

Islamic Financial Institutions and Stability: An Empirical Analysis

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Abstract

Using econometric data, this study investigates the internal and external factors influencing the financial stability of Islamic banks from 2011 to 2022. We identify the critical elements that impact the capital adequacy ratio, liquidity, size, governance, and degree of concentration of Islamic banks in order to determine their financial stability. The study concludes that while size, governance, and degree of concentration have a detrimental effect on Islamic banks' financial stability, the capital adequacy ratio and liquidity have a beneficial effect. The report suggests that Islamic banks increase their capital and liquidity in order to support their financial stability. This is in line with other studies, such as an empirical analysis of Islamic banks and financial stability conducted by the IMF, which discovered that, on average, small Islamic banks have stronger finances than small commercial banks, and large commercial banks have stronger finances than large Islamic banks.

Keywords: financial stability, Islamic banks, Islamic finance

1. Introduction

The US subprime mortgage crisis, which set off the global financial crisis of 2007-2008, severely impacted the soundness of the financial systems in numerous nations. The crisis has sparked conversations about finding a different strategy to advance financial stability. Islamic finance, which is based on Shariah principles, can be seen as an addition to the conventional financial system because it is not allowed to employ the sophisticated derivative instruments and speculative products that were the root of the crisis (Hassan & Aliyu, 2017; Imam & Kpodar, 2016).

Globally, the Islamic finance sector has grown significantly. Although the majority of Islamic finance assets are concentrated in the Middle East and a few GCC nations, the sector has also spread to non-Muslim majority regions including Europe and Sub-Saharan Africa (Hussain & Turk-Ariss, 2015). Leading conventional financial hubs like London, New York, and Hong Kong have also seen a notable increase in interest in Islamic finance, and Western investors are now thinking about investing in Islamic financial products (Iqbal & Mirakhor, 2013). In more than 50 countries, some 400 organizations provide Islamic financial services, according to the World Bank's 2014 Islamic Banking Database. Due to the fact that these assets now account for more than 15% of the entire domestic financial sector in several countries, Islamic finance has gained systemic importance (Islamic Financial Service Board, 2017). Over the past ten years, the Islamic financial industry has expanded significantly, reaching about 20% yearly growth (The Economist, 2014), primarily due to the growth of Islamic banks. worldwide Islamic banking assets were valued at USD 1.493 trillion in 2016. With 78.9% of the industry's assets held by this sector, the sector continues to lead the worldwide Islamic finance sector (Islamic Financial Service Board, 2017).

Islamic banks are establishments that carry out banking activities based on Sharī'ah, or Islamic jurisprudence. Islamic banks presently play a significant role in numerous jurisdictions and regions and are present in over 60 countries, including the Middle East and Southeast Asia, Sub-Saharan Africa, and Central Asia (see IMF 2017a; Kammer et al., 2015). For many member nations, Islamic banking offers a chance to improve financial inclusion and intermediation while raising capital for economic growth. Islamic banks are regarded as systemic in at least 14 jurisdictions, which implies that their failure might have a major and potentially catastrophic impact on the financial systems in which they operate as well as other areas. It is therefore crucial that countries implement the required steps to support financial stability at the same time that they embrace Islamic banking and the potential

benefits it offers.

In Islamic banking jurisdictions, strong legislative frameworks are necessary for the supervision, regulation, and resolution of Islamic banks, especially those pertaining to anti-money laundering and counterterrorism financing (AML/CFT). However, because the rights and obligations of participants to Islamic banking transactions are not always expressly stated in the law, the legal framework governing such transactions is sometimes ambiguous in many jurisdictions. Islamic banking operations may be recognized and upheld by courts and regulatory bodies in jurisdictions where the Shari'ah is the primary or exclusive source of law. However, Islamic banking transactions may only be recognized and enforced in other jurisdictions whose legal systems are not primarily based on Shari'ah to the extent that they can be "precisely and effectively incorporated" into contracts recognized under secular contract law (McMillen, 2004).

In a similar vein, not all Islamic banking authorities have uniformly defined or implemented accounting standards for Islamic banks. Nonetheless, there has been progress in elucidating the concepts of accounting and supervision that are relevant to Islamic banks. To this end, a comprehensive set of Shari'ah, accounting, auditing, governance, and ethics standards for Islamic banks has been released by the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI). Additionally, based on the Basel Core Principles for bank supervision, the Islamic Financial Services Board released prudential supervisory guidelines specifically for Islamic banking (Core Principles for Islamic Finance Regulation [Banking Segment]). Adoption of these accounting, governance, and supervisory requirements varies among Islamic banking jurisdictions (Song & Oosthuizen, 2014).

Since multiple episodes of financial instability have harmed nations to varied degrees, leading to widespread unemployment and a loss of economic output, financial stability has shown to be a recurring requirement in modern economic history. The crisis that lasted from 1929 to 1933 was one of the most notable instances of financial instability. Prominent economists of the period battled to create a banking system that could maintain long-term financial stability. The Chicago reform plan was the name given to their recommendations. Unknowingly, some of the core tenets of Islamic finance and principles were naturally reaffirmed by their recommendations. Following the Chicago Plan and subsequent literature, it became evident that an Islamically-based financial system is impervious to volatility (Askari et al., 2010).

The world was once more severely affected by the financial crisis in 2007-2008, which was marked by an enormous number of bankruptcies and significant financial problems. This catastrophe has once again highlighted the perennially difficult problem of achieving financial stability. More pressingly, pointed questions emerged (Belouafi et al., 2015).

Islamic financial institutions and the tenets that guide their activities have drawn a lot of attention throughout this contentious debate. It is true that although Islamic banking existed in unstructured and private settings, official, structured organizations are relatively new. The earliest attempts at fully Islamic finance were made in the 1940s. This event, which happened in Pakistan and Malaysia, was regarded as a rudimentary endeavor that would not succeed. According to Shariah regulations, Malaysia founded the first organization in the late 1960s with the primary responsibility of managing pilgrimage funds (Iqbal & Molyneux, 2005).

A number of Islamic financial institutions were established in the Gulf countries after the oil boom, or global oil price crisis. The most significant of these was the Islamic Development Bank, which was founded in 1974. The establishment of Islamic banks then went forward, first in a number of nations, including Kuwait Finance House (KFH) in 1977, Dubai Islamic Bank in 1975, Jordan Islamic Bank in 1978, Bahrain Islamic Bank (BIB) in 1979, Qatar Islamic Bank (QIB) in 1982, and Faisal Bank in Egypt in 1981. This accomplishment served as impetus for the establishment of the Islamic Bank of Britain, the first worldwide Islamic financial organization, in non-Muslim nations like the United Kingdom. Numerous nations have embraced the experience, leading to the current exceptional expansion of the Islamic banking sector (Iqbal & Molyneux, 2005).

Still, there have been a number of critiques leveled at this industry. Khan (2010) acknowledges, in particular, that there are substantial differences between Islamic finance's theoretical contributions and its practical application. As Kuran (2004) points out, there are those who doubt the origins of Islamic finance. They firmly believe that the creation of this subset of finance was not meant to replace traditional Western financial practices, but rather to maintain the dominance of Islam and solidify its identity across the board. Others, however, disagree with this analysis and contend that the goal of acquainting clients with the products provided by Islamic banking justifies any similarities that could exist between the two models (Ahmad, 1994; Yousef, 2004).

In the same vein, the subprime crisis had a complete impact on the banking and financial systems; in fact, this severe catastrophe has fundamentally changed the nature of international finance. It also brought to light a

number of issues with the primary causes of instability as well as the financial stability of the main elements of the financial system. Surprisingly, it has been seen that Islamic banks' activity has increased significantly and is now growing at a rapid rate despite the current crisis. Numerous inferences suggest that Islamic banks offer more stability and are immune to the financial crises because of their nature and guiding principles (Hussein, 2010). The variables influencing this stability are still unclear, though. Numerous research works have been carried out to investigate the factors that influence the financial stability of banks, with a particular focus on Islamic and conventional banks simultaneously (Cũ ihák & Hesse, 2008; Shahid & Abbas, 2012; Rahim et al., 2012; Hassan et al., 2019; Parsa, 2022; Wijana & Widnyana, 2022). To the best of our knowledge, most studies on this topic used a single econometric model to compare the financial stability of conventional and Islamic banks, failing to distinguish between the factors that contribute to Islamic and conventional financial stability. The current study is the first to describe a specific and independent econometric model for the financial stability of Islamic banks in this environment.

There are two reasons why this problem has to be studied. First, the Z-score indicator shows that, between 2006 and 2017, the average value of Islamic banks' financial soundness in the MENA region was between -0.351 and 156.669. This shows that there are notable variations, with an 18.042% standard deviation. The topic of what precisely constitutes Islamic banks' financial health is raised by these disparities. Thus, by analyzing the crucial factors influencing the financial stability of Islamic banks, this study seeks to close this gap.

Furthermore, the examination of earlier research revealed that the majority of these studies compared the financial stability of conventional and Islamic banks, with relatively few concentrating on the factors that influence financial stability. Additionally, contradictory findings from earlier empirical research on the stability of the Islamic financial system are presented. Ibrahim and Rizvi (2017), for instance, concentrated on the effect of Islamic bank size on financial stability. Widarjono (2020), Daoud and Kammoun (2020), and Pambuko et al. (2018) investigated the effects of variables unique to banks, such as the size of the bank, cost efficiency, liquidity ratio, and capital adequacy ratio. However, they also included outside factors like economic expansion and inflation.

This study is important for a number of reasons. First, the significance of financial stability makes this study vital. Since banks are essential to the generation of money, the payment system, the funding of investments, and economic growth, the stability of the banking industry really serves as the cornerstone for the stability of the entire financial system. Furthermore, evaluating the stability of the banking system is particularly important to central banks and supervisory agencies in order to maintain monetary and financial stability. Since the crisis has had a significant impact on the financial intermediation process, one of the most important issues on the policy agenda in both developed and emerging markets is the financial stability of banks.

This study is significant because it offers a chance to concentrate on the Islamic finance industry, whose asset size has grown from USD 2.75 trillion in 2020 to roughly USD 3.06 trillion in 2021. The global Islamic financial services industry (IFSI) experienced its first significant test in the form of the COVID-19 epidemic, but it has since grown by 11.3% annually. Another measure of resilience is the impact of an extended conflict between Russia and Ukraine on the dynamics of financial stability and economic recovery (Islamic Financial Services Board, 2024).

Second, the factors influencing the Islamic banks' financial stability in the MENA region have not been thoroughly studied. For instance, MENA nations were included in the sample selected by Cũ ihák and Hesse (2010) and Rajhi and Hassairi (2013), who also included countries from West Africa and South Asia. Thus far as we are aware, no research has been limited to the MENA region. Because it focuses on an area that contributes the most to Islamic banking assets, this study is significant (Islamic Financial Services Board, 2024).

2. Literature Review

2.1 Theories of Islamic Financial Stability

The relationship between competitiveness and stability is the subject of a heated discussion in the banking literature. The discussion was started by a landmark article by Keeley (1990), which demonstrated how intense competition weakens the charter or franchise value (the present value of future profitability) and lessens banks' incentives to act responsibly. This "competition-fragility" theory holds that banks have lower earnings and less stability in a competitive market because they are unable to obtain monopoly rents. A few studies (Hellmann et al., 2000; Jiménez et al., 2013; Repullo, 2004) provide evidence for this theory. Boyd and Nicoló (2005) present the "competition-stability" concept in an attempt to refute this claim. A lower loan rate for the borrower will be required of banks due to increased competition in the banking industry. Because borrowers are more likely to repay their loans, banks have a lower chance of defaulting. This position is supported, among others, by Boyd et

al. (2006) and Schaeck et al. (2009).

Theoretical works that attempted to explain the components of Islamic finance that could make it stable finance initiated the discussion on Islamic financial stability. The structure of the bank balance sheet, which serves as an indicator for evaluating the financial risks associated with banking activities, is, in reality, the first factor. Accordingly, the asset side of the Islamic banking balance sheet is made up of investment accounts and demand deposits, while the liability side is made up of accounts for Islamic financing and investments that resemble conventional bank loans. Consequently, balance sheet transmission is allowed under Islamic banking, and it is assumed that the maturities of the liabilities and assets are equal (Ghassan & Krichene, 2017).

If not, the mismatch between assets and liabilities is eliminated because asset returns inherently include deposit returns. Since it exposed banks to liquidity concerns, this inadequacy risk was the root cause of multiple financial instabilities (Iqbal & Mirakhor, 2011).

Profit and loss sharing is the second stabilizing factor, according to Islamic banking theory. In fact, Chishti (1985) acknowledges that invested projects that use profit-and-loss-sharing financing are equipped with stabilizing mechanisms. The lack of a discrepancy between cash flows and payment obligations served as an explanation for this thinking. The gap's existence was long thought to be a cause of financial instability. Bank deposits are handled differently in Islamic banking intermediation, thus shifts in the liability side's deposit value instantly absorb shocks to the asset side. Furthermore, as neither the principal nor the return on investment deposits are guaranteed, credit risk is shifted from assets to liabilities via the 3P mechanism, meaning that any losses on the asset side may be absorbed on the liability side (Bourkhis & Nabi, 2013). In particular, profit-and-loss sharing finance fosters financial stability by distributing the bank's risk among a greater number of project participants (Zarqa, 1983).

Furthermore, the bank is able to actively participate in investment, particularly in productive areas, thanks to profit and loss sharing. Potential risks are decreased by diversifying investments with the goal of boosting initiatives and closely observing them by banks (Khoutem & Nedra, 2012; Said, 2012). This claim, however, is still debatable because Islamic financial institutions have come under fire for using PLS tools more sparingly than other financial institutions (Khan, 2010; Minhat & Dzolkarnaini, 2016; Aggarwal & Yousef, 2000). There are multiple explanations for this occurrence. First, due to the methods needed to operate them, PLS instruments are extremely complex (Abedifar et al., 2013). Second, there is a substantial risk associated with these instruments (Seho et al., 2020) and a high transaction cost (Louhichi & Boujelbene, 2016).

The quality of banking assets is, in theory, the third most important aspect contributing to the financial stability of Islamic banks. According to Prima Sakti and Mohamad (2018), Islamic banks appear to have better asset quality since they maintain equity in terms of savings and investment deposits, have less loan loss provisions, and have fewer non-performing loans.

The first way to explain this asset quality is through 3P agreements, which reduce credit risk by not requiring the investor to present collateral (Bourkhis & Nabi, 2013). The second way is that Islamic finance forbids the sale of debt in the case of debt-based agreements (Ahmed, 2009). Lastly, the presence of Islamic banking institutions in projects funded by participation products like Musharakah and Mudarabah allows for better oversight of the default risk (Hassoune, 2003).

Another element supporting Islamic finance's stability was mentioned in the literature as the relationship between the financial industry and the real economy. In fact, Islamic banking theory contends that because Shari'ah mandates that all financial transactions be supported by a physical asset, Islamic banks are able to create a link between the financial sector and the actual economy. According to Njima and Zouari (2012), financial flows can therefore satisfy the financing needs of actual movements of goods and services.

2.2 The Factors That Affect Financial Stability

According to Cihak and Hesse (2008), the key factors influencing bank financial stability in 20 countries between 1993 and 2004 were the cost-to-income ratio, bank size, loan-to-asset ratio, banking market concentration, and governance indicators. They arrive to the conclusion that the Herfindahl-Hurwitzman Index (HHI), which gauges banking concentration, the cost-to-income ratio, and the loan-to-asset ratio all have a detrimental impact on banking stability. In addition, financial stability is positively impacted by the bank's size and governance metrics.

From 2006 until 2009, Shahid and Abbas (2012) looked at the Pakistani case. They observed a negative effect on the rate of inflation and the loan-to-asset ratio, while a favorable correlation between GDP growth and financial stability is apparent.

Rahim et al. (2012) investigated the elements influencing Malaysian banks' financial stability between 2005 and 2010. They discovered that financial stability is adversely affected by the loan-to-asset ratio. However, the empirical findings imply that both GDP growth and the size of the bank, as shown by bank assets, support the financial stability of banks. Elbadri (2015) conducted a study on the stability of Turkish banks covering the years 2006 to 2013. He took into account both internal and external variables while determining financial stability. The findings showed that overall bank assets and the loan-to-asset ratio have a detrimental effect on financial stability. The study did discover, however, that the GDP growth rate, inflation rate, and cost-to-income ratio all had a favorable effect on financial stability.

Rajhi and Hassairi (2013) suggest that an increased proportion of loans in an asset structure corresponds to an increase in insolvency. Since the loan-to-asset ratio increases and vice versa, financial stability decreases. The cost-to-income ratio also has a detrimental effect on banks' capacity to maintain their financial stability. Furthermore, the results demonstrated that factors that contribute to financial stability include GDP growth, bank size, liquidity ratio, and governance indices.

The determinants impacting the financial stability of banks were identified by Altaee et al. (2013) for a panel of six nations for the years 2003 to 2010. The correlation between financial stability and the loan-to-asset ratio, GDP growth, and inflation rate was determined to be positive. Using information from 38 Malaysian banks' various characteristics, Wahid and Dar (2016) found that the cost-to-income ratio and bank size had a detrimental impact on Islamic banks' ability to be financially stable. Furthermore, it was discovered that there was a significant correlation between bank stability and both the capital adequacy ratio and the return on assets ratio.

Furthermore, Ouerghi (2014)'s regression analysis, which was based on a study of 54 banks across six countries between 2007 and 2010, demonstrates that the banking variables are not significant. Nevertheless, the bank's financial soundness appears to be negatively impacted by its size. Alandejani et al. (2017) examined the global financial crisis while contrasting the robustness of Islamic and conventional banks. The findings showed that, in contrast to their conventional counterparts, Islamic banks have a higher failure rate. Examining the resilience of each kind of bank, however, reveals variations in the explanatory factors and their impacts. Only Islamic banks have been found to be adversely affected by the return on assets ratio. It seems that the ratio (loan loss reserves/gross loans), which measures the quality of assets, has a negative effect on the likelihood that Islamic banks will fail. In terms of external factors, the analysis demonstrates that a high bank concentration rate corresponds with a higher failure probability. The probability of bank failure is positively impacted by the rate of inflation. Furthermore, there is a negative correlation between the probability of bank failure and the quality of regulation.

Crucially, the aforementioned literature assessment validates the relationship between the external (macroeconomic variables) and internal (bank-specific variables) determinants of bank stability. Nonetheless, the outcomes of earlier research differ greatly. We acknowledge that the aforementioned empirical research has compared Islamic banks with conventional banks rather than concentrating solely on Islamic banks. Furthermore, earlier research was satisfied to employ a single econometric model that simultaneously included both kinds of institutions. We created a unique econometric model for the financial stability of Islamic banks in order to close this gap. This made it possible for us to clearly examine how each element affected the stability of Islamic banks. This study offers an investigation of the financial stability of Islamic banks in the Middle East and North Africa (MENA) for the first time.

3. Hypotheses Development

It has been demonstrated by the previous discussion that the theoretical and empirical literature fails to offer a cogent understanding of the factors influencing Islamic financial stability. Thus, considering the goal of the research, the following theories were created and are shown in Table 1 below:

Table 1. Research hypotheses

H_1	The stability of Islamic banks is significantly impacted by the capital adequacy ratio.
H_2	The stability of Islamic banks is significantly impacted by the financing-to-asset ratio.
H_3	The stability of Islamic banks is greatly impacted by the cost-income ratio.
H_4	The stability of Islamic banks is significantly impacted by the profitability ratio.
H_5	The stability of Islamic banks is inversely correlated with the liquidity ratio.
H_6	Islamic banks' stability is significantly impacted by their size.

H_7	Islamic banks' stability is greatly impacted by banking concentration.
H_8	GDP growth and Islamic bank stability are favorably correlated.
H_9	The stability of Islamic banks is inversely correlated with the rate of inflation.
H_{10}	The stability of Islamic banks is favorably correlated with their governance.

4. Research Design

4.1 Representative Group

This investigation was carried out using a quantitative methodology. Thirty-one Islamic banks from twelve MENA countries—the United Arab Emirates, Saudi Arabia, Bahrain, Jordan, Kuwait, Qatar, Yemen, Palestine, Tunisia, Egypt, Turkey, and Lebanon—make up the sample used in this study. The study's data set encompassed the years 2006-2017. The variables used in this study were taken from earlier empirical research, and it made use of a panel data set.

4.2 Information and Elements

Scholars and policymakers have mostly employed the Z-score among other quantitative metrics to evaluate financial stability. The "safety first" tenet was formulated in response to Roy's (1952) distressing experience during the war and his discontentment with the straightforward maximization of returns norm. The safety first principle states that even in the face of a wide range of possible outcomes, including disasters, the gross return should not be less than the disaster threshold. This idea is developed into the Z-score measure (Rajhi & Hassairi, 2013), which combines the accounting measurements of volatility, leverage, and profitability to show the distance to insolvency. A higher Z-score is indicative of a lower risk of insolvency because it is inversely correlated with the possibility of a bank being insolvent, or the likelihood that the value of its assets will fall short of the value of its debt. As a result, one widely used indicator of bank strength is the Z-score ratio. It has the following notation:

$$z = \frac{(\mu+k)}{\sigma} \quad (1)$$

The average return on assets (ROA) of the bank is represented by μ , equity is expressed as a percentage of total assets by K , and return volatility is shown by the standard deviation of ROA, or σ (Bourkhis & Nabi, 2013). Overall, we use the Z-score as a dependent variable and as a gauge of bank financial stability at the level of this study. In fact, the panel data regression technique has been frequently employed in prior empirical studies to estimate the financial stability of banks using the Z-score. The external explanatory variables include bank concentration, GDP growth, inflation rate, and governance; the bank-specific variables include funding to assets ratio, capital adequacy ratio, cost-to-income ratio, profitability ratio, liquidity ratio, and bank size.

4.3 Model Details

In this study, a multivariate explanatory method called linear regression was used to identify the various factors that affect the financial stability of Islamic banks in the MENA region. With the same number of observations (12 observations from 2006-2017) for each individual (31 banks representing the 12 nations), this panel is balanced.

The following is the study's regression model:

$$Z\text{-SCORE}_{it} = \alpha + \beta_1 CAR_{it} + \beta_2 FAR_{it} + \beta_3 CIR_{it} + \beta_4 ROE_{it} + \beta_5 LIQ_{it} + \beta_6 SIZE_{it} + \beta_7 CONCR_t + \beta_8 GDP_t + \beta_9 INF_t + \beta_{10} GOV_t + \epsilon_{it}$$

Where Z-SCORE is the bank's proxy for financial stability; CAR, FAR, CIR, ROE, LIQ, and SIZE are the bank-specific variables; CONCR, GDP, INF, and GOV are the macroeconomic control variables; and ϵ_{it} is the error term. α is the constant value. β denotes a vector of exogenous variable coefficients.

5. Empirical Results

5.1 Analysis of Descriptive Data

The descriptive statistics for each independent and dependent variable are shown in Table 2. The variable with the greatest dispersion (857%) is FAR. The MENA region's Islamic banks have a mean CAR of 20.10%, which satisfies the required level of capital. The variation that approaches 90.40% is explained by the same ratio, which has a standard deviation of 18.17%, a maximum value of 1, and a minimum value of 0.01. The standard deviation of the average FAR is 6.09%, with a mean of 7.11%. Based on numbers ranging from 0.00012 to 117.895, certain Islamic banks in the MENA region have poor asset quality, while others have excellent bank

asset quality.

The average CIR value of 64.1% indicates that Islamic banks in the Middle East and North Africa (MENA) are not sufficiently cost-efficient. The gap's value can be explained by a maximum value of 16.61 and a minimum value of -0.62. Additionally, the average return on equity (ROE) for Islamic banks in the Middle East and North Africa (MENA) is 11.79%, indicating room for improvement.

Table 2. Descriptive statistics

Variables	Obs.	Mean	Std. Dev	Min	Max
Z-SCORE	362	18.111	18.041	-0.350	156.668
CAR	362	0.301	0.180	0.011	1
FAR	362	0.811	6.095	0.000123	117.894
CIR	362	0.741	1.011	-0.626	16.612
ROE	362	0.116	0.603	-1.511	11.113
LIQ	362	0.173	0.140	-0.097	0.917
SIZE	362	92,231.721	9223.371	0.093	10,141,102.6
GDP	362	0.037	0.0461	-0.278	0.260
INF	362	0.046	0.0474	-0.047	0.303
GOV	362	-0.170	0.4870	-1.87	0.724
CONCR	362	0.694	0.1721	0.352	1

The LIQ has a standard deviation of 14.00% and an average of 17.30% in terms of liquidity. This illustrates the MENA region's low level of Islamic bank liquidity. The highest value of this ratio, which is 0.918, and the lowest value, which is -0.098, support this observation. Furthermore, our sample's average SIZE is 92,231.721; the lowest value is 0.097, and the highest value is 10,141,102.6. This proves that a variety of bank sizes make up the sample of banks that was picked.

The average GDP for the MENA area is 3.7%, indicating a strong state of the economy. The inflation rate appears constant, with a mean inflation rate of 4.6% and a standard deviation of 0.0474. The MENA region needs to put in more effort in this area, as evidenced by the average score of -17.00% for GOV. The average CONCR for the MENA region is 69.40%, indicating a fairly concentrated banking sector.

5.2 Results of Multivariate Regression

The homogeneous or heterogeneous specification of the data-generating process should be examined first when evaluating a panel data sample (Khouiled, 2018). We used the Eviews program to achieve this goal. Thus, a homogeneity test is run in the initial stage. Table 4 illustrates the perfect homogeneity of the situation. It would only make sense to examine a time series' stochastic characteristics before handling it. A time series is deemed non-stationary if its expectation and variance change with time; in the event that the stochastic process remains constant, the time series becomes stationary (Bourbonnais, 2015). According to the Dickey-Fuller test, every variable is stationary.

Table 3. Full sample regression results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	22.00255	4.108132	5.355855	0.0001
CAR	33.49556	4.868725	6.879738	0.0001
FAR	-0.097171	0.138374	-0.702251	0.4831
CIR	-0.027460	0.859956	-0.031932	0.9744
ROE	0.372205	1.413664	0.263290	0.7924
LIQ	0.001260	0.000313	4.044978	0.0002
SIZE	-1.79×10^{-6}	1.17×10^{-6}	-1.529304	0.1270
GDP	-8.734874	19.82697	-0.440554	0.6597
INF	22.86027	22.60056	1.011491	0.3124
GOV	-8.469123	2.282176	-3.710990	0.0001
CONCR	-20.48915	5.187344	-3.949860	0.0002
S.E. of regression	16.21112	Hannan-Quinn criteria		8.491202
Sum squared resid	94,608.24	Durbin-Watson stat		0.360041

Five factors are significant at the 5% level, according to the coefficients estimate results. Islamic banks' financial stability is positively impacted by both the capital adequacy ratio and the liquidity ratio. Conversely, the financial stability of Islamic banks is adversely affected by the bank concentration rate, bank size, and governance factors.

Table 4 indicates that the Z-score is positively impacted by the CAR of Islamic banks in the MENA region. Z-score would rise in tandem with an increase in CAR, according to the positive correlation of 18.244. This result supports the first hypothesis (H1). This outcome can be explained by the necessity of both boosting public trust in Islamic banks and luring new clients to conduct business and deposit money there. This would undoubtedly have an effect on enhancing this type of bank's stability. A high CAR might boost public trust in banks and shield depositors from losing their money. The reason for this outcome might be that a bank with a high capitalization ratio is thought to be highly picky about the loans it makes, particularly when equity acts as actual shock absorbers. The findings of Wahid and Dar (2016), Widarjono (2020), and Daoud and Kammoun (2020) are in line with this outcome.

The calculation of coefficients demonstrates a positive correlation between Islamic banks' financial health and LIQ. It has a tenuous relationship to Z-score, though. If the level of liquidity improves by 1%, the level of financial stability of Islamic banks in the Middle East and North Africa (MENA) increases by 0.1%, according to the coefficient of LIQ of 0.001. We reject hypothesis (H5). The rationale behind this outcome is that Islamic banks, by virtue of converting their capital into long-term illiquid assets based on contracts such as Mudarabah, Ijarah, or Musharakah, are susceptible to liquidity risk. Their solvency is in jeopardy due to this liquidity risk. Islamic banks are aware of this issue and work to increase their liquidity in order to guard against future financial volatility. This outcome agrees with the findings of Pambuko et al. (2018) and Rajhi and Hassairi (2013).

The results show that the Z-score is inversely related to the SIZE, which is represented by bank assets, and has a negative and low coefficient (-2.381×10^{-6}). The hypothesis (H6) has been proven true. This conclusion indicates that large Islamic banks are less stable than small Islamic banks, but with a little impact. This lends credence to the "too big to fail" theory, which maintains that bank size and financial stability are inversely correlated since larger banks are encouraged to take on greater risk because their failure is guaranteed by the government. The challenge of overseeing big banks is the cause of this negative coefficient. A secondary rationale for this outcome pertains to the challenges faced by Islamic banks in adapting their supervisory frameworks to accommodate increased credit risk. According to Cù ihák and Hesse (2008), issues with moral hazard and adverse selection become more significant as a banking operation grows in scale because oversight rapidly becomes more difficult. The findings of Elbadri (2015), Ouerghi (2014), and Daoud and Kammoun (2020) are all in line with this result.

The stability of Islamic banks is adversely affected by bank concentration, as indicated by the concentration ratio CONCR. The seventh hypothesis (H7) is supported by this discovery. The CONCR coefficient's negative value (-18.304) suggests that when the banking industry is heavily concentrated, Islamic banks' financial stability in the MENA area declines. By using the "too big to fail" theory, this negative connection demonstrates how a concentrated market could have a destabilizing influence on financial stability. Banks are encouraged to take more risks when they are given the implicit or explicit guarantee that they would be saved in the case of bankruptcy, which eventually raises systemic risk. These results align with those of De Nicolo et al. (2009), Alandejani et al. (2017), and Cù ihák and Hesse (2008).

The financial soundness of Islamic banks was found to be negatively correlated with the GOV. With a coefficient of -8.960 , an increase of 1% in GOV results in an 80.96% decline in the financial soundness of Islamic banks in the MENA region. The tenth hypothesis (H10) is rejected by this finding. Given that corruption is an indicator of the breakdown of institutional and legal frameworks, it stands to reason that there is an inverse link between financial stability and governance. It exacerbates the bad loan issue and breeds further uncertainty in banks. These results corroborate Bourkhis and Nabi's (2013) earlier research.

5.3 Examining Robustness

The robustness check results are displayed in Table 4. To verify that the endogeneity issue in the preceding table was still present, we ran a second regression of the variables. Because the errors of the independent variables are not statistically significant, Table 4 results demonstrate that our model does not have an endogeneity issue.

Table 4. A robustness check for the stability regression results

Independent Variables	Coefficient	Std. Error	p-Value
C	24.290	3.212	0.000
CAR	18.243	4.520	0.000
LIQ	0.002	0.000	0.006
SIZE	-2.37×10^{-6}	0.000	0.022
GOV	-18.303	4.520	0.000
CONCR	-8.961	1.637	0.000

6. Conclusions

Finding the empirical factors that influence the financial stability of Islamic banks in the MENA area is the primary goal of this research. To do this, panel data for 31 banks in 12 MENA countries from 2006 to 2017 were used in a multivariate analysis based on linear regression to evaluate the factors of financial stability of Islamic banks in the region. Based on the results, financial stability as determined by the Z-Score is not significantly impacted by the financing-to-assets ratio, cost-to-income ratio, profitability ratio, GDP, or inflation rate. This suggests that financial stability is generally unaffected by the internal factors that the financial ratios measure. Furthermore, the consistency of these two variables explains why the GDP and the inflation rate are not significant.

Conversely, a high capital adequacy ratio shields depositors from the possible financial loss of their deposits, and has been found to have a significant impact on the stability of Islamic banks. This suggests that capital is used to boost public confidence in these banks. The oversight of capital requirements have to be significantly improved in this way.

Furthermore, liquidity has a marginally favorable effect on Islamic banks' stability. The limitations on their access to liquidity instruments account for this outcome. It is therefore highly advised that Islamic banks allocate a significant amount of high-quality liquid assets and be prepared to raise capital in non-monetary markets in case they need liquidity. Because size was proven to have a negative effect on stability, smaller Islamic banks in the MENA region are more stable than larger ones. Weakly concentrated banking sectors are more stable for Islamic banks since the concentration ratio has a significant and detrimental effect on financial stability.

On the other hand, the low regulatory quality may account for the significant and detrimental influence of the governance variable on the stability of Islamic banks. Therefore, it is advised that the regulatory and supervisory framework pertaining to Islamic banks be strengthened.

When considered collectively, the findings of this research may serve as a reference for tracking the soundness of Islamic banks' finances and differentiating between sound and troublesome institutions. Financial ratios may not be the only variable used in future research. A qualitative technique might be used in this situation to provide further information about the Islamic banks' financial stability. There are some ramifications for the findings of this investigation. Owing to CAR's beneficial effects on Islamic banks' financial stability, central banks and regulators of Islamic banks would be prudent to pay close attention to these institutions' capitalization levels through equity raises in order to preserve Islamic banks' financial stability.

Additionally, the fact that LIQ has a beneficial effect on financial stability suggests that Islamic banks in the MENA area should raise their liquidity levels in order to improve their stability. Islamic banks must therefore appropriate a significant amount of high-quality, liquid assets. To reduce liquidity risk, it is crucial to concentrate on creating a sufficient framework for liquidity management.

It is advised that financial authorities set up a system for supplying liquidity and establish organizations with the ability to design extremely liquid Sharia-compliant instruments. Given the inverse relationship between bank growth and financial stability, governments should exercise caution when considering plans to expand the number of Islamic banks. Banking supervisors should think about promoting the entry of new Islamic banks into the market in order to diversify the share of the banking market and improve the financial stability of these banks, given the negative relationship between the concentration of the banking market and the stability of Islamic banks. Furthermore, it is advised that governance be strengthened and integrated into all aspects of Islamic banks' operations. There are several restrictions on this study. Because this study looks at the factors that affect the financial stability of 31 Islamic banks in the MENA region, its sample size is limited. A larger sample size may be considered in future research. The authors could use additional indicators, such as global uncertainty factors, or create a financial stability index based on the aggregation of multiple economic and financial indicators in

future studies to define financial stability as broadly as possible. In this study, we only used one indicator of the financial stability of banks (Z-score).

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