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Analysis on the Determinants of Republic of Indonesia Sovereign Sukuk Liquidity in Secondary Market

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ABSTRACT
This study investigates the determinants of liquidity in Sharia Securities (SBSN) by analyzing the impact of bond-specific and macroeconomic factors on the bid-ask spread as a proxy for liquidity. Using panel data regression analysis, the study examines 62 tradable series of SBSN from 2013 to 2022, considering factors such as outstanding amount, time to maturity, yield to maturity, Rupiah exchange rate, inflation rate, reference interest rate, Indonesia Stock Exchange Composite Index (IHSG), and Indonesia Credit Default Swap (CDS). Results indicate that time to maturity, yield to maturity, central bank reference interest rate (BIRate), IHSG, and CDS significantly influence the bid-ask spread of SBSN, while outstanding amount, Rupiah exchange rate, and inflation rate do not. Additionally, analysis reveals that a strengthening IHSG and higher CDS widen the bid-ask spread, indicating reduced liquidity. These findings provide insights for stakeholders including issuers, investors, and regulators in managing SBSN liquidity in the Indonesian market.

INTRODUCTION

Based on the debt management strategy of the Indonesian government according to the Ministry of Finance of the Republic of Indonesia (2023), to meet the financing needs of the state budget (APBN), the Indonesian government regularly issues State Securities (SBN), consisting of Government Bonds (SUN) and Sharia Securities (SBSN). SUN is a conventional government bond, while Sharia Securities (SBSN) is a security issued by the government based on Sharia principles. SUN and SBSN are capital market instruments issued by the government and can be owned by both domestic and foreign investors, including corporations and retail/individual investors. The issuance of SBN has the largest portion for financing the APBN deficit, accounting for approximately 98% of total financing.

SBN is considered a risk-free investment instrument because the repayment of principal and interest is guaranteed by laws related to the APBN, as well as laws related to SUN and SBSN. However, based on research conducted by the Directorate of Sharia Financing, DPPR (2018), the public is relatively more familiar with SUN compared to SBSN, as SUN was issued earlier in 2002, compared to SBSN which debuted in 2008. The initial growth of SUN issuance was mainly driven by efforts to cover the financial crisis of 1998, used to replace the costs to Bank Indonesia that had provided loans through the Bank Indonesia Liquidity Assistance (BLBI) program. Meanwhile, the issuance of SBSN since 2008 stemmed from the relatively low public awareness of Sharia financial markets.

As the first issued SBN instrument, Government Bonds (SUN) has a relatively deeper market compared to Sharia Securities (SBSN). This is indicated by:

a) Outstanding Amount

Based on data from the Ministry of Finance (2023), by the end of 2022, the outstanding amount of SUN reached IDR 5,513.77 trillion (approximately 80.4% of total SBN), while the outstanding amount of SBSN was around IDR 1,344.35 trillion (approximately 19.6% of total

SBN). Although the portion of SBSN is relatively small, the outstanding SBSN to total SBN ratio has consistently increased over the past decade. The outstanding SBSN to total SBN ratio has shown a relatively consistent upward trend from less than 10% at the end of 2012 to nearly 20% at the end of 2022.

b) Primary Market Infrastructure

Since 2007, SUN has implemented the Primary Dealers system, functioning as market makers to support SUN liquidity. Since that year, SUN has also had benchmark series set by the government, serving as references for similar instruments in the capital market and as indicators for the financial market. In contrast, SBSN only implemented the Primary Dealers and benchmark series system starting in 2020. Primary Dealers are banks or securities companies appointed by the Minister of Finance to carry out specific obligations in the domestic primary market or domestic secondary market in either the Indonesian Rupiah or foreign currency with specific rights. As of the end of 2022, SUN Primary Dealers consisted of 19 institutions, while SBSN Primary Dealers consisted of 18 institutions.

c) Secondary Market Activity

Based on SBN market trading transaction data from the official DJPPR website, in 2022, the daily outright trading nominal for domestic SUN in the secondary market reached IDR 4,544.03 trillion, with a total of 427,711 transactions. Meanwhile, the daily outright trading nominal for domestic SBSN in the secondary market was around IDR 520.51 trillion, with a total of 56,592 transactions. Over the last five years (2018-2022), both in terms of nominal and daily frequency, SBSN trading activity in the secondary market has been significantly lower than SUN. In other words, it can be said that SBSN is relatively less liquid in the secondary market compared to SUN.

The low liquidity of SBSN in the secondary market, as indicated by the turnover ratio, can impact investor expectations of higher yields as compensation for the perceived liquidity risk. High yield expectations from investors can lead to potentially higher issuance costs for the government and an increased cost of funding for SBSN issuance, imposing a relatively heavier burden on the state budget. Therefore, it is deemed necessary to analyze in detail the liquidity of SBSN in the secondary market and the factors influencing SBSN liquidity in the secondary market.

Research on sukuk liquidity was conducted by (Almaskati, 2022), analyzing the hypothesis that sukuk liquidity is lower than conventional bonds using sukuk and conventional bond data issued in foreign currencies. The conclusion drawn from this research is a significant difference in liquidity between sukuk and conventional bonds in the international market, especially for corporate issuances, with sukuk having less liquidity compared to conventional bonds. This finding differs from some previous studies by (Ariff et al., 2017; Awaludin & Masih, 2015; Saeed et al., 2021) concluding that sukuk and conventional bonds have relatively similar liquidity conditions.

(Said & Grassa, 2013) examined sukuk liquidity in the domestic market of Malaysia and found that sukuk market liquidity is highly influenced by the issuance volume. (Karahan & Soykök, 2022) studied the liquidity of the Turkish government bond market using the Nelson-Siegel model to create the term structure of interest rates directly from bond price quotations in the Turkish domestic market. This research concluded that the liquidity of the Turkish bond market becomes lower during periods of negative sentiment. Moreover, the standard deviation of public expectations regarding inflation rates can be a strong explanatory variable for the emergence of noise in the Turkish bond market.

Asmuni and Tan (2021) investigated the yield differences between sukuk and conventional bonds in the domestic market of Malaysia. The study indicated that historically, government-issued Sharia bonds have higher yields than conventional bonds, while for sukuk

or bonds issued by corporations, the yield differential is not clear. Liquidity factors lead to a positive yield spread between government-issued sukuk and conventional bonds.

Based on previous research on bond and sukuk liquidity, various indicators have been used as dependent variables to analyze their impact on bond or sukuk liquidity. These indicators can include both bond-specific and macroeconomic factors. This study will analyze the determinants of SBSN liquidity using a combination of bond-specific and macroeconomic factors, using the bid-ask spread of SBSN as a proxy for liquidity. Su and Tokmakcioglu (2020) conducted research on the liquidity of Turkish government bonds proxied by the bid-ask spread. The study concluded that the bid-ask spread of Turkish government bonds is significantly influenced by time to maturity, trading volume, and bond type.

Several earlier studies on sukuk liquidity, including Sharia Securities (SBSN), have not used the bid-ask spread as a proxy for liquidity. The bid-ask spread's characteristics as a measure of demand and supply for a bond or sukuk indicate the price discovery mechanism between the bond or sukuk issuer and buyer. In other words, the narrower the spread between bid and ask, the better the liquidity of the bond or sukuk, as the offered price by the bond or sukuk issuer and the desired price by the buyer will be closer. Research on the determinants of liquidity in the secondary market is important for SBSN, which currently serves as a benchmark for Sharia investment instruments in the domestic Indonesian market.

The main issue faced is the low liquidity of Sharia Securities (SBSN) compared to Government Bonds (SUN), creating limited portfolio diversification options for investors. Low liquidity also makes the market vulnerable to shocks, increases volatility, and complicates decision-making in the financial market. Previous studies indicate that SBSN tends to be less liquid than conventional bonds, leading to higher yields. For the government, this condition may hinder the issuance and development of the SBSN market, as well as increase issuance costs. From an investor's perspective, low liquidity makes them hesitant to enter the market and request higher discounts as compensation. This issue can hinder the growth of the Sharia financial market. Therefore, this research aims to analyze the factors influencing SBSN liquidity, both bond-specific and macroeconomic, to provide relevant insights for issuers, investors, and regulators. The research goal is to analyze and determine the significance of these factors. The results of this research can be used by academics, regulators, the government, and investors as a reference and input for decision-making related to the SBSN market in Indonesia. This research includes all series of Rupiah-denominated SBSN that can be traded in the secondary market, with bond-specific factors involving the amount of outstanding SBSN, time remaining to maturity, and yield to maturity. Macroeconomic factors include the Rupiah exchange rate, inflation rate, reference interest rate, IHSG (Indonesia Stock Exchange Composite Index), and Indonesia CDS (Credit Default Swap). The data used covers the period from January 2013 to December 2022.

RESEARCH METHOD

In this research, the research type employed is correlational research with a quantitative approach. The research focus is to analyze the correlation between specific variables and test hypotheses to determine the exact correlation between variables. The quantitative approach is chosen to establish the causative relationship between the research object and influencing variables. Through this approach, the research aims to obtain the degree of significance of the impact of independent variables on the dependent variable.

The method used is panel data regression analysis to test hypotheses regarding the relationship between bond-specific factors and macroeconomic factors on the liquidity of Sharia Securities (SBSN) in the secondary market. A total of 62 tradable series of SBSN in the secondary market are the research objects, with data spanning from 2013 to 2022,

encompassing 2,883 observation data points. Secondary data is obtained from various sources such as DJPPR, the Ministry of Finance, Bloomberg, PT Penilai Harga Efek Indonesia, Bank Indonesia, the Central Statistics Agency, and the Financial Services Authority.

The research framework is based on bond-specific and macroeconomic factors that are presumed to have a significant impact on the bid-ask spread of SBSN prices, which serves as a proxy for SBSN liquidity in the secondary market. The analytical model used is regression, with the dependent variable being the bid-ask spread and independent variables involving bond-specific factors (amount of outstanding SBSN, time to maturity, yield to maturity) and macroeconomic factors (Rupiah exchange rate, inflation rate, reference interest rate, Indonesia Stock Exchange Composite Index (IHSG), and Indonesia Credit Default Swap (CDS)).

RESULTS AND DISCUSSION

Descriptive Research Data

The variables used in this study as explained in the previous section, consist of *Bid-ask Spread*, which is the difference between *the bid* and *ask prices of all outstanding SBSN series obtained from Bloomberg*, Outstanding SBSN *Amount, which is the nominal amount of SBSN still in circulation obtained from DJPPR, Time to Maturity* (TTM) is the maturity time of outstanding SBSN series obtained from DJPPR, *Yield to Maturity* (YTM) is SBSN rewards that will be obtained by investors if the investor holds bonds until maturity obtained from PT PHEI, Rupiah Exchange Rate is the exchange rate of Rupiah against US Dollar based on Jakarta Interbank Spot Dollar Rate (JISDOR) data obtained from Bank Indonesia, Inflation Rate is the *year-on-year inflation rate released every month* obtained from the Central Statistics Agency (BPS), the Reference Interest Rate is BI 7 Days (Reverse) Repo Rate / BI7DRR which is determined and released every month after the Bank Indonesia Board of Governors Meeting (RDG) obtained from the official website of Bank Indonesia, the Composite Stock Price Index (HSG) is an indicator of stock market performance in Indonesia obtained from Bloomberg, and Credit Default Swap (*CDS) Indonesia, which is a premium for* Indonesian CDS contracts with a tenor of 5 years obtained from Bloomberg. The research data came from 62 SBSN series in the period 2013 to 2022, with a total of 2,883 observational data.

Descriptive statistics are used to show the average magnitude, highest value, and lowest value of all dependent variables and independent variables in this study. The general description of descriptive statistics of research variables is as follows:

Table 1 Descriptive Statistics Variable

Variable	Obs	Mean	Std. Dev.	Min	Max
Bid-Ask Spread	2883	0,007	0,008	0,000	0,171
Outstanding (miliar)	2883	16.101,937	17.308,054	25,664	75.503,418
Time to Maturity (TTM)	2883	8,270	7,512	0,005	29,971
Yield to Maturity (YTM)	2883	0,070	0,014	0,019	0,109
KursRupiah	2883	13.454,230	1.362,797	9.678,000	15.867,430
Tingkat Inflasi	2883	0,041	0,020	0,013	0,088
BI7DRR	2883	0,055	0,015	0,035	0,078
IHSG	2883	5.598,008	792,191	4.222,277	7.202,120
CDS	2883	137,409	51,222	63,303	281,723

From the second semester of 2013 to the first semester of 2014, the 5-year Credit Default Swap (CDS) for Indonesia experienced a sharp and fluctuating increase due to pressure from external factors, such as uncertainty about the reduction of economic stimulus in the U.S., and internal factors, including Indonesia's trade balance deficit. The 5-year CDS touched a level of

281.72 in October 2013 and showed significant volatility throughout 2014 before rising again in the second semester of 2015 due to negative sentiment stemming from the increase in the U.S. benchmark interest rate, leading to capital outflows from the majority of emerging markets, including Indonesia.

After showing a decreasing trend in the 2016-2017 period as the investment risk of Indonesian government bonds improved, the 5-year CDS for Indonesia increased again in 2018 due to the trade war between the U.S. and China, the weakened economies of several emerging market countries, and the depreciation of the Rupiah. Meanwhile, the relatively conducive domestic capital market conditions in 2019 led to a declining trend for the 5-year CDS in Indonesia.

The COVID-19 pandemic that spread in the first quarter of 2020 also caused a sharp spike in the 5-year CDS for Indonesia from 58.73 on February 19, 2020, to reaching a level of 292.25 on March 23, 2020. Nevertheless, post-March 2020, the 5-year CDS for Indonesia showed a fairly sharp declining trend until mid-2020 and remained relatively stable, although sometimes fluctuating, until the end of 2021. Throughout 2022, the 5-year CDS for Indonesia exhibited volatile movement due to sentiment from the uncertainty of the movements in the U.S. benchmark interest rates and the impact of the economic policies of various countries worldwide in the post-COVID-19 economic recovery efforts.

Panel Regression Model Selection

In order to determine the best regression model approach to be used, several tests were carried out, namely the *Chow test, the* Hausman *test and the* Lagrange Multiplier *test* .

a. Test Chow

The Chow test is used to determine the best model among the Common Effect (*CE) and* Fixed Effect *(FE) models with the hypothesis used is:*

- H0 : *Common effect* (CE) is the best model approach
- H1 : *Fixed Effect* (FE) is the best model approach

Decision making is done by looking at the probability value of *cross section F* test results. If the probability value > 0.05 then H0 is accepted, while if the probability value < 0.05 then H0 is rejected.

Table 2 Chow Test Results

Sig. Chow Test	Models Compared	Conclusion
0,0000	CE and FE	Among CE and FE, selected FE

Based on the Chow test results, the probability value of the cross-section F is obtained as 0.0000. Thus, because the obtained probability value is < 0.05, H0 is rejected, and it can be concluded that among Common Effect and Fixed Effect, the best model is using the Fixed Effect approach.

b. Hausman test

The Hausman test is used to determine the best model between the Random Effect (RE) and Fixed Effect (FE) models, with the following hypotheses::

- H0: Random Effect (RE) is the best model approach.
- H1: Fixed Effect (FE) is the best model approach.

The Chi-Square probability value resulting from the test is the basis for decision-making. If the probability value > 0.05, then H0 is accepted; if the probability value < 0.05, then H0 is rejected.

Table 3 Hausman Test Results

Sig. Hausman Test	Models Compared	Conclusion
0,2777	RE dan FE	Among RE and FE, selected RE

Based on the Hausman test results, the Chi-Square probability value is 0.2777. Thus, because the obtained probability value > 0.05, H0 is accepted, and it is concluded that among Fixed Effect and Random Effect, the best model is using the Random Effect approach.

c. Lagrange Multiplier Test

The Lagrange Multiplier test is used to determine the best model between Common Effect (CE) and Random Effect (RE) models, with the following hypotheses:

- H0: Common Effect (CE) is the best model approach.
- H1: Random Effect (RE) is the best model approach.

The conclusion from the test results can be seen through the cross-section F probability value. If the probability value > 0.05, H0 is accepted; if the probability value < 0.05, H0 is rejected.

Table 4. Lagrange Multiplier Test Results (LM)

Sig. LM Test	Models Compared	Conclusion
0,0000	CE and RE	Among CE and RE, selected RE

Based on the Lagrange Multiplier test results, the probability value is 0.0000. Thus, because the obtained probability value < 0.05, H0 is rejected, and it is concluded that among Common Effect and Random Effect, the best model is using the Random Effect approach.

d. Regression Model Selection Results

The overall results of the three regression model selection tests (Chow, LM, and Hausman) indicate that the best-selected model is the Random Effect model:

Table 5 Regression Model Selection Results

No	Test	Result	Conclusion	Model Selected
1	LM	Prob = 0,0000	Among CE and RE, selected RE	*RE (Random Effect)*
2	Chow test	Prob = 0,0000	Among CE and FE, selected FE	
3	Hausman test	Prob = 0,2777	Among RE and FE, selected RE	

Based on the summarized results of the regression model selection tests using Chow, LM, and Hausman tests, it can be concluded that the best-selected model is the Random Effect model.

Classical Assumption Tests

From the tests conducted for the previous regression model selection, the selected regression model is with the random effect approach, and thus, the regression model estimation is done using generalized least square (GLS). Therefore, classical assumptions can be avoided or may not be satisfied.

Multicollinearity Test

Multicollinearity tests are conducted to ensure that there is no correlation among independent variables in the regression model. If, after testing, it is found that independent variables are correlated, these variables are not orthogonal (Ghozali 2007:91). Multicollinearity detection can be observed from the Variance Inflation Factor (VIF) and Tolerance Value (1/VIF). If the VIF > 10 and 1/VIF < 0.10, multicollinearity is considered to occur. Conversely, multicollinearity does not occur if the VIF < 10 and 1/VIF > 0.10. The results of the multicollinearity test are shown in the following table:

Table 6. Multicollinearity Test Results

Variable	VIF	1/VIF
Outstanding (X_1)	1,02	0,98

Time To Maturity (X_2)	1,96	0,51
Yield To Maturity (X_3)	3,61	0,28
Rupiah (X_4)	2,48	0,40
Inflation (X_5)	3,77	0,26
BI7DRR (X_6)	4,85	0,21
IHSG (X_7)	4,21	0,24
CDS (X_8)	4,63	0,22

Based on the table above, it can be seen that all independent variables in the model have Variance Inflation Factor (VIF) < 10 and Tolerance Value (1/VIF) > 0.10. Thus, it can be concluded that there is no multicollinearity among independent variables in the regression model.

Heteroskedasticity tests

Heteroskedasticity tests are conducted to see if there is a difference in variance of the residual values from one observation to another in the regression model. Heteroskedasticity tests are performed using the Breusch Pagan Godfrey test. Heteroskedasticity symptoms occur in the regression model if the test results show that the significance value of the variable is less than 0.05, then it can be concluded. The results of the heteroskedasticity test for this study are as follows:

Table 7. Heteroskedasticity Test Results

Sig. Breusch Pagan Test	Cut Value	Conclusion
0,0000	> 0,05	Heteroskedasticity

Based on the table above, it can be seen that the significance probability value of the chi-square test is 0.0000 or smaller than 0.05. Thus, it can be concluded that there are symptoms of heteroskedasticity in the regression model.

Autocorrelation tests

Autocorrelation tests are conducted to see if the residual values in a regression model have a correlation with themselves. Autocorrelation tests are performed using the Wooldridge Test. In this test, the regression model is considered not to contain autocorrelation if the significance value is >0.05. The results of the autocorrelation test for this study are as follows:

Table 8. Autocorrelation Test Results

Sig. Wooldridge Test	Cut Value	Conclusion
0,4514	> 0,05	No Autocorrelation

From the table above, after the Wooldridge Test is conducted, the significance value obtained is 0.4514 or larger than 0.05. Thus, it can be concluded that there is no autocorrelation in the regression model.

Based on the overall classical assumption tests above, it is concluded that the regression model does not meet the assumption of heteroskedasticity. Therefore, the estimation of the panel regression model must be done using the technique of robust standard error estimation.

Correlation tests

Correlation tests are conducted to understand the relationship and direction between the variables under investigation. The results of the correlation test for the variables in this study are as follows:

Table 9. Correlation Test Results

	BidAsk Spread	Outstanding	Time ToMaturity	Yield ToMaturity	Kurs Rupiah	Inflation	BI Rate	IHSG	CDS
BidAskSpread	1,000								
Outstanding	0,003	1,000							
TimeToMaturity	0,139	-0,033	1,000						
YieldtoMaturity	0,219	-0,025	0,512	1,000					
KursRupiah	-0,062	0,102	-0,005	-0,174	1,000				
Inflation	0,126	-0,095	-0,001	0,408	-0,550	1,000			
BIRate	0,170	-0,096	0,000	0,634	-0,534	0,733	1,000		
IHSG	-0,136	0,090	-0,001	-0,418	0,582	-0,397	-0,635	1,000	
CDS	0,187	-0,093	-0,003	0,524	-0,404	0,666	0,712	-0,750	1,000

From the table above, the correlation matrix of all variables used in this study can be observed. Negative correlation with bid-ask spread is indicated by Kurs Rupiah and IHSG, while other independent variables have positive correlations with bid-ask spread. The table also shows that there is no very strong correlation among independent variables (correlation coefficient > 80%). However, there is a strong correlation between CDS and IHSG, BIRate and Inflasi, CDS and BIRate, CDS and Inflasi, BIRate and Yield to Maturity, and BIRate and IHSG (correlation coefficient > 60%). Referring to the previous multicollinearity test, it is proven that there is no multicollinearity among independent variables.

Analysis of the Influence of Bond-Specific and Macroeconomic Factors on SBSN Liquidity

The analysis of the influence of bond-specific factors, consisting of outstanding amount, time to maturity, and yield to maturity, as well as macroeconomic factors consisting of Rupiah exchange rate, inflation rate, central bank reference interest rate (BIRate), IHSG, and credit default swaps (CDS), on SBSN liquidity in the domestic market, approximated by the bid-ask spread, includes the results of partial influence tests (t-test), simultaneous influence tests (F-test), and the calculation of the Coefficient of Determination (R2). The results of the panel data regression using the random effect model are as follows:

Table 10. Regression Model Estimation Results

Dependent Variable: *Bid-Ask Spread*

Variable	**Coefficient**	**Std. Error**	**z**	**P>z**
(Constant)	0,083	0,170	0,490	0,624
Outstanding (X_1)	-0,030	0,036	-0,830	0,405
Time To Maturity (X_2)	0,274	0,120	2,290	0,022
Yield To Maturity (X_3)	0,192	0,025	7,750	0,000
Rupiah (X_4)	-0,054	0,037	-1,470	0,141
Inflation (X_5)	-0,001	0,033	-0,040	0,966
BI7DRR (X_6)	-0,150	0,026	-5,780	0,000
IHSG (X_7)	0,080	0,027	2,950	0,003
CDS (X_8)	0,113	0,032	3,580	0,000

From the table above, it can be seen that out of the 8 independent variables studied for their impact on the bid-ask spread of SBSN, there are 5 variables that have a significant impact (P-value below 0.05), namely Time To Maturity, Yield To Maturity, BIRate, IHSG, and CDS. Meanwhile, the other 3 independent variables, namely Outstanding, Rupiah exchange rate, and inflation rate, do not have a significant effect on the bid-ask spread of SBSN at $\alpha = 5\%$.

T-test

Based on the t-test as shown in table 4.9 above, several conclusions can be drawn:

1. From the regression results, it is found that the liquidity of SBSN, approximated by the bid-ask spread, is influenced by Time To Maturity, Yield To Maturity, BIRate, IHSG, and CDS because the significance value of these variables is less than 0.05. Meanwhile, other independent variables, namely Outstanding, Rupiah exchange rate, and inflation rate, do not have a significant influence on the bid-ask spread of SBSN because the significance value of these variables is greater than 0.05.
2. The significance value of Time To Maturity is less than 0.05, namely 0.022, so it can be concluded that Time To Maturity has a significant effect on the bid-ask spread of SBSN. The coefficient shows a value of 0.274, which means that every change in Time To Maturity by 1 year will cause an increase in the bid-ask spread of SBSN by 0.274 bps.
3. Yield To Maturity has a significance value of 0.000, or less than 0.05, so it can be concluded that there is a significant effect of Yield To Maturity on the bid-ask spread of SBSN. The coefficient shows a value of 0.192, indicating that every 1% increase in Yield To Maturity will cause an increase in bid-ask spread by 0.192 bps.
4. BIRate has a significant effect on the bid-ask spread of SBSN because the variable has a significance value less than 0.05, namely 0.000. The coefficient shows a value of -0.150, indicating that every 1% increase in BIRate will cause a decrease in bid-ask spread by 0.150 bps.
5. The significance value of IHSG is less than 0.05, namely 0.003, so it can be concluded that IHSG has a significant effect on the bid-ask spread of SBSN. The coefficient shows a value of 0.080, indicating that every 1-point increase in IHSG will cause an increase in bid-ask spread by 0.080 bps.
6. CDS has a significant effect on the bid-ask spread of SBSN because the significance value of the variable is less than 0.05, namely 0.000. The coefficient shows a value of 0.113, indicating that every 1 bps increase in CDS will cause an increase in bid-ask spread by 0.113 bps.

F-test

The F-test is used to determine whether there is a simultaneous influence of independent variables on the dependent variable.

Table 11 F-Test and Coefficient of Determination Results

F Count	P Value	R^2
37,58	0,0000	0,0965

The results in table 4.10 above show that based on the F-test, the Sig. value is 0.000, indicating that at a significance level of alpha equal to 0.05, it can be concluded that independent variables simultaneously influence the dependent variable in the model.

The coefficient of determination (R2)

The coefficient of determination (R2) indicates the model's ability to explain the dependent variable. An R-square value approaching one indicates that the independent variables used in the model are increasingly able to provide the information needed to describe the variation in the dependent variable. Based on table 4.10 above, it can be seen that the R2 of the model is 0.0965 or 9.65%. This indicates that the independent variables used in the model can only explain 9.65% of the variation in the dependent variable. Thus, approximately 90.35% of the dependent variable is explained by other independent variables not included in this study.

Model Interpretation

From the regression results in table 10 above, the equation/model generated can be written as follows:

$$BAS = 0{,}083 + 0{,}274TTM + 0{,}192YTM - 0{,}150BIRATE + 0{,}080IHSG + 0{,}113CDS + e_i \quad (2)$$

Further conclusions that can be drawn from this equation are:

a. From the equation, it can be concluded that if the variables Time To Maturity, Yield To Maturity, BIRate, IHSG, and CDS have a value of zero, then the bid-ask spread of SBSN will increase by 0.083 bps.
b. The regression coefficient of Time To Maturity is 0.274, which means that every change in Time To Maturity by 1 year will cause an increase in the bid-ask spread of SBSN by 0.274 bps.
c. The regression coefficient of Yield To Maturity is 0.192, which means that every 1% increase in Yield To Maturity will cause an increase in bid-ask spread by 0.192 bps.
d. The regression coefficient of BIRate is -0.150, which means that every 1% increase in BIRate will cause a decrease in bid-ask spread by 0.150 bps.
e. The regression coefficient of IHSG is 0.080, which means that every 1-point increase in IHSG will cause an increase in bid-ask spread by 0.080 bps.
f. The regression coefficient of CDS is 0.113, which means that every 1 bps increase in CDS will cause an increase in bid-ask spread by 0.113 bps.

Factors Affecting SBSN Liquidity

Based on a series of test results, the following conclusions can be drawn from the hypotheses tested:

a. H1: The amount of outstanding SBSN has a negative effect on the bid-ask spread of SBSN.

The research results show that the amount of outstanding SBSN does not have a significant impact on the bid-ask spread of SBSN; thus, H1 is rejected. This differs from previous research by Su and Tokmakcioglu (2020), which concluded that the amount of outstanding bonds would have a positive impact on bond liquidity in the secondary market.

b. H2: Time to maturity of SBSN has a positive effect on the bid-ask spread of SBSN.

The research indicates that time to maturity has a significant impact on the bid-ask spread of SBSN with a positive regression coefficient; thus, H2 is accepted. This means that the longer the maturity duration of an SBSN, the wider the bid-ask spread and the lower the liquidity in the secondary market. This aligns with previous research by (Su & Tokmakcioglu, 2021), concluding that time to maturity would have a negative impact on bond liquidity in the secondary market because, according to that study, shorter-term bonds are traded more frequently in the secondary market.

c. H3: Yield to maturity of SBSN has a positive effect on the bid-ask spread of SBSN.

The research shows that yield to maturity has a significant impact on the bid-ask spread of SBSN with a positive regression coefficient; thus, H3 is accepted. A higher yield to maturity indicates relatively unfavorable conditions in the SBSN market, so SBSN liquidity is expected to be less favorable, reflected in a wider bid-ask spread, as investors tend to adopt a buy-and-hold strategy. This is consistent with previous research by (Asmuni & Tan, 2021) that concluded yield to maturity would have a negative impact on bond liquidity in the secondary market.

d. H4: The Rupiah exchange rate has a positive effect on the bid-ask spread of SBSN.

The research results show that the Rupiah exchange rate does not have a significant impact on the bid-ask spread of SBSN; thus, H4 is rejected. This differs from previous research by Kapingura et al. (2015), which concluded that the volatility of a country's exchange rate

would have a negative impact on bond liquidity in the secondary market because a weak currency indicates unfavorable financial market conditions, impacting investors who tend to refrain from entering the market.

e. H5: Inflation rate has a positive effect on the bid-ask spread of SBSN.

The research results show that the inflation rate does not have a significant impact on the bid-ask spread of SBSN; thus, H5 is rejected. This differs from previous research by Kapingura et al. (2015) and (Khudari, 2017), which concluded that the inflation rate would have a negative impact on bond liquidity in the secondary market as an increasing inflation rate leads to a decrease in the value of money, affecting the purchasing power of the public, including for investment.

f. H6: The benchmark interest rate has a positive effect on the bid-ask spread of SBSN.

The research results show that the benchmark interest rate (BI7DRR) has a significant impact on the bid-ask spread of SBSN. However, the negatively valued regression coefficient indicates that the influence of the benchmark interest rate on the bid-ask spread is negative, so H6 is rejected. This means that an increase in the benchmark interest rate will cause the bid-ask spread to narrow, or in other words, SBSN liquidity improves. This differs from previous research by Kapingura et al. (2015) and (Nienhaus & Karatas, 2016), which concluded that the benchmark interest rate would have a negative impact on bond liquidity in the secondary market.

g. H7: IHSG has a positive effect on the bid-ask spread of SBSN.

The research results show that IHSG has a significant impact on the bid-ask spread of SBSN with a positive regression coefficient; thus, H7 is accepted. This means that a strengthening Composite Stock Price Index (IHSG) attracts investors to switch from bond instruments to stocks, which potentially provide higher returns, thereby suppressing bond liquidity and causing the bid-ask spread to widen. This is consistent with previous research by (Kapingura et al., 2022) that the stock market's performance will have a negative impact on bond liquidity in the secondary market.

h. H8: Credit Default Swap has a positive effect on the bid-ask spread of SBSN.

The research results show that CDS has a significant impact on the bid-ask spread of SBSN with a positive regression coefficient; thus, H8 is accepted. A higher CDS for a bond indicates increasing risk and tends to be avoided by investors, causing the bid-ask spread to widen because it is illiquid in the secondary market. This is consistent with previous research by (Ernawati, 2022), concluding that CDS will have a positive impact on the yield spread of bonds.

CONCLUSION

Based on the research findings, it can be concluded that significant bond-specific factors affecting the liquidity of Sharia Securities (SBSN) in the secondary market, measured through bid-ask spread, are time to maturity and yield to maturity. These results support previous research that found a significant impact of both factors on the liquidity of bonds or sukuk. Meanwhile, another bond-specific factor, the amount of outstanding SBSN, does not have a significant influence. In the context of macroeconomic factors, the benchmark interest rate (BI7DRR), Indonesia Stock Exchange Composite Index (IHSG), and Credit Default Swap (CDS) were found to have a significant impact on the liquidity of SBSN. These results align with previous research that used these three indicators as independent variables influencing the liquidity of bonds or sukuk. However, the exchange rate of the Rupiah and the inflation rate were not found to have a significant effect.

The influence of independent variables on SBSN liquidity can be detailed as follows: time to maturity and yield to maturity of SBSN contribute significantly to widening the bid-

ask spread, indicating that SBSN liquidity tends to decrease with a longer tenor or higher yield. Meanwhile, an increase in the benchmark interest rate (BI7DRR), IHSG, and CDS leads to a narrowing bid-ask spread, indicating increased liquidity.

Limitations of the research include the explanation of liquidity variation by the independent variables used. Suggestions for future research include adding independent variables, especially those related to the SBSN investor profile, and gaining a deeper understanding of the relationship between transaction activities in the secondary market and investor characteristics. For the government and regulators, it is recommended to maintain price stability, improve communication on financing management strategies, and consider issuing new instruments to expand the domestic investor base. SBSN investors are advised to monitor the development of SBSN yields, benchmark interest rates, and the government's SBSN issuance plans to make informed investment decisions.

REFERENCES

Almaskati, N. (2022). Sukuk versus bonds: New evidence from the primary market. *Borsa Istanbul Review*, *22*(5), 1033–1038.

Ariff, M., Chazi, A., Safari, M., & Zarei, A. (2017). Significant difference in the yields of Sukuk bonds versus conventional bonds. *Journal of Emerging Market Finance*, *16*(2), 115–135.

Asmuni, N. H., & Tan, K. S. (2021). Exploring the yield spread between sukuk and conventional bonds in Malaysia. *Journal of Emerging Market Finance*, *20*(2), 165–191.

Awaludin, F., & Masih, M. (2015). *Sukuk pricing dynamics-factors influencing yield curve of the Malaysian Sukuk*.

Ernawati, L. (2022). Pengaruh Inflasi, Likuiditas, Kurs, Maturitas, Credit Default Swap, IHSG dan Profit Terhadap Obligasi Korporasi di Indonesia dengan Metode Data Panel. *Sanskara Akuntansi Dan Keuangan*, *1*(01), 1–14.

Kapingura, F. M., Mkosana, N., & Kusairi, S. (2022). Financial sector development and macroeconomic volatility: Case of the Southern African Development Community region. *Cogent Economics & Finance*, *10*(1), 2038861.

Karahan, C. C., & Soykök, E. (2022). Term premium dynamics in an emerging market: Risk, liquidity, and behavioral factors. *International Review of Financial Analysis*, *84*, 102355.

Khudari, M. (2017). The Role of Economic and Financial Factors in Enhancing Sukuk Market Cross-Sectional Study. *International Journal of Industrial Management (IJIM)*, *3*, 5–24.

Nienhaus, V., & Karatas, A. (2016). Market perceptions of liquid sovereign Sukūk: a new asset class? *International Journal of Islamic and Middle Eastern Finance and Management*, *9*(1), 87–108.

Saeed, M., Elnahass, M., Izzeldin, M., & Tsionas, M. (2021). Yield spread determinants of sukuk and conventional bonds. *Economic Modelling*, *105*, 105664.

Said, A., & Grassa, R. (2013). The determinants of sukuk market development: does macroeconomic factors influence the construction of certain structure of sukuk? *Journal of Applied Finance & Banking*, *3*(5), 251–267.

Su, E., & Tokmakcioglu, K. (2021). A comparison of bid-ask spread proxies and determinants of bond bid-ask spread. *Borsa Istanbul Review*, *21*(3), 227–238.