

The Impact of BI Rate, Yield, and Inflation on Project-Based Sukuk

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Abstract. One of the sharia-based financing instruments issued by the government of the Republic of Indonesia is the Project-Based Sukuk (PBS) series. PBS is designed to finance certain projects conducted by many Indonesian agencies. This study aims to analyze the effect of BI rate, sukuk yield, and inflation on the development of PBS from 2018 to 2021. A quantitative descriptive using the multiple linear regression analysis is applied. The results show that the BI rate has no significant effect on the development of PBS, while yield and inflation have a significant negative effect. It implies the government shall consider some particular macroeconomic and other factors in the issuance of the next series of sukuk. Moreover, a newly innovated scheme in sukuk issuance is needed. Since PBS has been contributing to the development in Indonesia, it is highly recommended to optimize the use of PBS in long term.

Keywords: bi rate, inflation, project-based sukuk, yield

1 Introduction

The state budget financing instruments continue to experience product development and diversification in line with increasing financing needs. The issuance of Law Number 19 of 2008 concerning Sovereign Sharia Securities (SBSN) became the legal basis for the government in issuing sharia-based financing instruments in Indonesia. Sovereign sukuk is evidence of the contribution of SBSN assets issued in rupiah and foreign currencies with sharia-based mechanisms. The issuance of SBSN is based on sharia agreements, such as *akad ijarah*, *mudharabah*, *musyarakah*, and *istishna*.

One form of SBSN that applies an *ijarah* agreement is project-based SBSN, also known as SBSN PBS (*Project Based Sukuk*). The SBSN PBS is issued based on a lease agreement (*ijarah*), which is an *ijarah* asset to be leased agreement so that the government can lease an asset in the form of infrastructure project construction according to the construction period. Then, investors can get profits from rewards or *ujrah* derived from a predetermined rental mechanism with fixed returns. Until the end of 2021, the issuance of the SBSN PBS has reached

the 32nd series with the longest maturity date, namely PBS-015 in 2047 (Kementerian Keuangan, 2021).

The government of the Republic of Indonesia determines the SBSN product used as the benchmark series every year. In 2021, the government set the SBSN benchmark series, i.e., PBS-017, PBS-027, PBS-028, and PBS-029, through the Director-General of Financing and Risk Management's Decision Number 92 of 2020 concerning the Sovereign Sharia Securities Benchmark Series 2021. These were chosen after considering the results of the analysis of liquidity, outstanding amounts, and potential needs of investors and main dealers of each SBSN (Kementerian Keuangan, 2020). Some brief information about the Benchmark Series SBSN in 2021 are:

Table 1. Benchmark Series SBSN Data for 2021 (as of December 2, 2021)

SBSN Series Benchmark	Coupon Rate	Published Date	Due Date	Total Outstanding
PBS-017	6.125%	January 11, 2018	October 15, 2025	63.086.476.000.000
PBS-027	6.5%	May 4, 2020	May 15, 2023	64.115.368.000.000
PBS-028	7.75%	July 23, 2020	October 15, 2046	75.503.418.000.000
PBS-029	6.375%	January 14, 2021	March 15, 2034	43.116.794.000.000

Source: DJPPR (2021)

Based on the data in Table 1, PBS-017 is a benchmark series SBSN published earlier than other PBS series. However, PBS-017's total outstanding as of December 2, 2021, is lower than PBS-027 and PBS-028 issued two years after PBS-017's issuance. In terms of the coupon rate, PBS-017 has the lowest coupon rate among the four PBS series, which is 6.125%. The development of the outstanding PBS sukuk amount might be determined by several variables, including BI Rate, sukuk yield, and inflation (Amali, 2018; Cupian et al., 2021; Gusniarti & Primasuci, 2019; Rahman et al., 2016; Suriani et al., 2018).

The BI Rate is a reference interest rate in which periodically set by Bank Indonesia. The BI Rate tends to affect economic activity in Indonesia. It significantly negatively influences the sukuk market's development in the long term (Risandy, 2021; Suriani et al., 2018) and short-term (Suciningtias, 2019). If there is an increase in the BI Rate, people tend to be more interested in saving in banks than investing or buying sukuk, which might affect the outstanding value of the sukuk (Risandy, 2021). On the other hand, there are differences in some empirical results, namely claiming that the BI Rate does not positively or negatively affect the outstanding Sukuk value (Abdi & Masih, 2017; Fatiyani, 2019).

Sukuk yield is one of the main factors for investors in buying or investing in sharia securities. Yield would increase the desire of investors to buy sukuk because it might reflect profits in the form of returns. However, Harahap's (2018) study shows a negative relationship between yields

and retail Sukuk prices. The Sukuk yield level is more likely to decline due to the increase in retail sukuk prices. In that case, it will affect the development of the number of retails sukuk circulating in the community because their intention to invest in sukuk tends to decrease (Amali, 2018). Moreover, based on several studies, it is argued that the yield variable does not affect the trading volume of retail sukuk because the sukuk yield is determined at a fixed rate (Gusniarti & Primasuci, 2019; Risandy, 2021). Since the sukuk yield is fixed, the yield has no bearing on investors' decision to invest in retail Sukuk (Cupian et al., 2021) (Cupian et al., 2021).

In addition to sukuk yield, inflation might also affect investors' decisions in investing. The increase in inflation would reduce the demand for sukuk due to the decrease in the real value in the form of profits that investors will receive; thus, it becomes such consideration for investors to invest in sukuk (Rahman et al., 2016). Therefore, the increase in inflation tends to reduce the level of demand for sovereign sukuk. Meanwhile, Nurhayadi et al. (2020) claims that the inflation significantly affects the volume of sukuk trade in the secondary market.

In general, the results of the issuance of sovereign securities are used to finance the state budget deficit. However, for the issuance results of SBSN, they are *earmarked* (set aside) to meet the needs of infrastructure projects. The issuance of the PBS-017 Series SBSN in early 2018 became part of the project/activity financing sources listed in the 2018 State Budget. Over time, the outstanding value of SBSN PBS-017 circulating in the financial market is increasing because PBS also includes tradable securities in the secondary market before reaching the maturity period.

Based on data from the DJPPR, the outstanding development of SBSN PBS-017 throughout 2021 tends to stagnate (Kementerian Keuangan, 2021). Although there was an increase in the number of outstanding in the middle of the year, the percentage increase was still lower compared to other PBS benchmark series. The following is the outstanding development of SBSN PBS-017 during 2021.

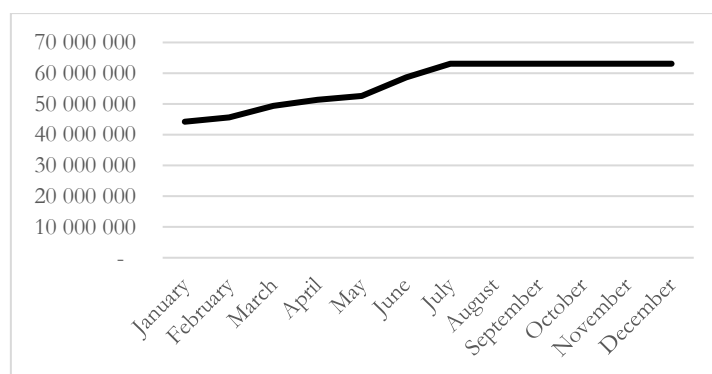


Fig. 1. Outstanding Development of SBSN PBS-017 in 2021 (In millions of rupiah)

Source: DJPPR (2021)

The results of previous studies are very diverse, and research concerning SBSN PBS (*Project Based Sukuk*) is still very limited. This research is considered different from the earlier studies,

which mostly used retail sukuk as research objects and only focused on factors that could affect the level of demand for sovereign sukuk. This study aims to determine whether macroeconomic variables in the form of BI Rate and inflation affect the total outstanding of SBSN PBS-017, as well as whether the yield of sukuk influences the total outstanding of SBSN PBS-017.

2 Methods

This research employs a quantitative approach by using multiple linear regression to analyze the data. Widarjono (2009) explains that multiple linear regression analysis is a method that aims to study a phenomenon consisting of more than two variables, including the dependent variable. The data used as independent variables are the BI Rate, SBSN PBS-017 yield, and inflation while the dependent variable is the outstanding SBSN PBS-017. This study collects the monthly data from 2018–2021.

The PBS-017 yield data is obtained through the DJPPR of the Ministry of Finance of the Republic of Indonesia, and the total outstanding PBS-017 is gained through the official website of www.djppr.kemenkeu.go.id. Meanwhile, BI Rate and inflation data are obtained through www.bi.go.id.

The following is the definition of each variable used in this study:

1. BI Rate or currently known as BI-7 Day Reverse Repo Rate (BI7DRR), is a reference interest rate that reflects the attitude or stance of monetary policy set by Bank Indonesia and announced to the public.
2. PBS-017 Sukuk yield is the PBS-017 yield level prevailing in the secondary market.
3. Inflation is the rate of increase in prices over a given period of time. In this study, the inflation is the consumer price index (CPI).
4. The total outstanding SBSN PBS-017 is the number of SBSN PBS-017 in circulation and still actively traded in the secondary market.

In this study, the equation is then described as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

(1)

Description:

Y = Total Outstanding of PBS-017

α = Constant

β_1 = BI Rate Regression Coefficient

β_2 = PBS-017 Yield Regression Coefficient

β_3 = Inflation Regression Coefficient

X1 = BI Rate

X2 = PBS-017 Yield

X3 = Inflation

e = Error

The impact of BI Rate, yield, and inflation variables on the total outstanding of SBSN PBS-017 in this study can be described as follows:

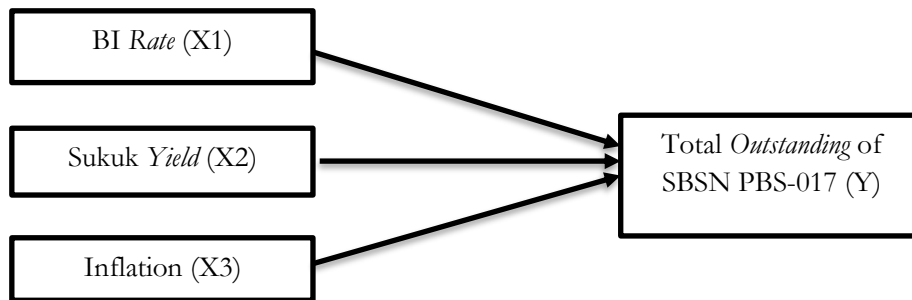


Fig. 2. Model Equation Research
Source: Processed by the Author (2022)

3 Result and Discussion

Descriptive statistical analysis is a statistic that describes or gives an overview of the object under study through samples or population data on an as-is basis that results in a general conclusion about the data used. The results of the descriptive statistical analysis of each independent and dependent variable in this study are shown in Table 2.

Table 2. Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard Deviation
<i>BI Rate</i>	48	3.50	6.00	4.6250	0.93114
<i>Yield</i>	48	4.69	8.80	6.6171	1.20210
<i>Inflation</i>	48	1.32	3.49	2.4556	0.77851
<i>Outstanding</i>	48	3,130	63,086	2,391	2.2688

Source: Processed from SPSS (2022)

There are three independent variables used in this study. First, the minimum value of the BI Rate variable is 3.50%, and the maximum value is 6.00%, with an average value of 4.6250%. Second, the minimum value of the sukuk yield variable is 4.69%, and the maximum value is 8.80%, with an average value of 6.6171%. Third, the minimum value of the inflation variable is 1.32%, and the maximum value is 3.49%, with an average value of 2.4556%. Furthermore,

the dependent variable is outstanding for SBSN PBS-017. The minimum value is IDR 3,130 billion, and the maximum value is IDR 63,086 billion, while the average value is IDR 2,391 billion.

This study employs a multiple linear regression method to determine whether independent variables affect the dependent variable. Before conducting regression testing, a classical assumption test was carried out to meet the requirements criteria. Based on the results of the classical assumption test, all research data are normally distributed, and there are no autocorrelation, heteroscedasticity, or multicollinearity symptoms. There are two stages of statistical testing in multiple linear regression tests, namely the t-test and the F-test (Suyitno & Herlawati, 2015). The t-test is used to partially test an independent variable's effect on the dependent variable respectively while the F-test aims to determine the effect of independent variables simultaneously on the dependent variables. The regression test results are shown in Table 3.

Table 3. Regression Test Results

Variable	Statistical Test			
	Coefficient	Std. Error	t-Statistic	Prob.
C	1.153	7.114	16.207	0.000
X ₁	5.453	3.970	0.137	0.891
X ₂	-7.596	3.053	-2.488	0.017
X ₃	-1.777	2.505	-7.094	0.000
R-squared	0.873		Sample	48
Adjusted R-squared	0.865		S.E. of regression	8.34636
F-Statistic	101.102		Durbin-Watson stat	2.134
Prob. (F-Statistic)	0.000			

Source: Processed from SPSS (2022)

The regression equations obtained based on Table 3 are: $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$. Thus, Total Outstanding of SBSN PBS-017 = 1.153 + 5.453 (BI Rate) – 7.596 (yield SBSN PBS-017) – 1.777 (inflation) + error.

Based on Table 3, the impact of each variable can be described as follows: first, the BI Rate variable does not affect the total outstanding of SBSN PBS-017. The regression coefficient value of the BI Rate variable is 5.453 with a significance value of 0.891 (above $\alpha=0.05$). This means that the BI Rate variable has no significant effect on the total outstanding SBSN PBS-017. The higher the increase in the BI Rate does not cause an increase or decrease in the value

of the Sukuk. Second, sukuk yield negatively affects the total outstanding of SBSN PBS-017. The regression coefficient value of the yield variable is $-7,596$. This means that every 1% increase in yield leads to reduce the total outstanding SBSN PBS-017 by IDR 7,596 billion. The higher the yield of Sukuk, the lower the value of sukuk, and vice versa. Third, inflation negatively affects the total outstanding of SBSN PBS-017. The value of the inflation variable regression coefficient is $-1,777$. This means that every 1% increase in inflation leads to reduce the total outstanding SBSN PBS-017 by IDR 1,777 billion. The higher the inflation rate, the lower the value of the sukuk, and vice versa.

These results find that the BI Rate, yield, and inflation variables simultaneously affect the total outstanding of SBSN PBS-017. Table 3 shows a significant value below $\alpha=0.05$, which is 0.000. This means that the BI Rate, yield, and inflation variables together affect the total outstanding SBSN PBS-017. Furthermore, the value of r-squared is 0.873. This figure shows that the variation of independent variables is able to explain the dependent variables together by 87.3% and is affected by other variables out of the model by 12.7%. R-Squared described the coefficient of determination used to measure the extent of a model's ability to explain variations in the dependent variables (Suliyanto, 2011).

The results show that the BI Rate does not significantly affect the total outstanding of SBSN PBS-017. It might have occurred because the BI Rate during the research period was quite stable and did not have a major effect on the investment sector, especially in the SBSN PBS-017 instrument. These results are in line with the previous study that claimed the BI Rate increase will not affect the frequency of trading in retail sukuk series SR-006 both in the long and short term (Cascarella, 2019). Meanwhile, in the retail sukuk series SR-007, the BI Rate might positively affect the trading volume of sukuk (Cascarella, 2019; Ni'mah & Pratomo, 2019), while in the short term, it affects negatively. It shows that the difference in the sukuk series and period can also determine whether there is an effect of the BI Rate on outstanding sukuk or not.

Based on data from the Bank Indonesia website, the BI Rate during the 2018–2021 period tends to be stable and even relatively low in 2020–2021. The reduction in the BI Rate is intended to maintain economic stability and stimulate economic recovery in the era of the COVID-19 pandemic, including restoring the investment sector (Bank Indonesia, 2020). However, the BI Rate did not significantly affect the development of SBSN PBS-017 during this research period. It is because investors tend to consider other factors in investing. During the pandemic, investors tend to prioritize their guard attitude and prepare emergency funds because of fluctuating economic conditions and even recession due to the pandemic (Sulistiyorini, 2021).

The sukuk yield significantly negatively influences the total outstanding of SBSN PBS-017. The yield of SBSN PBS-017 during the 2018–2021 period was volatile and unpredictable due to the unstable condition of the Indonesian economy due to the pandemic. Although sukuk yields have increased, investors tend to choose to keep their money in banks as a savings fund during the COVID-19 pandemic. This study's results align with several studies that show that sukuk yields significantly negatively affect retail sukuk trading volumes (Harahap, 2018; Yusiarmayanti, 2017). However, the results of this study are not in line with the research of

Gusniarti & Primasuci (2019), which claims that the yield level does not significantly affect the demand for retail sukuk during the research period. Furthermore, Risandy's (2021) study shows that yield has a positive but insignificant effect on retail sukuk trading volume. It is because the yield given to investors is fixed, so the level of return received can be predicted.

The inflation variable is one of the macroeconomic variables that can affect outstanding sukuk. These findings show that inflation significantly negatively influences the total outstanding of SBSN PBS-017. During 2018–2021, inflation in Indonesia experienced fluctuations and even experienced deflation in August 2020, which became the lowest inflation since 2000 (BPS, 2020). Apart from the impact of the COVID-19 pandemic, the low inflation rate was caused by price declines in several expenditure groups. Inflation also impacts the investment sector, so if there is an increase in inflation, it will reduce investors' intention to invest, especially in sukuk.

Several studies have also argued that inflation significantly negatively affects the volume of retail Sukuk in the long term (Fatiyani, 2019; Zulianingrum et al., 2020). However, there are differences with the results of research by Rizqi (2020) and Fauzi (2019), which claimed that inflation did not significantly affect the level of demand for retail sukuk both in the long and short term. Simultaneously, the BI Rate, sukuk yield, and inflation affect the total outstanding of SBSN PBS-017. These results are in line with research by Risandy (2021), Ni'mah & Pratomo (2019), and Irham (2019), which shows that the BI Rate, yield, and inflation influence the country's outstanding sukuk although there are differences in the research period and the sukuk object studied.

The outstanding of SBSN PBS-017 has continued to increase since the beginning of the issuance in 2018, amounting to IDR 2,570 billion, up to IDR 63,086 billion as of December 2021. It is in line with the increase in the need for financing infrastructure development in Indonesia. The issuance of the SBSN PBS series has had various positive impacts on infrastructure development in Indonesia. Based on data published by the DJPPR of the Ministry of Finance in the fourth quarter of 2021, the realization of infrastructure financing by many Indonesian ministries/agencies through the project financing sukuk mechanism for the Fiscal Years 2013 to 2020 reached IDR 21,188 billion. This nominal is considered very huge for the allocation of accelerating infrastructure development in Indonesia.

SBSN PBS is part of the Indonesian government's efforts to meet infrastructure financing needs. In addition to aiming as a source of financing, SBSN PBS might be one of the investment options for investors who intend to invest and obtain profits through periodic returns. To optimize the role of sovereign sukuk in Indonesia's development, it would be necessary to innovate the sukuk issuance scheme for subsequent series so that infrastructure financing instruments become more varied.

4 Conclusion

Based on the results and discussions, it can be concluded that the BI Rate set by Bank Indonesia would not affect the total outstanding of SBSN PBS-017 during the period of 2018–2021.

Meanwhile, sukuk yield and inflation negatively affect the total outstanding of SBSN PBS-017. The findings imply that the government of the Republic of Indonesia shall continue to consider economic features and other aspects that might influence the issuance of the next series of sukuk, especially the project-based sukuk arrangement. In line with the post-pandemic national economic recovery policy, the issuance of SBSN PBS is expected to be carried out in accordance with current infrastructure financing needs. The utilization of SBSN PBS has shown positive results and might increase infrastructure development in Indonesia. Since the increasingly role of sovereign sukuk in Indonesia's development, innovations in sukuk issuance schemes for subsequent series are urgently required to optimize the potential of sovereign sukuk issued by the Indonesian government.

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