# Modern Finance

*Article*

# Institutional quality and Islamic financial development

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**Abstract:** The Islamic financial system has become an important source of financing for many Muslim and non-Muslim countries. Therefore, this paper examines the role of institutions in facilitating the development of Islamic financial institutions. The study covers the period 2013-2021 for a panel of 11 leading economies in Islamic finance and employs fixed effects with the Driscoll and Kraay (1998) estimator. The results show a positive impact of effective governance on the development of Islamic finance. However, regulatory quality has a significant negative impact on the development of Islamic finance. Thus, we argue for the improvement of critical institutions that include political, legal, governmental, and regulatory aspects.

**Keywords:** sukuk, Islamic banks' assets, Islamic financial development, institutional quality, fixed effects, Driscoll-Kraay estimator

## 1. Introduction

Islamic finance is an increasingly important component of the global financial system, and its impact on economic growth (Naz & Gulzar, 2022) is of great interest to economists and policymakers. During the COVID pandemic, the Islamic financial system remarkably demonstrated a high degree of resilience. Despite the challenges posed by COVID-19, the global Islamic financial system's total assets as of 2021 stood at $4.0 trillion, a rise of 17% from 2020. Similarly, the global net return in 2021 increased threefold compared to 2020, signaling a better performance (IFR, 2022). This is attributable to sound financial policy, vibrant financial markets, and strong macroeconomic fundamentals. Accordingly, a greater percentage of Islamic finance's assets comprise Islamic banking and bonds (IMF, 2015). In this regard, Figure 1 shows the persistent growth in Islamic banking assets between 2014 and 2020. In less than a decade, Islamic financial assets rose from about US$2 trillion in 2014 to US$3.37 trillion in 2020, representing 70% cumulative growth. It is expected to reach close to US$5 trillion in 2025 due to the resilience and positive performance of the industry.

However, the role of institutional quality in the development of Islamic finance has not received the necessary attention in the literature. Indeed, many studies have examined the factors responsible for the growth and development of Islamic finance in both Muslim and non-Muslim countries, but little attention has been paid to the role of institutional quality in the development of Islamic financial institutions and markets. In particular, Basyariah, et al. (2021) and Basyariah, et al. (2020) explicitly acknowledge the role of institutional quality indicators in examining the development of sukuk markets. However,

the institutional indicators are not as comprehensive as those analyzed in our current research. The economic implications of institutions are formally recognized by North (1990), who sees institutions as "the rules of the game in a society, or more formally ... the humanly devised constraints that shape human interaction. As a result, they structure incentives in human exchange, whether political, social or economic". Institutions shape the character of economic agents and their welfare. These include public rules deliberately created to ensure the survival of property rights and the enforcement of contracts (Acemoglu, Johnson & Robinson, 2000; Fukuyama, 2008; Ekpo, 2013).
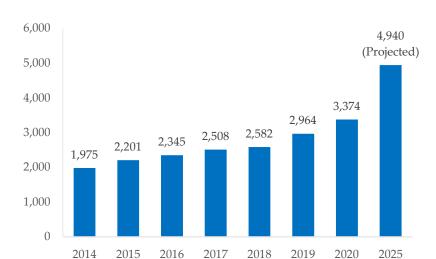
**Figure 1.** Islamic Financial Assets [$ US billion]



*Source: ICD Refinitiv Islamic Finance Development Report*

Furthermore, Capasso (2004) points out the paramount importance of quality institutions to ensure that resources are channeled into productive activities. Therefore, the relationship between Islamic finance and institutional quality in this regard is paramount, especially in a market free of gharar (uncertainty) and interest to ensure fearless dealings among players. Similarly, Chinn and Ito (2006) show that quality institutions are a panacea for financial liberalization. Similarly, trade openness and foreign investment in financial instruments are direct functions of a country's well-developed institutions. A well-established legal system and property rights positively correlate with financial development in both the short and long run (Mishkin, 2009).

To address the gap, the research dissects institutional quality into political, legal, governmental, corruption, and regulatory categories, and analyzes their distinct effects on Islamic finance. Ultimately, the study aims to examine the role of institutional quality in the development of Islamic finance in selected Muslim countries. As part of the pre-estimation tests, the research conducts two variants of unit root tests, including LLC (2002) and IPS. The results of LLC (2002) show that all panel variables are stationary at level. Based on cointegration results, four out of five statistics confirm significant long-run equilibrium between Islamic bank assets and institutional variables, and between sukuk and institutional factors. The results highlight the implications of institutional quality in influencing the equilibrium position of Islamic financial development over the long term. In addition, the results of panel regression reveal the significant effects of effective governance and the rule of law in promoting Islamic financial development. However, political stability and regulatory quality have a negative influence on driving Islamic financial development. However, control of corruption shows statistical evidence of influencing the development of the Islamic financial industry in the countries under investigation.

This study contributes to the literature in three ways. First, it examines the role of institutions in Islamic financial development. It looks into two aspects of Islamic financial development: Islamic banking and the sukuk market. Previous studies did not integrate Islamic banking and the sukuk market in examining the effect of institutional factors on Islamic financial development. However, this research conducts a comprehensive examination of the implications of governance quality in promoting a vibrant Islamic financial industry. Second, it addresses the endogeneity associated with the institutional quality among the cross-sections. In this regard, a model that mitigates heteroscedasticity and spatial and temporal correlations is employed to provide robust results. Again, the study has both academic and practical implications. From an academic perspective, the theoretical and conceptual literature should give equal priority to improving the institutional framework for the development of Islamic financial institutions. This means integrating institutional studies into Islamic finance teaching and research. From a practical point of view, bureaucrats and regulators should strengthen financial regulation in particular, and the political system to increase investors' and stakeholders' confidence in the Islamic financial market. Thus, the main objective of this study is to investigate the role of institutional quality in the development of Islamic finance in selected Muslim countries.

The rest of the paper proceeds as follows. Section 2 reviews the theoretical and empirical literature as well as develops the research hypotheses. Section 3 delves into the research methodology by delineating sampling, data sourcing, and modeling. Section 4 presents and discusses the research findings. Section 5 concludes the paper, discusses the implications alongside future direction, and proffers policy recommendations.

## 2. Literature review

### 2.1. Theoretical underpinnings

Theoretical literature claims a connection between institutions and finance (Beck & Levine, 2004; Haber et al., 2008). According to Beck and Levine (2004), the theory of "law and finance" views the relationship between legal institutions and financial development as self-reinforcing. It argues for the influence of effective law enforcement on the development of financial institutions. It asserts that the degree of stakeholders' participation and confidence in the financial markets is largely dependent upon the efficiency of law enforcement in a country. For example, an efficient private property system makes investors confident enough to invest in financial securities such as stocks and bonds. Beck and Levine (2004, p. 7) succinctly summarize that "the degree of protection of private investors is a crucial determinant of financial development.".

Besides, Haber et al. (2008) discuss the role of political institutions as crucial for financial development. The political institution view holds that there are conflicting interests between financial institutions and political actors. Effective government is necessary for financial development, while the government requires financing from financial institutions to fund its activities. As a result, sound governance and regulations are necessary to check the excess of political actors and protect investors and other participants in the financial markets. Furthermore, Haber et al. (2008) underscore the synergy between government institutions, the banking industry, and the capital market. Private banks and other financial institutions act as placement agents for the sale of government bonds, while corporate stocks and bonds are traded in the stock market. Likewise, both governments and financial institutions borrow from each other. Hence, the financial system requires conducive political institutions such as bureaucracy and effective regulations to ensure sustained financial development.

### 2.2. *Empirical review*

2.2.1. Institutional quality and Islamic financial development

Muslims hold that the Quran and hadith are the main sources of Shariah's rulings, which serve as the foundation for all aspects of human life. The financial system in Muslim endeavors is part of a comprehensive way of life. The Muslim man is the panacea for the successful operation of Islamic finance amidst a conventional financial system. According to Al-Jarhi (2017), the operation of conventional finance is based on interest rate operations in the money and capital markets, and conventional banking is not exceptional when it comes to loanable funds and other financial products. Seven verses in the glorious Quran and several hadiths prohibit 'riba' (usury) in financial and commodity dealings. Out of empathy and sympathy for mankind, the Almighty forbade riba in all its forms and declared its practice as declaring war with Allah. However, there is a consensus among scholars on the illegality of dealing with usury.

Previous research has grossly understudied the link between institutional quality and Islamic financial development (Said & Grassa, 2013; Imam & Kpodar, 2013; Smaoui & Khawaja, 2017; Basyariah et al., 2020; Basyariah et al., 2021). While Imam and Kpodar (2013) control for the quality of institutions in explaining the economic influencers of Islamic banks' total assets, other authors (Said & Grassa, 2013; Smaoui & Khawaja, 2017; Basyariah et al., 2021) account for institutions in analyzing sukuk market development. In this context, Basyariah et al. (2021) employed GMM and found that the rule of law significantly promotes the sukuk market; however, other governance indicators appear insignificant. Likewise, Basyariah et al. (2020) examine the effect of institutional quality on sukuk in a panel of five economies. The findings revealed that the rule of law and government effectiveness have positive implications for developing sukuk. In contrast, regulatory quality does not affect sukuk development.

By surveying thirteen economies, Smaoui and Kwaja (2017) reveal that control of corruption is a propeller while law and order are inhibitors of sukuk development; however, bureaucratic quality was not significant. Similarly, Said and Grassa (2013) discovered that the rule of law and the suppression of corruption significantly influence sukuk development, while regulatory quality has no bearing on sukuk. Likewise, Imam and Kpodar (2013) explore Islamic banking development across the globe from 1992 to 2006. Utilizing the Tobit model, the authors reveal that the rule of law and regulatory quality do not significantly explain Islamic banking expansion.

In the conventional context, few studies examine the role of institutional quality in financial development. For example, Bhattacharya and Hodler (2014) study the effect of institutional quality at the interface of natural resource revenue and financial development. The conclusion emanating from the nexus revealed that weak institutions in a country tend to worsen contract enforcement, which can cause serious harm to the overall growth and development of finance. Conversely, strong institutions play a vital role in strengthening contracts and ensuring transactions are free from exploitation by the parties involved. In a related study, Costa and Santos (2013) used the rule of law as the institutional variable to examine the interlinkage between institutions, resources, and hydrocarbon royalty. They found violations on the part of the institutions as a critical factor explaining failure and corruption in oil revenue allocation. Similarly, Yuxiang and Chen (2011) found a negative relationship between resource abundance and financial development in the panel of Chinese provinces. Huang (2010), in his study of developed and developing countries, notes that good institutions enhance financial development. Empirical results show that institutional quality has a positive impact on financial development in the short run, especially for developing economies.

Rathinam and Raja (2010) investigate the long-run causal relationship between institutional quality and financial development using rules, regulations, and procedural laws to measure institutional effectiveness. The outcome revealed a causal relationship between legal and institutional performance and financial sector development in India. In

a related study, Zingales (2003) found evidence of associating the quality of the institutions with financial development, though the impact was presumed to be weak. In the case of De Soto (2000), the absence of property rights is considered the greatest threat to financial sector development. This is in agreement with the findings of Claessens & Leaven (2003) and Mishkin (2009). Similarly, Chin and Ito (2006) controlled for the legal development in the study of one hundred and eight countries. They found that financial openness shoots equity and banking financial development within the threshold level of legal development. In a similar panel study of developed and developing countries, Law and Azman-Saini (2012) investigate the effect of institutional quality on financial development. Financial development indicators are divided into two categories: banking sector development and stock market development. Using the dynamic system GMM estimator, the findings revealed that a quality institutional environment is paramount in explaining financial development. Based on our foregoing discussion, we propose the following research hypotheses:

*H1: The rule of law has a significant positive relationship with Islamic financial development.*
*H2: Control of corruption significantly upscale Islamic financial development.*
*H3: Political stability has a significant positive relationship with Islamic financial development.*
*H4: Government effectiveness significantly promotes Islamic financial development.*
*H5: Regulatory quality significantly propels Islamic financial development.*

### 2.2.2. Macroeconomic fundamentals and Islamic financial development

Apart from institutions, previous studies have shown the significance of macroeconomic factors in shaping the financial development of the Islamic financial industry. For example, Abduh and Omar (2012) pioneered research on the drivers of Islamic banking expansion. Specifically, Abduh and Omar (2012) utilized the ARDL model between 2003 and 2010 using quarterly data. They establish a feedback causality between the growth and financial development of Islamic banking in Indonesia. Based on their findings, sound Islamic finance stimulates economic expansion, and a booming economy creates a favorable atmosphere for Islamic finance to flourish.

Besides, other empirics (e.g., Sabiu & Abduh, 2020; Al Fathan & Arundina, 2019; Zarrouk et al., 2017; Tabash & Dhankar, 2014) document the interconnection between Islamic finance and economic performance. Ledhem and Mekidiche (2022) showed that sukuk and economic performance are significantly associated in a panel of Brunei, Indonesia, and Malaysia. Another empirical study focusing on Indonesia by Al Fathan and Arundina (2019) found evidence of significant one-way causality from sukuk to growth, while Islamic banking and growth were not interconnected. Similarly, Yildrim et al. (2020) document the long-run equilibrium between growth and sukuk. Again, Zarrouk et al. (2017) revealed that real per capita income unilaterally propels the development of Islamic banks in the United Arab Emirates. The authors conclude that the progress of the UAE's Islamic banking industry depends on its level of economic performance. However, Baita et al. (2023) found no significant effect of economic size, inflation, or trade openness on driving Islamic financial development through sukuk market development.

## 3. Data and methods

### 3.1. Sample and data

This empirical investigation covers the leading economies in the operation of the Islamic financial system: Bangladesh, Brunei, Indonesia, Kuwait, Malaysia, Nigeria, Oman, Pakistan, Saudi Arabia, Turkey, and the United Arab Emirates. We employ annual data, and the period is from 2013 to 2021. The proxies of Islamic financial development include bank total financial assets and banks' sukuk holdings, following the work of Al Fathan and Arundina (2019). These proxies are in millions of dollars, and the data are taken from the statistical, economic, and social research and training centers for Islamic countries

[SESRIC]. However, authors (Sabiu & Abduh, 2020; and Abduh & Omar, 2012) measured Islamic financing using log transformation; similarly, Basyariah et al. (2020) expressed sukuk in natural logarithmic form. There has been widespread use of a recent World Bank index as a proxy for institutional quality. Following this convention found in the literature, we collected data on five indicators, namely, control of corruption, government effectiveness, political stability, regulatory quality, and rule of law, from the World Bank's World Governance Indicators (WGI). We exclude voice and accountability following the past studies (Basyariah et al., 2020; Smaoui & Kwaja, 2017; Said & Grassa, 2013), which focus mainly on politics, law enforcement, and regulations. As well, empirical evidence (Basyariah et al., 2021; Basyariah et al., 2020; Smaoui & Kwaja, 2017; Said & Grassa, 2013) documents the role of institutional factors such as effective government, quality of regulations, control of corruption, and rule of law in driving the financial development of the Islamic bond market. Similarly, Imam and Kpodar (2013) control for effective government and regulatory quality in examining the drivers of Islamic banking financial development. We also collect data on macroeconomic indicators from the World Development Indicators (WDI). We take the natural logarithm of total financial assets and sukuk fund variables to stabilize the variance and normalize the data for efficient estimation. Further details about the variables, including definition, code, unit of measurement, and sources, are displayed in Table 1.

**Table 1.** Variable Definitions and Measurement

| S/n | Code | Descriptions | Sources |
|---|---|---|---|
| 1 | lnbankass | Aggregate assets of banking and near-banking institutions offering Islamic financial services consisting of all financial and non-financial assets by local and foreign investors. | SESRIC (2023) |
| 2 | lnsukuk | Value of holdings of Islamic bonds, in the ownership of tangible assets related to specific projects. | SESRIC (2023) |
| 3 | Cocorrup | Control of Corruption measures perceptions of how public power is used for personal gain, covering small and large corruption, plus elite/state "capture". It ranges from around -2.5 to 2.5. | WGI (2023) |
| 4 | Goeffe | Government Effectiveness measures public service quality, civil service autonomy, policy execution, and government commitment. The standard-normal-score ranges between -2.5 and 2.5. | WGI (2023) |
| 5 | Postab | Political Stability assesses public perceptions of the possible political instability and/or politically motivated violence, including terrorism. The estimate lies around -2.5 to 2.5. | WGI (2023) |
| 6 | Regqul | Regulatory Quality assesses the capability to create favorable policies for private sector growth. The indicator is within -2.5 to 2.5 range | WGI (2023) |
| 7 | Rol | Rule of Law evaluates trust in laws, contract enforcement, property rights, and law enforcement quality + crime risk. The aggregate score on a standard normal scale is roughly around -2.5 to 2.5. | WGI (2023) |
| 8 | Rpcgdp | Real per capita GDP (constant 2015 US$) | WDI (2023) |
| 9 | Cpi | Consumer price index as a proxy of inflation | WDI (2023) |
| 10 | To | Trade openness is the sum of exports and imports as the ratio of GDP | WDI (2023) |
| 11 | Fnd | Credit to domestic private sectors by banks as ratio of GDP | WDI (2023) |

*Source:* authors' compilation.

### 3.2. Econometric modeling

To carry out an econometric investigation, several tests and estimations are normally carried out to avoid making wrong inferences. In the first stage, we examine the descriptive features of the variables. This helps in observing the behavior of the data at a glance and

inspecting whether the data in question follows a normal distribution and is free from outliers that may affect the regression results. As reported in Table 2, the statistics computed include the mean, standard deviation, minimum, and maximum observation.

Observing the stationarity test to examine whether the underlining variables contain a unit root has become popular in applied economics. However, panel unit root is considered to provide more powerful results in determining the stationarity or otherwise of a series than individual time series. In addition, we consider testing the stationary nature of variables so that inferences based on the regression wouldn't be considered biased and inefficient in the face of nonstationary variables. Of the n-class of the panel unit root test, this study considered the Im-Pesaran-Shin (2003) and Levin-Lin-Chu (2002) tests. We further test for cointegration to ascertain a long-run relationship among the variables using Kao (1999). We cannot employ Pedroni (2014) and Westerlund (2007) because the number of variables exceeds seven (7). We further test for cross-sectional dependence for each variable; this test is important because a fixed effect or random effect model will suffer from robustness if the underlining model has cross-sectional dependence. Discroll and Kraay (1998) extended a method for estimating robust standard errors for panel fixed effects, OLS, and WLS.

### 3.3. Model specification

In the initial phase of the analysis, the choice of pooled, fixed, and random models should be made with caution. This consideration necessitates employing the Breusch Pagan Lagrange Multiplier test to choose between the pooled ordinary least square and fixed effect model. Subsequently, the Hausman test is used to choose between fixed and random effects in line with the convention in the panel data estimations. Once a chosen model suffers from serial correlation and heteroskedasticity, then the coefficients are no longer the best linear unbiased estimators.

This research intends to examine the effect of institutional qualities on Islamic financial development. In addition, we control for macroeconomic fundamentals. To achieve this objective, we specified two separate models following the study of Naz and Gulzar (2019),

Model 1:

$$lnbankass_{it} = \beta_0 + \beta_1 cocorrup_{it} + \beta_2 goeffe_{it} + \beta_3 postab_{it} + \beta_4 regqul_{it} + \beta_5 rol_{it} + \beta_6 rpcgdp_{it} + \beta_7 cpi_{it} + \beta_8 to_{it} + \beta_9 fnd_{it} + \gamma_i + \delta_t + \mu_{it} \qquad [1]$$

Model 2:

$$lnsukuk_{it} = \beta_0 + \beta_1 cocorrup_{it} + \beta_2 goeffe_{it} + \beta_3 postab_{it} + \beta_4 regqul_{it} + \beta_5 rol_{it} + \beta_6 rpcgdp_{it} + \beta_7 cpi_{it} + \beta_8 to_{it} + \beta_9 fnd_{it} + \gamma_i + \delta_t + \mu_{it} \qquad [2]$$

The dependent variable in the first model is the natural logarithm of bank assets of the institutions offering Islamic financial services, for country $i$ in year $t$, $\beta_0$ is the constant term, while $\beta_1$ to $\beta_5$ are the coefficients of the institutional quality variables for individual countries at time $t$, which include control of corruption, government effectiveness, political stability, regulatory quality and rule of law. $\beta_6$ to $\beta_9$ represent the coefficients of macroeconomic control including real per capita GDP, inflation, trade openness, and financial development. The country effect is controlled by $\gamma_i$, while $\delta_t$ the year dummy and $\mu_{it}$ is the random disturbance term.

### 3.4. Estimation techniques

As earlier mentioned, we estimate equations 1 and 2 using conventional pooled ordinary least squares, fixed effect models, and random models. These models are likely going to suffer from serial correlation and heteroscedasticity, which may render the coefficients inefficient. However, to avoid these violations of classical regression assumptions, we resort to the regression technique of (Driscoll & Kraay, 1998). Tsopmo et

al. (2022) extend some of the advantages of the technique, in that it not only considers the differences between various groups but also addresses potential variations in the spread and relationships between variables, while also taking into account the interconnectedness among variables within each group. Additionally, this estimator is capable of managing missing data and does not impose any constraints on the changes in the number of individuals over time in relation to the panel's temporal dimension. Similarly, the Driscoll-Kraay fixed-effects estimator brings a benefit by proposing a non-parametric variance-covariance matrix. This matrix not only produces consistent standard deviations assuming homoscedasticity and autocorrelation, but it also generates standard errors that are robust in the presence of cross-sectional interdependencies. Therefore, the standard deviation estimation method by Driscoll-Kraay guarantees the consistency of the covariance matrix estimator regardless of the extent of cross-sectional dimensions; thus, overcoming the limitations found in other large-scale covariance matrix estimation techniques (Hoechle, 2007). As such, the combined Ordinary Least Squares (POLS) and fixed-effects regression technique introduced by Driscoll and Kraay (1998) holds the potential to deliver dependable and unbiased coefficients (Gehring et al. 2017; Hoechle 2007).

## 4. Results and discussion

### 4.1. Preliminary analysis

This subsection presents descriptive statistical data and conducts pre-estimation tests in the form of panel unit roots tests. The summary statistics depicted in Table 2 provide insights into the distribution and characteristics of the variables in the dataset. The bank's financial assets have a mean of approximately 9.61, with values ranging from around 5.31 to 12.50. The standard deviation of 1.94 indicates a moderate degree of variability around the mean. The log of Sukuk has an average value of about 7.18, spanning from 1.24 to 10.59. The higher standard deviation of 2.10 implies greater dispersion in the data. Control of corruption has a negative mean of approximately -0.98, with values ranging from around -1.28 to 1.28. The lower standard deviation indicates relatively less variability around the mean. Furthermore, the government effectiveness index has an average value of about 0.14, with a range from -1.19 to 1.51. The standard deviation of 0.77 suggests a moderate amount of variability. Similarly, political stability has a negative mean of approximately -0.46, which varies between -2.60 and 1.26. The standard deviation of 1.10 indicates moderate dispersion. While the regulatory quality has a mean value of about 0.07, ranging from -1.01 to 1.11. The standard deviation of 0.64 implies moderate variability. The mean value of the rule of law draws close to zero ranging from -1.12 to 0.93. The standard deviation of 0.58 suggests moderate variability around the mean. The average real per capita income is US$27,815.85 across the sample countries. The minimum per capita GDP is US$1,120.69 and the maximum is US$71,782.16. This signifies that the sample countries range from low-income economies to high-income countries. This is reflected in the standard deviation, which is nearly three-quarters of the mean income per capita. Inflation has less variability as its standard deviation is 48.67, which is far below the mean value of 142.43. It shows that average inflation is not significantly high between 2013 and 2021. Mean trade openness is moderate standing at 63.33%; however, its standard deviation (50.15%) is very high, reflecting high variation among the countries under study. Finally, the mean financial development is about 55%, with a 33.5% standard deviation. It has a minimum of 10% and a maximum of 134%, indicating different levels of financial development among the sample countries.

**Table 2**. Descriptive Analysis

| Variables | Observations | Mean | Std. dev | Min. | Max. |
|---|---|---|---|---|---|
| Lnbankass | 99 | 9.6071 | 1.9357 | 5.3099 | 12.5045 |
| Lnsukuk | 99 | 7.1764 | 2.0954 | 1.2442 | 10.5867 |
| Cocorrup | 99 | -0.9781 | 0.6920 | -1.2835 | 1.2782 |
| Goeffe | 99 | 0.1438 | 0.7704 | -1.1906 | 1.5054 |
| Postab | 99 | -0.4558 | 1.0951 | -2.60033 | 1.2615 |
| Regqul | 99 | 0.0675 | 0.6394 | -1.0094 | 1.1066 |
| Rol | 99 | -0.0256 | 0.5834 | -1.1200 | 0.9250 |
| Rpcgdp | 99 | 27815.85 | 20760.13 | 1120.685 | 71782.16 |
| Cpi | 99 | 142.4295 | 48.66625 | 98.40634 | 354.2962 |
| To | 99 | 63.32568 | 50.14795 | -7.412649 | 172.8034 |
| Fnd | 99 | 54.83671 | 33.54867 | 10.17951 | 133.832 |

*Source:* authors' computation.

Two versions of panel unit roots tests are utilized, including Levin-Lin-Chu (LLC) and Im-Pesaran-Shin (IPS). Table 3 reports the results of the panel unit root tests. It is important to note that the two-unit root test has different null hypothesis. In IPS, the null states that panels contain unit roots, while the alternative hypothesis assumes that some panels are stationary. The natural logarithm of bank assets is not stationary at level, but its first difference is stationary at 1%. Similarly, sukuk exhibits different stationarity processes. Control of corruption is found to be weakly stationary, while its first difference is stationary at 1%. Regulatory quality is found to be a nonstationary series, while its first difference is stationary.  Further scrutiny of Table 3 revealed that government effectiveness, political stability, rule of law, real income per capita, and financial development are all stationary at levels. However, inflation and trade openness are not stationary at levels but stationary at first difference respectively. In LLC's (2002) Panel unit root results, all panel variables are found to be stationary at level.

**Table 3**. Panel Unit Root Results

| Variable | IPS (2003) | LLC (2002) |
|---|---|---|
| Lnbankass | 0.6035 | -10.8504* |
| Δlnbankass | -2.5146* | |
| Lnsukuk | -1.2444 | -16.1356* |
| Δlnsukuk | -20.8035* | |
| Cocorrup | -1.5223*** | -13.0804* |
| Δcocorrup | -3.3486* | |
| Goeffe | -2.8107* | -7.8888* |
| Postab | -2.8554* | -12.9372* |
| Regqul | -1.2278 | -3.6790* |
| Δregqul | -3.8656* | |
| Rol | -3.3248* | -7.2483* |
| Rpcgdp | -1.9519** | -3.6530* |
| Cpi | 3.4688 | -2.6327* |
| Δcpi | -1.9734** | |
| To | -0.6722 | -5.8434* |
| Δto | -2.1621** | |
| Fnd | -2.4339* | -6.9299* |

*Note:* LLC: $H_0$ = panels contain a unit root, $H_a$ = panels are stationary. IPS: $H_0$ = panels contain a unit root, $H_a$ = some panels are stationary. *,**,*** signify rejection of the null hypothesis at 1%, 5% & 10% respectively. Source: author's computations

### 4.2. Panel data analysis

In conducting panel data regression analysis, we run cointegration tests and employ OLS, FE, and RE. We test for cross-sectional dependence, heteroscedasticity, and serial correlation in order to examine the efficiency of the proposed regression models. In Tables 4 and 5, we report the results of Kao's (1999) cointegration test. This is coming when the integration order yields mixed results. Therefore, examining cointegration helps to determine whether the variables move together in the long run. In Table 4, estimates from Kao's (1999) cointegration test show that only modified DF test statistics reject the null hypothesis of no cointegration among Islamic banking development, institutional quality indicators, and macroeconomic variables. However, DF, ADF, unadjusted modified DF, and unadjusted DF confirmed that the variables are cointegrated. In Table 5, where *lnsukuk* serves as the dependent variable, the results reveal that only DF statistics showed evidence of no cointegration, while the remaining four statistics showed evidence of cointegration among the variables. The conclusion emanating thereof suggests that the variables have a long-run association for all the panels in Model 1 and Model 2 respectively, while in some instances cointegration is achieved for some panels under investigation. In summary, Islamic financial development, institutional qualities, and macroeconomic variables have long-run equilibrium.

**Table 4.** Panel Cointegration Test Results (Dependent Variable: lnbankass)

| Kao (1999) | t-statistics | Summary |
| --- | --- | --- |
| Modified DF | 0.6767 | No Cointegrated |
| DF | -1.9128** | Cointegrated |
| ADF | 1.4437*** | Cointegrated |
| Unadjusted Modified DF | -2.2349** | Cointegrated |
| Unadjusted DF | -4.0717* | Cointegrated |

*Note:* *,**,*** signify rejection of the null hypothesis at 1%, 5% & 10% respectively. Source: author's computation

**Table 5.** Panel Cointegration Test Results (Dependent Variable: lnsukuk)

| Kao (1999) | t-statistics | Summary |
| --- | --- | --- |
| Modified DF | 1.4907*** | Cointegrated |
| DF | -0.2776 | No Cointegrated |
| ADF | 1.2888*** | Cointegrated |
| Unadjusted Modified DF | -1.9865** | Cointegrated |
| Unadjusted DF | -3.3546* | Cointegrated |

*Note:* *,**,*** signify rejection of the null hypothesis at 1%, 5% & 10% respectively. Source: author's computation

Cross-sectional dependency test for variables shown in Table 6, suggests that the variables banks assets, sukuk, rule of law, inflation, and trade openness in these countries do not exhibit cross-sectional dependence. On the other hand, control of corruption, government effectiveness, political stability, regulatory environment, real income per capita, and financial development show weak evidence of cross-sectional dependence. The presence of weak cross-sectional dependence in certain variables might be considered when interpreting their relationships in further analyses as shown in the subsequent results.

**Table 6.** Pesaran (2015) Cross-Sectional Dependence Test

| Variable | Test statistics | Summary |
|---|---|---|
| Lnbankass | 19.044* | No cross-sectional dependent |
| Lnsukuk | 11.740* | No cross-sectional dependent |
| Cocorrup | -1.452 | Weak cross-sectional dependent |
| Goeffe | 0.521 | Weak cross-sectional dependent |
| Postab | 1.235 | Weak cross-sectional dependent |
| Regqul | -0.152 | Weak cross-sectional dependent |
| Rol | 5.945* | No cross-sectional dependent |
| Rpcgdp | -0.476 | Weak cross-sectional dependent |
| Cpi | 17.221* | No cross-sectional dependent |
| To | 4.973* | No cross-sectional dependent |
| Fnd | 0.546 | Weak cross-sectional dependent |

*Note:* *,**,*** signify rejection of the null hypothesis at 1%, 5% & 10% respectively. Source: author's computation.

Equations 1 and 2 are estimated using ordinary least squares, fixed effect, and random effect models, the schematic selection of the model is reported in Table 7. Each of the equations is estimated using the three methods. Breusch Pagan LM tests reject panel OLS in each case. However, Hausman tests reveal that the random effect model is the optimal model for explaining the relationships among the variables in both Model 1 and Model 2. The chosen model is subjected to post-estimation tests; serial correlation and heteroscedasticity. Evidence from Table 6 shows that the model suffers from serial correlation and heteroskedasticity. To resolve this issue, Driscoll and Kraay's method takes care of heteroscedasticity, serial correlation, and cross-sectional dependence that may arise from the fixed and random models.

**Table 7.** Schematic Selection of Panel Data Estimation

| Variables | Model 1 | | | Model 2 | | |
|---|---|---|---|---|---|---|
| | FE | RE | OLS | FE | RE | OLS |
| Cocorrup | -0.505 | -0.341 | -0.341 | 0.233 | 0.721 | 0.721 |
| Goeffe | 0.651** | 0.603** | 0.603** | 1.091*** | 0.927*** | 0.927*** |
| Postab | -0.284 | -0.212 | -0.212 | -1.529* | -1.241* | -1.241* |
| Regqul | -0.47,,,g0*** | -0.382 | -0.382 | 0.134 | 0.410 | 0.410 |
| Rol | 1.244* | 1.220* | 1.220* | 1.193*** | 1.173*** | 1.173*** |
| Rpcgdp | -0.000** | -0.000 | -0.000 | -0.000** | -0.000 | -0.000 |
| Cpi | 0.007* | 0.006* | 0.006* | 0.018* | 0.017* | 0.017* |
| To | -0.001 | -0.002 | -0.002 | -0.003 | -0.002 | -0.002 |
| Fnd | 0.003 | 0.004*** | 0.004*** | -0.004 | -0.000 | -0.000 |
| Constant | 9.367* | 8.937* | 8.937* | 6.312* | 4.966* | 4.966* |
| BP-LM test | $\bar{\chi}^2 = 143.58^*$ | | | $\bar{\chi}^2 = 149.18^*$ | | |
| Hausman test | $chi-squared\chi^2(8) = 8.92$, Prob > chi2 = 0.3489 | | | $\chi^2(8) = 11.1$, Prob > chi2 =0.1963 | | |
| Serial corr. | F(1, 10) = 41.264   Prob> F = 0.000 | | | F(1, 10) = 40.083, Prob> F = 0.000 | | |
| Hetero. test | $\chi^2(11) = 441.78$, Prob>chi2 = 0.000 | | | $\chi^2(11) = 189.94$, Prob>chi2 = 0.000 | | |

*Note:* *,**,*** signify rejection of the null hypothesis at 1%, 5% & 10% respectively. Source: author's computation

Table 8 depicts the estimation results of regression with Driscoll-Kraay robust standard errors. The estimated parameters are homoscedastic, serially uncorrelated, and free from cross-sectional dependence. In Model 1, Islamic banks' assets serve as the dependent variable, while sukuk issuances represent the dependent variable in Model 2. The standard errors in the Driscoll-Kraay panel model are both consistent and efficient.

They take care of heteroscedasticity, serial correlation, and cross-sectional dependence, which are observed and presented vividly in both Models 1 and 2.

**Table 8.** Regression with Driscoll-Kraay Standard Errors

| Variables | Model 1 | | Model 2 | |
|---|---|---|---|---|
| | Coefficients | Std error | coefficients | Std error |
| Cocorrup | -0.505 | 0.416 | 0.233 | 0.361 |
| Goeffe | 0.651* | 0.163 | 1.090* | 0.280 |
| Postab | -0.284 | 0.229 | -1.528* | 0.144 |
| Regqul | -0.470** | 0.178 | 0.134 | 0.292 |
| Rol | 1.244** | 0.402 | 1.192** | 0.372 |
| constant | 9.368* | 0.380 | 6.312* | 0.441 |

*Note:* *,**,*** signify rejection of the null hypothesis at 1%, 5% & 10% respectively. Source: author's computation

The results of Model 1 in Table 8 reveal a positive influence of government effectiveness on the Islamic banks' financial development. This outcome is statistically significant as the probability value is very low (< 1%). A one-unit increase in government effectiveness is connected with an increase of approximately 0.651% in bank assets when all other variables are held constant. The result's standard error is relatively low, indicating a good sign. Interestingly, the rule of law is found to have a positive impact on Islamic bank financial assets. The coefficient is statistically significant at a conventional level. As the regulatory quality index increases by one unit, Islamic banks' assets will rise by 1.244%. As well, inflation appears positive and significant at the 1% level, though its value is practically very low (0.007).

Surprisingly, regulatory quality proves to have a negative and significant impact on Islamic financial development. It decreases Islamic banks' financial development by 0.47%. However, this may not support the theoretical and conventional norms, where regulatory quality is expected to have a positive role in the development of institutions, especially in social and economic aspects. Again, real per capita has a significant negative effect on Islamic financial development; however, its size is practically zero, which could not support an empirical decision. In contrast, control of corruption, political stability, trade openness, and financial development do not have a significant impact on the financial development of Islamic banking.

As shown in Table 8, sukuk is the dependent variable and represents the Islamic financial market development in Model 2. Government effectiveness, rule of law, and inflation have a significant positive relationship with Islamic financial development. As the government effectiveness index increases by one unit, sukuk market development improves by 1.09%, all things being equal. The rule of law increases Islamic financial development by 1.192%, ceteris paribus. Therefore, the higher the adherence to the rule of law, all other things being equal, the better would be the development of the Islamic financial market proxy by sukuk. Inflation, a control variable, leads to an increase in the sukuk market by 0.018%.

Contrarily, political stability and real GDP per capita have a significant negative influence on the development of the Islamic financial market. Specifically, political stability dampens it by 1.528%, while real income per capita reduces it by practically US$0. These results remain consistent relative to Model 1, signifying that the countries under investigation rank low in political stability. This is further confirmed by the low average index of political stability (-0.4558) among the countries, in addition to the high standard deviation (1.0951), which is more than double the mean value. However, corruption, trade openness, and financial development have insignificant associations with the sukuk market.

*4.3. Discussion*

The findings are mixed in terms of the direction and significance of governance indicators in explaining Islamic financial development. Government effectiveness significantly improves Islamic financial development. This fits with new research that found that having a good government helps the growth of sukuk (Basyariah et al. 2020) and the overall growth of the economy (Law & Azman-Saini, 2012; Rathinam & Raja, 2010). On the other hand, Smaoui and Kwaja (2017) show that poor law enforcement slows down the growth of sukuk. However, it negates the findings of Basyariah et al. (2021), who observe that governance indicators are insignificant in explaining Islamic financial development, except for the rule of law. Furthermore, the rule of law has had a significant positive influence on the development of Islamic finance. This is in line with the findings of Said and Grassa (2013), Basyariah et al. (2020), and Basyariah et al. (2021), who found that the rule of law significantly promotes the sukuk market. However, it negates the work of Imam and Kpodar (2013), who reveal that the rule of law does not significantly explain Islamic financial development.

In contrast, regulatory quality proves to have a negative and significant impact on Islamic financial development. According to previous research in conventional finance, this backs up the idea that weak institutions lower the quality of regulation, which slows down economic growth and financial development (De Soto, 2000; Bhattacharya & Hodler, 2014). Some authors in Islamic finance literature observe that good regulation has no big impact on the growth of Islamic banking (Imam & Kpodar, 2013) or the sukuk market (Said & Grassa, 2013; Smaoui & Khawaja, 2017; Basyariah et al., 2020). This evidence negates the idea that good regulation affects financial development. Zingales (2003), also, establishes a weak connection between institutions and financial development. However, Rathinam and Raja (2010) indicate that regulatory quality promotes financial development. Additionally, political stability has a significant negative influence on the development of the sukuk market. This corroborates the findings of Smaoui and Kwaja (2017), who reveal that law and order inhibit sukuk development.

Contrarily, the control of corruption has no significant influence on the development of Islamic finance. This is in contrast with Said and Grassa (2013) and Smaoui and Kwaja (2017), who revealed that control of corruption significantly influences sukuk development. This implies the need for streamlining the governance structure by ensuring efficiency, increasing workers' skills, and removing bottlenecks through decentralizing the communication channel at the interface between regulators and Islamic financial industry actors.

**5. Conclusion**

The research analyzes the implications of institutional quality indicators on the development of Islamic finance in the leading Islamic finance economies. The findings establish that institution matters for Islamic finance. In other words, institutions have efficacy in deepening Islamic financial development. Effective rule of law and a stable political system provide a favorable environment for expanding Islamic finance, particularly in the Islamic banking industry. However, regulatory quality consistently inhibits Islamic finance in the countries under investigation. This is attributable to sub-optimal private-sector-led policies in the developing economies. Besides, control of corruption and effective governance scored low ratings in the sample countries; consequently, they could not trigger Islamic financial development.

Therefore, the paper has both implications and limitations. The research implication lies in its evaluation of the quality of institutions for enhancing financial development. The research shows that institutional quality matters for the sound and vibrant Islamic finance industry. Current Islamic finance literature, theoretical as well as empirical, focuses largely on financial and macroeconomic analysis in explaining the performance of Islamic financial institutions. However, the researchers and theorists should expand the

research frontier by giving adequate attention to the role of institutions in building a solid theoretical framework for Islamic financial development. Considering the practical implications, investors are aware of quality governance alongside economic and financial fundamentals. Thus, countries interested in deepening Islamic financial development should streamline bureaucracy and regulations, through effective law enforcement and property protection. This action is tantamount to promoting the Islamic finance industry. The major research limitation is the availability of data. Leading countries in Islamic finance such as Bahrain, Jordan, Iran, and Sudan are not integral parts of this research due to data unavailability. Thus, future research should incorporate more countries as data becomes available. More so, this study utilizes macro-level data for Islamic financial development indicators. However, future studies should leverage micro-level data for individual Islamic banks to conduct cross-country research.

In light of the findings, the researchers firstly recommend that regulators and policymakers should align macro-financial policies with private-sector-led growth strategies in order to upscale the financial development of the Islamic financial industry. Secondly, the enforcement of contracts should be transparent, and the rights of financial stakeholders should be clearly defined and enforced. These actions will increase the confidence of the financial actors in the Islamic financial industry, hence leading to higher financial development. Thirdly, regulators should decentralize and simplify bureaucratic procedures in the activities relating to the financial services industry. This will improve government effectiveness, reduce the cost of doing business, and increase Islamic financial development. In fact, instilling efficiency in government has the overall benefit of raising efficiency in the economy including financial systems that require a real-time approach. Finally, we advocate for the enhancement of critical institutions encompassing political, legal, governmental, and regulatory realms. This imperative measure is instrumental in bolstering the sustenance and progressive growth of the Islamic finance domain in these economies.

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