Investigating the impact of financial, economic, and political risks and economic complexity on sukuk market development (NARDL Approach)

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Abstract

The main objective of this article is to investigate the impact of various financial, economic, and political risks and economic complexity on the development of the Sukuk market in the Iranian economy. The data required to conduct this research based on the variables of the proposed model were used from the Capital Market Central Asset Management Company, the International Country Risk Guide (ICRG) database, and the MIT University website. The data relating to 2010-2022 is seasonal, and REVIEWS 13 software was used. The model estimation results using the Nonlinear Autoregressive Distributed Lag Model Approach (NARDL) show that the negative shock of political risk reduces the development of the Sukuk market in the short and long term. The negative shock of financial risk in the long term has a negative impact on the development of the Sukuk market. The negative shock of economic complexity reduces the development of the Sukuk market in the short term. The positive shocks of political risk, financial risk, economic risk, and economic complexity in the short and long term led to the development of the Sukuk market. Among the three types of risk, political risk and financial risk have the most impact on sukuk market development. The error correction coefficient in this estimate is negative and statistically significant, which shows that 0.42% of the short-term imbalance is adjusted to reach the long-term balance every year.

Keywords: Sukuk, Financial risk, Economic risk, Political risk, Economic complexity, NARDL.

Introduction

By collecting stagnant and unused resources, financial markets play an important role in financing large and small economic projects. Therefore, they can be the origin of many economic developments in any society, and the scope of activities of these markets and the role they play in the growth and prosperity of countries' economies are increased. (Sadeghi et al., 2014).

So, the difference between developed and developing countries is their strong financial markets because diverse and powerful financial markets and instruments will provide the source of economic progress and development. Governments, organizations, and private companies need low-risk and high-yield financial resources to expand their activities, and in conventional financial markets, this need is financed by issuing bonds. Bonds are based on loans with interest, which is usury in Islamic law, and therefore, these bonds cannot be used for financing in Islamic markets (Capital et al. Company,

2016).

Therefore, considering the importance of financing companies, Muslim thinkers first thought of creating an Islamic banking system without usury, and then, relying on financial initiatives, they thought of designing Islamic capital markets. In this regard, the role of Islamic financial instruments or sukuk is very prominent in the Islamic financing system. (Bailey, 2005).

A new solution invented and presented in the Islamic banking system to cover and reduce investment risk in uncertain conditions is to use the financial instrument of Sukuk and its various contracts (Khansari, 2018).

The Accounting and Auditing Organization of Islamic Financial Institutions (AAOIFI) has defined sukuk as "securities that represent individual ownership interests in existing or future qualified assets" (Nazarpour & Khazaee, 2010.......page number?).

In other words, Sukuk is securities with the same financial value that can be traded based on one of the contracts approved by Islam in the financial markets. The holders of these bonds jointly own one or a basket of assets and benefits derived from them; therefore, sukuk includes the ownership of a specific asset (Khansari, 2018).

As one of the emerging financial initiatives, the Sukuk financial market is designed to contribute to the global convergence of conventional and Islamic finance. Due to the relative similarities between Sukuk and conventional fixed-income securities, many investors are attracted to the use of Sukuk. This process is reinforced with adequate techniques in risk management and this process is reinforced with adequate techniques in risk management and makes it possible to respond to a set of investment demands.

By creating order and discipline and increasing financial stability, sukuk is an essential tool in deepening financial markets, which is very useful for pooling resources in the public and private sectors. The developed sukuk financial market, with hedging interest rates and inflation risk, will improve investors' welfare (Boukhatem, 2022).

This market helps governments and banks to strengthen their capital adequacy ratio and better manage their operations, which can be achieved through two channels. Firstly, Islamic banking allows investing in quality sukuk (low-risk sukuk investment), and secondly, sukuk increases capital adequacy with access to a fixed budget structure. (Panahi and Rezaei, 2021).

The development of the sukuk market requires the identification and analysis of factors affecting it. In this regard, risks and economic complexity

can be mentioned. As this financial market develops, its effectiveness will increase from other economic factors and phenomena. As a result, by creating new opportunities, the possibility of fluctuations in its efficiency will be strengthened. The phenomenon of risk is one of the key decision-making variables in the field of investment. Risk is the measurable potential loss of an investment. From the investors' point of view, investment security exists when risk estimation institutions declare that country safe.

Economic complexity also, with the creation of diverse and comprehensive products in society and the advanced division of labor, shows the use of advanced technologies and innovation in the production process by applying knowledge and technology in the combination of manufactured products through the creation of a productive structure, increasing productivity and diversity of products Production leads to increased growth and economic prosperity (Zubiri & Motmani, 2020). Economic complexity expresses the use of technology and innovation in the production process or other words, the application of knowledge and technology in the composition of production products, and through the creation of a productive structure, the possibility of using unused capacities, saving resources, optimal allocation of production resources, It reduces production costs and increases the productivity and variety of manufactured products, which leads to an increase in GDP (Shahabadi & Arghand, 2018).

Therefore, the development of the sukuk market and the creation of low-risk investment platforms for the economic enterprises of the country provide this advantage to contribute to the growth and prosperity of the country by creating and applying knowledge and technology in the combination of manufactured products. Based on this, it seems very necessary to identify the factors influencing sukuk market development. In this research, we have focused on the problem from different dimensions, and we have selected variables related to risk (financial risk, economic risk, and political risk) along with economic complexity to analyze the statistical impact on the development index of Iran's Sukuk market. In this regard, we first discuss the theoretical and empirical literature related to this issue. Then, the research method, the data collection tool, and the data analysis method are presented to determine the research hypotheses. The impact of financial, economic, political risks and economic complexity shocks on sukuk market development in Iran is analyzed quarterly during the years 2010-2022 using the Nonlinear Autoregressive Distributed Lag Model Approach (NARDL).

Literature Review

Sukuk is derived from two Arabic words, saq (singular) and sukuk (plural), which means a certificate, note, or evidence (claim) of ownership. In practice, sukuk acts as a title deed. Accounting and Auditing Organization of Islamic Financial Institutions (AAOIFI) defines sukuk as follows:

"Certificates of equal value representing undivided shares in the ownership of tangible assets, usufruct rights, and services, assets of specific projects with specific investment activity."

Unlike bonds, sukuk is not strictly a debt but rather a statement of ownership over the benefits of an asset. Sukuk, like bonds, have a maturity date, and holders are entitled to a regular income stream over the life of the Sukuk in addition to the payment at maturity. Furthermore, sukuk and shares are similar financial instruments as they represent ownership claims and returns on both investments are not guaranteed. However, Sukuk is tied to a specific asset or project for a fixed period of time, while shares represent an ownership claim to the entire company with no maturity date. Sukuk bonds represent the ownership rights of investors in a particular property, business, company, or project, which gives them the right to receive a share of the income from it (Irawati & Fadhila, 2024; Khalid Afifi, 2024; Mseddi, 2023).

According to the documents of the International Islamic Financial Market (IIFM), chart (1) shows the total amount of sukuk issued in the world during the period of 2001-2022. The results clearly indicate that the amount of sukuk used for financing in the world has fluctuated over time, but its increasing trend is quite obvious. In this time period, the most issued sukuk is related to Malaysia with 868,130 million dollars, Saudi Arabia with 225,087 million dollars, and Indonesia with 169,907 million dollars (IIFM Sukuk database, 2023).
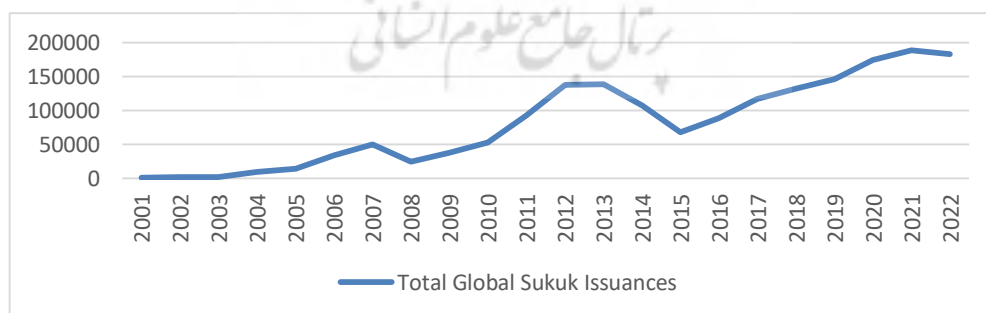
Figure 1. Sukuk issued in the world in the period (2001-2022)
Source: IIFM Sukuk database

In Iran, the Islamic financial instruments of participating bonds have been used since 1993 in Tehran Municipality to provide capital for some projects. But mainly, Islamic sukuk bonds using various types of Islamic contracts have attracted the attention of many public and private organizations since 2009 (Capital Market Central Asset Management Company[1] 2016). In this regard, graph (2) of the amount of sukuk issued in Iran in the period of 2010-2022 has been analyzed.
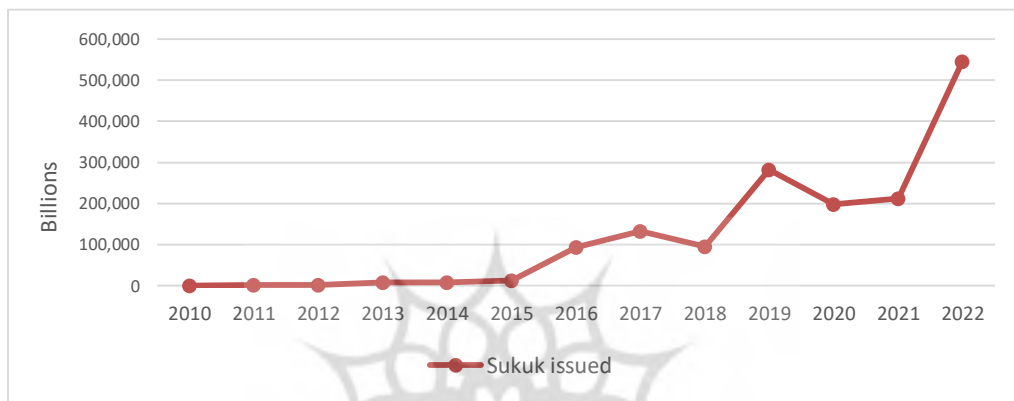
Figure 2. The trend of issuing sukuk bonds in Iran (2010-2022)
Source: Capital Market Central Asset Management Company Iran

As graph (2) shows, in the period of 2010-2022, the trend of issuing sukuk bonds in Iran has increased. From 2010 to 2015, the use of sukuk has had a steady trend, but since 2015, although the use of this instrument has fluctuated, in general, it has shown an increasing trend, which shows the attention of public and private organizations to financing in this way. However, macro risks, including financial, political, and economic risks, can affect the sukuk market. In the ranking of the International Country Risk Guide (ICRG), political, financial, and economic risks are examined in the form of 22 variables, and a separate index is created and presented for each subcategory. This rating can help to recognize and evaluate the risks related to the Sukuk market and financial markets (The International Country Risk Guide, 2014).

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[1] Capital Market Central Asset Management Company, as one of the pillars of issuing Islamic securities (Sukuk), is responsible for the establishment and management of intermediary institutions in Iran's capital market. In fact, this company has the role of a trustee, which, in order to protect the interests of the holders of Islamic securities and to ensure the correctness of the issuer's operations, continuously examines and comments on the use of funds, the way of keeping accounts and financial statements, and executive performance.

Financial risk and sukuk

Financial risk, which is the acceptance of risk in corporate finance, is caused by debt. The higher the amount of debt, the greater the financial risk. Financial risk includes five components: 1) Foreign debt, 2) Exchange rate stability, 3) Debt service, 4) Capital account, and 5) International liquidity. Participants in the sukuk market react quickly to positive financial shocks (reducing financial risk) and increase their investments in financial markets, including sukuk, which in turn will lead to sukuk market development. Negative financial shocks, which imply an increase in financial risk, lead to more economic uncertainty in society. This process can lead to the loss of the issuer or the investor, which will ultimately have a negative impact on the development of the Sukuk market. Financial risk reduces participation in financial markets, including the sukuk market, by creating distrust in price changes and adjusting profit margins. It should be mentioned that sukuk is also affected by the laws of demand and supply, yield and risk, and economic principles. The Sukuk market performs well with fewer financial risks. According to this analysis, any positive shock that reduces the financial risk will result in more participation in sukuk bonds and, ultimately, sukuk market development (ICRG Methodology, 2014).

Economic risk and sukuk

Economic risk includes five components: GDP per capita, real economic growth, inflation rate, budget deficit as a percentage of GDP per capita, and trade balance deficit as a percentage of GDP per capita. Economic activists react to positive economic shocks that result from the improvement of economic indicators such as inflation, national monetary value, budget deficit, real economic growth, and GDP per capita and increase their investment in productive projects. This process increases the participation of public and private organizations in the financial markets, which in turn will lead to sukuk market development. Economic risks, such as economic recession, inflation, income inequality, information rent, and the closure of the international economic space, can have a direct effect on the sukuk market development. These risks may reduce the demand for sukuk. Any positive shock that indicates the improvement of economic conditions has a positive effect on the increase of investment in the country. In this situation, the issuance of sukuk by organizations for financing increases, and the sukuk market develops. Obviously, in the conditions of negative shocks to the economy, economic enterprises have no desire to issue sukuk and attract capital, and they try to refrain from investing in various projects in high economic risk conditions (ICRG Methodology, 2014).

Political risk and sukuk

Political risk includes 12 components: investment Profile, government stability, external conflict, internal conflict, Socioeconomic Conditions, corruption, military in politics, religious tensions, law and order, ethnic tensions, democratic accountability, and bureaucracy quality.

Political risks, including political changes, geographic tensions, and sanctions, can affect the sukuk market development. These risks may cause instability in the economy and cause insecurity in investing in financial instruments, including Sukuk. Negative shocks in the long term, which imply more political risk, have more harmful effects on the sukuk market development. Uncertainty caused by high political risk due to problems of information symmetry and economic insecurities leads to a large change in domestic and foreign investment decisions and financing through the Sukuk market (The International Country Risk Guide, 2014).

Economic complexity and sukuk

Economic complexity expresses the national production capabilities of a country; when the national productions of a country have more complex structures, the country's production capabilities are stronger (Zhu & Li, 2016).

The index of this variable for a country includes the diversity and extent of their export products. Diversity depends on the number of goods that a country exports and inclusiveness is the number of countries that export a product. Economic complexity index data is calculated based on the export of knowledge-based products, not just their production, which means that if countries make products that they are unable to export, that product is not counted in this index (Atlas of Economic Complexity, 2013).

Considering that economic complexity is measured based on export products, the effect of economic complexity on the exchange rate can be directly examined. This means that the increase in economic complexity that results from the increase in the export of knowledge-based products due to their diversity and inclusiveness affects the exchange rate. For countries that have complex export products, their trade balance improves with the increase in exports, and then with the increase in foreign exchange reserves and supply of currency, the value of the currency is strengthened, and the exchange rate decreases. On the other hand, economies with unfavorable levels of economic complexity have a weak accumulation of productive knowledge, and there needs to be more diversity in their manufactured products. These countries, which have weak support of productive knowledge, usually specialize in the

export of raw materials or produce fewer simple goods that require a smaller network of interactions, which means that they earn little from exports. For this reason, their competitiveness and flexibility are very low, and since they are largely dependent on one or more specific goods in their exports, the exchange rate fluctuations of these countries are higher than those of countries with diverse and complex export structure.s For this reason, the exports of these countries are constantly decreasing, and the decrease in their trade balance leads to a decrease in foreign exchange reserves and a weakening of the value of the country's national currency, which causes an increase in the exchange rate (Shahabadi et al., 2022). These currency fluctuations caused by the decrease in the trade balance will increase the risk of the exchange rate in the country, and therefore, the risk of financial instruments such as securities and sukuk will also increase. The reverse of this problem has occurred for economies with high levels of economic complexity so that by improving the economic complexity through the mentioned process, it can have a positive impact on Sukuk market development. In the following section, we present some relevant studies to this research:

Roslen et al. (2024), in a research study entitled "Long-term asymmetric effects of financial risks on the development of the Sukuk market: empirical evidence from Malaysia," using the NARDL method in the period of 2010-2021, to investigate the long-term asymmetric effects of financial risks on sukuk market development in Malaysia and came to a conclusion that in the long term international liquidity stability, exchange rate stability has a positive effect on the development of Sukuk market. At the same time, foreign debt service has a negative impact on the development of the Sukuk market.

Gomez-Gonzalez et al. (2023), in a research entitled "Does economic complexity reduce the probability of a financial crisis" in 172 countries (including more than 200 periods of financial crisis) during the years 1995-2020 and using the panel data method, showed that Economic complexity has a significant effect on the probability of experiencing a financial crisis in a country. Also, an increase of one unit in the economic complexity index reduces the probability of a financial crisis by half.

Boukhatem (2022), in an article entitled "How does financial risk affect sukuk market development? Empirical evidence from the ARDL approach," using seasonal data in the period of 2012-2021, reached these results that the exchange rate stability, external debt stability and debt service stability are effective and influential factors in the development of the sukuk market in Saudi Arabia, while international liquidity stability and current account stability do not have an important role on sukuk market development in this

country.

Shahabadi et al. (2022), in a research entitled "Effect of economic complexity on exchange rate in selected knowledge-oriented developing countries" in the period of 2007-2019 and using the generalized moments method, examined the effect of economic complexity on exchange rate. The results show that economic complexity, trade balance, and political stability have a negative effect. Money supply has a positive and significant effect on the exchange rate.

Mirza and Sultana (2020), in research titled "Impact of Economic Factors to Determine the Sukuk Market Development: An Empirical Analysis," investigated the factors that determined Sukuk market development in the period of 2012-2003. The results indicate that the percentage of Muslims and economic factors such as trade openness, GDP per capita, and the size of the economy have a positive effect on the prosperity and Sukuk market development

Suciningtias (2019), in an article titled "Macroeconomic Impacts on Sukuk Performance in Indonesia: Co-integration and Vector Error Correction Model Approach," investigated long-term and short-term effects of macroeconomic variables on sukuk performance in Indonesia for the period 2014-2017 using Vector Error Correction Model (VECM). The results indicate that the change in Sukuk returns in the long term is influenced by changes in the exchange rate, inflation, and changes in the global price of gold. In the short term, Sukuk's performance is affected by previous performance, exchange rate, and global gold price. Also, the price of crude oil in the long and short term does not have a significant effect on the performance of Sukuk.

According to the discussed topics and theoretical foundations, we are trying to investigate the impact of shocks or impulses of financial, economic, and political risks and economic complexity on the development of Iran's sukuk market by using the Nonlinear Autoregressive Distributed Lag Model Approach (NARDL).

Research Methodology

A) Definition of variables

Measuring economic complexity

The mathematical methodology used to measure economic complexity is based on the export products of countries, and its numerical value is between (3) and

(-3). Two indicators of diversity (the number of distinctive products of a country) and the comprehensiveness of the production of a product (the number of countries producing a specific product) are used to calculate ECI. For this purpose, consider the matrix M_{CP}. In this matrix, country C produces product P, and country O produces other goods; based on this, the diversity and Inclusiveness of goods can be calculated simply by adding up the rows and columns of this matrix. In mathematical formula, it can be described as follows:

$$\text{Diversity} = M_{C,0} = \sum_P M_{CP} \tag{1}$$

$$\text{Inclusiveness} = K_{P,0} = \sum_P M_{CP} \tag{2}$$

In order to create an accurate index of the number of capabilities and abilities available in a country that are needed to make a product, information related to diversity and inclusiveness can be completed. This process requires that for each country, the average inclusiveness and diversity of the products it exports is calculated. This process can be better expressed with the help of the following expressions:

$$K_{C,N} = \frac{1}{K_{C,0}} \sum_P M_{CP}, M_{P,N-1} \tag{3}$$

$$K_{P,N} = \frac{1}{K_{P,0}} \sum_C M_{CP}, K_{C,N-1} \tag{4}$$

By putting the above relations in the following expression, we will have:

$$K_{C,N} = \frac{1}{K_{C,0}} \sum_P M_{CP} \frac{1}{K_{P,0}} \sum_C M_{CP}, K_{C',N-2} \tag{5}$$

$$K_{C,N} = \sum_{C'} M_{C'N-2} \sum \frac{M_{CP} M_{C'P}}{K_{C,0} K_{P,0}} \tag{6}$$

Now, if we name the expression $\sum \frac{M_{CP} M_{C'P}}{K_{C,0} K_{P,0}}$ as M_{CC} ', we will have:

$$K_{C,N} = \sum_{C'} M_{CC} K_{C',N-2} \tag{7}$$

The above relationship is when $KC,N = KC',N-2 = 1$. It is the eigenvector M_{CC} ' associated with the largest eigenvalue. Since this vector of numbers is one, it does not contain useful information; therefore, the eigenvector corresponding to the second largest eigenvalue is used instead. It is the vector that shows the largest amount of variance and is used to measure the economic complexity index; therefore, economic complexity can be defined as:

$$ECI = \frac{\vec{K} - \langle\overrightarrow{K}\rangle}{se\ (\overrightarrow{k})} \tag{8}$$

In relation (8), Se Indicates deviation from the standard, the symbol $\langle\rangle$ represents the mean, $\vec{K}$ is the eigenvector of the matrix, and the matrix M_{cc} ' is related to the second largest value (Sepahvand et al., 2021).

Measuring financial risk

The overall objective of the financial risk rating is to measure a country's ability to finance and pay official and commercial financial obligations and liabilities. This process is done by considering risk points in a group of considered factors called financial risk components. The minimum score that can be assigned to each component is zero. The lower the total risk score of each component, the higher the risk, and the higher the total risk score, the lower the risk. In general, if the considered scores of any component are less than 50% of the total, that component can be considered very dangerous. Therefore, if the points are in the range of 50-60%, it is high risk; in the range of 60-70%, medium risk; in the range of 70-80%, it is low risk; and finally, in the range of 80-100%, it is very low risk. Table (1) shows the risk components, ratios (%), and points for measuring the financial risk rating.

Table 1. Risk components, ratios (%), and points of financial risk

Sequence	Component	Ratio (%)	Points
1	Foreign Debt % GDP	0 to 200	10 to 0
2	Debt Service % XGS	0 to 45	10 to 0
3	Current Account as % XGS	25 to -120	15 to 0
4	Net Liquidity in Months	15 to 0	5 to 0
5	Exchange Rate Stability	-0 to 100	10 to 0
	Total		50

Source: Methodology ICRG, (2014)

Generally, a financial risk rating of 0.0% to 24.9% represents very high risk, 25% to 29.9% high risk, 30% to 34.9% moderate risk, 35% to 39.9% low risk, and 40% or more very low risk (ICRG Methodology, 2014).

Measuring economic risk

Economic risk is the risk of changing the economic structure of a country or the continuous fluctuation of the exchange rate and economic laws of that land to the extent that it reduces or slows down the rate of return of foreign and domestic investments in that country (Zare et al., 2021).

The general purpose of an economic risk rating is to provide indicators to check and measure a country's current economic strengths and weaknesses. In general, when the economy of a country has more strengths, it has a low economic risk, and if the weaknesses of the economy are more than its strengths, it has a high economic risk. These strengths and weaknesses of the economy are checked by assigning risk points to a group of factors and indicators determined by the name of economic risk components. The minimum score assigned to each component is zero, while in the overall economic risk assessment, the maximum score depends on the fixed weight of that component.

Finally, if the total score calculated for economic risk is low, it indicates a higher economic risk, and the higher the total score calculated for economic risk is, it indicates a lower economic risk.

Generally, if the calculated scores are less than 50% of the total, that component can have a very high risk for the economy.

If the points are in the range of 50-60%, it is high risk; in the range of 60-70%, it is medium risk; in the range of 70-80%, it is low risk; and in the range of 80-100%, it is very low risk.

However, assuming this is a general recipe for calculating economic risk, a better rating in other components can compensate for a poor risk rating in another component. Table (2) shows the risk components, Ratio, and points for measuring the economic risk rating.

Table 2. Risk components, Ratio, and points of economic risk

Sequence	Component	Ratio	Points
1	GDP Per Head (% of average)	250 plus to 9.9	5 to 0
2	Real GDP Growth (Change (%))	6.0 plus to -6.0 below	10 to 0
3	Annual Inflation Rate (Change (%))	< 2.0 to - 130.0 plus	10 to 0
4	Budget Balance (% GDP)	4.0 plus to -30.0 below	10 to 0
5	Current Account (% GDP)	10.0 plus to -40.0 below	15 to 0
	Total		50

Source: Methodology ICRG, (2014)

So, in general, the economic risk rating of 0.0% to 24.9% indicates very high risk, and 25% to 29.9% indicates high risk. Also, 30% to 34.9% indicates moderate risk, 35% to 39.9% is low risk, and 40% or more is very low risk (The International Country Risk Guide, 2014).

Measuring political risk

The main purpose of the political risk rating is to provide a comparative gadget for assessing the political stability of the countries covered by the ICRG. This is done by assigning risk points to a group of Preset factors called political risk components. The minimum score that can be assigned to each component is zero. At the same time, the maximum score assigned to each component in the overall assessment of political risk depends on its fixed weight. Finally, the lower the total risk score, the higher the risk, and the higher the calculated total score for political risk, the lower the risk. Table (3) shows the components of political risk, including risk components, weights, and ranking order of political risk (ICRG Methodology, 2014).

Table 3. Risk components, weights, and sequence of political risk

Sequence	Component	Points (maximum)
1	Government Stability	12
2	Investment Profile	12
3	External Conflict	12
4	Internal Conflict	12
5	Socioeconomic Conditions	12
6	Corruption	6
7	Military in Politics	6
8	Religious Tensions	6
9	Law and Order	6
10	Ethnic Tensions	6
11	Democratic Accountability	6
12	Bureaucracy Quality	4
Total		100

Source: Methodology ICRG, (2014)

B-Nonlinear Autoregressive Distributed Lag Model Approach (NARDL)

The research method used in this research is the Nonlinear Autoregressive Distributed Lag Model Approach (NARDL). This model can determine the long-term asymmetric and nonlinear relationship between variables. Also, this method distinguishes between short-term and long-term effects of independent variables on dependent variables.

It should be noted that even if all these things can be tested through the VECM model, again, these models suffer from the problem of convergence created due to the increase in the number of variables. In addition, unlike other error correction models where the correlation degree of the time series must be the same, the NARDL model removes this limitation and allows different degrees of correlation (Hoang et al., 2016).

$$\Delta SUK_t = a_0 + \rho SUK_{t-1} + \theta_1^+ ECI_{t-1}^+ + \theta_2^- ECI_{t-1}^- + \theta_3^+ RFIN_{t-1}^+ +$$
$$\theta_4^- RFIN_{t-1}^- + \theta_5^+ RECO_{t-1}^+ + \theta_6^- RECO_{t-1}^- + \theta_7^+ RPOL_{t-1}^+ + \theta_7^- RPOL_{t-1}^- +$$
$$\sum_{i=0}^{p} \alpha_1 \Delta SUK_{t-i} + \sum_{i=0}^{q} \alpha_2 \Delta ECI_{t-i}^+ + \sum_{i=0}^{q} \alpha_3 \Delta ECI_{t-i}^- + \sum_{i=0}^{q} \alpha_4 \Delta RFIN_{t-i}^+ +$$
$$\sum_{i=0}^{q} \alpha_5 \Delta RFIN_{t-i}^- + \sum_{i=0}^{q} \alpha_6 \Delta RECO_{t-i}^+ + \sum_{i=0}^{q} \alpha_7 \Delta RECO_{t-i}^- +$$
$$\sum_{i=0}^{q} \alpha_8 \Delta RPOL_{t-1}^+ + \sum_{i=0}^{q} \alpha_9 \Delta RPOL_{t-1}^- + \mu_t \tag{9}$$

In equation (9), a_j with i=1, 2,3,....8 are used for short-term coefficients and θ_i for long-term coefficients. It should be noted that short-term analysis is used to evaluate the immediate effects of changes in the exogenous variable on the dependent variable. In contrast, long-term analysis is used to measure the reaction time and the speed of adjustment towards the equilibrium level. SUK_t: Represents sukuk market development (the amount of sukuk issuance); ECI_t: economic complexity; $RFIN_t$: financial risk; $RPOL_t$: political risk; $RECO_t$: economic risk. Also, p and q represent the optimal number of intervals of dependent variable SUK_t and independent variables ECI_t‹ $RECO_t$ ‹ $RFIN_t$ ‹ , $RPOL_t$, which can be determined through Akaike's criterion (AIC). Independent variables will be decomposed into positive and negative partial sums for their increases and decreases. This breakdown will be as follows:

$$x_t^+ = \sum_{j=1}^{t} \Delta x_j^+ = \sum_{j=1}^{t} \max(\Delta x_j, 0) \tag{10}$$

$$x_t^- = \sum_{j=1}^{t} \Delta x_j^- = \sum_{j=1}^{t} \min(\Delta x_j, 0) \tag{11}$$

Where X_t represents the variables ECI_t ‹ $RECO_t$ ‹ $RFIN_t$ ‹ $RPOL_t$, in linear relationships, positive and negative shocks do not differ, and their effect is the same. However, in nonlinear relationships, the impact of positive and negative shocks may be different. Therefore, the use of the Toda-Yamato test can allow the distinction between positive and negative shocks in nonlinear effects. The integral variables can be represented as a random step process in the following general form (Shin et al., 2014).

$$Y_t = Y_{t-1} + e_{1t} = Y_0 + \sum_{i-1}^{t} e_{1t} \text{ and } X_t = X_{t-1} + e_{1t} = X_0 + \sum_{i-1}^{t} e_{2t} \tag{12}$$

Where t=1,2,3,...T, X_0, and Y_0 represent initial values and e_{1t} and e_{2t} represent error sentences. Also $e_{1i}^+ = \max(e_{1t}, 0)$ and $e_{2i}^+ = \max(e_{2t}, 0)$ represent positive shocks and $e_{1i}^- = min(e_{1t}, 0)$ and $e_{2i}^- = \min(e_{2t}, 0)$ represent negative shocks.

In an asymmetric framework, the variables are represented by the following equations:

$$Y_t = Y_{t-1} + e_{1t} = Y_0 + \sum_{i-1}^{t} e_{1i}^+ + \sum_{i-1}^{t} e_{1i}^- \tag{13}$$

$$X_t = X_{t-1} + e_{2t} = X_0 + \sum_{i-1}^{t} e_{2i}^+ + \sum_{i-1}^{t} e_{2i}^- \tag{14}$$

In fact, the approach used in this research is a new technique to identify nonlinear and asymmetric relationships between economic variables in the short and long term. This method was presented by Shin et al. and is actually an extended technique of the linear ARDL pattern. This method, like the ARDL model, has advantages over other co-accumulation methods (Khezri & Samimi, 2021), which are: a) In this model, regardless of whether the variables are I (0) and I (1) or mutually accumulated, is being used. b) This technique does not include short-term dynamics in the error correction section. c) This method can be used with a small number of observations. d) This method can be used even when explanatory variables are endogenous. z) This method can simultaneously examine nonlinear and asymmetric relationships in the short and long term (Yeap & Lean, 2017), and since asymmetric relationships can exist in the long term or short term or both, the impact of positive shocks and the negativity of independent variables on the dependent variable can be investigated by short-term and long-term separation (Ariz et al., 2017).

Research model

In this research, in order to investigate the effects of financial, political, and economic risk shocks along with economic complexity on the development of the sukuk market in Iran, the following model is presented, which is estimated seasonally and in the period of $2010\ Q_1 - 2022\ Q_4$.

$$\text{Ln}SUK_t = a_0 + a_1 \text{LnRFIN}_t + a_2 \text{LnRECO}_t + a_3 \text{LnRPOL}_t + a_4 \text{lnECI}_t + \varepsilon_t$$

Where SUK_t is sukuk market development (sukuk issuance rate), $RFIN_t$ is financial risk, $RECO_t$ is an economic risk, $RPOL_t$ is political risk, and ECI_t is economic complexity. The information and data needed to conduct this research based on the variables of the proposed model were used from the capital Market central asset management company in Iran, the International Country Risk Guide (ICRG) database, and the MIT University website2 Also, Eviews3 software was used to estimate the model.

Results

Before estimating the model, the unit root test should be performed to prevent false regression, and the stationarity of the variables should be evaluated. Therefore, this test was performed using the generalized Dickey-Fuller (ADF)

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[2] http://atlas media.Mit. eud

method, and its results are listed in Table (4). As it is known, all the variables were not stationary at the level, but after differentiation, variables at level one became stationary.

Table 4. ADF unit root test results

Variables	LEVEL (0)		LEVEL (1)	
	t statistic	Prob	t statistic	Prob
$\ln SUK_t$	-0.829427	0.3624	-5.884797**	0.0000
$\ln RFIN_t$	-2.601564	0.0993	-6.078410**	0.0000
$\ln RECO_t$	-1.988216	0.2910	-4.221058**	0.0016
$\ln RPOL_t$	-0.979657	0.7538	-5.385026**	0.0000
$\ln ECI_t$	-0.033655	0.9705	-6.630274**	0.0000

Note: *, ** and *** represents significance at 1%, 5% and 10% level respectively

Source: Research findings using Eviews 13 software

In this part, we use the BDS test (Brock et al. test) to check linear and nonlinear dependence that shows possible independence deviations.

This test determines whether the residuals are independent and equally distributed and whether there is a nonlinear relationship between the model variables. Therefore, based on the results of the Z test in the degree of interruptions 2 to 6, which are listed in table (5), the existence of a nonlinear relationship between the variables of the proposed model of this research is confirmed.

Table 5. BDS test results for Linearty or Independency of variables

Embedding Dimension (m)	BDS Statistic	Z Statistic
2	0.006299	0.377518
3	-0.009842	-0.363948
4	-0.014230	-0.435512
5	-0.00548	-0.0158411
6	0.00451	0.130648

Source: Research findings using Eviews 13 software

Now, the long-term relationship between the variables of the model was investigated using bond ardl test. Therefore, according to the results of this test recorded in Table (6), the calculated F statistic is higher than the critical value of the upper limit at the level of 5%, so the long-term relationship between the variables of the model is confirmed.

Table 6. ARDL BOND test results

Calculated F-statistics	5.133243	
Significance	I0 Bound	I1 Bound
10%	3.03	4.6
5%	3.47	4.57
1%	4.4	5.72

Note: *, ** and *** represents significance at 1%, 5% and 10% level respectively

Source: Research findings using Eviews 13 software

In this part, according to the results obtained from the bond test, which indicates the existence of a long-term relationship between the variables of the model, we will examine the long-term and short-term shocks between the variables using the nonlinear autoregressive distributed lag (NARDL). In this regard, the short-term results are shown in Table (7), and the long-term results are shown in Table (8).

Table 7. Short-term results of Nonlinear Autoregressive Distributed Lag Model (1,1,1,2,0,0,0,1,2) Approach

Dependent variable: Sukuk market development			
short term			
Variables	Coefficient	t statistic	Prob
DLSUK(-1)	0.57	10.10162	0.0000
$DlnRPOL_t^+$	-1.15	-0.439623	0.6663
$DlnRPOL_{t-1}^+$	8.46	2.41028	0.0221
$DlnRPOL_t^-$	-5.05**	-1.795511	0.0523
$DlnRPOL_{t-1}^-$	-14.66**	-4.044152	0.0003
$DlnRFIN_t^+$	5.45**	10.457816	0.0000
$DlnRFIN_{t-1}^+$	7.54**	7.62280	0.0000
$DlnRFIN_{t-2}^+$	3.88**	12.036912	0.0000
$DlnRFIN_t^-$	1.03	1.57892	0.1245
$DlnRECO_t^+$	0.91**	2.650866	0.0432
$DlnRECO_t^-$	-0.34	-1.416406	0.1666
$DlnECI_t^+$	-0.58**	-2.52963	0.0486
$DlnECI_{t-1}^+$	0.60**	2.848354	0.0077
$DlnECI_t^-$	1.52**	9.421297	0.0000
$DlnECI_{t-1}^-$	-1.79**	-4.964514	0.0000
$DlnECI_{t-2}^-$	-0.98**	0.850097	0.0006
ECM(-1)	-042**	-9.317394	0.0000
$0.99 R^2$: Durbin-Watson:2.4		Serial correlation: 2.392570 (prob): 0.1324	
F-statistic: 312.2003 Prob: 0.000000		0.779221 Heteroskedasticity Test: 0.5698 (prob):	

Note: *, ** and *** represents significance at 1%, 5% and 10% level respectively
Source: Research findings using Eviews 13 software

The results obtained from the NARDL test in the short term indicate that: a) the impact of the positive shock of political risk is not statistically significant. At the same time, the negative shock of political risk, along with its lags, is statistically significant. In other words, investors pay more attention to negative shocks that involve more political risk in the short term and reduce their participation in financial markets, including sukuk bonds. b) The effect of positive shock of financial risk along with one and two lags is statistically significant. At the same time, statistically significant negative shocks were not obtained. It is clear that participants in the sukuk market react quickly to positive financial shocks in the short term and increase their investments in the financial markets, including the sukuk market, which will lead to sukuk market development. c) The effect of the positive shock of economic risk is statistically significant at the 5% level. While negative shocks were not statistically significant. Economic actors have reacted positively to the positive economic risk shocks that show the improvement of economic indicators (GDP per capita, real economic growth, inflation rate, budget deficit, risk reduction) and increased their participation in the financial markets to finance investment projects. This will lead to the development of the Sukuk market. d) Positive and negative shocks of economic complexity have been obtained at a significant level of 5%. In this way, the positive impact of economic complexity shock occurs after one lag, and the negative economic complexity shock, along with its lags, reduces the development of the Sukuk market.

In the following, we examine the impact of research variables shocks on the Sukuk market in the long term, which is recorded in Table (8).

Table 8: Long-term results of the Nonlinear Autoregressive Distributed Lag Model Approach

Dependent variable: Sukuk market development			
Long- term			
Variables	Coefficient	t statistic	Prob
$lnRPOL_t^+$	17.25	10.154926	0.0000
$lnRPOL_t^-$	-47.54**	-8.009791	0.0000
$lnRFIN_t^+$	13.31**	6.472057	0.0000
$lnRFIN_t^-$	-2.45***	-1.584085	0.0974
$lnRECO_t^+$	2.15**	2.375249	0.0339
$lnRECO_t^-$	-0.82	-1.099589	0.2800
$lnECI_t^+$	2.96**	14.272951	0.0000
$lnECI_t^-$	0.05	0.295681	0.7694
C	16.18093**	43.435354	0.0000
@TREND	-0.641514**	-5.515524	0.0000

Note: *, ** and *** represents significance at 1%, 5% and 10% level respectively
Source: Research findings using Eviews 13 software

A) The obtained results indicate a significant impact of positive and negative political risk shocks on Sukuk market development in the long term. So, with an increase of one percent in the positive shock of political risk (improvement of political risk), 17.25 percent is added to the Sukuk market development in the long term. Meanwhile, the negative shock of political risk, as much as one percent, will decrease 47.54 percent of Sukuk's market development in the long term. The results indicate a high impact of political risk on Sukuk market development. In addition to the high impact of positive and negative shocks of this type of risk, fluctuations, and negative shocks will have a greater impact on the sukuk market in Iran. b) The impact of positive and negative financial risk shocks on the Sukuk market development in the long term is statistically significant. In this way, with an increase of one percent of positive shock in financial risk (improvement of financial risk), 13.31 percent will be added to Sukuk market development. However, the negative shock in financial risk by as much as one percent reduces 2.45 percent sukuk market development in the long term. c) The positive shock of economic risk on Sukuk market development is statistically significant (at the 5% level) in the long term. In this way, with an increase of one percent positive shock in economic risk (improvement of economic risk), 2.15 percent is added to Sukuk market development in the long term. This significant effect was not observed in the case of negative shock. d) The impact of the positive shock of economic complexity on sukuk market development is statistically significant at the 5% level in the long term. An increase of one percent positive shock in the economic complexity will increase sukuk market development by as much as 2.96 percent in the long term. This significant effect was not observed in the case of negative shock.

The error correction coefficient in this estimate is negative and statistically significant, which shows that 0.42% of the short-term imbalance is adjusted to reach the long-term balance every year. The ranking of the influence of financial, political, and economic risks on Sukuk market development in Iran is reported in Table 9. The results indicate that among the three types of risk, political risk and then financial risk have the most impact on sukuk market development.

Table 9. Ranking of the influence of financial, political, and economic risk in the long term on Sukuk market development

Dependent variable: Sukuk market development		
Variables	Positive shock	Negative shock
Financial risk	-2.45	13.31
Political risk	-47.54	17.25
Economic risk	-.82	2.15

Source: research findings

In the following, cumulative sum (CUSUM) and cumulative sum of square (CUSUMQ) tests were used to check the stability of model coefficients. In these tests, the null hypothesis tests the stability of the parameters at a significance level of 5%. Figures 1 and 2, which show the results obtained from these tests, indicate that the estimated model has structural stability at the level of 5%, and no structural break was observed.
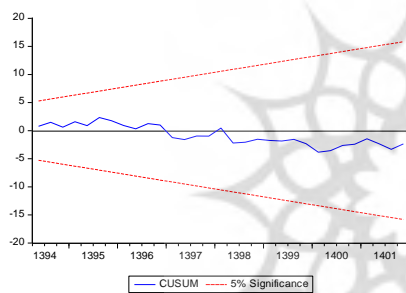

Figure (1): CUSUM test
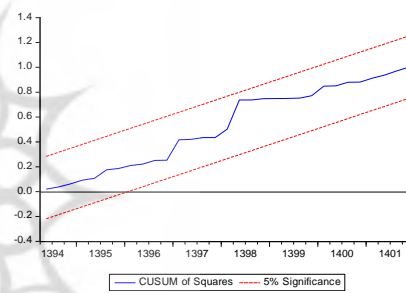
Source: research findings

Figure (2): CUSUMQ test

Source: research findings

Discussion and Conclusion

The research results regarding the impact of financial, economic, and political risk shocks and economic complexity on sukuk market development between 2010-2022 and quarterly frequency using the nonlinear autoregressive distributed Lag model approach (NARDL) in the country are as follows:

a.) The positive and negative shocks of political risk have a significant impact on the Sukuk market in the long term and have the most impact among the types of risk. This impact is evident in the short term in the case of negative shocks with its lags. In other words, negative shocks that indicate more political risk reduce the desire to invest in the sukuk market. The presence of positive shock can create a positive impact in the long term. In other words, if people feel the reduction of political risk in the long term, it increases their desire to participate in this market. Such positive shocks did not have a

significant impact on Sukuk market development in the short term, and this indicates that in the short term, people pay more attention to negative shocks and react to them. Attracting their attention to this market is the presence of positive incentives in the long term. In other words, they do not immediately apply short-term positive shocks in their decisions to participate in this market. The uncertainty caused by high political risk due to problems of information symmetry and economic insecurities has created pessimistic expectations in individuals and investors, which will reduce demand in this market. Changes in each of the political risk components (foreign conflicts, internal conflicts, investment profile, government stability, socioeconomic conditions, corruption, democratic accountability, ethnic tensions, rule of law, militarism, religious tensions, and quality of bureaucracy) that lead to changes in the political risk situation, it can affect the sukuk market. The lack of improvement of these components, which has led to more political risk, can cause uncertainty in investing in financial instruments (sukuk) due to instability in the economy. The results of the research also indicated the high harmful effects of this issue on the sukuk market. Things like reducing bureaucracy in the issuance of Sukuk bonds, monitoring and correct implementation of the rules and regulations governing the sukuk market, ensuring the implementation of all general policies of the sukuk market by the government, creating strong institutional foundations for the implementation of political, economic, legal policies, etc. should be prioritized. Policymakers. Such cases can increase the relative participation of the people in the political and social affairs of the society and cause the participation and activity of more groups in the formulation and correct implementation of the rules and regulations of the financial markets, including Sukuk.

b) The positive and negative shocks of financial risk have a significant impact on the sukuk market in the long term, and with the improvement of the financial risk situation in the country, the sukuk market prospers, and when the financial risk situation becomes inappropriate, stagnation occurs in this market. In fact, the increase in the negative fluctuations of financial risk leads to more economic uncertainty in society and causes the formation of pessimistic expectations, which has a negative impact on the Sukuk market. In other words, more financial risk can reduce participation in financial markets, including sukuk, by creating distrust in price changes and adjusting profit margins. Such influence of financial risk was observed for positive shocks in the short term up to two-time lags, and no significant effect was observed for negative shocks. So, the participants in the sukuk market react quickly to positive financial shocks in the short term, which will lead to sukuk market

development. For this reason, politicians and policymakers should consider financial security (stability of exchange rate and interest rate) to reduce financial fluctuations in order to increase investors' confidence in the market

c) The positive shocks of economic risk have a significant impact on the sukuk market in the long and short term. The Sukuk market reacts positively to positive economic shocks that indicate the improvement of economic indicators (gross domestic product per capita, real economic growth, inflation rate, budget deficit) or low economic risk. Any positive shock that indicates the improvement of economic conditions has a positive effect on investment in the country, and accordingly, organizations will turn to issuing more sukuk to increase their financing, which will cause sukuk market development. One of the most important things that affects the risk of financial markets, including the sukuk market, is the risk caused by changes in exchange rates and interest rates. Therefore, by creating economic security (stability of exchange rate and interest rate), governments and policymakers should prioritize the reduction of economic fluctuations in order to increase investors' confidence in the Sukuk financial market. Also, taking appropriate decisions to reduce the government's current expenses and prevent non-yielding or late-yielding projects in order to reduce the government's budget deficit will reduce economic risk or improve its situation.

d) The positive shocks of economic complexity have a significant impact on the sukuk market in the long term, and with the improvement of the economic complexity in the country, the sukuk market will prosper. Such positive affectivity occurs in the short term after one lag. The negative shock of economic complexity, along with its lags, reduces the Sukuk market development in the short term. Positive shocks in economic complexity, which include increasing technical knowledge and exports, have led to the improvement of the trade balance and, as a result, the improvement of financial and economic risk. The reduction of these risks has led to an increase in productive economic investments, and this increases the supply and demand of Sukuk in order to finance these projects, which ultimately leads to Sukuk market development. Therefore, more attention should be paid to knowledge-based organizations in creating complex products that create a competitive advantage for the country. Economic complexity can be improved by using modern knowledge and science. In this regard, the business environment and advantage in exports can be improved by interacting with countries with high technology in the field of producing complex and knowledge-based products. This will increase investment in such products, and therefore, the sukuk market will also develop.

References

Ajide, M. Osinubi, B. Ojeyinka, B. (2023). Does the Insurance Sector Matter for Economic Complexity? Organizations and Markets in Emerging Economies, 14 (3), 536–561. https://doi.org/10.15388/omee.2023.14.4

Atlas of Economic Complexity. (2013). https://atlas.cid.harvard.edu/glossary

Boukhatem, J. (2022). How does financial risk affect sukuk market development? Empirical evidence from ARDL approach. Heliyon. 8 (5), 1-7. https://doi.org/10.1016/j.heliyon.2022.e09453

Bailey, R. (2005). The Economics of Financial Markets, Cambridge University Press. https://doi.org/10.1017/CBO9780511817458

Capital Market Central Asset Management Company. (2016). capital financing instrument (Sukuk). 1(Special Issue): 5-49. https://sukuk.ir/images/pdf/SUKUK-EBOOK-issue.pdf

Gonzalez- Gomez-, J. Uribe, J. Valencia, O. (2023). Does economic complexity reduce the probability of a fiscal crisis? World Development,168, 106250. https://doi.org/10.1016/j.worlddev.2023.106250

Hoang T., Lahiani A. & Heller D. (2016). Is gold a hedge against inflation? New evidence from a nonlinear ARDL approach. Economic Modelling, 54: 54-66. https://doi.org/10.1016/j.econmod.2015.12.013

IIFM Sukuk database. (2023). 1-202 https://www.iifm.net/frontend/general-documents/f0a12d4a6880f8e3bc23a23a03baa8e61693983390.pdf

Irawati, D. Fadhila, L. (2024), Do Underlying Assets, Duration, Default Risk Level, Sukuk Liquidity, and Profitability Affect Sukuk Yield?, International Journal of Accounting & Finance in Asia Pacific, 7 (1), 46-61. https://doi.org/10.32535/ijafap.v7i1.2898

Khansari, R. (2018). Application of sukuk in strengthening banks' capital. Monetary and Banking Research Institute, 146: pp. 76–80.

Khezri, H., & Samimi, A. (2021). Asymmetric effects of exchange rate shocks on the money demand function in Iran. Journal of Business Quarterly, 25 (100): 1-24.

https://doi.org/10.22034/ijts.2021.246917

Khalid Afifi, Z. (2024). Financial Sukuk: Concept, Legal Principles, and Types, Asian Journal of Economics, Business and Accounting, 24 (2), 98-106. https://doi.org/10.9734/AJEBA/2024/v24i21224

Mirza A.R., Sultana N. (2020). Impact of economic factors to determine the sukuk market development: an empirical analysis. Int. J. Islamic Econ. Govern,1(1): 65–83. https://doi.org/10.1108/IMEFM-03-2020-0105

Mseddi, Slim. (2023). International issuance of Sukuk and companies' systematic risk: An empirical study, Borsa Istanbul Review, 23 (3), 550–579. https://doi.org/10.1016/j.bir.2022.12.007

Nazarpour, M., Khazaee, A. (2010). Risk coverage of the Istisna' Sukuk in the Security Market. Economic Policies, 18: 3–26. https://doi.org/10.22096/esp.2010.26219

Panahi, M., Rezaei, A. (2021). The effect of the development of the Sukuk market on the capital adequacy ratio of Islamic banks. Iran's Economic Journal, 18 (36): 33-48. https://doi.org/10.30471/iee.2022.8073.2161

Roslen, S.N., Chua, M.-S. Ruslan, R.A. (2024). Long-run asymmetric effects of financial risks on Sukuk market development: empirical evidence from Malaysia. Journal of Islamic Accounting and Business Research, ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JIABR-08-2022-0200

Sepahvand, R., Sayeh Miri, A., Shirkhani, A. (2021). The impact of economic complexity on environmental performance in MENA countries. Economic Research Quarterly (sustainable growth and development), 21 (3): 177-208. https://dorl.net/dor/20.1001.1.17350794.1397.23.89.4.2

Shahabadi, A., Arghand, H. (2018). The impact of economic complexity on social welfare in selected developing countries. Iranian Journal of Trade Studies, 23(89): 89-122. https://dorl.net/dor/20.1001.1.17350794.1397.23.89.4.2

Shahabadi, A., Omidi, V., AliKaramzadeh, N. (2022). The impact of economic complexity on the exchange rate in selected knowledge-based developing countries. Economics and Modeling Quarterly, 13(1): 1-25. https://doi.org/10.29252/jem.2022.226013.1722

Sadeghi, M., Kashian, A., Samimi, A. (2014). Economics of Financial Markets. Imam Sadegh University Publications, first edition.

Suciningtias, S. (2019). Macroeconomic Impacts on Sukuk Performance in Indonesia: Co-integration and Vector Error Correction Model Approach. Journal of Islamic Finance, 8: pp. 117–130. https://doi.org/10.31436/jif.v8i0.351

Shin, M. Lung, M. Lai, Y. Jhy Lin, F. (2014). The Impact of Industrial Clusters on Human Resource and Firms Performance. Journal of Modelling in Management,

9 (2): 141-159. https://doi.org/10.1108/JM2-11-2012-0038

The International Country Risk Guide (ICRG). (2014). https://www. prsgroup.com/wp-content/uploads/2014/08/icrgmethodology.pdf

Zhu, S., & Li, R. (2016). Economic complexity, human capital, and economic growth: Empirical research based on cross-country panel data. Applied Economics, 49(38): 3815–3828. https://doi.org/10.1080/00036846.2016.1270413

Zubiri, H and Motmani, M (2020). Human capital and the complexity of the economy in Iran. QJER , 20 (3): 145-166. http://ecor.modares.ac.ir/article-18-33426-en.html

Zare, M. H., Ansari Samani, H., simin, N., & Mahmoodi, Z. (2021). The Effect of Economic, Political and Financial Risk on Capital Flight: Dynamic Panel Approach. new economy and trad, 16(1), 95-127. https://doi.org/10.30465/jnet.2021.7104

Yeap, G. P., & Lean, H. H. (2017). Asymmetric inflation hedge properties of housing in Malaysia: New evidence from nonlinear ARDL approach. Habitat International, 62: pp. 11–21. https://doi.org/10.1016/j.habitatint.2017.02.006

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