

Macroeconomic Indicators and Sukuk Market Performance in Selected OIC Economies

Nursilah Ahmad,¹ Asma Abdul Rahman,² Syazwani Abd. Rahim,³ Nurul
Atika Azzan,⁴

Abstract. *Sukuk plays a critical role in developing Islamic finance globally. Therefore, it is important to identify macroeconomic determinants that drive the sukuk market. The study investigates the relationship between macroeconomic indicators and sukuk market performance for the period 2004 until 2019 in 10 sukuk issuing countries using a panel data approach. The macroeconomic indicators are Gross Domestic Product (GDP), consumer price index, trade openness, exchange rates, and financial crisis. The findings reveal that GDP, trade openness, and exchange rates have a significant impact on sukuk market performance. In addition, the study analyses the growth components of GDP in these countries five years before the Covid-19 pandemic outbreak. The countries' performance in terms of changes in percentage contribution of consumption, investment, government spending, and net export, towards GDP growth, is measured. The findings indicate that the consumption component contributes the most to economic stability. Therefore, the authorities can implement policies that would support productive consumption and design trade policies that will enhance sukuk market performance.*
Keywords: *Sukuk, Macroeconomic indicators, Islamic bond, GDP decomposition*

Abstrak. *Sukuk memainkan peranan penting dalam membangunkan kewangan Islam diperingkat global. Sehubungan itu, adalah penting untuk mengenalpasti pembolehubah makroekonomi yang mempengaruhi pertumbuhan pasaran sukuk. Kajian ini meneliti hubungan antara indikator makroekonomi dan prestasi pasaran sukuk bagi tempoh 2004 hingga 2019 bagi 10 negara penerbit sukuk menggunakan pendekatan panel data. Penunjuk makroekonomi yang digunapakai ialah Keluaran Dalam Negara Kasar (KDNK), indeks harga pengguna, perdagangan antarabangsa, kadar pertukaran wang dan krisis kewangan. Hasil kajian mendedahkan bahawa KDNK, perdagangan antarabangsa dan kadar pertukaran wang mempunyai kesan yang ketara ke atas prestasi pasaran sukuk. Kajian ini juga menganalisis peratusan perubahan pertumbuhan setiap komponen KDNK di negara tersebut lima tahun sebelum pandemik Covid-19 melanda dunia. Dapatan kajian menunjukkan bahawa komponen penggunaan adalah penyumbang utama kepada kestabilan ekonomi. Oleh itu, pihak berkuasa disarankan untuk melaksanakan polisi yang menyokong penggunaan produktif dan perdagangan antarabangsa bagi meningkatkan prestasi pasaran sukuk.*

Kata Kunci : *Sukuk, Indikator makroekonomi, Bon Islam, Dekomposisi KDNK*

¹ Corresponding Author. Associate Professor, Faculty of Economics and Muamalat, Universiti Sains Islam Malaysia | nursilah@usim.edu.my

² Associate Professor, Faculty of Major Language Studies, Universiti Sains Islam Malaysia | asma@usim.edu.my

³ Senior Lecturer, Academy of Contemporary Islamic Studies (ACIS), Universiti Teknologi MARA, Johor Branch | syazwanirahim@uitm.edu.my

⁴ Post-graduate candidate, Faculty of Economics and Muamalat, Universiti Sains Islam Malaysia | nurulatika.azzan10@gmail.com

Introduction

The sukuk market is seen as a vehicle for channeling the world's increasing pool of Shariah-compliant investment toward economic growth that is both sustainable and equitable. The worldwide sukuk issuances are mostly dominated by sovereign, quasi-sovereign, corporate, and financial institutions. Sovereign issuances continue to lead the pack, followed by the quasi-sovereign, which explains why government support is necessary, particularly in the growth of the sukuk market. The sovereign sukuk formed 73 percent of the total global sukuk for the period 2001 to 2019 (IIFM Sukuk Report, 2019), as shown in Figure 1. Sovereign sukuk issuances have two benefits. First, providing funding for the government borrowing requirement. Second, giving ready access to liquidity for the growing number of Islamic banks that operate in sukuk issuing countries.

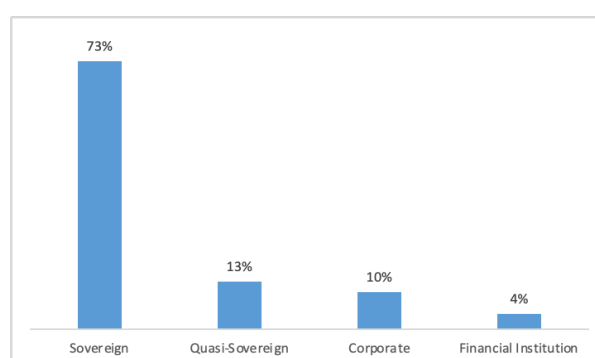


Figure 1. Global Sukuk Issuances by Issuers Status, 2001-2019

Source: IIFM Sukuk database

Sovereign sukuk issues are significant contributors to global sukuk market growth. In 2019, Saudi Arabia, Indonesia, Malaysia, the United Arab Emirates (UAE), and Turkey continue to provide a solid base for the sovereign sukuk market (IIFM, 2019). After its establishment, gross sovereign issuance from sukuk was USD 680.7 billion by the end of 2019, representing about 54.58 percent of all global sukuk issuances. Global sovereigns have continued to increase within the first two months of 2020. Nevertheless, the Covid-19 pandemic may disrupt economic growth in the long run. Since the economic recovery process will not bounce back quickly, there is a growing possibility that most sovereigns will issue sukuk to fulfill their fiscal budget.

Motivated by the above situation, this study investigates key macroeconomic factors affecting sukuk issuances in 10 sukuk issuing countries. The countries under study are Malaysia, Saudi Arabia, Indonesia, Brunei, the UAE, Bahrain, Kuwait, Qatar, Sudan, and Pakistan. According to Samoui and Khowaja (2017), most nations struggle to promote their sukuk markets and should maintain stable macroeconomic policies to attract investors. They also indicate that no single determinant is fully responsible for sukuk market development. As a result, the question of what drives the sukuk market performance has become crucial, more so due to the recent Covid-19 endemic.

The paper is organized as follows. The relevant literature is briefly reviewed in section two, followed by the research method in section three. Section four discusses the empirical findings, and section five concludes the discussion.

Literature Review

Sukuk is a Shariah-compliant financial instrument or an Islamic bond, that is traded in the secondary market. There is quite a number of research on the issuance of sukuk and the development of economic sectors using sukuk (Saad & Haniff, 2013). However, few studies are available on the relationship between sukuk and economic growth. Therefore, the level of accuracy and reliable data presented is uncertain. Furthermore, the presence of disapproval of the concept of sukuk among Shariah scholars and the lack of standards of Islamic finance is also the reason why research on sukuk is less developed (Zulhibri, 2015). Table 1 lists selected studies on the relationship between macroeconomic indicators and the sukuk market.

The present work is supported by the "flight-to-quality" phenomenon and endogenous growth theory. The "flight-to-quality" phenomenon describes how investors withdraw funds from riskier assets like stocks to safer products like bonds (Robiyanto, 2018 Robiyanto et al., 2017). Their findings show that investors prefer to shift from high-risk assets (like equities) to safer assets (bonds). Another study by Mustafa et al. (2015) investigates if a sukuk market displays a flight-to-quality episode. The study found that investors prefer to migrate to the safer sukuk market when traditional stock market volatility rises.

Table 1. Selected Studies on Macroeconomic Indicators and Sukuk Market

Authors	Dependent Variables	Determinants	Method	Findings
Nursilah Ahmad, Siti Nurazira Mohd Daud, Zurina Kefeli (2012)	Total <i>Sukuk</i> issuances	<ul style="list-style-type: none"> • Producer Price Index (PPI) as a proxy of the business cycle • The inflation rate, measured using CPI, • Gross Domestic Product (GDP) to represent economic growth 	<ul style="list-style-type: none"> • Vector Autoregressive models (VARs) • Variance Decomposition (VDC) 	<ul style="list-style-type: none"> • PPI (+) • CPI (+) • GDP (+)
Arafat Mansoor Al-Raeai, Zairy Zainol, Ahmad Khilmy Abdul Rahim (2019)	<i>Sukuk</i> market development	<ul style="list-style-type: none"> • Savings rate • Exchange rate • Trade openness • Banking system size • Stock market capitalization • Political risk 	Panel Data, Pooled Ordinary Least Square (POLS) Model	<ul style="list-style-type: none"> • Savings rate (+) • Exchange rate (-) • Trade openness (+) • Banking system size (-) • Stock market capitalization (+) • Political risk (+)
Houcem Smaoui, Mohsin Khawaja (2016)	<i>Sukuk</i> market development	<ul style="list-style-type: none"> • GDP • Natural openness • Legal origin • Muslim population • Size of IB • GDPC • Institutions • Bonds market development • IR variability • level of IR • FX vol 	System GMM	<ul style="list-style-type: none"> • GDP (+) • Natural openness (+) • Legal origin (-) • Muslim population (not significant) • Size of IB (+) • GDPC (+) • Institutions (+) • Bonds market development (+) • IR variability (+) • level of IR (-) • FX vol (+)
Cupian, Rien Muasia, Safira Aryanti Putri (2020)	Developments in the issuance of <i>Sukuk</i> (percent)	<ul style="list-style-type: none"> • Index of production (percent) • Inflation (percent) • Certificate Bank Indonesia Sharia Bonus (percent) • Jakarta Islamic Index (percent) 	Ordinary Least Square (OLS)	<ul style="list-style-type: none"> • Index of production (percent) (+) • Inflation (per cent) (-) • Certificate Bank Indonesia Sharia Bonus (percent) (+) • Jakarta Islamic Index (percent) (not significant)
Siti Aisyah Suciningtias (2019)	<i>Sukuk</i> performance	<ul style="list-style-type: none"> • BI rate (benchmark interest rate) • Inflation, • Exchange rate • Changes in world gold prices • World oil prices 	Vector Error Correction Model (VECM)	<ul style="list-style-type: none"> • BI rate (benchmark interest rate) (+) • Inflation(+) • Exchange rate (+) • Changes in world gold prices (+) • World oil prices (not significant)

Datien Eriska Utami et al (2019)	Mudhaarabah <i>Sukuk</i> Issuances	<ul style="list-style-type: none"> • <i>Sukuk</i> Characteristics • Role of Shariah Supervisory Board • Firm Characteristics • Market Value • Macroeconomic Condition (Inflation, BI Rate) 	Probit Regression	<ul style="list-style-type: none"> • <i>Sukuk</i> Characteristics (+) • Role of Shariah Supervisory Board (+) • Firm Characteristics (+) • Market Value (-) • Macroeconomic Condition (Inflation (-), BI Rate (+))
Ali Said and Rihab Grassa (2013)	<i>Sukuk</i>	<ul style="list-style-type: none"> • Economic and Macroeconomic factors, • Global financial crisis • Financial system • Institutional environment • Legal origin • Religion and society 	Panel Data (Fixed and Random Model)	<ul style="list-style-type: none"> • Economic and Macroeconomic factors (+) • The global financial crisis (-) • Financial system (+) • Institutional (+) • environment (+) • Legal origin (+) • Religion and society (+)
Suriani, M. Shabri Abd. Majid, Raja Masbar, Nazaruddin A. Wahid (2018)	Sovereign <i>Sukuk</i>	<ul style="list-style-type: none"> • Inflation • Exchange Rate • Interest Rate (BI Rate) 	Cointegration, VECM, and multivariate causality approaches	<ul style="list-style-type: none"> • Inflation (not significant) • Exchange Rate (+) • Interest Rate (BI Rate) (not significant)

Source: Authors' compilation

In the present study, we investigate the impact of trade openness, GDP, CPI, and exchange rates on the sukuk industry. Trade openness may benefit the financial sector in two ways. First, an increase in demand for financial goods and services promotes financial market development. This need was raised when income risk and volatility associated with trade openness rise (Mohd et al., 2013). Second, the stock market and sukuk market will be more developed in a more open economy since foreign financing from international investors have easier access. Research by Arafat Mansoor (2013) reveals that trade openness positively and significantly impacts the Sukuk market development, supported by the endogenous growth theory. It indicates that the stock market and sukuk market will grow more rapidly in a more open economy since increased openness facilitates international funding from foreign investors. As a result, it will boost the growth of the sukuk and Islamic stock markets. Trade openness has a favorable and considerable impact on the growth of the sukuk market in Saudi Arabia, Kuwait, Bahrain, Qatar, Indonesia, the UAE, Malaysia, Pakistan, Brunei, and Gambia (Said and Grassa, 2013).

Several studies discovered that economic growth has a strong effect on the development of the sukuk market (Ahmad et. al, 2012, Istiqomah, 2012, Said and Grassa, 2013, Smaoui and Nechi, 2017). On the other hand, the development of the sukuk market also has a significant impact on economic growth. In a different context, Goaid and Sassi (2010) examine the connection between Islamic finance and economic development in a sample of the Middle East and North Africa (MENA) countries. The authors utilize an imbalanced panel data set and estimated a dynamic panel model using a generalized method of moments (GMM) estimation. Their results show no statistically significant correlation between Islamic finance and economic development in the economies they studied. However, the primary study shortcoming is that the nations studied have various economic and financial development levels. The dispersion between these two indicators may not be constant among MENA countries. As a result, the study findings may be skewed. Researchers indicate that macroeconomic factors influence the development of the sukuk market (Said & Grassa, 2013; Istiqomah, 2012; Smaoui and Nechi, 2017). However, some macroeconomic indicators such as inflation are not significantly influenced by sukuk.

In addition, high currency volatility creates uncertainty about the real value of sukuk instruments, impeding the development of the sukuk market. These results correspond to Arafat Mansoor's (2019), Smaoui, and Khawaja's (2016) findings that the exchange rate has a negative relationship with the development of the sukuk market. The United States dollar (USD) currency risk occurs when Sukuk payments are made in a foreign currency with unpredictable cash flows. Other studies are reporting a positive relationship between exchange rates and the sukuk market (Suriani et al., 2018, Sucinigtias, 2019). To summarise, different studies report different findings on the relationship between macroeconomic indicators and sukuk market development. Therefore, the present study contributes to the literature on the sukuk-growth nexus.

Method

Data collection for this study is based on the secondary data obtained from the World Development Indicator (World Bank, 2016), *Zawya Sukuk Database*, IIFM *Sukuk Report*, Securities Commission (SC), and Bloomberg. The data used in this study involves unbalanced panel data collected from ten sukuk issuing countries namely Malaysia, Indonesia, Brunei, Bahrain, Qatar, Sudan, Pakistan, Kuwait, United Arab Emirates, and Saudi Arabia. This study employs panel data analysis to investigate key macroeconomic drivers of the growth of the sukuk market over the period 2004 - 2019.

Sukuk market development is measured by the total value of issuances, with GDP serving as a proxy for economic growth (Smaoui & Khawaja, 2016; Grassa & Gazdar 2014; Said & Grassa 2013). Because a change in the US dollar rate affects sukuk return, which affects the volume of sukuk issuances, the sukuk trade was listed at the US dollar rate. The nominal exchange rate for local currency units per US dollar (USD) is used as a proxy for the exchange rate. According to empirical financial market literature, openness to international commerce is a significant predictor of financial market development (Bhattacharyay 2013; Smaoui & Khawaja 2016). Total imports plus exports as a percentage of GDP is used as a proxy for trade openness. The annual percentage changes measured by CPI are used as a proxy of inflation. Table 2 lists the variables used and the data sources.

Table 2. Data Descriptions

No.	Variable	Measures	Frequency	Source of Data
1.	Sukuk	<i>Sukuk</i> Issuance (volume in USD)	Annual	SC, OJK, <i>Zawya Sukuk Database</i> , and IIFM <i>Sukuk Report</i>
2.	Exchange Rates	National Currency/USD	Annual	World Bank, SESRIC
3.	GDPC	Income Per Capita (USD)	Annual	World Bank, SESRIC
4.	CPI	Inflation, average end year period (%)	Annual percentage changes	World Bank, SESRIC
5.	Trade Openness (TO)	The ratio of exports and imports to GDP (%)	Annual	World Bank, SESRIC
6.	Global Financial Crisis (DGFC)	Dummy variable	Annual	IMF

Source: Authors' compilation.

There are 18 sukuk issuing OIC economies for the period under study, but only the top ten countries are selected due to data availability. Table 3 lists the average annual values of sukuk issuances and macroeconomic indicators over the period 2004 - 2019.

Table 3. Sukuk Issuances and Macroeconomic Indicators, 2004 - 2019

Country	Sukuk Issuances (USD mil)	Macroeconomic Indicators (average annual values, 2004 - 2019)			
		GDP	CPI (%)	TO	FXE
Malaysia	51,265.39	260,204.13	2.35	158.86	3.65
Saudi Arabia	9,616.31	562,398.77	2.77	78.98	3.75
Indonesia	6,573.44	732,863.56	6.11	48.51	11,214.25
United Arab Emirates	6,171.15	31,460.75	3.76	148.90	3.67
Bahrain	2,224.50	27,287.33	2.25	151.72	0.38
Qatar	2,186.75	111,405.57	3.32	76.71	2.96
Sudan	1,182.13	53,043.88	18.00	15.63	4.06
Pakistan	1,280.06	229,865.44	8.09	29.39	89.88
Brunei	684.31	9,575.17	0.20	70.22	1.03
Kuwait	377.13	60,707.82	1.46	69.97	0.16

Notes: GDP = Gross Domestic Product, CPI = Consumer Price Index, TO = trade openness, FXE = exchange rates per USD.

Source: Authors' compilation.

The data are annual, with T=15 and N=10. The number of panels in this analysis has a lower cross-sectional dimension N than its temporal dimension T, indicating a short panel data study. The panel data regression in this work was analyzed using three models, including the Pooled ordinary least squares (POLS) model, the Fixed Effect Model (FEM), and the Random Effect Model (REM), which are based on the models of Grassa and Gazdar (2014), Said and Grassa (2013), and Adelegan and Radzewicz-bak (2009). Pooled Least Square or Common Effect Model is a typical panel data approach model combining time-series and cross-sections. This method used the OLS

approach or the smallest square technique to estimate the panel data model. The OLS method produces efficient and consistent parameters estimate if the individual effects do not exist. The baseline model for the estimation is shown below.

$$SUKUK_{it} = \beta_0 + \beta_{1it}x_{it} + \beta_{2it}x_{it} + \beta_{3it}x_{it} + \varepsilon_{it} \quad (1)$$

$$SUKUK_{it} = \beta_0 + \beta_1GDP_{it} + \beta_2CPI_{it} + \beta_3TO_{it} + \beta_4FXE_{it} + \varepsilon_{it} \quad (2)$$

where:

$SUKUK$ = *Sukuk*
 GDP = Gross Domestic Product
 TO = Trade Openness
 CPI = Consumer Price Index, percentage growth
 FXE = exchange rate
 ε = error term
 i = cross-sectional unit
 t = time period

The pooled OLS model is expressed as follows:

$$SUKUK_{it} = \beta_0 + \beta_1GDP_{it} + \beta_2CPI_{it} + \beta_3TO_{it} + \beta_4FXE_{it} + \varepsilon_{it} \quad (3)$$

where:

i = the cross-sectional dimension for countries
 t = the time series dimension

Panel Ordinary Least Square (POLS) refers to a standard linear regression procedure to minimize the differences between the observed responses in some arbitrary dataset and the responses predicted by the linear approximation of the data (Gujarati, 2008). The FEM model is listed below.

$$SUKUK_{it} = \beta_{0it} + \beta_1GDP_{it} + \beta_2CPI_{it} + \beta_3TO_{it} + \beta_4FXE_{it} + \mu_{it} \quad (4)$$

$$\beta_{0it} = \alpha + \mu_{it} + \lambda_{it} \text{ for each entity}$$

where:

μ_{it} = random error term
 μ_i = individual effects
 λ_t = time effects

In this approach, the panel data model has an intercept that may be changed for each individual and time, where each cross-section unit is fixed to the time series. The individual and time effects are not equal to zero since an individual-specific effect is time-invariant. The Random Effect Model (REM) estimates error variance particular to groups or times, assuming that individual effects or heterogeneity are unrelated to any regressor. Thus, μ_i is an individual-specific random heterogeneity (a component of the composite error term). In other words, the individual effects (μ_i) and time effects (λ_t) behave randomly.

The REM model was expressed as follows.

$$\begin{aligned} SUKUK_{it} = & \beta_0 + \beta_1 GDP_{it} + \beta_2 CPI_{it} + \beta_3 TO_{it} \\ & + \beta_4 FXE_{it} + (\mu_i + \lambda_t) + \mu_{it} \end{aligned} \quad (5)$$

In this approach, the difference over time and the individual country is accommodated by error term. In addition, the favorite method used in this approach is the Generalized Least Square (GLS) method (Gujarati, 2008). The t-statistical and F-statistical tests are required to see the significance of the individual influence of the independent variables on the dependent variable and tests.

This study uses two tests to choose which model is preferable, the Hausman test and the likelihood ratio test. The Hausman test is used to determine whether the Fixed Effect Model or the Random Effect Model is the best. The Random Effect Model is efficient if H_0 fails to be rejected. In contrast, if H_0 is rejected, the Fixed Effect Model is preferable to the Random Effect Model. To put it another way, if the p -value is bigger than 0.05, the Random Effect Model is preferred over the Fixed Effect Model.

The Likelihood ratio, commonly known as Redundant Fixed Effect, is used to select the preferable model between the Common Effect Model and Fixed Effect Model. If the value of Chi-square (χ^2) is greater than 0.05 (p -value $>$ 0.05), then the Common Effect Model is better rather than the Fixed Effect Model.

Results and Discussion

The descriptive statistic was presented on the independent variables, namely GDP, CPI, trade openness and exchange rates, while sukuk is the dependent variable. The average GDP is 5.18 with a standard deviation of 0.58, while the average sukuk is 3.34 with a standard deviation of 0.75. Compared to the study by Datien Eriska Utami et al. (2019), which analysis the determinants of sukuk issuances in Indonesia, the average of sukuk for this study is higher than that of Indonesia, which is 1.58. This is analogical considering that this study combined several sukuk countries' issuances while the previous study was only for Indonesia. Based on the descriptive statistics, GDP's average and the standard deviation are lower than sukuk issuance.

The descriptive statistics revealed that the variables data throughout the research period had a normal distribution as shown in Table 4. The skewness for all variables was less than 3, and the kurtosis for all variables was less than 10, indicating that the dataset deviation from normality was not severe (Kline, 2011).

Table 4. Descriptive Statistics

Statistics	SUKUK	GDP	CPI	TO	FXE
Mean	3.341	5.182	0.769	1.918	1.213
Median	3.379	5.334	0.746	1.975	0.790
Maximum	5.324	6.020	1.818	2.328	4.160
Minimum	1.389	4.100	-1.000	1.266	0.444
Std. Dev.	0.748	0.538	0.340	0.281	1.099
Skewness	0.073	-0.613	-0.606	-0.673	1.891
Kurtosis	2.898	2.332	8.088	2.345	5.156

Notes: **** significant at 10%, 5% and 1% level, respectively. GDP = Gross Domestic Product, SUKUK = Total sukuk issuances, CPI= Consumer Price Index, TO = Trade Openness, FXE = Exchange rates.

The results of the correlation matrix show that no variable has strong or perfect correlations, either in positive or negative values as shown in Table 5. However, only the TO and CPI and FXE, and GDP have moderate correlations, while other variables exhibit weak correlations. Gujarati and Porter (2009) suggest that a coefficient correlation of less than 0.8 is unlikely to be vulnerable to a significant multicollinearity issue. Overall, sukuk issuances, CPI, and exchange rate all have negative associations. However, trade openness and GDP have favorable relationships.

Table 5. Correlation Matrix

Covariance Correlation	SUKUK	GDP	CPI	TO	FXE
SUKUK	0.555 1.000				
GDP	0.158 0.395	0.287 1.000			
CPI	-0.059 -0.236	0.024 0.136	0.115 1.000		
TO	0.059 0.282	-0.024 -0.165	-0.050 -0.525	0.078 1.000	
FXE	-0.049 -0.061	0.324 0.551	0.101 0.271	-0.146 -0.475	1.201 1.000

Note: *, **, *** denotes significant at 10%, 5% and 1% level, respectively.

Next, the autoregressive conditional heteroscedasticity (ARCH) test was conducted for the POLS model. Based on the results (p -value > 0.05), the issue of heteroscedasticity is insignificant.

Table 6. Sukuk Market Development Estimation Models

Variables	POLS	FEM	REM
Dependent variable = Total Sukuk Issuances			
GDP	0.000 (6.776)	0.000 (8.363)	0.000 (6.601)
CPI	0.215 (-1.2432)	0.998 (0.002)	0.015 (-2.442)
TO	0.037 (2.101)	0.019 (2.369)	0.104 (-1.633)
FXE	0.007 (-2.717)	0.000 (-4.175)	0.000 (-3.648)
DGFC	0.205 (-1.272)	0.095 (-1.681)	0.039 (-2.079)
DCP	0.341 (0.955)	0.959 (-0.051)	0.365 (0.907)
R-squared	0.347	0.731	0.291
Adjusted R-squared	0.318	0.699	0.259
F-statistic	11.898***	22.653	9.175***
Likelihood Ratio	0.000		
Hausman Test	0.000		

Note: *, **, *** significant at 10%, 5% and 1% level, respectively.

This research seeks to complement the previous studies on the sukuk-bond-growth nexus using various macroeconomic indicators (Nayan & Kadir, 2014; Said & Grassa, 2013; Elkirim, 2012). Based on the POLS results, three variables, namely, the GDP, trade openness, and rate of exchange, demonstrate significant results. The GDP and trade openness shows a positive relationship with the sukuk issuances,

indicating that for every 1 percent increase in GDP and trade openness will be followed by the increase of sukuk issuances by 0.80 percent and 0.51 percent, respectively. However, the exchange rate negatively affects the sukuk market development, which denotes that every increase of the exchange rate by 1 percent will decrease the sukuk issuances by 0.18 percent. The CPI and the dummy variables of DGFC and DCP do not significantly impact the *Sukuk* issuances. In addition, the value of the coefficient of determination (R^2) indicates that the independent variables explain 34.76 percent of the variation in sukuk issuances.

The results based on the FEM model denote that GDP, trade openness, and exchange rate affect sukuk market development. Both GDP and trade openness have positive influences on sukuk market development while exchange rates have a negative impact. Considering this, the exchange rate seems to imply a negative association between the sukuk market development and a 10 percent rise in the dollar value, suggesting that when the dollar price grows, the return rate decreases or vice versa. Rising currency volatility impairs sukuk market development because it makes it more difficult for the market to develop (Bhattacharyay, 2013; Adelegan & Radzewicz-bak, 2009). The dollar risk associated with the USD rate stems from the sukuk investments denominated in a foreign currency, where there is considerable uncertainty about the cash flows. On the contrary, in the study by Smaoui and Khawaja (2016), there was no significant association between exchange rate fluctuation and sukuk market growth in 11 countries from diverse regions.

The dummy variable on the financial crisis significantly affects sukuk issuances. The flight-to-quality phenomenon supports this result. Mustafa et al. (2015) conduct an extensive investigation to see if there was a flight-to-quality between a conventional financial market and a *Sukuk* market. The study findings revealed that investors prefer to flock to the sukuk market when traditional stock market volatility rises since it is more secure.

The result of GDP has a positive and significant impact on the *Sukuk* market development, similar to the research conducted by (Said & Grassa, 2013). Harrod-

Domar's Theory also supports these results. The result indicates that a 1 percentage increase in GDP will be accompanied by a rise in sukuk issuances by 4.37 percent. This result is supported by research carried out by Said and Grassa (2013) and Istiqomah (2012), which revealed that economic growth positively influences *Sukuk* market development. Conversely, *Sukuk* market development also has a positive influence on economic growth. This finding is also supported by previous research in Indonesia and Malaysia (Ahmad et al., 2012; Selvianty, 2015).

On the other hand, the output of trade openness positively and significantly impacts the *Sukuk* market development. The results denote that every 1 percent increase in trade openness will increase the *Sukuk* issuances by 1.46 percent. This development is supported by the endogenous growth theory, which advocates that an economy that tends to be more open will witness increased growth in the stock and *Sukuk* markets. When openness is high, there will be more accessible access to foreign financing from foreign investors. As a result, it will help to expand the *Sukuk* market and the Islamic stock market. The coefficient of determination R^2 equals 73.11 percent. It indicates that the independent variables can explain the variance of the sukuk market development by 73.11 percent.

Results of the Random Effect Model (REM) above show that four variables affect the *Sukuk* issuance: GDP, CPI, rate of exchange, and the dummy variable of the financial crisis. The output of GDP is a positive and significant effect on the issuance of *Sukuk*. This finding was also approved by the previous research in Indonesia and Malaysia (Ahmad et al., 2012; Selvianty, 2015). This implies that an increase will follow each 1 percent increase in GDP in *Sukuk* issuance of 1.56 percent. Moreover, the results show that the exchange rate has a negative and significant influence on the *Sukuk* issuance. This reveals that if the rate of exchange increases by 1 percent, it will be followed by a decrease in *Sukuk* issuance of 0.51 percent. In addition, the CPI output shows a negative relationship of CPI to the *Sukuk* issuances. These results supported by Said and Grassa (2013) found that inflation does not substantially affect the *Sukuk* market development.

The coefficient of determination R^2 shows an amount of 29.12 percent. It indicates that the independent variables can explain the variance of the *Sukuk* issuances by 29.12 percent, while other factors explain the remaining. The coefficient of determination R^2 in this model is lower than the fixed-effect model, which shows that the ability of independent variables to provide information to predict dependent variable is better in the fixed-effect model. In other words, the higher the coefficient R^2 , the better the ability of independent variables to provide information to predict the dependent variable. The p -value of the Hausman test was lower than 0.05, which indicates that the fixed effect model is better compared to the random effect model.

Furthermore, for the likelihood ratio, the results also similar to the Hausman test revealed that the fixed random effect model is more appropriate compared to the common effect model. Considering those results, this study also presents the result of the common effect model for comparison. Regardless of the likelihood and Hausman test results, the most appropriate model is the fixed effect model. The null hypothesis in the Hausman test cannot be rejected at a five percent level of significance. Therefore, it is presumed that the differences between individual countries (cross-section analysis) can be accommodated from a different intercept.

Robustness Test

This research is expanded by running Generalized Least Squares (GLS) estimate for the robustness test as shown in Table 7. The GLS model is similar to the random effect model in that it takes into account heteroskedasticity and autocorrelation concerns. The GLS estimator is a more suitable approach for long panel data if the panel's cross-sectional size N is lower than its temporal dimension T (Hoechle 2007; Baltagi 2008). Based on the findings, CPI, DGFC, and DCP dummy variables are not statistically significant. However, the coefficients of GDP, trade openness, and exchange rates, are in line with the results of the POLS analysis mentioned earlier.

Table 7. Results for Generalized Least Square Model

Variable	coefficients	t-stat	prob.
----------	--------------	--------	-------

Dependent variable: Sukuk Issuances			
GDP	0.806***	7.385	0.000
CPI	-0.186	-1.005	0.317
TO	0.622**	2.607	0.0102
FXE	-0.131**	-2.162	0.0324
DGFC	-0.218	-1.495	0.1373
DCP	0.208	1.147	0.2534
R ²	0.396		
F-Stat	14.612***		

Note: *, **, *** significant at 10%, 5% and 1% level, respectively.

GDP Growth and Decomposition

The pandemic Covid-19 has caused significant and severe losses in many economies worldwide due to illness and social distancing laws. The impact of the virus outbreak economic crises on individual families is difficult to predict since many variables remain unclear, such as how long stay-at-home orders, devastating industries, and post-crisis consumption and recovery. This study examines the growth components of GDP in ten sukuk issuing countries five years before the Covid-19 pandemic outbreak. The countries' performance in terms of changes in percentage contribution of consumption, investment, government spending, and net export, towards GDP growth, is measured.

When the data was collected, several countries were still in the early stages of Covid-19, with new household regulations, government fiscal policy, and trade restrictions still to be implemented. This may explain why government expenditure is falling in many countries. The Covid-19 pandemic has influenced government fiscal policy in terms of both revenue and expenditure. In this sense, the federal government must respond quickly by infusing huge sums of money into the economy. Expansionary fiscal policy measures like increased allocation and tax relief are critical to saving lives, helping companies, and minimizing the economic impact of the crisis. This scenario may have a beneficial or negative effect on government expenditures.

Figure 2 shows changes in GDP and its components, namely government expenditure (G), net export (N_x), foreign direct investment (I), and personal

consumption expenditure (PCE). The y-axis refers to the contribution to the changes in real GDP from 2015 to 2019 in billion USD, while the x-axis represents the four GDP components mentioned earlier.

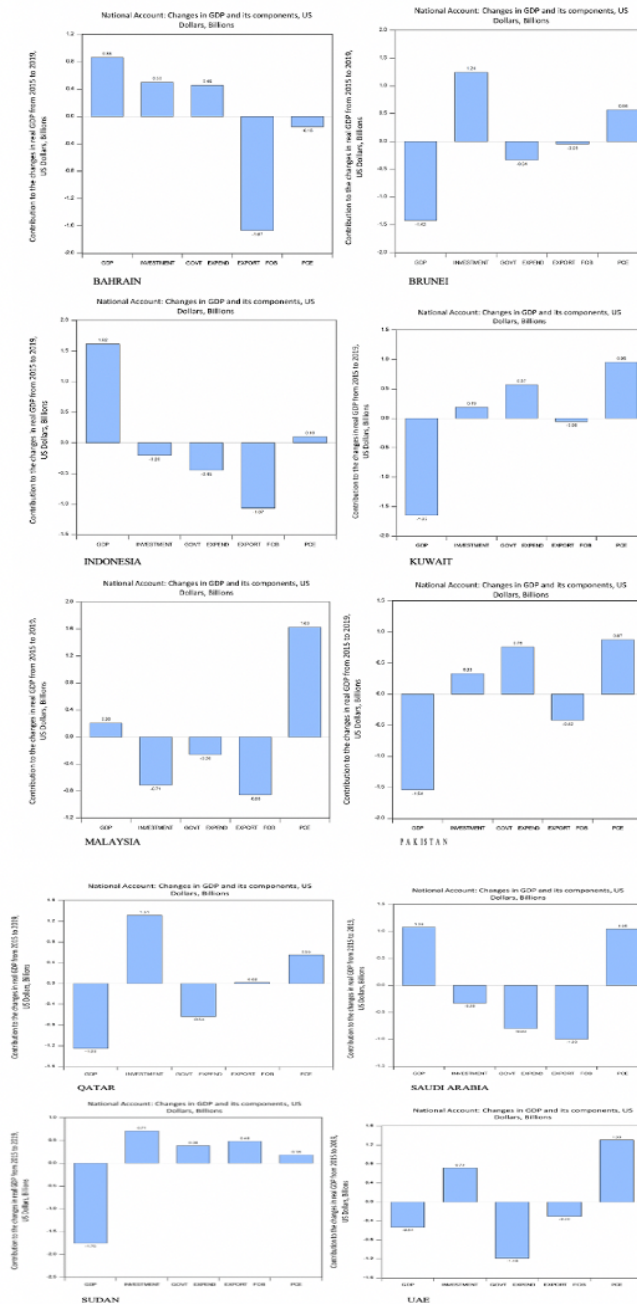


Figure 2. Changes in GDP Growth Components
 Source: Authors' estimation.

Figure 2 indicates that household consumption has significantly increased in

Sudan, Brunei, Malaysia, Indonesia, the UAE, Saudi Arabia, Kuwait, Qatar, and Pakistan and is significantly reduced during the Covid-19 pandemic in Bahrain (not shown in the diagram). In Malaysia, to boost consumption, household policies included electricity discounts, and temporary paid leave, cash transfers to low-income families, salary subsidies to assist companies in retaining workers. In addition, employees are permitted exceptional withdrawals from their Employment Provident Fund and hiring and training subsidies. This strategy encourages families to spend more, thus contributing to the economy's long-term stability.

As a result, boosting government spending during the pandemic may aid in maintaining economic success. The lockdown and social distance process have also created an alarming scenario for global trade in general, particularly the services sector, which is intricately linked and needs close contact between the providers and the customers. The findings also indicate that export significantly reduced during the Covid-19 pandemic in all countries, except for Sudan. The trade restrictions implemented by most regions have contributed to this situation. The pandemic has affected many sectors, including the availability of food supplies. In such a circumstance, governments may be compelled to limit their food exports in the near term to ensure sufficient domestic supply.

Conclusion

This study investigates the relationship between sukuk and selected macroeconomic variables and decomposes the growth rate components of GDP in ten sukuk issuing countries. The findings indicate that GDP and trade openness have a positive impact on sukuk issuances. The 2008 financial crisis and exchange rates impacted the sukuk market negatively. As for the GDP component, the findings indicate that most components display steadier growth, with household components being the chief contributor. The findings help policymakers identify which component is particularly important in accounting for the overall decline in volatility. The pandemic has caused significant economic losses in several countries owing to sickness and government social distancing measures, mainly through a reduction in

personal and government consumption. The government may adopt new rules for families to encourage them to spend more and support the economy. Increasing government spending during a pandemic may therefore lead to a faster economic recovery post-pandemic. The decrease in global foreign direct investment is also linked to supply chain problems caused by the pandemic.

The policymakers may use the findings to ensure the sustainable growth of the sukuk industry. Sukuk market infrastructure is an important finding for policymakers to develop strategies for connecting and integrating the banking sector and sukuk industry. The results of this research may help public and institutional investors choose shariah-compliant financial products with minimal risk as a preferred investment vehicle. Moreover, issuers, especially governments and corporate entities, should provide value to sukuk issuance and keep it stable to promote the market's development, particularly the Islamic capital market. For future research, other macroeconomic indicators that particularly influence sukuk issuances may be included. Another estimation method, such as the generalized method of moments system (GMM), can also be employed to complement the existing study.

Acknowledgment

The research is funded by Universiti Sains Islam Malaysia Research Grant. Research Code: PPPI/FEM/0121/USIM/15121.

References

- Adelegan, O. J., & Radzewicz-bak, B. (2009). What determines bond market development in sub-Saharan Africa? International Monetary Fund. IMF Working Paper, 9-213.
- Ahmad, N., Abdul Rahman, A. & Azzan, N.A. (2021). A Decomposition of GDP Growth in Sukuk Issuing Countries. The 9th International Islamic Economic System Conference (I-iECONS2021), Faculty of Economics and Muamalat, Universiti Sains Islam Malaysia, 12-13 July 2021.
- Ahmad, N., Daud, S. N. M., & Kefeli, Z. (2012). Economic forces and the sukuk market. *Procedia-Social and Behavioral Sciences*, 65(127-133).
- Al-Raeai, A. M., Zainol, Z., & Rahim, A.K.A. (2019). The Influence of Macroeconomic Factors and Political Risk on the *Sukuk* Market Development in Selected GCC

- Countries: A Panel Data Analysis. *Jurnal Ekonomi Malaysia*, 53(2).
- Baltagi, B. H. (2008). Forecasting with panel data. *Journal of forecasting*, 27(2), 153-173.
- Bhattacharyay, B. N. (2013). Determinants of bond market development in Asia. *Journal of Asian Economics*, 24, 124-137
- Cupian, C., Muasia, R., & Putri, S. A. (2020). The Influence of Macroeconomic Indicators on the Growth of *Sukuk* in Indonesia.
- Eichengreen, B. (2006). The development of Asian bond markets. Asian bond markets: issues and prospects. *BIS Papers*, 30,1-12.
- Eichengreen, B. & Luengnaruemitchai, P. (2004). Why doesn't Asia have bigger Bond Markets? *National Bureau of Economic Research*, No. 10576.
- Elkarim, G.A. (2012). *Factors influence Sukuk and conventional bonds in Malaysia. Doctoral dissertation*, Universiti Utara Malaysia.
- Goaied, M., & Sassi, S. (2010). Financial development and economic growth in the MENA region: What about Islamic banking development? *Institut des Hautes Etudes Commerciales, Carthage*, 1-23.
- Grassa, R., & Gazdar, K. (2014). Financial development and economic growth in GCC countries: A comparative study between Islamic and conventional finance. *International Journal of Social Economics*, 41(6), 493-514.
- Hoechle, D. (2007). Robust standard errors for panel regressions with cross-sectional dependence. *The Stata Journal*, 7(3), 281-312.
- International Islamic Financial Market IIFM *Sukuk* Report, (2019). *A comprehensive study of the global Sukuk market*. Published July 2019. 8th Edition. Retrieved from <<http://www.iifm.net>>
- International Islamic Financial Market IIFM *Sukuk* Report, (2020). *A comprehensive study of the global Sukuk market*. Published July 2020. 9th Edition. Retrieved from <<http://www.iifm.net>>
- Istiqomah. (2012). Dinamika Interaksi Antara Variabel Moneter dan Pasar Modal Syariah Terhadap Pertumbuhan Ekonomi Indonesia. *Skripsi Departemen Ilmu Ekonomi Fakultas Ekonomi dan Manajemen Institut Pertanian Bogor*.
- Kline, R.B. (2011). *Principles and practice of structural equation modeling*. New York: The Guilford Press.
- Leduc, S., & Liu, Z. (2020). The uncertainty channel of the coronavirus. *FRBSF Economic Letter*, 7, 1-05.

- Mohd Hanafiah, K., Groeger, J., Flaxman, A. D., & Wiersma, S. T. (2013). Global epidemiology of hepatitis C virus infection: new estimates of age-specific antibody to HCV seroprevalence. *Hepatology*, 57(4), 1333-1342.
- Mustafa, M. S., Rasotgi, V., Jain, S., & Gupta, V. J. M. J. A. F. I. (2015). Discovery of fifth serotype of dengue virus (DENV-5): A new public health dilemma in dengue control. *Medical journal armed forces India*, 71(1), 67-70.
- Robiyanto, R. (2017). The Analysis of capital market integration in ASEAN Region by using the OGARCH approach. *Jurnal Keuangan dan Perbankan*, 21(2), 169-175.
- Robiyanto, R. (2018). Performance evaluation of stock price indexes in the Indonesia Stock Exchange. *International Research Journal of Business Studies*, 10(3), 173-182.
- Saad, N. M., & Haniff, M. N. (2013). A delve into the performance of *Sukuk* (Islamic bonds) and conventional bonds issued by PLCs in Malaysia. *European Journal of Accounting Auditing and Finance Research*, 1(4), 83-94.
- Said, D., & 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.
- Selvianty, I. (2015). Analisa indikator makro ekonomi terhadap pertumbuhan *Sukuk* di Indonesia: Sebuah analisa dengan metode Error Correction Model (ECM). *Doctoral dissertation*, Universitas Islam Negeri Maulana Malik Ibrahim.
- Smaoui, H., & Khawaja, M. (2016). The determinants of *Sukuk* market development. *Emerging Markets Finance and Trade*, 53(7), 1501-1518.
- Smaoui, H., & Nechi, S. (2017). Does *Sukuk* market development spur economic growth? *Research in International Business and Finance*, 41, 136-147.
- Suciningtias, S. A. (2019). Macroeconomic Impacts on *Sukuk* Performance in Indonesia: Co-integration and Vector Error Correction Model Approach. *Journal of Islamic Finance*, 8, 117-130.
- Suriani, M., Majid, R. M., & Nazaruddin, A. W. (2018). Macroeconomic Determinants of the Capital Market in Indonesia: A Comparative Analysis between *Sukuk* and Bonds Markets. *Journal of Academic Research in Economics and Management Sciences*, 7(2), 1-17.
- Utami, D. E., Trinugroho, I., & Sergi, B. S. (2019). What determines *Sukuk* issuance type in Indonesia? in *Asia-Pacific Contemporary Finance and Development*. Emerald Publishing Limited.
- Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*. MIT Press.

Zawya Sukuk Database: <<https://www.zawya.com/Sukuk/>>

Zulhibri, M. (2015). A synthesis of theoretical and empirical research on *Sukuk*. *Borsa Istanbul Review*, 15(4), 237-248.