Connectedness of Maturity Period and Zakat Investment Oblige to Sukuk (Islamic Bonds) Value Issuance

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ABSTRACT

Firms, public or private and even governments are sometimes faced with the problem of scarcity of funds to finance economic activities for industry investment sectors/ projects. The main sources of long-term funding preferable by issuer firms are mainly through debt (bonds) and equity issuance either in conventional or Islamic instruments. Listed companies under main market in Bursa Malaysia that belong to shariah compliant securities firms, they are normally prefer to issue sukuk as compared to conventional bonds concerning on zakat investment obligations for profitable projects at maturity date. Thus, the objective of this study is to investigate the relationship between sukuk tenure and zakat investment towards sukuk issuance influenced by systematic risk factors. Secondary data are utilized cover from year 2000 to 2023 for 2840 number of observations. Results from regression tests reported that maturity date or tenure of sukuk have a significant positive relationship towards its issuance in all equation model regressions for fixed effect, random effect and robust effect model. However, zakat investment shows a significant only in random effect model justifying that this wealth contribution paid for profitable investment/ project at specified date. All systematic risk factors show a significant effect towards sukuk issuance with mixed positive and negative associations except for interest rate spread. Thus, to encourage sukuk issuance by companies or government, an adoption by introducing sector-specific incentives, such as regulatory relief, tax exemptions, and government-backed guarantees is timely needed since it can reduce the cost of sukuk issuance.

Keywords: Sukuk; Maturity Period; Zakat Investment; Systematic Risk

INTRODUCTION

Sukuk (Islamic bonds) trade under a capital marketplace primarily governed by Securities Commission (SC) in Malaysia. Malaysia became a market leader and the largest sukuk market with a total outstanding sukuk value issued at MYR173.5 billion, or 57% as of March 2015 in the global sukuk market. As at June 2021, the global sukuk outstanding by Malaysia showed 44.8% whereby Malaysia still holds a dominant position compared to other countries (Economic Outlook, 2022). Here, the high percentage recorded by Malaysia sukuk issuance gives it a dominant position in sukuk by the size of issuance denominated by Malaysian Ringgit (MYR). Also, the stabilization of global liquidity, economic growth and high financing needs in core Islamic finance countries significantly increased sukuk issuance in 2023 with a forecast of $160-$170 billion in 2024 (Damak, 2024).

Firms, public or private and even governments are sometimes faced with the problem of scarcity of funds to finance economic activities for industry investment sectors/ projects. The main sources of long-term funding preferable by issuer firms are mainly through debt (bonds) and equity issuance either in conventional or Islamic instruments. Listed companies under main market in Bursa Malaysia that belong to shariah compliant securities firms, they are normally prefer to issue sukuk compared to conventional bonds concerning on zakat investment obligations. Conventional bond is a contractual debt obligation whereby the issuer is contractually

obliged to pay interest and principal on specified period to bondholder, therefore un-Islamic. Differ to sukuk issuance that strictly comply with shariah principles that prohibit charging an excessive interest rate or riba. Under sukuk structure, the sukuk holders each hold an undivided beneficial ownership in the underlying assets. Thus, sukuk holders are entitled to share in the revenues generated by the sukuk assets as well as being entitled to share in the proceeds of the realization of sukuk assets as well as the zakat investment obligations on generating returns from investment during maturity period are considered.

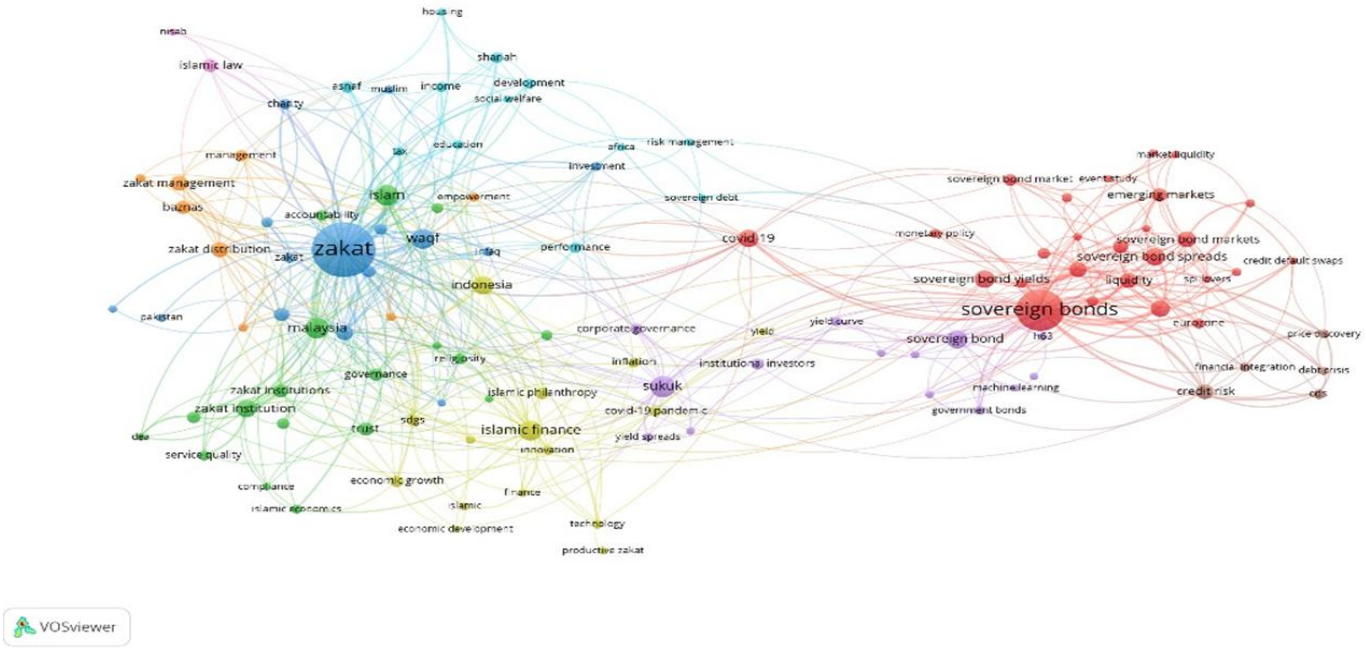

Fig. 1. Sukuk areas connection cover by network visualization mapping worldwide

Source: Authors (2025)

Fig. 1 presents the network area built up by VOSviewer for sukuk areas connection with subject research area on sukuk investment in the Islamic capital market. From this network connection, we can see that the separation areas between sukuk (belongs to the yellow to green colour network line) and conventional bonds (belongs to the purple to red colour network line) with regards to the factor influence or determinants much probably because of application concept of halal and non-halal investment. It also can be observed that some of the systematic risk factors have a connection to both debt instrument either sukuk or conventional bonds, for instance; economic growth, spreading of yield, credit risk and inflation rate. With regards to the liquidity, it looks like it has a big connection with conventional bonds as the network line is totally in red colour. According to Almaskati (2022; 2023), sukuk investment sculpt under shariah principles and halal investment, that the trading should comply with the guidelines highlighted by SC for shariah principles compliance. Besides, the author also confirmed that sukuk issuance reported a lower volatility than bond issuance since it complies with the shariah principles by avoiding the prohibited elements of gharar, maisir as well as uncertainty in their investment.

The remainder of this paper will discuss the past studies about the connectedness of sukuk value issues with its maturity period, zakat investment and systematic risk factor. Then, discuss the research methodology applied for multivariate regression tests. Next, findings discussions and lastly on concluding remarks with policy impact and recommendations.

LITERATURE REVIEWS

Connectedness between Sukuk Value and its Maturity Period (Tenure) Most of the studies considered tenure or maturity period as an independent variable in investigating the relationship between sukuk or conventional bonds value with its features. The tenure for this study is measured by the number of years for which sukuk issuance starts from the date of issue until maturity date. The longer the years to maturity are expected to lead higher yields due to longer risk exposure (Torabzadeh, Roufagalas & Woodruff, 2000; Bhojraj and Sengupta,

2003; Bokpin, 2010; Godlewski, Turk-Ariss & Weill, 2011; Ariff & Safari, 2012; Nejadmalayeri, Nishikawa & Rao, 2013; Massa, Yasuda & Zhang, 2013; Asquith, Au, Covert & Pathak, 2013; Chen et al. (2016); Mohd Saad, et. al. (2020). Some studies refer to maturity periods as duration (Anderson, Mansi & Reeb, 2003; Ramasamy, Munisamy & Mohd Helmi, 2011) and bond age (Huang & Wang, 2014; Anderson, Mansi & Reeb, 2004).

There is no difference between tenure for sukuk and conventional bonds whereby both can be issued for medium-term or long-term in the capital market as stated in Bondinfohub in Bank Negara Malaysia by using a symbol of IMTN and IBond and MTN and Bond respectively. Therefore, the discussion on the past studies regarding the tenure of sukuk issuance in ICM also can consider the study from conventional bonds findings. A longer tenure of maturity leads to huge uncertainty and volatility of bond prices and yield spreads and could mean huge possible return or loss in sukuk value (Jones, Lamont & Lumsdaine, 1998; Rusgianto & Ahmad, 2013; Mohd Saad, et. al (2020; 2023; 2025).

Custodio, Ferreira & Laureano (2013) explained the relationship between the tenure of debt investment with sukuk value. They used debt-maturity in US industrial firms from 1976 to 2008 for a total of 97215 observations from 12938 firms. Their result postulated that shortening of debt-maturity had increased the exposure of firms to credit, and liquidity shocks since firms with higher abnormal earnings have better projects and are expected to issue short-term debt as a signal of good quality.

The decision to issue and hold short-term, medium-term or long-term debt is one of the factors that needs to be considered when the firm decides to issue to avoid any default risk in future. As reported by Loffler (2004), the association between holding period strategies took one, three and five years to reduce its value/return. This shows that the strategy yields smaller losses than each of the strategies that favour the longer period of five years. McEnally & Ferri (1982) studied the relationship between risks of corporate bonds and found it related negatively to rating besides justifying duration is superior to coupon as a dominant factor in influencing betas benignly.

With respect to the yield spreads that determine the value of the bond during yield to maturity, Elyasiani, Jia & Mao (2010) found that bond yield spreads are positively related to bond age. They claimed that YTM is the length of time (in years) before the bond matures and is positively related to the cost of debt. As argued by Helwege & Turner (1999), through the theory of liquidity premium bonds with longer maturities have a greater risk. This study is consistent with Chen et al. (2016) also revealed that controlling variables as proxy by maturity period have a significant positive relationship with firms' cost of debt.

On the contrary, Bhojraj & Sengupta (2003) found a significant positive relationship between bond age with bond yields. Consistent with Fields, Fraser & Subrahmanyam (2012) also reported a significant positive relationship between bond age and yield spreads. The results pointed out about the higher cost of debt borne by the issuer and the likelihood to be default is also high that might affect the sukuk value during maturity date.

Connectedness between Sukuk Value and Zakat Investment Economic and Shariah finance are closely linked to several Arabic terms, including riba (interest), gharar (uncertainty), maysir (gambling), and other activities prohibited in Islam. Besides prohibited activities in sukuk investment, the zakat obligation is also important and compulsory to be paid since zakat is one of the five pillars in Islam. Its primary purpose is to purify both wealth and the soul. Every capable Muslim is required to fulfill the obligation of zakat. Investments fall under the category of wealth, meaning that zakat on stock/ bond/ sukuk investments and other assets is classified as zakat maal. According to Qaradawi (1999), wealth encompasses both traditional and modern assets. Traditional assets include agricultural produce, gold, jewelry, cash, and livestock, whereas modern assets cover income, salaries, and securities. Shihatah and Ghuddah (2004) elaborate on the rules for calculating zakat from various asset forms, including real estate, shares, bonds, and investment deposits.

While there is limited research directly examining the relationship between sukuk investment and zakat, some studies have touched upon this connection. Shariah–compliant asset pricing model integrating zakat and purification is developed by Issam Derbali, Zied Khaldi, Slim Jouini (2017). The purification of income gained from sukuk investments is one area where sukuk and zakat meet. Islamically, any wealth coming from haram (impermissible) means should be cleansed. The authors also state that the idea of decreasing zakat and

purification simultaneously in the Indonesian stock market has not been studied sufficiently. The significance of a novel investment structure which aims to further examine the potential synergies of zakat and sukuk, would bring forth a further dimension which encompasses the integrated portfolio modelling within existing asset pricing framework. As supported by Hanafi (2011) it states that the screening process that considers only the halal income of the company from their total revenue, is a process of purification that needs to be done before further listing the stocks in shariah compliance. The same idea applies to sukuk investments, where the revenue generated needs to be purified so it would not contravene shariah laws.

Another critical aspect to consider is the obligation to pay zakat on profits from sukuk investments. A study by Subekti et al. (2022) encourages sukuk profits zakat payment through interactive zakat collection by focusing on sukuk as one of the Muslim investors' Shariah investment products, thus highlighting the obligation to pay zakat on sukuk profits. This ensures that SCAPM is developed in accordance with Islamic principles, a concept authors refer to as zakat. A study by Derbali et al. (2017) offers perspective by providing Shawarah-Compliant Asset Pricing Model (SCAPM) that covers zakah and purification. But this phenomenon of zakat and purification decrease in the research of Indonesian stock market remain under studied. This suggests that there is room for future studies to look into how success can be achieved in the areas of zakat and sukuk, together with their implications for the Islamic finance community with respect to portfolio modelling and asset pricing. Another study by Bossman, Owusu Junior & Tiwari (2022) reported that Islamic stocks provide diversification benefits for constructing equity portfolios, whereby portfolio managers should not disregard the information on policy amendments (Islamic tax = zakat is static at 2.5%) resulting from market shocks.

DATA COLLECTIONS & RESEARCH METHODOLOGY

Measurement of this variable is based on the total value of tranche for sukuk issuance in Malaysian Ringgit (MYR). The figure has been logged because the data provided is in millions. This variable becomes a control variables in many previous studies whereby the results show that is inverse relationship between size of issued with bond yields (Bhojraj & Sengupta, 2003; Helwege, Huang & Wang, 2014; Asquith, Au, Covert, & Pathak, 2013; Chen et al. (2016). They found that big size of issuances led to lower default risks. Otherwise, the small size of issuances led to higher default risks. However, these studies used the empirical data for conventional bonds only. From the Islamic perspective, Muslims are not encouraged to have huge debt and are recommended to settle all debt as quickly as possible. Therefore, the prediction sign of the relationship between issue size and default risk should be inversely related from the conventional bonds. Thus, the big size of sukuk issuances leads to higher default risks or small size of sukuk issuances leads to lower default risks.

With regards to the zakat investment, the main conditions in the implementation of zakat is: (1) Shariah Compliance: Investments should adhere to Islamic principles, (2) Nisab and Haul: Zakat becomes obligatory when the total value of zakatable investments reaches or exceeds the nisab (minimum threshold and has been held for one lunar year (haul Calculation: The standard zakat rate is 2.5% of the zakatable amount. (3) Assets Included: Zakat calculation includes cash, gold, stocks, and business inventory, from which outstanding debts can be deducted, and (4) Intention: Zakat accounting considers the intention of owning shares (Andatu, 2025).

The variables used in this study, along with their descriptions, proxies or measurements, and data sources, are summarized in Table 1 below:

Table 1: Dependent, Independent and Control Variables

No.	Variables	Description	Proxy/Measurement	Predicted sign (+/-/?)	Data Sources
	Dependent (DV):				
1	Sukuk Issuance	lnValue	Log of total value of sukuk issuance in Malaysian Ringgit denomination for the tranche in the ith year.		Bondinfo Hub, RAM & Workspace Refinitiv

	Independent (IVs):				
2	*Sukuk Feature :* Maturity Period	Tenure	Maturity year period minus with issue year period.	+	World Database & MEIH
3	*Government wealth distribution:* Zakat Investment	Zakat Inv	The return they generate is earned income and Zakatable at 2.5%	+	World Database, BloombergBursa Malaysia & DOSM
4	**<u>Control Variables (CVs):</u>** *Systematic Risks:* a) Gross Domestic Product Growth Rate	GDP	GDP growth (annual %)	+	
	b) Consumer Price Index	CPI	Inflation rate based on consumer price index (annual %)	-	
	c)Real Interest Rate	RIR	Nominal real interest rate	+	World Database, BloombergBursa Malaysia & DOSM
	d) Interest rate spread	IR Spread	Lending rate minus deposit rate, %	-	
	e) Risk Premium on Lending	RP	Lending rate minus treasury bill rate, %	-	
	f) Bank capital to assets ratio	BankCap/ Asset	Bank capital divided by assets ratio, %	+	World Database & DOSM

To analyze the relationship between sukuk issuance and its key factors, this study applies data regression techniques. These methods enable the examination of variations across firms over time, providing a comprehensive understanding of the factors at play. Since sukuk issuance is different for issuers and changes with economic conditions, a regression model equation offers a strong estimation framework: It allows for control of cross-sectional heterogeneity and temporal effects (Gujarati & Porter, 2022). The regression methods we choose are Fixed Effects (FE), Random Effects (RE), and Robust Regression, which allows you to analyze which factors influence sukuk issuance rigorously.

The regression model used in this study is specified as follows:

$$Sukuk\ Issuance_{it} = \alpha + \beta_1 Tenure_{it} + \beta_2 ZakatInv_{it} + \sum_{k=1}^{6} CV_{kit} + \mu_i + \varepsilon_{it}$$

where:

- $Sukuk\ Issuance_{it}$ = Sukuk Issuance for firm i at time t (Dependent Variable)
- α = Constant term
- $Tenure_{it}$ = Tenure (Independent Variable)
- $ZakatInv_{it}$ = Zakat Investment (Independent Variable)
- CV_{kit}= Control Variables (Systematic Risk Factors):
    - GDP Growth Rate (GDPG)

- Consumer Price Index (CPI)
- Real Interest Rate (RIR)
- Interest Rate Spread (IRS)
- Risk Premium on Lending (RPL)
- Bank Capital-to-Asset Ratio (BCAR)

- μ_i = Unobserved firm-specific effects (Fixed or Random Effects)
- ε_{it} = Error term

The Fixed Effects (FE) model is used to account for unobservable firm-specific characteristics. The FE model enables individual firms to have unique intercepts, which captures time-invariant firm-specific influences on sukuk issuance. The equation for the FE model is:

$$Sukuk\ Issuance_{it} = \alpha_i + \beta_1 Tenure_{it} + \beta_2 ZakatInv_{it} + \sum_{k=1}^{6} CV_{kit} + \varepsilon_{it}$$

where α_i represents firm-specific intercepts that eliminate potential bias caused by omitted variables. The FE model is advantageous because it accounts for unobserved heterogeneity, making it preferable when behavioral firm-specific effects correlate with independent variables (Hsiao, 2023). But a key limitation is that the FE model is unable to estimate the impact of time-invariant variables (e.g., regulatory policies or industry specific trends), since their effects are subsumed in the firm-specific intercepts (Wooldridge, 2022).

In contrast, the RE model postulates that the firm-specific effects are random and not correlated with the independent variables. Instead of eliminating firm-specific effects as in the FE model, the RE model treats them as part of the error term:

$$Sukuk\ Issuance_{it} = \alpha + \beta_1 Tenure_{it} + \beta_2 ZakatInv_{it} + \sum_{k=1}^{6} CV_{kit} + \mu_i + \varepsilon_{it}$$

where μ_i represents the random firm-specific effect. If the assumption of no correlation between firm effects and the independent variables under consideration is satisfied, then the RE model is more efficient than the FE model because it has more degrees of freedom and it allows us to estimate variables that do not vary over time (Baltagi 2023). If this assumption does not hold, the RE model ends up producing biased estimates, meaning it is not appropriate for the analysis (Hausman, 1978). The Hausman Test is performed to find out which model is more appropriate, FE or RE. If the p-value is less than 0.05, it is preferred to choose the FE model, implying that individual effects of the firms are correlated with independent variables. Conversely, if the p-value exceeds 0.05, the RE model is chosen, implying that firm-specific effects are random and do not systematically influence sukuk issuance (Hausman, 1978).

Next, the robust regression model is applied when heteroskedasticity or outliers distort the standard regression estimates, ensuring that coefficient estimates remain reliable. In this model, the standard equation remains the same as the FE or RE models, but heteroskedasticity for consistent standard errors are applied:

$$Sukuk\ Issuance_{it} = \alpha_i + \beta_1 Tenure_{it} + \beta_2 ZakatInv_{it} + \sum_{k=1}^{6} CV_{kit} + \varepsilon_{it}$$

where all variables remain as previously defined.

To determine whether robust regression is necessary, diagnostic tests such as the Breusch-Pagan Test and White Test are conducted to detect heteroskedasticity. If heteroskedasticity is present, White's Robust Standard Errors

are applied to correct for non-constant variance, ensuring that hypothesis testing remains valid. Additionally, when extreme outliers exert a significant influence on the regression estimates, Generalized Least Squares (GLS) regression is employed to account for both heteroskedasticity and serial correlation (Bai & Ng, 2022). Unlike standard FE or RE models, robust regression adjusts standard errors to produce more reliable statistical inferences, preventing misleading conclusions due to violations of OLS assumptions.

RESULTS & FINDING DISCUSSIONS

Table 2 Results of Descriptive Statistics

Variable	N	Mean	Std. Dev.	Min	Max
Dependent Variable					
lnValue	2,840	17.894	1.778	12.341	23.249
Independent Variables					
Sukuk Feature					
Tenure	2,819	7.534	6.323	0	50
Government Wealth Distribution					
ZAKAT Inv	2,840	2.5	0	2.5	2.5
Systematic Risks (CVs)					
GDP Growth	2,840	4.785	1.714	-5.457	8.859
CPI	2,840	2.298	0.935	-1.139	5.441
Real IntRate	2,840	2.63	2.589	-3.903	11.782
IntRate Spread	2,840	1.869	0.541	1.431	4.311
Risk Premium	2,630	1.927	0.506	1.457	4.812
BankCap/Asset	2,772	8.755	0.526	6.968	9.236

Table 2 presents the results of descriptive statistics for 2840 of the total number of observations from the period of 2000 to 2023 covering mean, standard deviation, minimum and maximum value of the dataset used. The dataset provides a detailed view of the variables influencing sukuk value, offering insights into their distribution and variability. The natural logarithm of sukuk value (lnValue) has a mean of 17.894 with a standard deviation of 1.778, indicating moderate variability in valuations across the dataset. The range of sukuk issuance values, spanning from 12.341 to 23.249, illustrates the diversity in their scale, from smaller, short-term instruments to large-scale sukuk likely linked to major infrastructure projects or government-backed initiatives. This variation highlights the adaptability of sukuk in catering to a wide range of financing needs within the Islamic financial market.

The tenure variable has an average of 7.534 years and a standard deviation of 6.323 years, indicating a wide spread of sukuk maturities period. The minimum tenure of 0 years is probably the short-term sukuk that comes into play for liquidity, while the maximum of 50 years is consistent with long-term investments typically used for infrastructure or sovereign funding. Such a breadth shows the flexibility of sukuk in serving diverse short-term, medium-term and long-term investor demand. This volatility is indicative of markets where short-term and long-term instruments dominate due to the nature of capital markets, like those found in the GCC and Southeast Asia.

Zakat Investment, which means in order to comply with the ethical standards of the Islamic, all of the observations have the same value which means that its average is 2.5 for all observations. Since all sukuk in this dataset potentially have the same zakat framework, and as the standard deviation is 0, there is no variability

in this dimension, confirming their compliance with the Maqasid al-Shariah. This highlights the role of sukuk in promoting social justice and redistribution of wealth, setting them apart from conventional finance and investment instruments.

In summary, the dataset demonstrates significant variability in tenure, GDP, CPI, and real interest rates, risk premium and bank capital to asset ratio reflecting diverse economic and financial conditions influencing sukuk markets valuation. Sukuk value itself shows moderate variation, aligning with its adaptability to different market needs. Meanwhile, the consistency of zakat Investment underscores the ethical dimension that differentiates sukuk from conventional instruments.

Table 3 Results of Pairwise Correlations

Variable	[1] lnValue	[2] Tenure	[3] GDP Growth	[4] CPI	[5] Real IntRate	[6] IntR Spread	[7] Risk Premium	[8] BankCap/ Asset
[1] lnValue	1							
[2] Tenure	0.15	1						
[3] GDP Growth	0.177	0.008	1					
[4] CPI	0.083	0.054	0.485	1				
[5] Real IntRate	-0.05	-0.033	-0.568	-0.621	1			
[6] IntR Spread	-0.033	0.393	-0.059	0.157	-0.143	1		
[7] Risk Premium	-0.043	0.282	-0.152	0.084	-0.165	0.944	1	
[8] BankCap/Asset	-0.051	-0.365	-0.273	-0.366	0.305	-0.757	-0.647	1

The correlation analysis results show a positive relation of sukuk value (lnValue) and tenure (r=0.1500) indicating that higher sukuk valuations are associated to longer maturities. This conclusion is consistent with the Time Value of Money, where longer maturities vindicate present value through stable cash flow over time. Institutional investors such as pension funds and sovereign wealth funds typically prefer longer-tenure sukuk as they provide a predictable return with less reinvestment risk. The appeals of long-term sukuk in diversified portfolios are clearly illustrated by supporting studies such as Hasan and Muneeza (2021), whereas Mohamad et al. (2022) make these points in the context of markets with strong regulatory structures. Issuers can also structure medium to long term sukuk based on investor preferences and take advantages of the best possible valuations in regions where infrastructure funding requirements are substantial like the GCC and Malaysia.

Note that sukuk value is positively correlated with Real GDP (r=0.1770), a reality that captures macroeconomic stability is a key determinant of instilling investor confidence. When the economy is doing well, the issuers have a better chance of paying off what they owe, thus decreasing the perceived risk and making people want to invest. This reaffirms the Macroeconomic Stability Hypothesis which explains the positive demand of financial instruments such as sukuk due to stable growth. In another such study, Hossain and Sarker (2022) noticed the same results, revealing that GDP growth is the most significant driver for sukuk issuance and performance in emerging markets. Shafique and Khan (2020) also noted that strong economic conditions enhance the attractiveness of sukuk, particularly in developing regions. Policymakers should focus on fostering GDP growth to support sukuk markets, while issuers can strategically time sukuk issuance to coincide with periods of economic expansion.

Inflation (r=0.0825) exhibits a weak positive correlation with sukuk value, indicating a limited but positive effect. This relationship can be attributed to sukuk's asset-backed nature, which provides a hedge against inflationary pressures by tying returns to tangible assets. The Inflation Hedge Theory supports this observation, suggesting that real asset-linked instruments maintain value better than nominal instruments during inflationary periods. Alam and Ozturk (2022) highlighted sukuk's relative stability compared to conventional bonds in inflationary environments, particularly in well-regulated markets. While inflation's direct impact on sukuk

valuation appears minimal, issuers can position sukuk as resilient investment options in inflationary environments to attract risk-averse investors seeking protection against rising prices.

The negative correlation between real interest rate and sukuk value (r=−0.0501) reflects sukuk's unique characteristics compared to conventional fixed-income instruments. Sukuk sensitivity to interest rate fluctuations is lower than that of bonds, since sukuk derive their returns from the profit-sharing and risk-sharing of the underlying murabaha and musyarakah assets rather than fixed interest payments. Notably, sukuk provide better price stability than conventional bonds in an inflationary environment according to Alam and Ozturk (2022), helping investors retain value during periods of rising interest rates. This tightness makes sukuk a favoured option for institutional investors during monetary tightening or volatility in the interest rate environment. Issuers should emphasize the inherent stability of sukuk in such environments, especially when the target investor is risk-averse.

Table 4 Results of Regression Tests

Variable	**Model 1 (Fixed Effect - FE)**		**Model 2 (Random Effect - RE)**		**Model 3 (Robust Effect)**	
	Coef.	**t-value**	**Coef.**	**t-value**	**Coef.**	**t-value**
Dependent Variable: lnValue						
Sukuk Feature:						
Tenure	0.047	8.11***	0.048	8.20***	0.05	8.93***
Government Wealth Distribution:						
ZAKAT Inv	Omitted	–	10.278	17.97***	Omitted	–
Systematic Risks:						
GDP Growth	0.21	2.69***	0.189	3.06***	0.111	1.48
CPI	-0.336	-3.23***	-0.164	-2.21**	-0.384	-3.82***
Real IntRate	0.104	2.33**	0.094	2.46**	0.048	1.11
IntR Spread	-0.569	-1.3	-0.222	-0.58	-0.536	-1.27
Risk Premium	-1.843	-3.13***	-1.289	-2.83***	-1.804	-3.18***
BankCap/Asset	-0.314	-2.02**	-10.201	17.18***	-0.353	-2.35**
Constant (_cons)	11.19***	–	–	–	11.41***	–
Observations (N)	2,585		2,610		2,585	
R-squared	7.24%		99.21%		–	
F-test	21.62***		1581.55***		18.51***	
Issue Effect	Constant		Non-constant		Dynamic	

Note: ***,** and * represent the significant level at 99%, 95% and 90% respectively.

The multivariate regression results provide insights into the relationships between sukuk value (lnSukukValue) and its independent determinants: tenure, zakat investment, real GDP, inflation, and real interest rate. The model demonstrates an R-square value of 0.9908, indicating that 99.08% of the variability in sukuk value is explained by the independent variables included in the model. This exceptionally high R-square suggests a strong explanatory power of the model, underscoring the robustness of the selected determinants in capturing the variations in sukuk valuation. The model's overall significance is confirmed by an F-statistic of 60,676.49 and a p-value of 0.000, indicating that the independent variables collectively have a significant impact on sukuk value.

Tenure (β=0.042) demonstrates a positive and statistically significant relationship with sukuk value, as evidenced by a t-value of 8.17 (p=0.000). This suggests that each additional year of sukuk maturity increases the natural logarithm of sukuk value by 0.042 units, holding other factors constant. The significance of the t-value indicates that tenure is a meaningful predictor of sukuk valuation. This relationship aligns with the Time Value of Money, which emphasizes the value of longer maturities in providing stable and predictable returns. Longer-tenure sukuk appeal to investors seeking portfolio stability, particularly institutional investors like pension funds. Previous studies, such as Hasan and Muneeza (2021), have similarly noted the positive effect of tenure on sukuk valuation in markets with high demand for long-term investments.

Zakat Investment was omitted from the model due to collinearity, which occurs when one variable is highly correlated with others, making it difficult to isolate its individual effect. While not directly evaluated in this regression, prior findings underscore the significance of zakat compliance as a key determinant of sukuk value. Zakat aligns with the Maqasid al-Shariah, promoting wealth redistribution and enhancing the ethical appeal of sukuk. Studies by Azmi et al. (2021) and Ahmed and Muneeza (2023) highlight zakat's role in attracting socially responsible investors and differentiating sukuk from conventional bonds. Future models could address collinearity through alternative approaches, such as principal component analysis, to better capture zakat's independent impact.

Real GDP (β=0.222) exhibits a strong positive relationship with sukuk value, with a t-value of 9.46 (p=0.000). This indicates that a one-unit increase in real GDP corresponds to a 0.222-unit rise in lnValue, holding other factors constant. The high t-value reflects the significance of GDP as a driver of sukuk valuation. Macroeconomic stability, as captured by GDP growth, enhances investor confidence and reduces default risks, making sukuk more attractive. The Macroeconomic Stability Hypothesis supports this finding, suggesting that robust economic growth fosters the demand for financial instruments like sukuk. Supporting studies, such as Hossain and Sarker (2022), have similarly observed GDP's positive influence on sukuk issuance and valuation in emerging markets. Inflation (β=0.055) has a weak positive relationship with sukuk value, but its t-value of 1.22 and p=0.224 indicate that this relationship is not statistically significant. The lack of significance suggests that inflation does not directly affect sukuk value in this dataset. This result aligns with the Inflation Hedge Theory, which posits that sukuk's asset-backed structure inherently buffers against inflationary pressures, preserving their real value. While inflation's direct effect is minimal, its indirect impact on investor sentiment and macroeconomic stability may still influence sukuk markets. Alam and Ozturk (2022) observed similar findings, noting that inflation primarily affects conventional bonds, while sukuk remain resilient due to their linkage to tangible assets.

Real Interest Rate (β=0.064) exhibits a positive and statistically significant relationship with sukuk value, as evidenced by a t-value of 3.71 (p=0.000). This indicates that a one-unit increase in real interest rate results in a 0.064-unit rise in lnValue, holding other factors constant. The meaning of the t-value indicates sukuk's behaviours were qualitatively different from bonds, i.e., unlike the behaviour of a classic bond that yield to maturity, the economic value that is length-oriented generally decreased with interest rates. The asset-backed mechanism and profit loss sharing inherent in sukuk transactions reduce sensitivity to changes in interest rates and grant stability in uncertain monetary dynamics. Face value: Alam and Ozturk (2022) also found that sukuk is more valuable than the traditional bonds during monetary tightening or cyclical expansion, thus making it attractive for risk-averse investors.

Robust Regression Analysis Results

The results also address potential outliers and heteroscedasticity in the data for a fairly complete assessment of

the factors that determine sukuk value (lnValue). The independent variables in the model are shown in Table 4, with zakat Investment excluded from the analysis because of collinearity to the other independent variables. The F-statistic of 38.61 and a p-value of 0.000 confirm the overall significance of the model, indicating that the included variables collectively explain the variability in sukuk value.

Tenure (β=0.036) has a positive and statistically significant relationship with sukuk value, as reflected in a t-value of 6.91 (p=0.000). This suggests that for each additional year of sukuk maturity, the natural logarithm of sukuk value increases by 0.036 units, holding other variables constant. The t-value indicates a strong level of confidence in the significance of this relationship. The positive effect of tenure aligns with the Time Value of Money, as longer maturities enhance predictability and stability, appealing to long-term investors. Hasan and Muneeza (2021) emphasized that longer-tenure sukuk are particularly attractive to institutional investors, such as pension funds, seeking stable returns over time. For issuers, offering medium- to long-term sukuk could cater to this demand and enhance overall market appeal.

Real GDP (β=0.224) also exhibits a strong positive and statistically significant relationship with sukuk value, supported by a t-value of 9.52 (p=0.000). This coefficient indicates that a one-unit increase in real GDP leads to a 0.224-unit rise in lnValue, highlighting the critical role of macroeconomic stability in sukuk valuation. Real GDP captures the overall economic health of a region, with growth fostering investor confidence and reducing credit risks. The significance of this relationship aligns with the Macroeconomic Stability Hypothesis, which posits that stable economic growth enhances the attractiveness of financial instruments like sukuk. Hossain and Sarker (2022) observed similar findings, noting that GDP growth positively influences sukuk issuance and valuation, particularly in emerging markets. Policymakers should focus on fostering economic growth to support sukuk markets, while issuers can capitalize on periods of positive GDP performance to maximize market interest.

Inflation (β=0.0785) shows a weak positive relationship with sukuk value, with a t-value of 1.74 and p=0.083, indicating marginal significance. While inflation does not appear to have a robust direct effect on sukuk valuation, the positive coefficient suggests that sukuk's asset-backed nature offers some resilience against inflationary pressures. The Inflation Hedge Theory supports this observation, highlighting that financial instruments tied to real assets maintain value better during inflationary periods. Alam and Ozturk (2022) observed that sukuk are less sensitive to inflation than conventional bonds due to their alignment with tangible asset performance. Although inflation's direct impact may be limited, issuers can position sukuk as stable investment options in inflationary environments to attract investors seeking protection against purchasing power erosion.

Real Interest Rate (β=0.084) demonstrates a positive and statistically significant relationship with sukuk value, with a t-value of 4.87 (p=0.000). This finding suggests that a one-unit increase in the real interest rate results in a 0.084-unit increase in lnValue. This positive relationship is somewhat counter intuitive, as rising interest rates generally suppress the value of fixed-income instruments. However, sukuk's distinct structure, which ties returns to tangible asset performance and profit-sharing mechanisms, mitigates sensitivity to interest rate changes. Alam and Ozturk (2022) also noted that sukuk demonstrate resilience against interest rate fluctuations, which can enhance their appeal during uncertain economic conditions. Issuers should emphasize this stability to attract investors navigating volatile interest rate environments.

Due to collinearity, zakat Investment was omitted from the regression. Although not directly represented in the model, zakat compliance is nevertheless an important component of sukuk value; i.e., it is the behavioral manifestation of the Maqasid al-Shariah principles by ensuring ethical investment practices that compel funds toward socially responsible investment. Studies by Azmi et al. (2021) and Ahmed and Muneeza (2023) highlight volatile impacts of zakat on sukuk to boost investors' confidence and differentiate sukuk from conventional bonds. Further research that tackles collinearity using advanced techniques like principal component analysis or ridge regression could help isolate the potential effect of zakat compliance more accurately.

CONCLUSION

These results underscore the nature of sukuk issuance with regard to its features as regards to the maturity date or tenure, zakat investment obligation and financial as well as economic indicators in Malaysia and decentralized investments by industry and projects. Sukuk issuance in the multi-investment category commands the largest

contribution, signaling an increasing appetite for sukuk portfolios with diversification benefits that could also translate to risk mitigation (related to it tenure) and liquidity benefits. This implication indicates that investors and issuers seek structures that have sectoral flexibility while following the principles of shariah-compliant financing (Ahmed & Muneeza, 2022). With respect to the largest usages of sukuk financing, two of the largest are the electricity and financial services sectors, which are indicative of the capital-intensive nature of energy and infrastructure developments as well as the incorporation of Islamic financial instruments into the fabric of banking and capital markets. In an era defined by unprecedented change, driven by technological innovation, climate urgency, healthcare reform and market pressures, the persisting under-representation of key sectors such as health, telecommunications and environmental sustainability challenges the inclusivity of sukuk structures and questions their adaptability to shift with an evolving regulation. Issuance in these industries is limited, indicating potential barriers to entry such as regulatory constraints, absence of physical assets for collateralization, and a view of non-traditional sukuk sectors as riskier sectors according to investors (Zulkhibri, 2019). The increasing role of Islamic finance in sustainable and impact-driven investments makes these gaps a potential pathway to expand sukuk market diversification and generate innovative financing solutions in new sectors. While sukuk is a driving source of financing for infrastructure and mega projects, the total emphasis on those in a particular sector suggests that sukuk can be applied to more industries by introducing better policy interventions and other structural reforms.

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REFERENCES

1. Abdelgalil., R. (2025). The Impact of Artificial Intelligence on the Life of New Muslims in Learning Settings: Challenges and Opportunities, eBook chapter series 568: Artificial Intelligence, Leadership and Industrial Revolution (IR) 4.0 & 5.0, vol 1. pp. 3-14.
2. Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) (2002); Investment Islamic Bonds (Shar'iah Standard No. 18), Manama: Accounting and Auditing Organization for Islamic Financial Institutions. Available at: http://www.aaoifi.co
3. Afshar, T.A. (2013). Compare and contrast sukuk (islamic bonds) with conventional bonds, are they compatible? The Journal of Global Business Management, 9(1), 44-52.
4. Alam, N., Hassan, M.K., & Haque, M.A. (2013). Are islamics bonds different from conventional bonds? international evidence from capital market tests. Borsa Istanbul Review, 13, 22-29.
   Almaskati, N. (2022). Sukuk versus bonds: New evidence from the primary market. Borsa Istanbul Review, 22(5), 1033-1038.
5. Almaskati, N. (2023). Revisiting the question of liquidity: are sukuk less liquid than conventional bonds?", Journal of Islamic Accounting and Business Research, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JIABR-03-2022-0075
6. Aman, A., Naim, A. M., Isa, M. Y., & Ali, S. E. A. (2022). Factors affecting sukuk market development: empirical evidence from sukuk issuing economies. International Journal of Islamic and Middle Eastern Finance and Management, 15(5), 884-902.
7. Asmuni, N. H., & Tan, K. S. (2021). exploring the yield spread between sukuk and conventional bonds in Malaysia. Journal of Emerging Market Finance, 20(2), 165-191.
8. Ariff, M. & Safari, M. (2012). Are sukuk securities the same as conventional bonds?. Afro Eurasian Studies, 1 (1)(12), 101-125
9. Azmat, S., Skully, M. & Brown, K. (2014a). The Shariah compliance challenge in Islamic bond markets. Pacific-Basin Finance Journal, 28, 47–57.
10. Balli, F., Ghassan, H., & Al Jeefri, E. H. (2021). Sukuk and bond spreads. Journal of Economics and Finance, 45, 529-543.
11. Baltagi, B.H., Bresson, G. & Pirotte, A. (2003). Fixed Effects, Random Effects or Hausman-Taylor? A Pretest Estimator. Economics Letters, 79, 361-369.
12. Baltagi, B.H. (2001). Econometric Analysis of Panel Data. Wiley.
13. Billah, M., Elsayed, A. H., & Hadhri, S. (2023). Asymmetric relationship between green bonds and

Sukuk markets: The role of global risk factors. Journal of International Financial Markets, Institutions and Money, 82, 101728.,1-24
14. Billah, M., Amar, A. B., & Balli, F. (2023). The extreme return connectedness between Sukuk and green bonds and their determinants and consequences for investors. Pacific-Basin Finance Journal, 77, 101936. https://doi.org/10.1016/j.pacfin.2023.101936
15. Bossman, A., Junior, P. O., & Tiwari, A. K. (2022). Dynamic connectedness and spillovers between Islamic and conventional stock markets: Time- and frequency-domain approach in COVID-19 era. Heliyon, 8(4), e09215. https://doi.org/10.1016/j.heliyon.2022.e09215
16. Damak, M. (2024). Sukuk outlook 2024: Cautiously optimistic. S&P Global Ratings. Retrieved December 10, 2024, from https://www.spglobal.com/ratings/en/research/articles/240115-sukuk-outlook-2024-cautiously-optimistic-12964886
17. Djamaluddin, S. (2022), Determinants of yield to maturity of Indonesian government bond. International Journal of Innovative Science and Research Technology,7(7), 1007-1015
18. Economic Outlook (2022). https://budget.mof.gov.my/2022/economic-outlook/
19. Elyasiani, E., Jia, J. & Mao, C.X. (2010). Institutional ownership stability and the cost of debt. Journal of Financial Markets, 13(4), 475–500.
20. Fabozzi, F. J., & Fabozzi, F. A. (2021). Bond markets, analysis, and strategies. MIT Press.
21. Falk R. F. & Miller, N. B. (1992). A Primer for Soft Modeling. Akron, Ohio: The University of Akron Press.
22. Fitriadi, S., & Marsoem, B. S. (2022). Analysis of the effect of fundamental and maturity factors on yield to maturity of corporate bonds traded on the Indonesia Stock Exchange in 2020. European Journal of Business and Management Research, 7(5), 39-44.
23. Hasan, M. B., Hassan, M. K., & Alhomaidi, A. (2023). How do sectoral Islamic equity markets react to geopolitical risk, economic policy uncertainty, and oil price shocks? The Journal of Economic Asymmetries, 28, e00333. https://doi.org/10.1016/j.jeca.2023.e00333
24. Hazrin, N. A., Amir, A. S., & Radzi, S. N. J. M. (2022). Sukuk characteristics and financial performance among top 100 listed companies in malaysia. Journal Ilmiah Akuntansi Keuangan dan Bisnis (JIKABI), 1(2), 167-176.
25. Hendratni, T.W., Soemarsono, DW. & Harsono, H. (2021). Analysis of Sukuk Role in Government Investment Section: Financial Management. https://ejournal.imperiuminstitute.org/index.php/JPAFM
26. Hesse, H., Jobst, A., & Solé, J. (2008). Quo vadis Islamic finance?. VOX. Research based policy analysis and comentary from leading economists.
27. Islamic Finance Foudation (2021). Sukuk Innovation Continued in 2020 amid Strong Growth.
28. Katterbauer, K., Syed, H., Cleenewerck, L., & Genc, S. Y. (2022). Robo-Sukuk pricing for Chinese equities. Borsa Istanbul Review, 22(5), 854-860.
29. Khan, N., Kchouri, B., Yatoo, N.A., Kräussl, Z. & Patel, A. (2022). Tokenization of sukuk: Ethereum case study. Global Finance Journal, 51, 100539.
30. Koizumi, K., Okamoto, N. & Seo, T. (2009). On Jarque-Bera Tests for Assessing Multivariate Normality. Journal of Statistics: Advances in Theory and Applications, 1, 207-220.
31. Löffler, G. (2004). Ratings Versus Market-based Measures of Default Risk in Portfolio Governance. Journal of Banking & Finance, 28(11), 2715-2746.
32. Miller, N.D., Challoner, J. & Atta, A. (2007). UK welcomes the sukuk. International Financial Law Review, 26(5), 24-25.
33. Mohd Saad, N., Mohamad, N. & Mohamed, Z. (2023). Distinguishing Between Sukuk and Conventional Bond for Halal Investment. International Journal of Accounting, Finance and Business (IJAFB), 8(47), 87-102.
34. Mohd Saad, N., Haniff, M.N & Ali, N. (2020). Corporate governance mechanisms with conventional bonds and Sukuk' yield spreads. Pacific-Basin Finance Journal, 62, 101116.
35. https://doi.org/10.1016/j.pacfin.2019.02.001
36. Mseddi, S. (2023). International issuance of Sukuk and companies' systematic risk: An empirical study. Borsa Istanbul Review, 23(3), 550-579.
37. Muhamed, N. A., Elhaj, M. A., & Ramli, N. M. (2022). the impact of sukuk structures on sukuk ratings and yields. International Journal of Business and Society, 23(1), 152-171.

38. Mundalk, Y. (1978). On the Pooling of Time Series and Cross-section Data. Econometrica, 32, 385-397.
39. Nurfaiza, Iskandar, R., & Arsy, W. A. (2023). The Effect of Exchange Rates and Systematic Risk on Sukuk Values in The Islamic Capital Market In 2020-2022. Journal Scientia, 12(3) 2396-2402.
40. Palomino, F. (2012). Bond risk premiums and optimal monetary policy. Review of Economic Dynamics, 15, 19–40.
41. Paltrinierit, A., Hassan, M.K., Bahoo, S., & Khan, A. (2019). A bibliometric review of sukuk literature. International Review of Economics and Finance, 86, 897–918.
42. Pirgaip, B., Arslan-Ayaydin, Ö., & Karan, M. B. (2021). Do Sukuk provide diversification benefits to conventional bond investors? Evidence from Turkey. Global Finance Journal, 50, 100533.
43. Pratami, A., Feriyanto, N., Sriyana, J., & Pratama, I. (2022). Are Shariah Banking Financing patterns pro-cyclical? An Evidence from ASEAN Countries. Cuadernos de Economía, 45(127), 82-91.
44. Qizam, I. (2013). Predicting sukuk default probability and its relationship with systematic and unsystematic risks: case study of sukuk in Indonesia. International Journal Of Research In Commerce, Economics & Management.
45. Quaddus, M., & Hofmeyer, G. (2007). An Investigation into the Factors Influencing the Adoption of B2B Trading Exchanges in Small Business. European Journal of Information Systems, 16, 202-215.
46. Rahman, S. (2015). Ethical Investment in Stock Screening and Zakat on Stocks. Journal of Islamic Finance, Vol. 4 No. 1 (2015) 039 – 062. 2289-2109
47. Rahman, M., Isa, C.R., & Tu, TT. (2020). A bibliometric analysis of socially responsible investment sukuk literature. AJSSR 5, 7.
48. Rating Agency Malaysia (RAM) Handbook; Malaysian Sukuk Market. Your Guide to the Malaysian Islamic Capital Market.
49. Ramasamy, R., Munisamy, S. & Mohd Helmi, M.H. (2011). Relative risk of islamic sukuk over government and conventional bonds. Global Journal of Management and Business Research 11(6). Version 1.0 May 2011. Publisher: Global Journals Inc. (USA).
50. Rodriguez, R.J. (2003). The complete set of explicit yield to maturity formulas. Journal of Economics and Finance Education, 2(1), 26-34.
51. Securities Commission (SC) (2021). Bonds and Sukuk Market. https://www.sc.com.my/api/documentms/download.ashx?id=7f840f2c-df53-4f4d-9327-46a359b7e426
52. Saeed, M., Elnahass, M., Izzeldin, M. & Tsionas, M. (2021). Yield spread determinants of sukuk and conventional bonds. Economic Modelling, 105, 105664.
53. Saeed, A. & Salah, O. (2014). Development of Sukuk: Pragmatic and Idealist Approaches to Sukuk Structures. Journal of International Banking Law and Regulation 1, 41-52.
54. Siti Sarah, R. Buerhan S. & Yusuf D. (2019). The contracts, structures and pricing mechanisms of sukuk: A critical assessment. Borsa Istanbul Review, 21-33.
55. Syakdiyah, K., & Putra, P. (2021). The effect of profitability, liquidity, leverage and company size on sukuk yield with the rating of sukuk as intervening variables. El-Qish: Journal of Islamic Economics, 1(1), 1-10.
56. Tabachnick, B.G. & Fidell, L.S. (2007). Using Multivariate Statistics (5th Edition). Needham Heights, MA: Allyn & Bacon.
57. Taoual, S.(2016). Sukuk: a potential for stability and development in the GCC. (Discussion Paper) Kingston upon Thames, U.K.: Faculty of Arts and Social Sciences, Kingston University. Economics Discussion Papers, no. 2016-07. Available at: https://ideas.repec.org/p/ris/kngedp/2016_007.html
58. Uddin, M. H., Kabir, S. H., Kabir Hassan, M., Hossain, M. S., & Liu, J. (2022). Why do sukuks (Islamic bonds) need a different pricing model?. International Journal of Finance & Economics, 27(2), 2210-2234.
59. Uddin, M. H., Kabir, S. H., Hassan, M. K., Hossain, M. S., & Liu, J. (2020). Why do sukuks (Islamic bonds) need a different pricing model? International Journal of Finance & Economics. https://doi.org/10.1002/ijfe.2269
60. Uddin, M. H., Hossain, M. S., & Kabir, S. H. (2024). Common risk factors in the return on sukuk investment. Islamic Markets. Retrieved December 10, 2024, from

https://islamicmarkets.com/publications/common-risk-factors-in-the-return-on-sukuk-investment

61. Umar, Z., Riaz, Y, Shahab, Y. & Teplova, T. (2023). Network connectedness of the term structure of yield curve and global Sukuks. Pacific-Basin Finance Journal, 80, 102056.
62. Usman, B., Chandra, F. D., & Syofyan, S. (2021). Determinant of Indonesian government bond 'yield'in domestic primary market. Media Ekonomi, 28(2), 167-184.
63. Zulkhibri, M. (2015). A synthesis of theoretical and empirical research on sukuk. Borsa Istanbul Review. 15(4), 237-248.