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Do global uncertainties and financial distress impact Sukuk issuance?

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Abstract

Purpose — This paper examines the impact of major uncertainty indices and global uncertainty on the volume of Sukuk issuance in Türkiye.

Method — The NARDL method is applied to determine the short- and long-term relationships between Türkiye's sukuk issuance and global uncertainty and financial stress indices, capturing both symmetric and asymmetric dimensions.

Findings — Although a symmetric relationship exists between Global Economic Policy Uncertainty (GEPU) and Sukuk issuance, the Financial Stress Index (FSI) has no long-term impact on Sukuk issuance. During periods of global uncertainty, sukuk issuances increase, whereas in conditions of less uncertainty, they fall. There is an inverse relationship between Geopolitical Risk (GPR) and Sukuk issuance. Since all factors affect sukuk issuance in the short run, GEPU has the highest impact. Decreases in the GEPU index positively affect sukuk securities and increase their issuance volumes. Therefore, GPR and GEPU indices have asymmetric effects on sukuk issuances in the short and long term.

Implication — Evidence suggests that sukuk is more resilient to crises than its conventional equivalents. Sukuks are strategically crucial for portfolios and provide sufficient assurance to reduce risk.

Originality — No study has assessed how global financial distress and uncertainty influence Türkiye's sukuk issuance. This study differs from previous studies by focusing on sukuk issuance volumes rather than sukuk yields.

Keywords — Sukuk Issuance, Financial Stress Index, Global Economic Policy Uncertainty, NARDL

Introduction

By their nature and functional structure, financial markets must keep pace with the growth of financial transactions. The world has become nearly a single market due to economic liberalism and integration, leading to a steady increase in global trade and economic activity. This is because globalisation has made national borders obsolete. This circumstance not only promotes the expansion of financial markets and the improvement of social well-being but also causes financial instability and the transfer of adverse consequences across markets. Investors now consider risk and expected return in investment decisions, especially in forming a portfolio. Particularly in portfolio diversification, the low risk of Islamic securities, the reduced portfolio risk and the increase in the daily volume of Islamic securities. This increase in demand for Islamic finance instruments is also reflected in the sukuk issuance volumes. Sukuk issuances are becoming increasingly prominent in the market as a rival to participation banking, especially in developing

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countries like Türkiye. Projects that sukuk issuances would rise by 16.2% cumulatively each year, reaching 1.987 trillion dollars as of 2027 and 2.276 trillion dollars by the end of 2028 (Ratings, 2023). Since the first issuance in 2001, the number of Sukuk issuances has skyrocketed. The growth rate is further accelerated by securities issuance, particularly in the West.

Fluctuations and crises in financial markets are among the main factors that enable the development of Islamic finance. Asutay and Hakim (2018) and Sclip, Dreassi, Miani, and Paltrinieri (2016) state that Islamic finance instruments are strategically crucial for portfolios and provide sufficient assurance to reduce risk, particularly during economic downturns. Evidence indicates that Islamic securities, notably sukuks, are more resilient to crises than their conventional equivalents. It is a fact, nevertheless, that financial crises no longer stay local but spread worldwide. Therefore, a risk emerging anywhere in the world, whether local or global, affects all financial markets and creates spillover effects. In this regard, factors widely recognised as global risk indicators—namely, the financial stress index (FSI), geopolitical risks (GPR), and international economic policy uncertainty (GEPU)—are currently the variables financial markets actively monitor when making decisions. It is critical to monitor these factors closely to identify and implement the necessary actions to improve financial stability and economic resilience.

The present study contributes to the limited literature on the empirical determinants of global uncertainties related to sukuk issuance in Türkiye. However, despite the significance of this topic, there has been relatively little research on it in Türkiye, making it worth examining and generating new empirical evidence that could provide valuable insights for policymakers and investors. The primary purpose of this paper is to investigate how major uncertainty indices affect the size of Sukuk issuance in Türkiye. More specifically, we address the following unanswered questions. Does there exist a relationship between global uncertainty factors and Sukuk issuance? Is dependence symmetric or asymmetric? This study differs from previous studies by focusing on sukuk issuance volumes rather than sukuk yields. This is because investors often seek safe havens over higher yields during periods of global uncertainty. In response to this, Sukuk issuance volumes are expected to increase during uncertain times. Until now, uncertainty indices have overlooked the sukuk market, focusing instead on conventional markets and Islamic stocks. The Sukuk market is expanding annually, so the current study aims to fill this gap. The results of this study are significant for policymakers and sukuk investors as they will provide a clear picture of their investment in Islamic finance.

This study aims to assess the impact of the economic policy uncertainty (EPU) index developed by Baker, Bloom, and Davis (2016), the geopolitical risk (GPR) index introduced by Caldara and Iacoviello (2022), and the FSI index founded by Illing and Liu (2003) on the sukuk issuance of Türkiye. To this end, this section summarises studies that discuss how the three uncertainty indices affect Islamic securities, notably sukuk issuance. Caldara & Iacoviello (2018) introduced the concept of Geopolitical Risk (GPR) to the literature. GPR is a metric that quantifies the uncertainty surrounding wars, military operations, terrorist attacks, and other conflicts. This variable, which mainly causes the deterioration of financial stability, is one of the subjects that researchers have been intensively addressing in recent years. The financial markets are also affected by this process, as the uncertainties that arise when the GPR increases affect the volume of international trade. Consequently, investors' willingness to take risks will wane, resulting in significant losses. Billah and Adnan (2024) examined how geopolitical risks affect the dynamic interconnectedness between sukuk, green sukuk, Islamic stocks, and Islamic green assets. The results demonstrate that Islamic stocks are net volatility receivers, whereas sukuk and green sukuk are short-term volatility spreaders. Long-term results show that the relationship is precisely the reverse. In a distinct study, Billah, Elsayed, and Hadhri (2023) utilised global risk indicators to determine the asymmetric relationship between sukuk and green bonds. The most significant conclusion is that global risk variables do not affect either sukuk or green bonds. In contrast, Balcilar, Bonato, Demirer, and Gupta (2018) investigated the effect of GPRs on Islamic securities and found that GPR had a statistically significant impact on sukuk pricing. To examine the relationship and volatility between global stock markets and sukuks, Sclip et al. (2016) used the dynamic conditional correlations (DCC) model. Results show that sukuk volatility is low

throughout the financial crisis. The authors claim that sukuk-containing portfolios offer substantial benefits, particularly during uncertain and crisis-ridden periods. Boukhatem (2022) examined the impact of financial and geopolitical risks on the Saudi Arabian Sukuk market. Financial risk factors encompass exchange rate stability, foreign debt and debt service stability, international liquidity stability, and current account stability. It has been illustrated that the sukuk market is impacted by exchange rate stability, foreign debt stability, and debt service stability.

Recently, many empirical studies have examined the impact of global risk and uncertainty factors on the dynamics of Islamic securities. Notably, GEPU and FSI are among the variables whose effects on Islamic securities and sukuk are investigated in many studies (Ajmi, Hammoudeh, Nguyen, & Sarafrazi, 2014; Kenourgios, Naifar, & Dimitriou, 2016). Naifar, Hammoudeh, and Al-Dohaiman (2016) examined the effects of several risk variables, including FSI and GEPU, on sukuk returns. The findings demonstrate that the sukuk returns of GCC countries are negatively impacted by global risk factors. Additionally, results indicate that GCC sukuk returns are highly susceptible to changes and extremely sensitive to global occurrences. Naifar, Mroua, and Bahloul (2017) explored how local and global uncertainty factors (e.g. VIX and GEPU) affect sukuk and bond returns. The results indicate that sukuk behave differently from bonds in uncertain conditions, which adds them to portfolios and reduces risk. This result suggests that sukuk returns are more resilient to uncertainties. Kasal (2023) used the Bayesian Vector Autoregressive (BVAR) model to examine how FSI affected economic activity and government debt. In conclusion, a rise in FSI will lead to a decline in economic activity, thereby increasing national debt. Ajmi et al. (2014) investigated the interaction between the Dow Jones Islamic Market Index (DJIM) and various financial indexes, including stock, crude oil, and bond indexes, as well as EPU, MOVE, and VIX. The results reveal that all variables, except the DJIM index and VIX, are causally associated. Sukuk performed better than traditional bonds during challenging economic periods, as Billah, Hadhri, Balli, and Sahabuddin (2024) demonstrated, and they recommend that portfolio managers consider this. Similar findings are supported by Billah, Alam, and Hoque (2024), which examines the connection between Islamic markets and green assets during turbulent periods worldwide. The results of Balli, Billah, Balli, and Gregory-Allen (2020), Naifar and Hammoudeh (2016), and Billah, Alam, et al. (2024) indicate that the sukuk market and VIX and GEPU are negatively associated. These findings are also supported by Said and Grassa (2013) and Mirza and Sultana (2020), indicating that it becomes increasingly important, particularly during rising financial uncertainty. In contrast, these results do not align with other studies, such as Billah, Kapar, Hassan, Pezzo, and Rabbani (2024), which includes the financial stress index, and Al-Raeai, Zainol, and Abdul Rahim (2019), which examines political risks.

Apart from these studies, the literature also includes various studies examining sukuk issuances and their performance in uncertain environments. Al-Yahyaee, Mensi, Rehman, Vo, and Kang (2020) find that Islamic stocks outperform conventional stocks during the crisis. The authors proposed that the best way to reduce risk in unstable conditions is to integrate Islamic securities, such as sukuk, into portfolio construction. In a similar vein, Jatmiko, Ebrahim, and Smaoui (2023) probed the relationship between income inequality and Sukuk issuance. The results show a significant positive relationship between income inequality and Sukuk issuance. As a result, Sukuk issuances rise in parallel with increases in income inequality. Godil, Sarwat, Sharif, and Jermsittiparsert (2020) used GEPU and GPR indices to analyse how conventional and Islamic equities behave in bull and bear markets. The impact of oil prices has consistently been shown to cause long-term differences between Islamic and traditional equities during bull markets. Nevertheless, due to GEPU repercussions, Islamic stocks differ from regular stocks during the bear market. As Bouri, Demirer, Gupta, and Marfatia (2019) indicated, GEPU has of greater effect on the volatility of Islamic securities than on their returns. Hasan, Hassan, and Alhomaidi (2023) examined the role of GEPU, GPR, and oil price shocks on sectoral Islamic securities. The results of this study demonstrate that Islamic securities are resilient to GPR and GEPU indices and are effective hedgers. In contrast, they are unable to fend against oil price shocks.

Several empirical studies have examined the effects of geopolitical risk factors, global economic policy uncertainty, and financial stress on equity and bond returns, and, more recently,

on the Islamic stock index. This paper contributes to the debate by analysing the impact of global risk and uncertainty on Türkiye's sukuk issuances—an area of the literature that has been largely overlooked. Given previous findings, exploring these factors is well justified. To our knowledge, no study has assessed how global financial distress and uncertainty influence Türkiye's sukuk issuance, a crucial aspect for portfolio strategies optimising risk-return dynamics. This perspective is the paper's originality and provides recommendations to current and potential investors. The principal contribution of this study is its emphasis on sukuk issuance volumes rather than sukuk yields. Determining the extent to which demand for sukuk issuances is influenced by global risk factors will enable the formulation of effective policy measures for countries such as Türkiye, Indonesia, Malaysia, and the Gulf Cooperation Council members that aspire to advance in the field of Islamic finance.

Methods

This study focuses on global uncertainty factors expected to affect Türkiye's sukuk issuance, which has become increasingly popular in Islamic finance. The analyses will be implemented by establishing equation no. 1 below.

$$LnY_{it} = \beta_0 + \beta_1 LnGPR_{it} + \beta_2 LnFSI_{it} + \beta_3 LnGEPU_{it} + \mu_{it} \quad (1)$$

The detrimental effect of financial stress and global uncertainty indices on the Sukuk issuance of Türkiye will be examined using the model developed in Equation 1. To this end, the dependent variable in the equation is expressed as LnY for Sukuk issuance volume. As for the independent variables, Geopolitical Risk is denoted by $LnGPR$, Financial Stress Index by $LnFSI$ and finally, Global Economic Policy Uncertainty by $LnGEPU$. Since the correlation analysis reveals no multicollinearity between the variables, the study used the single model developed for detecting long- and short-term relationships among variables. As indicated in Table 1, sukuk issuance and other variables are gathered from several sources and contain monthly data from 2014 to 2024. In this context, the study's dependent variable, sukuk issuance numbers, is obtained from the database of the Participation Banks Association of Türkiye (TSKB). Sukuk issuance numbers encompass both the private and public sectors, including all sukuk issuances. The Economic Policy Uncertainty website provides data for the Geopolitical Risk Index, while the Federal Reserve Bank supplies data for two independent variables (GEPU and FSI). For data reconciliation, the natural logarithm of all data is computed and analysed. Table 1 lists the variables utilised in the study, including their full names, abbreviations, data sources, data period, and expected signs on the dependent variable.

Table 1. Variables and Explanations

Period	Variables	Expected Sign	Abbreviation	Source
January 2014-September 2024	Sukuk Issuance size of Türkiye	Dependent Variable	LnY	TKBB
	Geopolitical Risk Index	-	LnGPR	EPU
	Financial Stress Index	-	LnFSI	FRED
	Global Policy Uncertainty Index	-	LnGEPU	FRED

Source: TKBB (2025): The Participation Banks Association of Türkiye, EPU: Economic Policy Uncertainty, FRED: Federal Reserve Bank of St. Louis.

The Brock-Dechert-Scheinkman (BDS) test is one of the most essential discriminant tests to perform before determining the long- and short-run relationships between the dependent and independent variables. The BDS test provides necessary evidence on whether the series is linear. Depending on the findings of BDS, linear or nonlinear models can be preferred for cointegration tests between the time series. If this distinction is ignored, there may be situations in which a nonexistent relationship is erroneously treated as if it exists, or a hidden relationship between variables is not revealed. Consequently, linearity analysis is performed to prevent inadequacy in determining the relationship between variables or distrust in the analyses. Thus, Table 2 presents the results of BDS.

Table 2. BDS Test Results

	m=2	m=3	m=4	m=5	m=6
lnY	0.079***	0.179***	0.245***	0.296***	0.328***
lnGPR	0.074***	0.118***	0.146***	0.157***	0.154***
lnFSI	0.025***	0.046***	0.054***	0.055***	0.054***
lnGEPU	0.134***	0.227***	0.288***	0.326***	0.345***

Embedding dimensions = m; *** Significant at 1%.

BDS test results show that the series is not linearly distributed at a 1% significance level. To clarify, the series is not linear. In that instance, models such as the ARDL (Autoregressive Distributed Lag) lose validity and become inefficient at determining the short- and long-term relationships between series. Hence, the NARDL model is the best fit among the alternatives for identifying the relationship in a nonlinear series (Syed, Kamal, & Tripathi, 2021; Göksu, 2024). The NARDL model, just like the ARDL model, must fulfil certain assumptions. The first of these criteria is that none of the variables should be stationary at the second difference *I(2)*. In ARDL and NARDL models, whether the variables are *I(0)* or *I(1)* is essential for the validity and reliability of the analyses. It is preferred that the dependent variable is *I(1)*. The OLS model is established once these assumptions are met, as shown in equation 1. The bounds test (F_{PSS} and t_{BDM}) determines the co-integration relationship in the third stage. Given the presence of a relationship between the variables in the bounds test results, in the fourth stage, the WALD test attempts to identify both short- and long-term asymmetry. The constructed model is verified in the last and fifth steps to see whether it fulfils the assumptions. Moreover, the normality assumption is examined using the Jarque-Bera test, the serial correlation assumption is reviewed using the LM test, and the heteroscedasticity assumptions are analysed using the BPG and ARCH tests. Furthermore, QUSUM tests are used to assess structural breakdowns.

The model initially proposed by Pesaran, Shin, and Smith (2001) and subsequently refined by Shin, Yu, and Greenwood-Nimmo (2014) serves as an illustration; equation 2 was developed to estimate the asymmetric impact of global uncertainty indicators on Türkiye's Sukuk issuance volume.

$$\begin{aligned}\Delta lnY_t = {} & \alpha_0 + \sum_{i=1}^{g=2} \alpha_{1i}\, \Delta lnY_{t-i} + \sum_{a=1}^{h=1} \alpha_{2a}\, \Delta GPR^{+}_{t-i} + \sum_{b=1}^{j=1} \alpha_{3b}\, \Delta GPR^{-}_{t-i} + \\ & \sum_{c=1}^{k=0} \alpha_{4c}\, \Delta FSI^{+}_{t-i} + \sum_{d=1}^{l=2} \alpha_{5d}\, \Delta FSI^{-}_{t-i} + \sum_{e=1}^{m=2} \alpha_{6e}\, \Delta lnGEPU^{+}_{t-i} + \\ & \sum_{f=1}^{n=1} \alpha_{7f}\, \Delta lnGEPU^{-}_{t-i} + \vartheta lnY_{t-1} + \gamma_1^{+} lnGPR^{+}_{t-1} + \gamma_1^{-} lnGPR^{-}_{t-1} + \gamma_2^{+} lnFSI^{+}_{t-1} + \\ & \gamma_2^{-} lnFSI^{-}_{t-1} + \gamma_3^{+} lnGEPU^{+}_{t-1} + \gamma_3^{-} lnGEPU^{-}_{t-1} + \mu_t \end{aligned} \quad (2)$$

In this equation, "Δ" shows the primary difference; "μ_t" represents the error term; "g, h, j, k, l, m, n" are the lag orders; "β_0" is the constant; "α_1", "α_2", "α_3", "α_4","α_5", "α_6" "α" are coefficients of the short-run effects; "ϑ", "γ_1", "γ_2", "γ_3" are coefficients of the long-run impacts.

The following hypotheses are examined by using the Wald test to determine long-term asymmetric relationships.

$$"H_0: \frac{\gamma_1^{+}}{-\vartheta} = \frac{\gamma_1^{-}}{-\vartheta};\ H_0 = \frac{\gamma_2^{+}}{-\vartheta} = \frac{\gamma_2^{-}}{-\vartheta};\ H_0 = \frac{\gamma_3^{+}}{-\vartheta} = \frac{\gamma_3^{-}}{-\vartheta}"$$

$$"H_A: \frac{\gamma_1^{+}}{-\vartheta} \neq \frac{\gamma_1^{-}}{-\vartheta};\ H_A = \frac{\gamma_2^{+}}{-\vartheta} \neq \frac{\gamma_2^{-}}{-\vartheta};\ H_A = \frac{\gamma_3^{+}}{-\vartheta} \neq \frac{\gamma_3^{-}}{-\vartheta}"$$

The Wald test indicates that if H_0, it implies the model has long-term asymmetric relationships. Similarly to the long-run, the Wald test is used to evaluate short-run asymmetric relationships.

$$"H_0: \sum_{i=0}^{a} \omega_{1i}^{+} = \sum_{i=0}^{b} \omega_{1i}^{-}\ ; \sum_{i=0}^{c} \omega_{2i}^{+} = \sum_{i=0}^{d} \omega_{2i}^{-}\ ; \sum_{i=0}^{e} \omega_{3i}^{+} = \sum_{i=0}^{f} \omega_{3i}^{-}"$$

$$"H_A: \sum_{i=0}^{b} \omega_{1i}^{+} \neq \sum_{i=0}^{c} \omega_{1i}^{-} \; ; \sum_{i=0}^{d} \omega_{2i}^{+} \neq \sum_{i=0}^{e} \omega_{2i}^{-} \; ; \sum_{i=0}^{f} \omega_{3i}^{+} \neq \sum_{i=0}^{g} \omega_{3i}^{-} "$$

Depending on the Wald test used, if Ho is rejected and Ha cannot be rejected, there are short-term asymmetric relationships among the model's variables.

Results and Discussion

The descriptive statistics of the study are initially acquired for the sake of analysis. The data set comprises 126 monthly sukuk issuances from January 2014 to September 2024. The low standard deviation, mean, and median are close to one another, suggesting the series may follow a normal distribution. The Jarque-Bera statistic is computed, and the test statistic indicates that the series is normally distributed if the p-value exceeds 0.05. In this context, it is determined that the sukuk issuance numbers and the financial stress index do not exhibit normal distributions.

Table 3. Descriptive Statistics

	Mean	Max.	Min.	Std. Dev.	Skewness	Kurtosis	J-Bera	Prob.	Obs.
lnY	21.787	24.532	16.860	1.671	-0.619	2.473	9.514	0.009	126
lnGPR	4.397	5.120	3.848	0.264	0.193	2.491	2.142	0.343	126
lnFSI	-1.089	1.662	-4.213	0.905	-0.865	4.572	28.678	0.000	126
lnGEPU	5.326	6.080	4.492	0.361	-0.391	2.267	6.025	0.049	126

The high correlation between the series reveals the issue of multicollinearity. This results in relationships that do not exist, or in the inability to recognise or misunderstand relationships that do. Consequently, Spearman's Rank Order is used to conduct the correlation analysis between the variables, and Table 4 presents the findings. These findings indicate slight positive and negative correlations between the dependent and independent variables, and no multicollinearity among the series. This is essential for the general well-being of analysis.

Table 4. Spearman Rank-Order

	lnY	lnGPR	lnFSI	lnGEPU
lnY	1			
lnGPR	0.070	1		
lnFSI	0.237	-0.101	1	
lnGEPU	0.637	-0.052	-0.094	1

As a result of the BDS test, the NARDL model is used after detecting the nonlinear structure. To use this model, some assumptions must be fulfilled. The first and most important assumption is the non-stationarity of any variables at the *I(2)* level. Secondly, the series is expected to exhibit different levels of stationarity, and preferably, the dependent variable is *I(1)*. Thus, unit root tests are performed to detect the stationarity level of each variable. The findings of the unit root test are provided in Table 5, based on the estimation of the constant model and the eighth lag length.

Table 5. Unit Root Test Results

Variables	Level	Prob.	First-difference	Prob.	Decision
lnY	-1.093	0.717	-6.984***	0.000	I(1)
lnGPR	-3.414**	0.012	-	-	I(0)
lnFSI	-7.212***	0.000	-	-	I(0)
lnGEPU	-2.423	0.138	-9.155***	0.000	I(1)

The dependent variable, *lnY*, represents sukuk issuance. In contrast, the independent variable, lnGEPU, reflects uncertainty in global economic policy, which was found to be stationary at the first difference (I(1)) using the ADF unit root test. Test statistics indicate that the results are

significant at the 1% level. Meanwhile, the variables *lnFSI* for the financial stress index and *lnGPR* for geopolitical risks are stationary at level *I(0)*.

Table 6. F-Bounds and t-Bounds Test Results

$f\left(lnY \mid lnGPR_t^+, lnGPR_t^-, lnGEPU_t^+, lnGEPU_t^-, lnFSI_t \right)$ k:5 m:4				
F $_{PSS:}$ 15.743*** t $_{BDM:}$ -9.647***		10%	5%	1%
F-Statistic	I(0)	2.26	2.62	3.41
	I(1)	3.35	3.79	4.68
t-Statistic	I(0)	-2.57	-2.86	-3.43
	I(1)	-3.86	-4.19	-4.79

Note: k: number of independent variables; m: lag length. (***) Significant at 1%.

After testing of unit roots, the dependent variable is found to be stationary in first differences. Additionally, the results of the BDS test indicate that using non-linear models is now more acceptable. In this sense, the bounds test approach assesses the non-linear cointegration relationship between the variables. The appropriate lag lengths for the series must be determined just before examining the cointegration relationship by the F-bounds and t-bounds tests. According to the Akaike Information Criterion (AIC), the most appropriate lag length for the monthly data set is 4. As shown in Table 6, the FPSS statistic exceeds the upper critical value at the 1% significance level, and the tBDM value is below the lower critical value at the 1% significance level. These results suggest a non-linear cointegration relationship between the variables.

Table 7. Estimation of NARDL Results

A) Long-run results	Coefficient		p-value	t-statistic	
lnY_{t-1}	-1.284***		0.000	-9.647	
$lnGPR\ ^{+}_{t-1}$	-1.128***		0.001	-3.356	
$lnGRP\ ^{-}_{t-1}$	-1.781***		0.000	-4.073	
$lnGEPU\ ^{+}_{t-1}$	0.944		0.007	2.771	
$lnGEPU\ ^{-}_{t-1}$	1.034***		0.030	2.201	
$lnFSI$	0.096		0.411	0.825	
B) Short-run results	Coefficient		p-value	t-statistic	
ECT	-1.284***		0.000	-9.950	
ΔlnY_{t-1}	0.124		0.154	1.437	
$lnGPR^{+}$	1.253**		0.031	2.190	
$lnGPR^{-}$	-2.239***		0.003	-3.096	
$lnGPR\ ^{+}_{t-1}$	0.774		0.208	1.267	
$lnGPR\ ^{-}_{t-1}$	1.535**		0.040	2.086	
$lnGPR\ ^{+}_{t-2}$	1.379**		0.029	2.207	
$lnGPR\ ^{-}_{t-2}$	1.533**		0.037	2.114	
$lnGEPU^{+}$	-0.777		0.229	-1.210	
$lnGEPU^{-}$	3.339***		0.000	4.118	
$\Delta lnFSI$	0.100		0.162	1.409	
$\Delta lnFSI_{t-1}$	-0.133*		0.064	-1.868	
Constant	24.857***		0.000	10.044	
C) Asymmetry tests					
$W_{LR.\ lnGPR}$	7.863**	0.020	$W_{SR.\ lnGR}$	13.535***	0.009
$W_{LR.\ lnGEPU}$	4.672**	0.011	$W_{SR.\ lnGEPU}$	9.343***	0.009
D)Diagnostic tests					
X^2_{SC}	0.967	0.617	$X^2_{HET(BPG)}$	18.475	0.359
$X^2_{NORM(J\text{-}B)}$	0.779	0.678	$X^2_{HET(ARCH)}$	1.854	0.173
CUSUM / CUSUM of Sq.	Stable	Stable	X^2_{FF}	0.008	0.927

Notes: "+" and "-" denote negative and positive partial sums, "X^2_{SC}": Serial correlation; "X^2_{NORM} ": Normality: Jarque-Bera; "X^2_{FF}": Functional form; "$X^2_{HET(BPG)}$ and $X^2_{HET(ARCH)}$ ": Heteroscedasticity; "W_{LR}": Long-run Wald test "W_{SR}": Short-run Wald test. Respectively.

NARDL findings are presented in Panel A of Table 7, which reports long-run estimate results adhering to the determination of the cointegration relationship. All coefficients except the

FSI are statistically significant in the long run. In the long run, a positive shock of 1% positive shock in GPR decreases sukuk issuance by approximately 1.13%. Conversely, a 1% negative shock in GPR increases sukuk issuance by approximately 1.78%. Regarding effect size, the impact of decreases in geopolitical risk on Sukuk issuance is greater than that of increases. This finding might be viewed as suggesting that market participants would be inclined towards sukuk as geopolitical issues decline. In the long run, sukuk issuance rises by around 0.94% for every 1% increase in GEPU and falls by roughly 1.03% for every 1% decrease. Sukuk issuance is considerably more affected by adverse shocks in the global economic policy uncertainty index than positive ones. This finding suggests that market players will shift towards sukuk in response to rising global economic policy uncertainties, and towards other financial instruments and investment tools as international monetary policy uncertainties decrease. In contrast, the financial stress index's long-run coefficient, included linearly in the model, is statistically insignificant. The results of the NARDL model are consistent with the literature, such as Asutay and Hakim (2018); Sclip et al. (2016); Balcılar, Demirer, and Hammoudeh (2015); Bhuiyan, Rahman, Saiti, and Mat Ghani (2018); Hasan, Hassan, Rashid, and Alhenawi (2021); Naifar (2023); Gubareva, Sokolova, Umar, and Vo (2024); Kenourgios et al. (2016), who confirm the findings of the current study, especially for GEPU and GPR.

In Panel B of Table 7, short-run estimation results are presented. In the short run, all variables, except the one-period lagged value of sukuk issuance, are statistically significant at different lag periods. In the short run, reducing global economic policy uncertainty is the most critical factor affecting sukuk issuance. Furthermore, the coefficient of the error correction term is statistically significant and negative. An absolute value of the coefficient greater than one means that there will be an uneven convergence, as stated by Narayan and Smyth (2006). Panel C shows the results of the short- and long-term asymmetry tests. As outlined in the Wald test results, it is concluded that geopolitical risk and global economic policy uncertainty have asymmetric effects in both the short and long run. After considering the diagnostic test findings shown in panel D, the model's functional form structure is appropriate, and there is no problem with heteroscedasticity and autocorrelation. Moreover, the error terms are normally distributed. The CUSUM and CUSUMSQ graphs show that the model parameters are stable and that the short- and long-run coefficients are reliable (Figure 1).

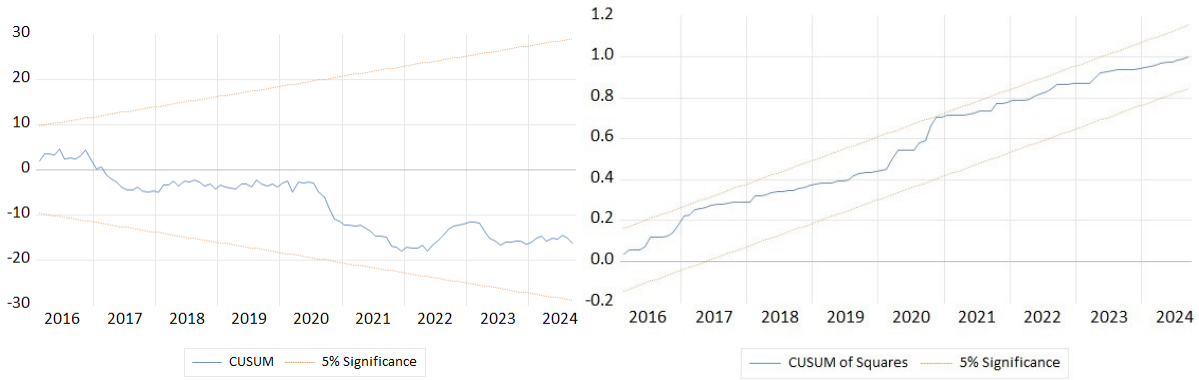

Figure 1: NARDL CUSUM and CUSUM of Squares Graphs

In the last step of the NARDL analysis, Figure 2 below shows the dynamic responses of the dependent variable to one unit of positive and negative shocks in the independent variables, and the formation of the new long-run equilibrium after the shock. Firstly, the left graph in Figure 2 illustrates the response of sukuk issuance to potential shocks arising from geopolitical risks. Specifically, the Sukuk issuance reacts positively to a negative shock of one unit in geopolitical risks. This reaction is much more than the reaction to a positive shock. After about four years, the asymmetric effect of a shock stemming from geopolitical risks on Sukuk issuance ends, and the long-run steady state point is reached.

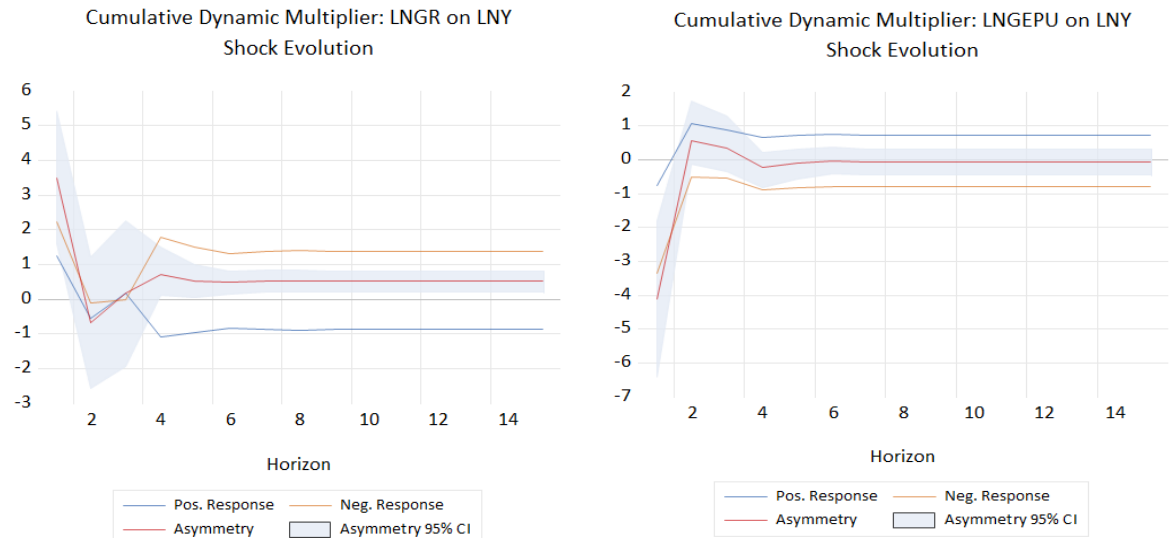

Figure 2: Cumulative Dynamic Shock Evolution

The graph on the right side of Figure 2 shows the response of sukuk issuance to shocks in the global economic policy uncertainty index. The sukuk issuance exhibits a positive response to a 1-unit negative shock caused by the worldwide policy uncertainty index, and this reaction lasted for about 2 years. It then turns negative, and after 4 years, the asymmetric effect of the global policy uncertainty index on Sukuk issuance ends.

Conclusion

This study examined the relationship between the global risk and uncertainty indices FSI, GEPU, and GPR and the sukuk issuance of Türkiye. Monthly totals of all sukuk issuances by Türkiye's governmental and private sectors from January 2014 to September 2024 are examined as a subsection of the study. The NARDL model outputs show short-term and long-term relationships between sukuk issuance and global uncertainty indices. The results demonstrate that the FSI has no long-term impact on sukuk issuances. In contrast, there is a negative relationship between sukuk issuance and GPR. A positive shock of 1% positive shock in GPR reduces sukuk issuance by approximately 1.13%. In contrast, a 1% negative shock in GPR leads to an increase in sukuk issuance of roughly 1.78%. There is a long-run direct relationship between GEPU and Sukuk issuance. A 1% increase in GEPU increases sukuk issuance by approximately 0.94%, while a 1% fall in GEPU decreases sukuk issuance by approximately 1.03%. In general, an assessment of the long-run relationship suggests that lower geopolitical risks increase sukuk issuance. Despite this, increasing GEPU also increases demand for sukuk issuances, as it reinforces the perception of a haven. On the contrary, investors turn to securities other than sukuk when GEPU decreases as their risk appetite increases. In the short run, statistically significant relationships are detected between sukuk issuance and all other variables except the lagged value of Sukuk issuance. The variable with the most critical short-run impact on Sukuk issuance is a decrease in global policy uncertainty. Wald test results also show that GEPU and GPR indices have asymmetric effects in the short and long run. Cumulative Dynamic Shock Evolution reveals that the asymmetric impact of a shock arising from geopolitical risks on Sukuk issuance disappears after 4 years, while the positive response time to a negative shock arising from the global policy uncertainty index is 2 years.

These results provide essential findings for sukuk issuers. Perhaps the most important of these is the decision to determine the timing of Sukuk issuance in response to global uncertainties. The study results suggest that investors tend to switch to safe-haven securities during periods of heightened global uncertainty and financial stress. There will be greater demand for sukuk issuance by issuers, especially during this period of economic and financial turbulence. The fact that companies and governments can access healthier, long-term financing through these issues will also affect future investment opportunities. On the flip side, we do not recommend that companies

and governments issue large volumes of sukuk during periods of low global uncertainty and financial turbulence. Due to the high-risk appetite of investors in these periods, there may be a decrease in demand for sukuk issuances. As investors seek alternative instruments for high returns during periods of financial instability, sukuk issuers must offer attractive returns to avoid reduced issuance demand. Accordingly, sukuk-issuing countries, including Türkiye, Indonesia, Malaysia, and the GCC members, as well as other emerging markets, should adopt flexible, countercyclical issuance strategies that account for the asymmetric effects of global uncertainty and geopolitical risk. Specifically, governments and policymakers should strengthen domestic investor bases, diversify sukuk structures toward sustainable and ESG-linked instruments, and maintain transparent policy communication to mitigate the adverse impact of geopolitical shocks. Such measures would enhance market resilience, stabilise issuance volumes, and support the long-term development of Islamic finance across jurisdictions. It is recommended that future studies focus on the volatility spillovers between sukuk issuances and global uncertainty indices. This allows investors to identify significant findings and further support the idea that sukuks are haven assets.

Use of AI tools declaration

The authors used AI tools (ChatGPT and DeepSeek) for language editing and grammar review of this manuscript. The authors are fully responsible for the content of this publication.

Conflict of interest

The authors declare no conflicts of interest.

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