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Abstract. The objective of this study is to analyze the factor of uncertain macroeconomics condition on the issuance of sovereign using four indicators, economic growth, inflation, exchange rate, and the money supply. The data is analyzed using the Fixed Effect Panel Regression Model. The finding of this study shows that partially, economic growth, exchange rate, and money supply have a positive and significant effect on the issuance of sovereign sukuk. However, only inflation shows a negative and significant effect on the issuance of sovereign sukuk. This means that inflation is inversely proportional to the issuance of sovereign sukuk. The increase in inflation will lower the issuance of sovereign sukuk and vice versa. The result of F-test finds that simultaneously economic growth, inflation, exchange rate, and money supply have a significant effect on the issuance of sovereign sukuk.

Keywords. Economic Growth, Inflation, Exchange Rate, Money Supply, Sovereign Sukuk Issuance

1. Introduction

In the understanding of the globalization era, the dynamic of sharia financial industry is mobilization and utilization that can mobilize the components of a country's economic system. The framework of this research is the phenomena in the capital market in the last decades, the existence of sharia-based financial stocks which increasing rapidly in various parts of the world. Exclusively, this study will discuss one of the sharia instruments that developed rapidly, Islamic Bonds (sukuk).

Sukuk becomes a new source of power in Islamic finance in increasing the funds for long-term projects. This can be proofed from the issuance of sukuk not only in Islamic majority countries but also worldwide. Based Muhamed, et al (2018), the outstanding value in the Asian countries reached 270 US$ Billion, followed by Gulf Cooperation Council (GCC) countries with 168 US$ Billion and European countries with 13 US$ Billion.

The uncertain investment climate one of which in on the issuance of sovereign sukuk are affected by various factors including fundamental and technical factors. One of the fundamental factors that affect the issuance of sovereign sukuk is an unstable macroeconomic condition.

This is supported by a financial report from The Islamic Financial Services Board (2019) which explains that sovereign sukuk accounted for the majority of issuances in particular up to 74% of the total issuance in 2018. However, the issuance of state sukuk declined by 9% from the previous year. The fluctuation in sukuk issuance is caused by the changes in several macroeconomic factors in 2018 which has hampered the issuance of sovereign sukuk. This is supported by the theoretical study conducted by Tandelilin (2010) which states that the changes that occur at the macroeconomic indicators have the potential to trigger changes in the capital market.

Thus, it is necessary for researchers to study the macroeconomic factors that affect the issuance of sovereign sukuk. The problem formulation in this study are as follows: (1) How does economic growth affect the issuance of sovereign sukuk in the Organization of Islamic Cooperation (OIC) member countries?; (2) How does inflation affect the issuance of sovereign sukuk in OIC member countries?; (3) How does the exchange rate affect the issuance of the sovereign in OIC member countries?; (4) How does money supply affect the issuance of sovereign sukuk in OIC member countries?; (5) How is the simultaneous effect of economic growth, inflation, exchange rate, and money supply on the issuance of sovereign sukuk in OIC countries?

2. Literature Review

Fatwa of National Sharia Council No. 32/DSN-MUI/IX/2002 defines sukuk as long-term security based on sharia principles issued by issuers to sharia bondholders, which require issuers to pay income to sharia bondholders in the form of profit-sharing/margin/fees, as well as repaying bond funds at maturity. Based on the issuers, Suryomurti (2011) describes that sukuk can be divided into two types, corporate sukuk and state sukuk. Sujianto (2016), The state sukuk exchange rate (in Indonesia is called Sharia State Securities abbreviated as SBSN) is supported by macroeconomic prosperity variables, namely: economic growth, income per capita, increase, foreign exchange rates and interest rates.

According to Adisasmita (2013), economic growth is an effort to increase the capacity of production to achieve additional national output, measured using Gross Domestic Products (GDP) Gross Regional Domestic Product (GRDP) of a country. According to Mankiw (2003) explanation, economic growth represents how far the economic activities will result in additional real income in a community over a certain period. The basis of economic activities is the utilization of the factors of production to produce output, thus, this process will result in a flow of compensation for the factors of production owned by the community.

Eachen (2000) states that inflation can be defined as a constant increase of prices in an economy due to an increase in aggregate demand or aggregate supply. According to Sukirno (2015), inflation can decrease the level of wellbeing of a group of community because inflation reduces the real value of money, thus enabling the community to shift their investment to the money market to maintain the real value of money. Tandelilin (2010) states that inflation have a negative effect on investment in the capital market.

The nature of the exchange rate, according to Sukirno (2015) is the number of domestic currencies needed to redeem one unit of foreign currency. Exchange rate will show the number of local currencies needed to purchase one unit of foreign currency. The exchange rate represents the price of a currency compared to another country currency when the exchange rate is unstable, it will affect the price of domestic and imported goods. High prices will increase production costs and in turn, will affect investment activities. Furthermore, Sujianto (2020) suggested that the exchange rate and inflation became important factors in increasing Indonesia's balance of payments in the period 2010 to 2017.

Boediono (2005) explains that currently, the number of circulated money in the community is increasing it will provide feedback to the increasing price of goods and services which will decrease the interest rate of deposits. This will encourage people to invest their money in the capital market and expect a higher return, which in turn will increase the demand for securities in the capital market.

3. Methodology
3.1 Population and Sample
The population in this study is OIC member countries with a total of 57 countries. The samples are selected using the purposive sampling with the following criteria: (1) the availability of data in each country from 2009 to 2018; (2) data is in numerical format; and (3) the country publishes secondary data in the responsible and competent institutions on the published contents. Thus, the total samples consist of five countries: Indonesia, Malaysia, Bahrain, Brunei Darussalam, and Qatar.

3.2 Data Collection Technique
This study collected data from the annual series of documentary data that consist of the 2009-2018 period. Table 1 shows the list of independent and dependent variables with proxies of measurement and source of data.

Table 1. Measurement and Source Data

Data	Measurement	Source
Sukuk	Issuence of Sukuk is measure in USD.	Bloomberg Database
Inflation	Inflation as measured by the consumer price index reproduces the annual percentage	World Bank Development Indicator
Exchange Rate	Exchange rate (units of LCU per US dollar).	World Bank Development Indicator
Economic growth	GDP (current US$)	World Bank Development Indicator
Money Supply	Broad money (current LCU of USD)	World Bank Development Indicator

3.3 Data Analysis
Based on the problem formulation, the data in this study is analyzed using panel data regression which integrated time series and cross-section data using Eviews. Before panel data analysis, classical assumption test, and hypothesis testing were conducted the data was cleaned and transformed into natural logarithm and the square root. The model formula for the model is as follows:

$$\ln Y_{it} = \alpha + \beta_1 \ln GDP_{it} + \beta_2 \ln INF_{it} + \beta_3 \operatorname{sqrt} EXC_{it} + \beta_4 \ln BRD_{it}$$

4. Results
4.1 Multicollinearity Test
The multicollinearity test aims to check for the presence of multicollinearity in the data by analyzing the correlation matrix of the independent variables. The multicollinearity can be

detected from the Variance inflation Factor (VIF), the VIF < 10 means that there is no multicollinearity in the model.

Table 2. Multicollinearity Test

Variables	VIF	Conclusion
GDP	5.261	Non Multicollinearity
Inflasi	1.444	Non Multicollinearity
Exchange	4.452	Non Multicollinearity
Broad	9.674	Non Multicollinearity

Based on the table, the result of the multicollinearity test shows that all of the independent variables have Variance Inflation Factor below 10, thus, the variables are free from multicollinearity.

4.2 Heteroscedasticity Test

The heteroscedasticity test is performed through Glejser test. The sig. > 0.05 indicates that the data are free from heteroscedasticity and the sig. < 0.05 indicates that the data contains the heteroscedasticity problem.

Table 3. Glejser Test

Test Statistics	Obs*R-squared	Sig.	Conclusion
Glejser	8.873	0.0643	Non Heteroskedastisitas

Based on the table, the result of Glejser test shows sig. of 0.0643 > 0.05 which means there is no heteroscedasticity in the data and that the assumption of homoscedasticity is fulfilled.

4.3 Autocorrelation Test

Autocorrelation test aims to find if there is a correlation between a certain period (t) with the previous period (t-1). The result of the test can be seen from the score of Durbin-Watson or D-W. The DW score below -2 means that there is a positive autocorrelation and DW scores between -2 and +2 mean that there is no autocorrelation, while DW scores above +2 means there is a negative autocorrelation.

Table 4. Autocorrelation test

Durbin Watson Test	Conclusion
1.157	Non autokorelasi

Based on the Durbin Watson result in the table, the Durbin Watson result is between -2 and +2, thus, there is no autocorrelation in the regression model.

4.4 Regression Model Selection using the Chow Test

Model selection is performed using the Chow Test.

H_0: Common Effect Model or Pooled OLS

H_1: Fixed Effect Model

H_0 is not supported when the result of the test shows F-count higher than the F-table, which means Fixed Effect Model is the appropriate model to analyze the data, and on the contrary, H_0 is supported when F-count is lower than the F-table, which means Common Effect Model is more appropriate to conduct the estimation.

Table 5. Chow Test

	Cross-section F	Cross-section Chi-square
Statistic	9.134453	31.859683
d.f	(4,41)	4
Prob	0.0000	0.0000

The Chow Test result shows an F-count score of 9.134, and the F-table score at the 5% table and 4 and 41 degree of freedom is 2.600. The F-count is higher than the F-table which means that Fixed Effect Model (FEM) is an appropriate model to be used in the research model estimation.

4.5 Regression Model Selection using the Hausman Test

The assumption used in the Hausman Test method is:

H_0: Use Random Effect Model (REM)
H_1: Use Fixed Effect Model (FEM).

Table 6. Hausman Test

	Cross-section random
Chi-Sq. Statistic	36.537813
d.f	4
Prob	0.0000

Based on the result of the test, the significance value (p-value) of the Cross-section is 0.000. Lower than 0.05 significance value indicates that H_1 is supported, which means the regression test will use the Fixed Effect Model (FEM).

4.6 Regression Model Selection using Lagrange Multiplier Test (LM)

The assumption used in the LM test is:

H_0: Use Ordinary Least Square
H_1: Use the Random Effect

Table 7. Lagrange Multiplier Test

	Breusch-Pagan
Cross-section	21.11119 (0.0000)
Test Hypothesis Time	0.036261 (0.8490)
Both	21.14745 (0.0000)

The result of the test shows significance value (p-value) of the cross-section of 0.000. Significance value lower than 5% shows that H_1 is supported, which means the regression model used in the study is the Random Effect Model (REM).

4.7 Regression Analysis

Based on the panel data analysis using Eviews through three estimation tests, Chow Test, Hausman Test, and Lagrange Multiplier, Fixed Effect model are selected. This chapter will explain the result of regression test on panel data using the Fixed Effect Model.

Table 8. Regression Test on Panel Data using the Fixed Effect Model

	C	GDP	Inflation	Exchange	Broad	R^2	A.R^2	F_{Stat}	Prob
Coefficient	-21.6270	0.9894	-0.1408	0.03565	0.6578	0.9526	0.9436	103.6378	0.0000

Std. Error	7.3555	0.3250	0.0589	0.0122	0.2659
t-Statistic	-2.9402	3.0436	-2.3882	2.9188	2.4721
Prob.	0.0054	0.0041	0.0216	0.0057	0.0177

The result of regression analysis on table 8 shows a significance value of 0.004 (lower than alpha 5% or 0.050) which means that GDP has a significant effect on the issuance of sovereign sukuk and economic growth is the most significant independent variable in the issuance of sovereign sukuk. Every percentage increase in economic growth will increase the issuance of sovereign sukuk by 3.044 (higher than the t table 1.996).

The analysis of panel data using the Fixed Effect shows the Adjusted R Square score of 0.944 or 94.4%. This means that GDP, inflation, exchange rate, and money supply explain 94.4% of the issuance of sovereign sukuk. As for the 5.6% of the variation in the issuance of sovereign sukuk is affected by other variables outside the model. Based on the result of the model analysis, the regression model can be formulated as follow:

$$\ln Y_{it} = -21.627 + 0.989472 \ln GDP_{it} - 0.140863 \ln INF_{it} + 0.035625 \text{ sqrt} EXC_{it} + 0.657584 \ln BM_{it} + e_{it}$$

5. Discussion

The positive sign of economic growth measured using GDP proxy explains that GDP has a positive contribution to the issuance of sovereign sukuk. The result of this study is in line with the theory developed by Tandelilin (2010) which states that the macroeconomic factors empirically affect the capital market condition in several countries. This study supports the study conducted by Muharam, Anwar, and Robiyanto (2019) which find a causal relationship between economic growth and the development of sukuk market in Malaysia. Supporting the finding from Said and Grassa (2013) that GDP per capita has a positive influence on the growth of the sukuk market. This study is also in line with the study conducted by Abrovov (2020) which find a positive effect of sukuk on the economy confirmed from sukuk emission as a factor in increasing Muslim countries' income. Medium-term and long-term sukuk are more effective in the macroeconomic context. In line with the empirical study conducted by Alam et al. (2020) on sukuk as an instrument of sharia capital market which is used to achieve economic development in Pakistan.

The regression coefficient of inflation has a negative sign which explains that when inflation increases, the issuance of sovereign sukuk will decrease. The negative notation shows the tendency of continuous increases in prices but is not followed by the increase in income, which results in a decrease in people's purchasing power. This result supports Wahyudi and Shofawati (2019) that during inflation, firms prefer not to issue securities in the form of sukuk because of the decline in firm's profitability due to the increase in production costs. Supporting the research conducted by Zanudin et al. (2019), inflation is one of the factors that determine the development of sukuk market.

The result of t-test shows that the exchange rate has a significant and positive effect on the issuance of sovereign sukuk. The exchange rate is a parameter in the import and export of a country. An appreciation of domestic currency will provide a positive impact on the exporter. The appreciation of currency will be used by a country to issue more securities in the form of sukuk as a way to raise capital because the increase in export will strengthen exchange rate, and in turn increases state income or economic growth. In line with the study conducted by

Suciningtias (2019) that long-term change in sukuk return in Indonesia is affected by the changes in the exchange rate. However, the finding of this study contradicts the finding from Al Raei et al. (2019) that exchange rate has a negative relationship with the development of sukuk market which indicates that the strengthening of the dollar leads to the decrease in the rate of return and vice versa.

The result of the partial test shows that the money supply measured using broad money as the proxy has a positive and significant effect on the issuance of sovereign sukuk. The increase in the number of circulated money represents the increase in people's real wealth, and people trust on sovereign sukuk as a safe investment instrument means that there is fixed return and no default risk because this security is issued by the country and the country will guarantee the repayment. This study is relevant to the study conducted by Ardiansyah and Lubis (2017) that money supply has a positive and significant effect on the growth of corporate sukuk in Indonesia. Additionally, this study also supports the finding from Altaleb and Alkhatib (2016) that the issuance of sukuk can provide a solution to monitor the monetary policy in Jordan. For example, with the monetary requirement that with the increase in money supply, the goods and services will also increase, thus protecting money from the reduction in purchasing power and prevent a decrease in the value of money.

6. Conclusion

Several important finding that can be extracted from the analysis results is, first, a positive and significant effect of economic growth on the issuance of sovereign sukuk. The economic growth has a strong effect in determining the issuance of sovereign sukuk. Second, inflation has a negative and significant effect on the issuance of sovereign sukuk, this is asymmetric with the direction of sukuk issuance, which means that inflation is inversely proportional to the issuance of sukuk. Third, the exchange rate has a positive and significant effect on the issuance of sovereign sukuk. This shows that when exchange rate experiences an appreciation, it will have a positive contribution on the issuance of sovereign sukuk. Fourth, the money supply has a positive and significant effect on the issuance of sovereign sukuk. This shows that the increase in the circulated money will increase real wealth, and will bring a positive transformation of the issuance of sovereign sukuk. Fifth, simultaneously the model shows that economic growth, inflation, exchange rate, and money supply have a significant effect on the issuance of sovereign sukuk.

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