



Forecasting and The Relationship between Sukuk and Macroeconomy in Turkiye

Valencia Kirana Rosadhillah¹, Salih Ülev²

^{1,2} Department of Islamic Economics and Finance, Sakarya University, Turkiye

This study aims to forecast the outstanding of sovereign sukuk in the coming years and investigate the relationship between sukuk and macroeconomic variables, specifically inflation and exchange rate. This study applied a quantitative approach and took time series data of related variables in Turkiye from 2012 to 2021. The growth of Sukuk was predicted by using the Autoregressive Integrated Moving Average (ARIMA), while the Granger causality test was considered to investigate whether there is an interrelation among variables or not. The findings showed that the volume of sovereign sukuk has had positive progress in the following years. For the remaining analysis, both inflation and exchange rate affected significantly on sukuk outstanding. Meanwhile, the volume of sukuk did not affect both. In conclusion, there is no causal relationship between sukuk volume and macroeconomic variables. The findings of this study are limited since it only uses inflation and exchange rates as macroeconomic instruments. Moreover, it just observed the sukuk growth in Turkiye, which cannot be generalized to other countries. However, this paper will give a practical contribution to assist the government in making an efficient policy since sukuk is an alternative financing source to boost economic growth. Furthermore, this study can give a general view of the development of sukuk as a diversification instrument to stimulate the growth of Islamic finance industries in the future.

OPEN ACCESS

ISSN 2715-6346 (Online)

*Correspondence:

Valencia Kirana Rosadhillah

valencia.rosadhillah@ogr.sakarya.edu.tr

Received: 21 August 2024

Accepted: 19 October 2024

Published: 27 October 2024

Citation:

(2024) Forecasting and The Relationship between Sukuk and

Macroeconomy in Turkiye.

Ekonomi Islam Indonesia

6.1.

Keywords: Sukuk; Turkiye; Forecasting; ARIMA; Granger Causality

Open access under Creative Commons

Attribution-NonCommercial 4.0

International License (CC-BY-NC)

©Author(s)



INTRODUCTION

Recently, the countries have experienced an economic crisis because of Covid 19. The government has to spend much money to tackle this outbreak which it can obstruct the national income, especially in Turkiye. According to Turkiye Central Bank, the inflation rate rose significantly to 85,51% in October 2022 and this number hits the highest for the last 20 years. Inflation in Turkiye happened due to some factors such as a weak economy during pandemic and the dramatic rise in value of currency (Faruk Biçen et al., 2022). Therefore, the Lira value have experienced depreciation. According to Reuters, currently the Lira value dropped to 30% in 2022 that was lower than a year before. Furthermore, the government applied unusual policy in last year that reduced interest rate when inflation increased. However, when the inflation rate went up, the interest rate must be rose to decrease the money circulation. As a result of, the commodity prices will be more expensive and it will lower purchasing power of society which they can not buy as many goods as they did before inflation.

On the other side, the high inflation will encourage people to keep saving in other forms to avoid the high inflation impact since it tend to appreciate in value less over time. Residents are reluctant to save the lira because the confidence index of society to lira decreased in Turkiye (CNBC, 2021). They tend to exchange Lira to dollar and invest in crypto because it can keep the value of their savings when the inflation happened. According to Chainalysis (2023), Turkiye is also fourth worldwide in raw crypto transaction volume, receiving approximately \$170 billion over the last year. However, crypto has high volatility and it can not be a hedging asset when economic crises happened (Baur et al., 2022). Controlling that phenomenon is necessary to restore the Lira value, but recovering the economy will require big financing. Therefore, issuing sukuk can be alternative financial instrument to finance the state budget and the domestic investors can take a chance to support economy and improve Lira value by investing on this Islamic investment.

Sukuk is shariah security to finance the country's development. Sukuk is more reliable than interest based financial instruments due to its asset-based issuance and profit or revenue sharing principles (Tülgen Çetin & Metlek, 2021). The government determine sovereign sukuk as instrument of financing government revenue and expenditure budget through sovereign sukuk law (Hariyanto, 2017). Sukuk is suitable for state financing since it was low volatile, low cost, low

risk and relative stable even in economic turbulence (Tülgen Çetin & Metlek, 2021). Thus, sukuk can alleviate risk and help to stabilize an investment portfolio (Ahmad & Muda, 2013). Issuance of sukuk can finance state budget, expand the number of investors, support the development of Islamic financial market. Moreover, it can increase the stability of domestic financial market and provide alternative instrument investment (Sari & Pribadi, 2022). By some benefits of sukuk, it can attract the local investor to invest in sovereign sukuk. Moreover, sukuk can also enable people who stay away from the financial system due to religious sensitivities to be included in the financial system. Based on the data from Ministry of Treasury and Finance Turkiye, in 2019, the sukuk volume stood at 36 billion lira, then increased twice to 76 billion lira in the next year, but it fell to 58,5 billion lira in 2021. To maintain the trend of sukuk growth and avoid a significant drop, it is necessary to predict the sukuk outstanding in upcoming years by considering determinant factors that can affect sukuk growth.

In recent studies, Hanifah & Pantas (2022) analyze whether macroeconomic indicators can affect on retail sukuk volume in Indonesia or not. The result stated that, money supply, Bank Indonesia Sharia Certificate (SBIS), inflation, exchange rates, Gross Domestic Product (GDP) have a positive effect on retail Sukuk volume in the long term. However, all variable did not affect sukuk volume in short term. In contrast, Rahman et al (2016) found that the price of retail Sukuk and inflation rate have a negative effect insignificantly on sukuk demand in 2013-2016. Meanwhile, the repo rate gave a negative effect significantly on Sukuk demand.

Based on above researches, the relationship between Sukuk and macroeconomic variables have different outcome in the existing literature and there is rarely to research about the forecasting and casual relationship between macroeconomic variables and sukuk outstanding in Turkiye. Thus, to fill gap researches, this study will raise the problem about how the forecasting sukuk outstanding in the following years and what the macroeconomic instruments affect Sukuk volume and vice versa. This study aims to analyze the relationship of inflation and exchange rate as indicator of macroeconomic on sukuk volume and predict Sukuk volume in upcoming years. This paper can offer practical implication to help the government for making an efficient policy, not only monetary but also fiscal. As a result, the government can supervise the economic growth in a country. Also, it will give a general view

about the development of Sukuk as a diversification instrument in the future to stimulate the growth of Islamic finance industries. The importance of this study is giving contributes to a better understanding of the estimation and causal relationship between sukuk and macroeconomics in Turkiye, as there has been little research on this topic.

LITERATURE REVIEW

Sukuk are asset-backed securities that provide their holders with ownership rights over the underlying assets and earnings derived from that ownership. Unlike bonds where fixed interest payments are made, Sukuk holders receive periodic payments in the form of profits from the sale of sukuk assets. This structure ensures compliance with Islamic laws and principles. Sukuk is seen as a better alternative financial instrument than debt because it contain of cooperation and investment (Rahman et al., 2016). According to Muhammad et al (2019), sukuk has other advantages, such as income of profit sharing which is higher than bond, more secure, and the investors stil get assets that are used to underlying transaction when experiencing losses. Sukuk has more benefit since it is based on Sharia principle such as honesty, fairness, certainty and avoiding usury (Ulfah et al., 2023). According to Tülgen Çetin & Metlek (2021), sukuk is divided into two types, specifically corporation sukuk and sovereign sukuk. Corportaion sukuk is issued by bank and companies, while sovereign sukuk is issued by government to fulfill financing need in a country.

The Relationship between Sukuk and Macroeconomy

There are some factors that can influence the demand of investment, particularly price, macroeconomic condition (interest rate, inflation rate, and investment return) (Muhammad et al., 2019). Supply and demand, risk and return, as well as macroeconomic variables (exchange rates and inflation) have an impact on the Sukuk. (Ahmad & Muda, 2013). Inflation is the tendency of prices to increase generally and continuously (Mustikowati & Wilujeng, 2020). Rahman et al (2016) stated that there are four types of infation as follows :

1. Light inflation (under 10% a year)
2. Medium inflation (10-30% a year)
3. Heavy inflation (30-100% a year)
4. Hyperinflation (above 100% a year).

Based on the data from Turkiye Central Bank, the inflation rate have a significant increase to above 70% which Turkiye have heavy inflation in last year. However, between 2018 and 2021, the inflation rate just stayed at below 20%. Furthermore, exchange rate is one of indicator that affect sukuk because it has a major impact on export competition, directly give effect inflation and the return on foreign investment (Ahmad & Muda, 2013). The exchange rate is a representation of the exchange price between currencies that showing money flows between countries in the short term (Nurhayadi et al., 2020) and it can be a reflection the economy condition in a country (Noor, 2011).

Previous Research

Ardiansyah & Lubis (2017) research the impact of macroeconomic instruments to corporate Sukuk growth in Indonesia in 2013-2015 by employing multiple linear regression analysis. Its finding presented that industrial production index, inflation and money supply have a positive impact significantly on the corporate sukuk outstanding, whereas exchange rate, oil price, and mudaraba deposit profit sharing have a negative effect significantly. Farikhatusun & Pratomo (2019) analyze about what factors can be determinant on sukuk volume in series SR-007 by using Vector error Connection Model. Its finding presented that Yield To Maturity (YTM) affect negatively on sukuk outstanding in the short time. Meanwhile, in a long term, YTM, the exchange rate, the BI Rate, and inflation give a positive impact on sukuk volume.

In addition, Nurhayadi et al (2020) investigate the influence of inflation, exchange rate, and yield on sukuk volume in series SR-007 in a secondary market by using multiple linear regression analysis. Its result displayed that inflation, exchange rate and retail sukuk yield have a significant effect on volume of sukuk simultaneously. In partial, inflation and yield provide a significant positive effect, while exchange rate affect negatively on volume of sukuk. Gusniarti & Primasuci (2019) analyze what factors can affect sovereign sukuk demand between series SR-004 and SR-007 by utilizing multiple linear regression analysis. The results indicate US dollar exchange rate and deposit rates can influence on demand for sukuk, yields and price. Meanwhile inflation have no effect on sukuk demand. Tülgen Çetin & Metlek (2021) predicted of Turkish sovereign Sukuk prices and investigate what determinants of this forecasting by using Artificial Neuro Network (ANN) model. The findings showed that the dollar index, the volatility index, geopolitical risk index, Eurobond prices,

standard and poor's MENA sukuk index are determinants of forecasting Sukuk prices and it was forecasted accurately at the succes rate of 99,98%.

Literature Gap

Based on the existing literature, there are still debate about the relationship between sukuk and macroeconomic and it provides little research on sukuk volume estimation. Therefore, this study will predict volume of sovereign sukuk in Turkiye by employing different model, spesifically ARIMA (Autoregressive Integrated Moving Average) and present how many Sukuk growth will occur in the following year. Furhermore, it will ensure how the relationship between Sukuk and macroeconomic variables in Turkiye by using Granger causality. This study is important to provide a better understanding what factors affecting sukuk growth in Turkiye. Moreover, it will observe the potential of Sukuk growth in the future where sukuk issuance can be an alternative financial instrument to finance the state budget and domestic investors can take the opportunity to support the economy and increase the value of the Lira by investing in this Islamic investment.

RESEARCH METHOD

This research uses a quantitative method to test the hypothesis. There are two types of variables, especially dependent and independent variables. The dependent variables are sukuk volume. Meanwhile, inflation and exchange rate are used as independent variables. This research uses secondary data that a researcher obtained the data indirectly through official sites such as the Central Bank of Turkiye, Turkish Statistical Institute, Turkish Ministry of Finance. It will collect and document the data sample of outstanding Sukuk, inflation and exchange rate for the last ten years from 2012 to 2021.

Analysis Techniques

This research uses two methods, spesifically ARIMA and Granger causality test. Applying those methods are necessary several analysis techniques to manage the data and get the finding.

1. ARIMA

ARIMA can be used for non-stationary data models. Therefore, this method is suitable to forecast sukuk growth. Since this uses ARIMA

method to do forecasting, there are three stages needed as follows:

- Identification Model

ARIMA models are only applicable to stationary time series. In this stage, there are unit root test and autocorrelation test. Unit root test is utilized to determine whether or not the time series data is stationary. If the time series data is not stationary, the first step is to determine at what difference the data will be stationary and the result will show the value of d .

In addition, correlogram test is necessary to determine how many residual lag values (q) and dependent lag values (p) will be used in the model. The main tools is used to identify q and p are ACF (Auto Correlation Function) and PACF (Partial Auto Correlation Function), and correlogram which shows a plot of ACF and PACF values against lags.

- Estimation and Parametre Test

Several alternative ARIMA models will be derived from the model identification results. The next step is to estimate the AR (Auto Regressive) and MA (Moving Average) parameters in the model. So, AR value represent of q and MA represent of p . This test examines whether the parameters obtained from the temporary ARIMA model are significant or not. The model is significant if the significance value is less than alpha (α), with 0,05 as the value. In addition choosing best model ARIMA based on the smallest value from Schwartz, Akaike and Hannan-Quin.

- Forecasting

The final stage is to use the best ARIMA model that has met the test stages to forecast the number of sukuk in the following year by using dyanamic method since this can predict in longer time rather than static method. The result will present how the trend of Sukuk volume year by year and how many sukuk are expected in the following year.

2. Granger Causality Test

Granger causality test needs two phases, especially VAR (Vector Auto Regression) test and the causality test. These steps will give information on whether there is an interrelation between the variables or not.

- VAR (Vector Auto Regression)

In this stage, the lag length should be determined. The selection of the right lag can be known by using several criteria (Rusydia, 2009), namely: LR (Likelihood Ratio), AIC (Akaike Information Criterion), SIC (Schwarz Information Criterion), FPE (Final Prediction Error), and HQ (Hannan-Quinn Information Criterion). Based on the calculation of each criterion available in the Eviews program, the optimal lag is marked with a star (*) sign.

In this study, the lag criteria used are Akaike's Information Criterion (AIC) and Schwarz Information Criterion (SIC). Both criteria have advantages over other criteria because they are suitable for time series data. AIC and SIC can explain the fit of the model to existing data (insample forecasting) and future values (out of sample forecasting). The model will be tested and ranked based on the AIC and SIC values is the best model, which is the model that has the smallest AIC and SIC values.

- Causality Test

This stage will present whether the variables have interrelation or not. If the probability

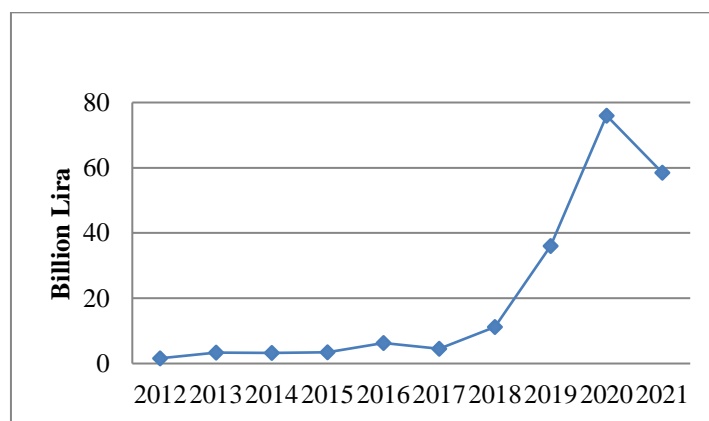
value is less than 0,05, it can be stated that a variable has impact on others. However, if it is not, the variable does not influence on other variables. Also, the effect of variable can be measured by F test. If F statistic showed in Eviews is higher than F table, that indicator affect on the others and vice versa.

RESULTS AND DISCUSSION

First of all, this study will serve the trend of Sukuk development in Turkiye for ten years. After that, it will predict sukuk growth in the future based on history data in 2012-2021. Forecasting the number of sukuk uses the Box-Jenkins or the ARIMA method since it can be applied to all data patterns, including non-stationary data. Then analyzing the interrelation between macroeconomic indicators and sukuk by Granger causality test.

Overview of Sukuk Issuance

The below figure represent the development of sovereign sukuk issuance in Turkiye for ten years. Overall, it can be seen that the trend of Sukuk experienced increasing over years and the most considerable number was 76 in 2020. The number are measured in billion lira.



Source: Ministry of Treasury and Finance (2022)

Figure 1. Domestic Sukuk Issuance in Turkiye 2012-2021

To begin, in the first year, it stood at 1,6, then it is followed by double growth in the next year at 3,3. During 2014 and 2015, the sukuk issuance has slightly different number at 3,2 and 3,4 respectively. Next, Sukuk amount increased to 6,3 in 2016, but it slightly dropped to 4,5 in following year. After that, it rose significantly to 11,2 in 2018 and continued to 36 in 2019, then it reached a peak at 76 in 2020. Unfortunately, it experienced decline to 58,5 in the end.

Forecasting of Sukuk Volume

1. Identification Model

This step is used to figure out the value of p, d, q . The chief tools in identification are the autocorrelation function (ACF) and partial autocorrelation function (PACF), and the resulting correlogram, which are simply the plots of ACF and PACF against the lag length. To identify the model, there are two stages test, especially unit root test and autocorrelation test.

- Unit Root Test

This test is necessary to find out whether the data is stationary or not that can be showed by probability value. Also, this result present the value of d. If the probability value is less than 0.05, the

data is stationary and vice versa. However, the data of sukuk volume is not stationary showed by table 1 since its probability value is above 0.05. Therefore, it is necessary to make it stationary by doing test with the 1st difference.

Table 1. Stationary test of sukuk volume in 1st difference level in Eviews 10

Null Hypothesis: D(SUKUK) has a unit root			
Exogenous: Constant			
Lag Length: 1			
		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic :		-4.561469	0.0130
Test critical values:	1% level	-4.803492	
	5% level	-3.403313	
	10% level	-2.841819	

Source: Data processed in Eviews

As a result, the probability value is less than alpha and the stationarity test is fulfilled. In the 1st difference level, it show that the probability is 0,0130. It can be concluded, the data is stationary because it less than 0,05, so the value of d is equal to 1.

- Autocorrelation/Correlogram Test

After unit root test, the value of ARIMA (p,d,q) is p,1,q. Then, this step will determine the possible value of AR (p) and MA(q). ACF will shows MA models and PACF for AR models.

Table 2. Correlogram Test of sukuk volume in 1st difference level in Eviews 10

	AC	PAC	Q-Stat	Prob
1	-0.026	-0.026	0.0085	0.926
2	-0.216	-0.216	0.6659	0.717
3	-0.126	-0.146	0.9283	0.819
4	0.000	-0.064	0.9283	0.920
5	-0.110	-0.187	1.2296	0.942
6	-0.070	-0.140	1.3921	0.966
7	-0.001	-0.114	1.3922	0.986
8	0.050	-0.072	1.6355	0.990

Source: Data processed in Eviews

After the results coming out, the lag in ACF (Autocorrelation) and PACF (Partial Autocorrelation) intersects at lag-2. It can be concluded that the possible models are AR (2), MA (2), or ARIMA (2,1,2).

According to (Gujarati, 2003), the model with the smallest values of Schwarz Criterion (SC) and Akaike Info Criterion(AIC) will be the most appropriate. The result show that the model of MA(2) has the lowest value of SC and AIC compared to others. Hence, it can be concluded that the value of ARIMA (p,d,q) is 0,1,2.

2. Estimation and Parametre Test

From the possible models, it is necessary to estimate the best model by considering several

Table 3. Comparison of possible ARIMA Model based on some criterion

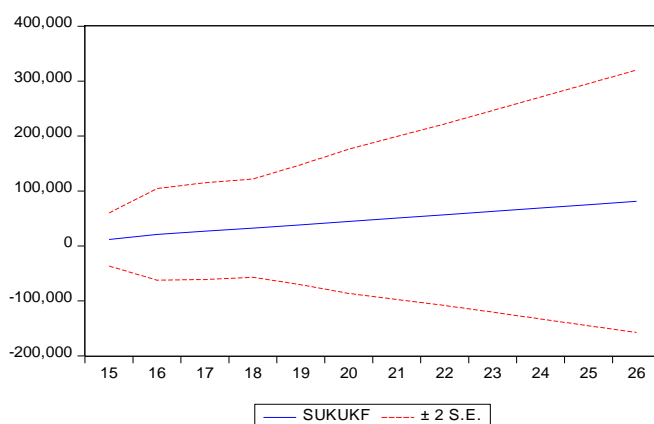
Criteria	Model			Best Model
	A) AR (2)	B) MA (2)	C) ARIMA (2,1,2)	
AIC (Akaike Info Criterion)	22.71287	22.67349	22.89094	B
SC (Schwarz Criterion)	22.77861	22.73923	22.97859	B

Source: The result of managing data in Eviews 10

3. Forecasting

After determining the value of ARIMA, the next step is do forecasting of Sukuk volume by using dynamic method since it can predict Sukuk

growth for longer time compared to static method. The result shows that Sukuk in Turkiye has potential to develop more in upcoming years eventhough the economy is unstable.



Source: Data processed in Eviews 10

Figure 2. The graphic of dynamic forecasting for sukuk

Causal Relationship between Inflation and Sukuk

1. VAR (Vector Autoregression)

In this step, we have to determine the lag length that will be used based on some criterion. Based on the calculation of each criterion available in the Eviews program, the optimal lag is marked with a star (*) sign. Based on below figure, the star sign is showed at lag 1

on each criterion, so result suggest the lag 1 should be used because those numbers indicate lag order selected by criterion of LR, FPE (Final Prediction Error), AIC (Akaike Information Criterion), SC (Schwarz Information Criterion), and HQ (Hannan-Quinn Information Criterion)

Table 4. Vector Autoregression Test of Inflation and Sukuk

	Lag	
	0	1
LogL	-127.7508	-113.2041
LR	NA	19.39564
FPE	1.14e+10	1.15e+09*
AIC	28.83351	16.48979*
SC	28.87734	26.62127
HQ	28.73893	26.20605*

*indicates lag order selected by the criterion

Source: Data Processed in Eviews 10

2. Causality Test

After the lag length is selected, the next step is find out the relationship between inflation and Sukuk. The result shows that the probability is

0,0106, so it can be concluded that Inflation influence Sukuk because the probability showed is less than 0,05. However Sukuk does not cause inflation.

Table 5. Granger Causality Test of Inflation and Sukuk

	F-Statistic	Prob.
Sukuk to Inflation	3.45994	0.1122
Inflation to Sukuk	13.3603	0.0106

Source: Data Processed in Eviews 10

Causal Relationship between Exchange Rate & Sukuk

1. VAR (Vector Autoregression)

In this step, we have to determine the lag length that will be used based on some criterion.

Based on the calculation of each criterion available in the Eviews program, the optimal lag is marked with a star (*) sign. Based on below figure, the star sign is showed at lag 1 on each criterion, so result suggest the lag 1 should be used because those

numbers indicate lag order selected by criterion of LR, FPE (Final Prediction Error), AIC (Akaike Information Criterion), SC (Schwarz Information

Criterion), and HQ (Hannan-Quinn Information Criterion)

Table 6. Vector Autoregression Test of Exchange Rate and Sukuk

	Lag	
	0	1
LogL	-117.1228	-94.48024
LR	NA	30.19002*
FPE	1.08e+09	18004822*
AIC	26.47172	22.32894*
SC	26.51555	22.46043*
HQ	26.37714	22.04520*

*indicates lag order selected by the criterion

Source: Data Processed in Eviews 10

2. Causality Test

After the lag length is selected, the next step is find out the relationship between exchange rate and Sukuk. The result shows that the

probability is 0,0462, so it can be concluded that exchange rate influence sukuk since the probability showed is less than 0,05. However Sukuk does not cause influence.

Table 7. Granger Causality Test of Exchange Rate and Sukuk

	F-Statistic	Prob.
Sukuk to Exchange Rate	0.19038	0.6779
Exchange Rate to Sukuk	6.27583	0.00462

Source: Data Processed in Eviews 10

Discussion

Based on the result above, it can be seen that sukuk in Turkiye will be grower until 2026 eventhough

the economy condition is unsteady due to some factors, including macroeconomic factors. It is proven by result of data processing on below.

Table 8. The Forecasting of Sukuk until 2026 (in million lira)

Year	Volume of Sukuk Expected
2013	7613,845
2014	13627,69
2015	19641,53
2016	25655,38
2017	31669,22
2018	37683,07
2019	43696,91
2020	49710,76
2021	55724,60
2022	61738,45
2023	67752,29
2024	73766,14
2025	79799,98
2026	85793,83

Source: Data Processed in Eviews 10

The figure 2 represent Sukuk grow postively until 2026 and it is expected to increase to above 70,000 million liras in 2024. Then, this growth continued to around 79,000 million in the next year and it is expected to reach above 85,000 million in 2026. So, the issuance of sukuk in Turkiye has potential to grow for the following years eventhough experienced a decline

slightly in 2021. This potential could be used by government as an alternative financial instrument to finance the state budget and attract the local investor to fix economy condition by investing in sukuk.

Furthermore, this study finds that inflation can affect the volume of sukuk in Turkiye based on managing the data. This finding is similar to a prior

research which according to (Nurhayadi et al., 2020), inflation has a significant effect on volume of sukuk. Furthermore, Rahman et al (2016) explained that this indicator has a negative effect on sukuk demand. Those researches are in line with the evidence in Turkiye. It is known that inflation can show the economy stability in a country. When the inflation rate increased significantly in Turkiye in 2021, the number of sukuk issuance dropped since the real income of resident will be lower and people invested their savings in foreign currency investment instruments. Therefore, maintaining the inflation rate is prominent since during inflation, the prices of commodity will be higher in general and people reluctant to invest in sukuk by using local currency. However, this finding is opposite with the finding of Hanifah & Pantas (2022) claiming that inflation have a positive effect on retail sukuk volume.

In addition, it is found that sukuk can be affected by exchange rate too based on the result of data processing. This result is the same as those conducted by Gusniarti & Primasuci (2019) stating exchange rate can influence on demand for sukuk. Moreover, according to Ardiansyah & Lubis (2017) claiming that exchange rate has a negative effect significantly on sukuk outstanding. Those reasearch is proved by evidences in Turkiye. The decline of sukuk outstanding in Turkiye in 2021 can show that ekonomiy is unstable since the exchange rate can reflect the economic condition, so it can affect the investment in a country. When exchange rate increased, sukuk issued will drop too because the domestic currency is less value compared to dollar. Therefore, keeping the stability of economy is important because this indicator can affect the behaviour of investor to invest in sukuk. Nevertheless, this study contradict with the research of Hanifah & Pantas (2022) claiming that exchange rate have a positive effect on retail sukuk volume.

CONCLUSION

Based on the results and discussion, the volume of sukuk has the potential to be higher for the upcoming years until 2026. Meanwhile, for the remaining test, inflation influence sukuk as well as exchange rate. However, sukuk can not affect both. Therefore, there is no causal relationsip from sukuk to macroeconomic variables. Inflation and exchange rate can be indicator to measure the stability of economy in a country, so investing in sukuk is expected to improve local currency and support the recover economy.

The results show that for an efficient sukuk outstanding, there must be a stable macroeconomic

condition where the inflation rate is low. Thus, the state can borrow at a lower cost and there may be higher demand from investors for sukuk issuance.

The findings of this study are limited since it only uses inflation and exchange rates as macroeconomic instruments. Also, it just observed the Sukuk growth in Turkiye that cannot be generalized to other countries. Hence, it is expected that future research can utilize broader macroeconomic intruments and investigate more than one country.

REFERENCES

- Ahmad, N., & Muda, M. (2013). Exchange Rate Pass-through Estimates for Sukuk Issuing Countries. *Procedia Economics and Finance*, 7(Icebr), 134–139. [https://doi.org/10.1016/s2212-5671\(13\)00227-x](https://doi.org/10.1016/s2212-5671(13)00227-x)
- Ardiansyah, I. H., & Lubis, D. (2017). Pengaruh Variabel Makroekonomi terhadap Pertumbuhan Sukuk Korporasi di Indonesia The Effect of Macroeconomic Variables to Corporate Sukuk Growth in Indonesia 1 Pendahuluan. 5(1), 51–68.
- Baur, D. G., Hoang, L. T., & Hossain, M. Z. (2022). Is Bitcoin a hedge? How extreme volatility can destroy the hedge property. *Finance Research Letters*, 47(PB), 102655. <https://doi.org/10.1016/j.frl.2021.102655>
- Farikhatur, L., & Pratomo, A. S. (2019). Analisis Determinan Volume Perdagangan Sukuk Negara Ritel Seri Sr-007 Industri Keuangan Syariah di Indonesia mengalami pertumbuhan yang. 7(2), 119–131.
- Faruk Biçen, Ö., Üniversitesi, B., ve İdari Bilimler Fakültesi, İ., & Bölümü, İ. (2022). Turkey's Recent Inflation Experience: Main Causes of Inflation According to Demand-pull and Cost-push Inflationary Effects and An Evaluation in Terms of Economy Policy. 2022(2), 59–83.
- Gujarati, D. N. (2003). Basic Econometrics. In *The Economic Journal* (Vol. 82, Issue 326). <https://doi.org/10.2307/2230043>
- Gusniarti, G., & Primasuci, D. (2019). E-ISSN: 2654-332X Vol.4 No.2 Oktober 2019. 4(2).
- Hanifah, I. N., & Pantas, P. E. (2022). Pengaruh Indikator Makroekonomi Terhadap Volume Perdagangan Sukuk Ritel di Indonesia. *Etihad: Journal of Islamic Banking and Finance*, 2(2), 99–114. <https://doi.org/10.21154/etihad.v2i2.4355>

- Hariyanto, E. (2017). Efektivitas Penerbitan Sukuk Negara Sebagai Instrumen Pembiayaan APBN. *Indonesian Treasury Review Jurnal Perbendaharaan Keuangan Negara Dan Kebijakan Publik*, 2(1), 79–98. <https://doi.org/10.33105/itrev.v2i1.15>
<https://www.cnbc.com/2021/11/23/turkish-lira-plummets-to-historic-low-after-erdogan-sparks-selloff.html>
<https://www.tcmb.gov.tr/wps/wcm/connect/EN/TCMB+EN/Main+Menu/Publications/Reports/Inflation+Report/>.
- Ministry of Treasury and Finance, R. of T. (2022). Public Debt Management Report.
- Muhammad, R., Permana, E. N., & Nugraheni, P. (2019). Tingkat Permintaan Sukuk Ritel: Analisis Faktor Internal Dan Eksternal. *Media Riset Akuntansi, Auditing & Informasi*, 19(2), 249. <https://doi.org/10.25105/mraai.v19i2.4205>
- Mustikowati, R. I., & Wilujeng, S. (2020). Macroeconomic Changes And Prices Stock In Real Estate And Property Firm. *Jurnal Studi Manajemen Dan Bisnis*, 7(1), InPress. <https://doi.org/10.21107/jsmb.v7i1.7979>
- Noor, Z. Z. (2011). Pengaruh Inflasi, Suku Bunga, dan Jumlah Uang Beredar Terhadap Nilai Tukar. *Trikonomika*, 10(2), 139–147.
- Nurhayadi, Y., Azizah, U. S. Al, & ... (2020). Pengaruh Inflasi, Nilai Tukar, Dan Yield Sukuk Ritel Terhadap Volume Perdagangan Sukuk Negara Ritel Serisr-007 Dipasar *Taraadin: Jurnal Ekonomi* ..., 1(1), 84–98. <https://jurnal.umj.ac.id/index.php/taraadin/article/view/7492>
- Rahman, F., Paminto, A., & Nadir, M. (2016). Pengaruh Harga Sukuk Negara Ritel Seri Sr-005, Tingkat Inflasi Dan Bi Rate Terhadap Tingkat Permintaan Sukuk Negara Ritel Seri Sr-005. *Skripsi*, 8(1), 19–29.
- Rusydiana, A. S. (2009). Hubungan antara perdagangan internasional, pertumbuhan ekonomi dan perkembangan industri keuangan syariah di Indonesia. *Tazkia Islamic Finance and Business Review*, 4(1).
- Sari, P. R. D., & Pribadi, Y. (2022). Potensi Sukuk Ritel sebagai Instrumen Pembiayaan serta Underlying Asset Utang Pemerintah. *Jurnal Indonesia Rich*, 3(1), 9–21.
- Tülgen Çetin, D., & Metlek, S. (2021). Forecasting of Turkish Sovereign Sukuk Prices Using Artificial Neural Network Model. *Acta Infologica*, 5(2), 241–254. <https://doi.org/10.26650/acin.907990>
- Ulfah, I. F., Sukmana, R., Laila, N., & Sulaeman, S. (2023). A structured literature review on green sukuk (Islamic bonds): implications for government policy and future studies. *Journal of Islamic Accounting and Business Research*. <https://doi.org/10.1108/JIABR-10-2022-0255>