicitly for individual investors, namely Retail Government Securities (Sukuk Retail). Retail Sukuk are state securities issued based on sharia principles as proof of the participation in SBSN assets, which are sold to individuals Indonesian Citizens through Sales Agents or can be called *Midis*, Distribution Partners. The issuance of Retail Sukuk has strategic value because it can encourage and facilitate the public funds mobilization of the nation financing, which will gradually lead to the nation's independence in financing development. Issuance of Retail Sukuk can also encourage the development of a more effective capital market.



Source: Directorate of Islamic Financing, DJPPR, Ministry of Finance RI

**Figure 1. Diagram of SBSN Ijarah – Assset to be Leased**

Retail sukuk was first issued in 2009 and subsequently issued annually with a 3-year tenor except for SR-004 which has a 3.5-year tenor. Issuing retail sukuk requires long stages, starting from Sales Agents and Legal Consultants selection, pre-marketing, marketing, allotment, and

settlement. The issuance of retail state sukuk is considered very successful and has succeeded in gaining massive interest from the public, as seen from the high supply of incoming purchases (oversubscription). Until 2015, the government has issued seven retail sukuk issuances, with the realization of the issuance reaching IDR 90.8 trillion and outstanding IDR 69.87 trillion.

Retail sukuk are issued in the medium-term tenor of 3-3.5 years with a fixed rate. In terms of return, retail sukuk compensation payments are made periodically every year (monthly basis). Retail sukuk can be traded on the secondary market with a nominal per unit of Rp 1 million. However, the minimum purchase by an investor is five units, with amount of IDR 5 million. At the same time, the maximum purchase is limited to Rp 5 billion. The price at the time of publication is 100% (at par), and at the time of review (Directorate of Sharia Financing DJPPR, Ministry of Finance, 2015).

### **Bank Indonesia Rate (BI rate)**

The BI rate or reference interest rate is the interest rate policies that reflect the monetary policy stance set by Bank Indonesia and announced to the public. BI rate is a mechanism used by Bank Indonesia to control inflation. By increasing interest rates, liquidity will be absorbed into the banking system and reduce inflationary pressures (BI, 2022).

According to Igfirly (2018), BI interest rates significantly effect to fixed income investment. The increase in the BI interest rate will be followed by an increase in the interest rate for investment instruments to be issued. BI interest rates have a negative relationship to bond prices in the secondary market. When BI interest rates increase, bond prices will decrease. On the other hand, if BI interest rates decrease, bond prices will increase.

### **Inflation**

Inflation measured by the consumer price index (CPI) is defined as changes in the price of goods and services usually purchased by certain groups of households. Inflation is measured in terms of annual growth rates and the index, the base year 2015 with details for food, energy, and total excluding food and energy. Inflation measures the decreasing of living standards. The consumer price index is estimated as a series of summary steps from period-to-period proportional changes in the price of a fixed set of consumer goods and services with constant quantities and characteristics, obtained, used, or paid by the reference population. Each summary measured as a weighted average of a large number of elementary aggregate indices. (Organisation for Economic Co-Operation and Development (OECD), 2018)

Brister et al, (1994) stated that generally investors will prefer safe bonds over debentures. This level of security involved researchers in measuring the effect on bond yields. It is expected that the sign will be negative, meaning that the more secure the bond is with the guarantee, will further reduce the bond yield.

As the increase in inflation will reduce the interest of the public to invest in buying SBSN, because the real rate of all investment instruments is reduced by inflation, where the offer is fixed then it will reduce the price of the SBSN as well. Therefore, the yields will rise, indicating the market is empty because investors are pushed by inflation. Thus there is a negative relation between inflation and SBSN price. In this case indicates that there is a direct relation with SBSN yield.

### **Exchange Rate**

The exchange rate is the number of units of a particular country's currency needed to obtain another country's currency. Rupiah exchange rate stability is essential because it is positively correlated with economic growth. The essential thing about the rupiah exchange rate is its volatility because it will affect the financing included bonds (Rambe, 2012). Rupiah exchange against US dollar is one of the essential macro indicators in preparing the nation budget. Rupiah rate towards US dollar influence revenue, expenditure, and financing in the nation budget.

According to Amardin Amir (2007), the Islamic economic system that makes money as a medium of exchange and its relation to the price of Islamic bonds certainly has an indirect impact. Exchange rates will affect company performance since the company which operated using other currencies can generate higher or lower income. Based on the description above, the price of Islamic bonds is indirectly affected by the exchange rate transaction. The exchange rate can increase revenue and this will increase the profit-sharing that will be distributed to bondholders and leads to Islamic bonds rate increase. (Wibowo, 2006).

### **Government Revenue**

According to Sumantri (2017), state revenue consists of tax and non-tax revenue. Government revenue is needed to fulfil the nation budget to meet nation expenditure expenses. The government revenue and expenditure process takes place during the fiscal year. Currently, tax revenue is the most significant contributor to the state revenue. In comparison, the Non-Tax State Revenue (PNBP) having lower role in state revenue. However, the trend of Indonesia's tax revenue has also decreased from year to year compared to its target and realization.

### **Government Expenditure**

According to Afiat (2015), government expenditure reflects the government system. If the government has established a policy to buy goods and services, government spending reflects the costs required to implement the system (Mangkoesoebroto, 1994). Government expenditure has a theoretical basis that can be seen from the identity of the national income balance, which is  $Y = C + I + G + (X-M)$ , a legitimacy source for the Keynesian view of the relevance of government interference in the economy. From the above equation, it can be seen that the change in government spending will affect national income. Many considerations underlie government decision-making in regulating its expenditure. The government cannot only achieve the ultimate goal of every expenditure policy but also consider the policy target. It is not to only increase the expenditure in order to increase national income or expand employment opportunities. It must be reconsidered who will be employed to increase revenue. The government also needs to avoid increasing its role in the economy to not interfere the private sector's activities (Dumairy, 1997).

### **Previous Study**

First, from Kurniasih & Restika (2015) the purpose of this research is to examine and analyze the influence of inflation, BI rate, exchange rate, and foreign ownership on government bond yields. Research data is monthly data from 2010 to 2013. Purposive sampling is chosen as the sampling method in this research. Based on the determined criteria, 23 government bonds have fulfilled the sample criteria. This research shows that inflation, BI rate, exchange rate, and foreign ownership simultaneously have a significant influence on government bond yields. Partially, inflation and BI rate have a positive significant impact on government bond yield, while

the exchange rate and foreign ownership have a negative considerable impact on government bond yield.

In another study from Igfirly (2018) in his study, a multiple linear regression method (LSDV, Fixed effect model) was used to analyze monthly panel data from January 2013 to September 2017. The result shows that BI Sharia Rate, Exchange Rate, and Index Return are significantly affect the dependent variable. At the same time, SBSN Trading Volume is significant in affecting the dependent variable with a negative direction. Meanwhile, the Inflation and Foreign Ownership variables were found to be insignificant. This suggests that some of the macroeconomic indicators are more relevant than others to explain the phenomena of SBSN yield curve fluctuation, especially in the recent stabilized economic period in Indonesia.

Moreover, in a study from Wibowo (2006), the purpose of this research is to analyze the effect of inflation, exchange rate, and interest rates of Bank Indonesia Rate (BI rate) on the dependent variable is Sukuk Negara Ritel yield series SR001 in the secondary market. This research used multiple linear regression analysis with SPSS. This research processes data every month with the time sequence or time-series from February 2009 until November 2011. The results showed that inflation has a negative influence on SR001 yield which is indicated if the inflation increase by 1%, the yield of SR001 in the secondary market would decrease by 0.00311, and the exchange rate variable has a positive influence on SR001 yield which is indicated if exchange rate increases 1%, the yield of SR001 in the secondary market will increase by 0.00002, while the BI rate has negative influence to SR001 yield which is indicated if BI rate increases 1%, the yield of SR001 in the secondary market would decrease by 0.00282.

### **3. RESEARCH METHOD**

This research is done with a case study in Indonesia presented by a central institution that is entirely located in Jakarta. The time of the study is from April 2016 until March 2019. This research will be done using quantitative research methods. The analysis was done to see the effect of the BI rate interest, inflation, exchange rate, government revenue, and government expenditure on the yield of the SR008 series state sukuk using the VAR-VECM method. This study using time series data from April 2016 to March 2019 (36 months). This data period is taken according to the tenor of SR008. The data of yield SR008 retrieved from the Ministry of Finance, Directorate of Islamic Financing DJPPR. Als for the other variable is obtained from the webmaster.

### **4. RESULT AND DISCUSSION**

Data processing using VAR-VECM has several stages. The data that has been collected will be obtained by using Eviews. This data processing will answer the formulation of first and second problems. There are several stages in testing the VAR model, namely :

#### **4.1. Stationarity Test**

In the time-series statistical model, time series variables need to be tested first for their stationary, which is by examining whether there is a root unit in the model (called integrated data) or not. The VAR test's initial step is the data stationarity test, also known as the unit root test. This test uses the ADF (Augmented Dickey-Fuller) test method and uses a 5% significance level. This test will later determine if the data used is stationary or not. If the ADF t-statistic

probability value is smaller than the 5% significance level, the data is said to be stationary. Conversely, if the ADF probability value is higher than the real level, then the data is not stationary. (Suciningtias, 2019)

Based on the results of stationary testing on data, it can be concluded that stationary data at the first difference level, with the following results :

**Table 1. Result of Stationary Test**

| Variable      | Result of Stationary Test |          |                 |               |
|---------------|---------------------------|----------|-----------------|---------------|
|               | Level                     |          | First Different |               |
|               | T-Statistic               | Prob ADF | T-Statistic     | Prob ADF      |
| Yield         | -1.250304                 | 0.6413   | -7.487962       | <b>0.0000</b> |
| BI RATE       | -1.364029                 | 0.5880   | -4.551081       | <b>0.0009</b> |
| Inflation     | -5.974344                 | 0.0000   | -7.173389       | <b>0.0000</b> |
| Exchange Rate | -1.012066                 | 0.7382   | -5.009697       | <b>0.0003</b> |
| Revenue       | -4.866112                 | 0.0004   | -5.294803       | <b>0.0001</b> |
| Expenditure   | -4.411642                 | 0.0013   | -6.911839       | <b>0.0000</b> |

This stationarity test results will later be useful in determining the model used, the VAR / VECM model. Because the data used is stationary at the first difference level, it implies two VAR choices, VAR in the form of difference or VECM.

**4.2. Correlation Test**

This correlation test will help determine the relationship between variables that will be needed for variable ordering. If the majority correlation test shows a majority above 0.2, then the sequence is adjusted to economic theory. Meanwhile, if the majority value is below 0.2, the variables do not need to be sorted. The results of correlation use views as follows :

**Table 2. Result of Correlation Test**

|             | YIELD            | BI RATE          | INFLATION        | EXCHANGE         | REVENUE          | EXPENDITURE      |
|-------------|------------------|------------------|------------------|------------------|------------------|------------------|
| YIELD       | 1.000000         | 0.463900         | <b>-0.105626</b> | <b>0.147489</b>  | <b>-0.099105</b> | <b>-0.116846</b> |
| BI RATE     | 0.463900         | 1.000000         | <b>-0.195368</b> | 0.510109         | 0.240559         | 0.222010         |
| INFLATION   | <b>-0.105626</b> | <b>-0.195368</b> | 1.000000         | <b>-0.117935</b> | <b>0.090849</b>  | <b>0.019100</b>  |
| EXCHANGE    | <b>0.147489</b>  | 0.510109         | <b>-0.117935</b> | 1.000000         | 0.325711         | 0.401280         |
| REVENUE     | <b>-0.099105</b> | 0.240559         | <b>0.090849</b>  | 0.325711         | 1.000000         | 0.805217         |
| EXPENDITURE | <b>-0.116846</b> | 0.222010         | <b>0.019100</b>  | 0.401280         | 0.805217         | 1.000000         |

Based on the correlation test results above, the majority of variable results are below 0.2 so it can be concluded that the ordering of the data is not needed in this model.

**4.3. Model Stability Test**

The stability testing of this model uses stationary data at both the level and first difference. The result is seen from the inverse root value of the AR polynomial characteristic. If the modulus is below 1, then the VAR model is stable, but if the modulus is more than one, the data is said to be unstable and will interfere with the validity of the impulse response result.

Based on the stability test VAR model, the maximum lag VAR model that is stable on all variables occurs in lag 1-4 with a range of modulus values -0.455174 - 0.730496.

**Table 3. Result of Model Stability Test**

| Modulus Range         | Maximum Lag |
|-----------------------|-------------|
| -0.455174 - 0.730496. | 4           |

#### 4.4. Optimal Lag Test

Several criteria determine the number of lags for VARs, and therefore VECM must meet the requirement of mathematical stability or stable condition. This means that all roots of the companion matrix lies inside the unit circle in absolute value. It should fulfil the LR criterion or SIC criterion.<sup>42</sup> Ivanzov, and Kilian (2005) suggested six criteria for lag order selection: the Schwarz Information Criterion (SIC), the Hannan-Quinn Criterion (HQC), the Akaike Information Criterion (AIC), the general-to-specific sequential Likelihood Ratio test (LR), a small-sample correction to that test (SLR), and the Lagrange Multiplier (LM) test. Some econometricians argue that the SIC should be applied to small samples and that the AIC should be used for large samples, but other econometricians' empirical results the opposite conclusions. (Lixin, 2011)

The next step is the test conducted to determine the optimum lag in the VAR model of study. This test is done to form a good VAR model by determining the optimum lag length. Determination of the number of lags (ordo) that will be used in the VAR model can be determined based on the criteria of Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), or Hannan Quinon Criterion (HQ). The lag that will be selected in this research model is the model with the smallest value. Too much lag length increases degrees of freedom, so lower lags are recommended to reduce the error specifications. (Gujarati, 2004)

In taking the result to select a model that provides the smallest value using views is as follows:

**Table 4. Result of Optimal Lag Test**

| Lag | AIC              | SC               | HQ               |
|-----|------------------|------------------|------------------|
| 0   | 31.21684         | <b>31.49439*</b> | 31.30732         |
| 1   | 31.63640         | 33.57922         | 32.26971         |
| 2   | 31.31425         | 34.92235         | 32.49040         |
| 3   | 30.18717         | 35.46055         | 31.90616         |
| 4   | <b>24.60392*</b> | 31.54257         | <b>26.86575*</b> |

Based on the result of the optimum lag selection above, the smallest AIC value **24.60392\*** in lag 4, so what is used is lag 4 on the AIC (Akaike Information Criterion).

#### 5.5. Cointegration Test

The results of this test are determining the existence of cointegration between variables. If there is no cointegration between variables, then VAR can only be done in the first stage, and it can only predict the short-term relationship between variables. If there is cointegration between variables, then VECM can be done using data levels to get a long-term relationship between variables. VECM can predict short-term and long-term relations between variables. In the analysis of the Vector Auto Regression (VAR) cointegration test is required when the test results previously conducted are stationary state and value at a level other than the data level. This means that when stationary research data on 1 on 2 variations, it is necessary to test

cointegration. Cointegration is a long-term relationship between variables or original research data that diverge in the short term, will have a balance (equilibrium) in the long term. In the VAR analysis between variables that have enacted cointegration, VECM analysis. Cointegration determination can be seen by comparing the value of the Max-Eigen and tracing its value. If the value of the Max-Eigen and determine value is higher than the critical value of 1% and 5%, then the data cointegrated. (Sholikhin, Amijaya, & Herianingrum, 2020)

The results of the cointegration test are shown in the following table:

**Table 5. Result of Cointegration Test**

| Hypothesized  |            | Trace     | 0,05           |         |
|---------------|------------|-----------|----------------|---------|
| No. Of CE (s) | Eigenvalue | Statistic | Critical Value | Prob ** |
| None *        | 0.944153   | 209.8540  | 117.7082       | 0.0000  |
| At most 1 *   | 0.756223   | 117.5296  | 88.80380       | 0.0001  |
| At most 2 *   | 0.595072   | 72.36151  | 63.87610       | 0.0081  |
| At most 3 *   | 0.500962   | 43.43203  | 42.91525       | 0.0443  |
| At most 4 *   | 0.317755   | 21.18969  | 25.87211       | 0.1716  |
| At most 5 *   | 0.244074   | 8.953978  | 12.51798       | 0.1832  |

The results of the cointegration test based on trace statistics stated that the SR008 yield model contained 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 so that further research using the VECM model can be conducted.

**6.6. Vector Error Correction Model**

Vector Error Correction Model is a form of Vector Autoregressive, which is restriction. This additional restriction must be given due to the existence of non-stationary but cointegrated data forms. VECM then utilizes the cointegration restriction information into its specifications. That's why VECM is often called the VAR design for nonstationary series, which has cointegration relationships. After the cointegration is recognized then the next test process is done by using the error correction method. Suppose there are different degrees of integration between the test variables. In that case, the test is done jointly between the long-term equations with the error correction equation, after it is recognized, the cointegration variable occurs. The degree of integration for cointegrated variables is called Lee and Granger as multi cointegration. However, if it is not encountered cointegration phenomenon, then the test is continued by using a variable of first difference. VAR has a specific instrument that has a particular function in explaining the interaction between variables in the model. The tools include Impulse Response Function (IRF) and Forecast Error Variance Decompositions (FEVD), or so-called Variance Decompositions (VD). (Suharsono, Aziza, & Pramesti, 2017)

In the cointegration test results that have been carried out, then we can proceed to the VECM stage to see the effect in the long and short term of the research variables. The VECM results carried out are as follows:

**Table 6. Result of VECM**

| <b>Short- Term</b> |             |                   |
|--------------------|-------------|-------------------|
| VARIABLES          | COEFFICIENT | T-STATISTICS      |
| D(BI RATE(-1))     | 0.998945    | [0.82846]         |
| D(BI RATE(-2))     | 0.213026    | [0.25743]         |
| D(INFLATION(-1))   | 1.184792    | <b>[1.96119]</b>  |
| D(INFLATION(-2))   | 0.087700    | [0.31492]         |
| D(EXCHANGE(-1))    | -0.698938   | [-1.18647]        |
| D(EXCHANGE(-2))    | -1.034007   | <b>[-1.73397]</b> |
| D(REVENUE(-1))     | 0.000578    | <b>[2.32125]</b>  |
| D(REVENUE(-2))     | 0.000322    | [1.61225]         |
| D(EXPENDITURE(-1)) | -0.001402   | <b>[-2.47758]</b> |
| D(EXPENDITURE(-2)) | -0.000621   | <b>[-1.71240]</b> |
| <b>Long- Term</b>  |             |                   |
| VARIABLES          | COEFFICIENT | T-STATISTICS      |
| BI RATE(-1)        | 11.48179    | <b>[9.58435]</b>  |
| INFLATION(-1)      | 9.409868    | <b>[14.4257]</b>  |
| EXCHANGE(-1)       | 0.632728    | [0.96761]         |
| REVENUE (-1)       | 0.002469    | <b>[3.64376]</b>  |
| EXPENDITURE(-1)    | -0.006314   | <b>[-6.39585]</b> |

The variable mentioned is significant in influencing other variables is if the t-statistic value of the variable is higher than that of the t-table at the 5% level of significance  $df=36$  (t-statistic  $> 1.68830$ ). Based on the above results, in the short term, there are three significant variables in value of the difference one year before, namely the variable inflation, government revenue, and government expenditure. Also there are four variables are significant in the long term, namely the Bank Indonesia Rate, inflation, government revenue, and government expenditure.

Based on the table above, we can conclude that in the short term:

1. The analysis of the equation of inflation had a significant positive effect on the yield of 1.184792, which means that if there were an increase in one unit of inflation, it would increase one frequency of yield by 1.184792. As inflation increases, it will reduce people's interest to invest in buying SBSN. This will reduce demand for SBSN because the nominal rate or coupon is eroded by inflation, which if the offer is fixed will increase yield.
2. The analysis of the equation of exchange rate had a significant negative effect on yield of -1.034007, which means that if there were an appreciation in one unit of the exchange rate, there will be depreciation one frequency of yield by 1.034007. This is possible because according to data compiled from the Ministry of Finance's DJPPR, until the end of the third quarter of 2017, the amount of foreign ownership in domestic SBSN was only around 6.2% or Rp 21.3 trillion of the total domestic outstanding of around Rp 533 trillion. This means that if there is a fluctuation in the rupiah exchange rate against the US dollar, it will not have a significant effect on yield.
3. The analysis of the equation of government revenue had a significant positive effect on the yield of 0.000578, which means that if there were an increase in one unit of government

revenue, it would increase one frequency of yield 0,000578. This means if the government revenue increase, it will make yield decrease because of deficit government did not need funds.

4. The analysis of the equation of government expenditure had a significant negative effect on the yield of -0.001402, which means that if there were an increase in one unit of government expenditure, it would decrease one frequency of yield of 0.001402. So when the government expenditure decrease it can make yield increase.
5. The analysis of the equation of government expenditure had a significant negative effect on yield of -0.000621, which means that if there were an increase in one unit of government expenditure, it would decrease one frequency of yield by 0.000621. It means that if the government decrease it can make yield increase.

While in the long term, four variables have a significant effect, namely Bank Indonesia Rate, Inflation, Government Revenue, and Government Expenditure. The explanation is as follows.

The Bank Indonesia Rate variable had a significant positive effect on the yield of 11.48179. This means that if there were an increase in one BI RATE unit, it would increase one frequency of yield by 11.48179. This is because Bank Indonesia Rate and SBSN are both free-risk instruments. Bank Indonesia Rate and BI rate 7 days RR is the benchmark for market interest rates in Indonesia, so the yield from Bank Indonesia Rate can be used as a benchmark for determining coupons for a new SBSN or corporate series sukuk. And with the increase in the yield on Bank Indonesia Rate, will have a positive effect on yield.

The inflation variable had a significant positive effect on the yield of 9.409868, which means that if there were an increase in one unit of inflation, it would increase one frequency of yield by 9.409868. As inflation increases, it will reduce people's interest to invest in buying SBSN. This will reduce demand for SBSN because the nominal rate or coupon is eroded by inflation, which if the offer is fixed will increase yield.

The government revenue variable had a significant positive effect on the yield of 0.002469, which means that if there were an increase in one unit of government revenue, it would increase one frequency of yield by 0.002469. If the government revenue increase it can make yield decrease.

The government expenditure variable had a significant negative effect on the yield of -0.006314, which means that if there were an increase in one unit of government expenditure, it would decrease one frequency of yield -0.006314. It means that if government expenditure decrease the yield will increase.

#### **Short-Term:**

Positive Relationship: **Inflation**, and **Government Revenue**.

In the short term, inflation and government revenue affect the yield requested by investors. The government will respond to inflation fluctuations by changing Bank Indonesia Rate, and ultimately this will affect yield. Declining government revenue will cause an increase in the issuance of SBN, based on the law of demand and supply it will affect yield.

Negative Relationship: **Exchange Rate and Government Expenditure**.

In the short term, the exchange rate has less effect on yield because the SR008 is an SBN issued on the domestic market, so the exchange rate less influences it. State spending will affect the money supply, but in the short term, it will not affect yield.

### **Long-Term:**

Positive Relationship: **Bank Indonesia Rate, Inflation, and Government Revenue.**

As in the short term, inflation and government revenue affect yield in long term.

Negative Relationship: **Government Expenditure.**

As in the short term, government spending in the long term also does not affect the SR008 yield. In the short term, inflation and state income affect yield.

## **5. CONCLUSION AND RECOMMENDATION**

### **5.1. Conclusion**

Based on the VECM test results, it can be concluded that a significant variable that positively influences yield in the short term is Inflation of 1.184792 and the Government Revenue variable of 0.000578. In the short term, inflation and government revenue affect the yield requested by investors. The government will respond to inflation fluctuations by changing Bank Indonesia Rate, and finally this will affect yield. The decreasing government revenue will cause an increase in the issuance of SBN, and based on law of demand and supply it will affect yield.

And also, the variable that significantly affects negatively is the Exchange Rate of -1.034007 and Government Expenditure of -0,000621. In the short term, the exchange rate has less effect on yield because the SR008 is an SBN issued on the domestic market, so the exchange rate less influences it. State spending will affect the money supply, but in the short term, it will not affect yield.

While in the long term, the variables that significantly affect positively are the Bank Indonesia Rate variable of 11.48179, the Inflation variable of 9.409868, and the Government Revenue variable of 0.002469. As in the short term, inflation and government revenue affect yield in long term. Then the variable that affects negatively is the Government Expenditure variable of -0.006314. As in the short term, government spending in the long term also does not affect the SR008 yield. In the short term, inflation and state income affect yield.

Based on the results of the FEVD test, it shows that generally it is dominated by the Yield allowance itself with a variant composition of 100 percent in the first period and continues to decline in the following period until it touches a variant of 80.32 percent in the last period. From the results of the FEVD value, it can be stated that the effect of Yield variations on the Bank Indonesia Certificate, Inflation, Exchange Rate, Government Revenue, and Government Expenditure in general only affects a small amount. Meanwhile, the impact of the smallest yield variation is explained by changes in the Government Expenditure variable. Meanwhile, the highest impact yield variation is Bank Indonesia Rate and Exchange Rate.

### **5.2. Recommendation**

Based on this research, there are several recommendations as follow.

The government emphasizes investment with the lowest possible cost of financing. So when the government is in a low revenue position, it is necessary to look for cheaper financing sources. One solution is the issuance of sovereign sukuk on the international financial market because the demand for yield on the global financial market is lower than the domestic one.

For the next research, it is expected to be able to use other variables, more data, and different analytical methods as a comparison of analytical tools that researchers have used in this study.

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