Capital requirements – risk taking/stability nexus during the global financial crisis and COVID-19: international evidence of Islamic banks

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Xiao Ling Ding, Razali Haron and Aznan Hasan
*IIUM Institute of Islamic Banking and Finance,
International Islamic University Malaysia, Kuala Lumpur, Malaysia*

Abstract

Purpose – This study aims to determine how Basel III capital requirements affect the stability of Islamic banks globally during the global financial crisis and the COVID-19 pandemic.

Design/methodology/approach – The secondary data for all Islamic banks worldwide from 2004 to 2021 is obtained from the FitchConnect database. The main technique was a two-step generalized method of moment (GMM) system, and the data were tested using pooled ordinary least squares, fixed effects and difference GMM models for robustness checks.

Findings – Regression results support the moral hazard hypothesis based on evidence that both the total capital ratio and the Tier 1 capital ratio have a statistically significant positive impact on the stability of Islamic banks globally. Furthermore, neither the global financial crisis of 2008–2009 nor COVID-19 (2020–2021) significantly impacted the stability of Islamic banks worldwide. The results are robust across alternative measures of stability, capital buffers, dummy variables and estimation techniques. According to the descriptive statistics, the number of Islamic banks that disclose their regulatory capital ratios to the public has increased over the study period, and the mean of total capital and Tier 1 ratios are considerably greater than what is required by Basel II and Basel III.

Research limitations/implications – Bankers, regulators and policymakers should benefit from the evidence on capital and risk management in Islamic banking according to Basel Committee on Banking Supervision (BCBS) and Islamic financial services board (IFSB) international standards in various jurisdictions.

Originality/value – This research builds on earlier studies that were both beneficial and instructive by exploring the relationship between BCBS and IFSB capital guidelines and the trustworthiness of Islamic banks in greater depth. This study uses numerous capital ratios, buffers and stability measures to provide an international context for research on Islamic banking. In addition, the database is up-to-date to include information about the COVID-19 pandemic aftereffects in the year 2021. This study also introduces the Basel membership of Islamic banks to provide context for countries still at the Basel II stage or are yet to begin implementing the Basel III international standard.

Keywords Capital ratios, Basel III, Stability, Islamic bank, GMM

Paper type Research paper

Introduction

The global financial system has faced significant challenges due to the COVID-19 pandemic and the global financial crisis (GFC) (Giese and Haldane, 2020). The effectiveness of

JEL classification – C33, G21, G32, G38, P43

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Basel III, the set of banking regulations, which was introduced in 2010 after the GFC, is now being tested on a global scale. The vulnerabilities exposed in the banking system during the GFC emphasized the need for new regulatory measures (ben Maatoug *et al.*, 2019). The impact of COVID-19 on the economy and the banking sector is widespread, evident from mounting debts and difficulties in loan repayments. Numerous studies have examined the effects of COVID-19 on the banking system, shedding light on the susceptibility of Islamic banks (IBs) to economic shocks (Yudaruddin, 2023). Research on the performance and stability of both conventional and IBs during the pandemic has revealed a negative impact on profitability (El-Chaarani *et al.*, 2022). Furthermore, studies on the risk behavior of banking institutions during the crisis have indicated that banks operating in competitive environments tend to maintain higher capital ratios (Mateev *et al.*, 2022a). Understanding the effects of COVID-19 on the Islamic finance industry is crucial for distinguishing the practical differences between Islamic and conventional systems (Hassan *et al.*, 2022). As Islamic financial institutions adapt to the "new normal," it is essential to reassess capital requirements and risk-taking practices, thereby adjusting regulations and operations accordingly.

In response to the fragility of the global financial system and the shortcomings of Basel II, the Basel Committee on Banking Supervision (BCBS) enhanced the capital quality requirements, established several macroprudential standards (known as capital buffers) and published the Basel III Accord, a new capital framework (BCBS, 2022). In accordance with the new rules, the Tier 1 capital ratio (T1CR) in Basel III is increased to 6% compared with the 4% required under Basel II. Also, with the new 2.5% capital conservation buffer in place, the total capital ratio (TCR) has increased from 8% to 10.5% as per the regulations. Does a higher level of capital requirement refer to a lower risk or better stability for bank? In relation to the increase in capital requirements, the pertinent question is, do higher capital requirements imply lower risk or greater stability for banks? Empirical evidence from a global perspective during the COVID-19 outbreak is crucial to assess the effectiveness of increased capital requirements, as it provides insights into the diverse impacts of the pandemic on the banking sector, the ability of higher capital requirements to mitigate risks and the interconnected dynamics of the global financial system.

In the sight of the regulations, IBs are just as regulated as their conventional counterparts because they both act as financial intermediaries (ben Maatoug *et al.*, 2019). In compliance with the new capital requirements established by BCBS for the conventional banking system, Islamic banking authorities, such as the Islamic financial services board (IFSB) and the Accounting and Auditing Organization for Islamic Financial Institutions, have updated their financial standards. For example, the newest publication on the capital requirement, *Revised Capital Adequacy Standard for Institutions Offering Islamic Financial Services*, was just published by IFSB in 2021.

According to the literature, empirical studies show that the mean of T1 and TCR ratios in IBs are all higher from 1999 to the present than what is required by Basel III. These include international evidence (Bitar *et al.*, 2018, 2020), regional (Bitar *et al.*, 2016; Mateev *et al.*, 2022b, 2022c; Mateev and Bachvarov, 2021) and country evidence (Harkati *et al.*, 2020). Nonetheless, during the COVID-19 testing period, empirical evidence connecting higher capital ratios with the global stability of IBs is lacking. Considering this gap, the current study's primary objective is to fill in this knowledge gap by broadening our understanding of the subject and adding fresh insights to the body of existing literature.

This study is structured as follows. The study begins with literature review and then discusses the empirical and theoretical underpinnings. This is followed by the methodology section. The section on robustness tests comes immediately after the section on results and discussion. The final part is a brief conclusion.

Literature review and hypothesis development

VanHoose (2007) presents an in-depth literature survey of the ways in which the stability and risk-taking of financial institutions are affected by capital requirements. Bitar *et al.* (2016, 2018, 2020) extended the previous discussions to the Basel II stage by analyzing the impact of capital ratios on bank efficiency, profitability and risk using a number of different forms of capital. Recently, a series of studies (Mateev *et al.*, 2022a, 2022b; Mateev and Bachvarov, 2021) were conducted on the relationship between capital ratios and bank stability/risk-taking in the Middle East and North Africa (MENA) region. Contrary to most of the earlier studies, our study updates the Basel III area data set, extends risk-based and non-risk-based capital ratios to include capital buffers, considers the impact of the recent crisis, COVID-19, and examines their effects on the Islamic banking system from a global perspective. From the perspective of research design, most studies used a static model. As a result, this paper adds to the existing body of knowledge by using the dynamic generalized method of moment (GMM) technique and bringing a heightened focus on IBs worldwide.

The predominant theoretical framework used to examine the impact of capital requirements on bank stability and risk-taking is the moral hazard theory. According to this theory, information asymmetries and deposit insurance create a situation where banks are shielded from the disciplining influence of depositors (Jokipii and Milne, 2011). Moral hazard arises when one party is insulated from the consequences of their actions, leading to an increased likelihood of engaging in risky behavior. Scholars such as Bitar *et al.* (2016), Lee and Hsieh (2013) and Mateev *et al.* (2022c) have highlighted the relevance of moral hazard paradigms in explaining the relationship between capital and risk. Specifically, they refer to the moral hazard hypothesis, which posits that capital has a negative impact on bank risk.

When it comes to Islamic banking operations, the application of the profit and loss sharing (PLS) concept to investment account holders (IAHs) theoretically allows IBs to take on more leverage while still satisfying their shareholders. However, in practice, it becomes apparent that losses cannot be transferred to IAHs, as this would lead to a loss of support and deposits from investors (Bitar *et al.*, 2018). If IAHs decide to withdraw their funds, it may result in liquidity and solvency issues for IBs. To address this challenge, IBs maintain profit-smoothing reserves. Consequently, IBs may choose to maintain higher capital ratios than their competitors to protect themselves from potential instability. According to Demirguc-Kunt *et al.* (2013), banks with higher capital quality are less likely to rely on public sector funds to cover losses. Therefore, we can anticipate a negative relationship between bank capital and risk-taking in IBs. This provides a basis for testing the moral hazard theory. In light of these considerations, to address the objective of this study, we propose the following hypothesis:

H1. There exists a negative correlation between the risk-taking behavior of Islamic banks and higher capital ratios.

The existing literature has identified variables explaining why banks adjust their portfolio risk to comply with regulations and increase stability. Ashraf *et al.* (2016) studied the impact of Basel III liquidity requirements on the stability of IBs post the GFC, referencing their findings and using similar variables. This study extends their research to the COVID-19 period, examining the effect of capital standards on stability/risk-taking behavior. The pandemic has significantly affected the banking industry, especially IBs (El-Chaarani *et al.*, 2022). Analyzing the impact of COVID-19 on financial systems helps understand the advantages of the Islamic financial system, based on risk sharing and real economic activities, and the disadvantages of the conventional system driven by risk transfer and profit-making (Hassan *et al.*, 2022). Mateev *et al.* (2022c) explore the impact of capital requirements on the financial soundness of banks in the MENA region, particularly relevant during the COVID-19 pandemic. Their findings emphasize the importance of policies aligning banks with capital requirements for overall financial stability. Ding *et al.* (2023) reveal that IBs generally maintain higher regulatory capital ratios, enhancing their stability and resilience during challenging times like COVID-19. Thus, this study contributes additional evidence on regulatory capital ratios and stability/risk-taking behavior of IBs worldwide during the pandemic.

Data and methodology

Sample and data

We primarily rely on three main sources for our data. First we used the FitchConnect database to collect bank-level financial characteristics for an unbalanced sample of 1,643 bank-year observations for 110 IBs in 30 countries globally between 2004 and 2021. We focus on IBs on a global scale for two main reasons. It initially relates to the consideration of global data. As stated in the introduction, the purpose of this research is to evaluate IBs globally using international banking regulators BCBS and IFSB's world standards for banking systems. This is done so that we can examine the relationship between capital and bank stability/risk-taking on a worldwide platform. The second concern is the application of the GMM technique for dynamic panel data. The quantitative nature of the surveyed data generally requires enough observations for a panel data regression analysis because inconsistent results from a small population (Baltagi, 2008). Furthermore, because there are fewer IBs than conventional banks, using global data can yield a better sample size to produce useful results (Mohammad *et al.*, 2020).

The sample period spans from 2004 to 2021, encompassing the evolution of Basel II and Basel III, as well as the GFC and COVID-19 crisis periods. BCBS published Basel II for conventional banks in 2004 (BCBS, 2004), and IFSB published IFSB-2, Guidance Notes (GN)-1, and IFSB-7 for IBs between 2005 and 2009 (IFSB GN-1, 2008; IFSB-2, 2005; IFSB-7, 2009). Basel III was developed in 2010 (BCBS, 2010) in response to the GFC, and GN-4, IFSB-15 and IFSB-23 were published from 2011 to 2021 (IFSB 15, 2013; IFSB 23, 2021; IFSB GN 4, 2011). In addition, the GFC (2008–2009) and COVID-19 (2020–2021) are included in the time frame being examined. These are the main justifications for the sampling procedure. For the collection of data on the FitchConnect database, we followed studies on IBs, such as Harkati *et al.* (2021, 2022).

Our original sample consists of 2,253 observations in 159 IBs from 35 countries. In accordance with the literature, we eliminated some sample. Following studies on Islamic banking and the Basel accord of Bitar *et al.* (2016, 2018, 2020), we excluded countries such as Bahamas, Cayman Islands, Gambia, Lebanon and Senegal because they lacked data on at least one of the four capital measures, namely, TCR. Following Ben Maatoug *et al.*'s (2019) study on IB capital and risk-taking using GMM, we use two additional data filtering producers. First, we excluded banks with unpublished TCR. Second, banks with fewer than three annual observations are dropped. These are the main justifications for the sampling procedure. Consequently, the following nations are included in this study: Bahrain, Bangladesh, Brunei Darussalam, Egypt, Germany, Indonesia, Iran, Iraq, Jordan, Kazakhstan, Kuwait, Malaysia, Maldives, Mauritania, Nigeria, Oman, Pakistan, Philippines, Qatar, Saudi Arabia, Singapore, Sudan, Syria Arabia Republic, Thailand, Tunisia, Turkey, United Arab Emirates, UK, West Bank and Gaza and Yemen.

The second data source, which controls for macroeconomic conditions and financial development, is the 2022 World Development Indicators database. Third, we accessed the websites of the World Health Organization and the Bank for International Settlements (BIS) to collect information on Basel membership (Siddika and Haron, 2020) and COVID-19 (Lee *et al.*, 2022). Finally, to control for outliers, the data is winsorized at the 1% and 99% percentiles (Saif-Alyousfi and Saha, 2021).

Measurement and definition of variables

Existing empirical literature identifies several variables that explain why banks may modify their portfolio risk to comply with regulatory requirements. The first two broad categories of explanatory variables consist of covariates specific to banks and industries. In this study, Basel risk-based capital ratios and traditional non-risk-based capital ratios are the primary independent variables. We used and extended the study conducted by Ashraf *et al.* (2016) as a guide to explore the relationship between Basel III capital ratios and IB stability/risk-taking. For the remaining explanatory variables, we used established methodologies. The justification for each covariate used in the empirical model is discussed in depth in this section. The variables used in this study, along with their definitions, references and data source, are listed in Table 1.

Stability measures

Most of the empirical literature on bank risk taking uses *Z*-score as a method for evaluating banking institutions insolvency risk and financial stability, such as Beck *et al.* (2013), Fiordelisi and Mare (2014); and Hesse and Čihák (2007). It was developed by Boyd and Runkle (1993) and is now commonly used to represent the likelihood of a bank going bankrupt (Lepetit and Strobel, 2013). Because it accounts for both interest and debt-based income, *Z*-score is superior to other accounting-based measures of financial stability (Ashraf *et al.*, 2016). In this study, we apply Čihák and Hesse's (2010) and Lepetit and Strobel's (2013) method, and use the following formula to calculate the *Z*-score:

$$Z_{it} = \frac{ROA_{it} + CAR_{it}}{\sigma ROA_{it}} \quad (1)$$

where Z_{it} refers to bank stability/risk-taking/insolvency risk. The *Z*-score is inversely related to bank insolvency risk. An increase in value corresponds to greater bank solvency or stability, and vice versa. In other words, the *Z*-score is the inverse of the probability that a bank will go bankrupt or become riskier. If the value is greater, the bank is more likely to be solvent or to take fewer risks, and vice versa. ROA refers to the bank's return on assets (ROA); CAR refers to the bank's ratio of equity to assets; and σROA denotes the standard deviation/volatility of the ROA, determined by calculating over the entire period of the sample. Bank and time are indicated by the subscripts i and t, respectively.

Capital ratios measurement

Following the studies of Abbas *et al.* (2021), Abbas and Ali (2020) and Abbas and Younas (2021), our research considers four capital ratios and two capital buffers with varying capital requirements definitions. In accordance with the Basel rule, TCR (Tier 1 plus Tier 2) to risk-weighted assets (RWA) ratio, to comply with Basel III regulations, this ratio must be at least 8%; and T1CR to RWA ratio, this ratio must be at least at 6% under Basel III, are computed using RWA in the first step. In the second step, we calculate two non-risk-based capital ratios using total assets (TA), namely, the ratio of total equity to total assets (TETA) and the ratio of Tier 1 capital to total assets (T1TA). As a robustness test, we use two of the Basel III required capital buffer ratios (TCR – 8% and T1CR – 6%) in the third step.

Table 1. Dependent and explanatory variables

Variables	Definitions	References	Data sources
Distance to default (*Z*-score)	*Z*-score is the distance to default calculated as bank's ROA plus the capital- to-asset ratio divided by the standard deviation of ROA	(Ashraf *et al.*, 2016)	Authors' calculation based on Fitchconnect database
lnZ_SCORE	Natural logarithm *Z*-score		
TCR/CAR	This ratio is the capital adequacy ratio (regulatory capital ratio). TCR = total capital/risk weighted assets (RWA). The capital used to calculate the capital adequacy ratio is divided into two tiers (Tier 1 and Tier 2). This ratio must be maintained at a level of at least 8% under Basel III rules	(Abbas *et al.*, 2021; Abbas and Ali, 2020; Abbas and Younas, 2021)	Fitchconnect database
TETA	TETA = total equity/total assets (%)		
T1CR	This is the capital adequacy measure, or regulatory capital ratio. Tier 1 capital ratio = Tier 1 cap/RWA, banks must maintain minimum Tier 1 capital ratio of at least 6% under Basel III.		
T1TA	Tier 1 cap/total assets (%)		
SIZE	Bank size is measured by the log of total assets	(Ashraf *et al.*, 2016)	Authors' calculation based on Fitchconnect database
ROE	Operating ROE (%)		Fitchconnect database
NIITOI	Non-int. inc./total operating income		
EFF	Cost to income ratio (%)		
GTA	Growth of total assets	(Bitar *et al.*, 2016)	
OBSATA	Off-balance sheet activities/total assets	(Saif-Alyousfi and Saha, 2021)	Authors' calculation based on
HH index	Herfindahl–Hirschman index (HHI) is a measure of market concentration calculated as the sum of the squared market shares based on total assets for each bank in a country	(Mateev *et al.*, 2022b)	Fitchconnect database
GDPG	GDP growth (annual %)	(Mateev *et al.*, 2022c)	World Bank Database
D_GFC	A time dummy variable, coded as 1 for the GFC year (2008–2009) and 0 for the remaining periods	(Saif-Alyousfi and Saha, 2021)	Literature
D_COVID19	A time dummy variable, coded as 1 for the COVID-19 year (2020–2021) and 0 for the remaining periods	(Lee *et al.*, 2022)	World Health Organization
D_MEM	Basel committee membership dummy, code as 1 for the member countries and 0 for the nonmember countries	(Siddika and Haron, 2020)	Bank for International Settlement (BIS)

Source: Authors' own

Other control variables influencing the stability of banks

We also use six bank-level variables, one industry-level variable and one country-level variable to account for differences in bank characteristics, industry and macroeconomic development. Among the factors unique to each bank, according to Schwerter (2011), the bank's size, also known as "too big to fail," has a significant impact on the composition of its assets and, ultimately, the amount of the risk-taking. Following Ashraf *et al.* (2016), size is measured as the natural logarithm of TA. Second, a bank's stability is also a function of its income sources. NIITOI is the ratio of income from fee-based activities to operation income; we use it to measure the level of diversification between lending and nonlending activities among banks (Bitar *et al.*, 2016). A positive correlation with stability suggests diversification advantages for banks. Third, bank profitability is a significant factor in determining bank stability (Ashraf *et al.*, 2016). The ratio of return on equity is included in our profitability measurement. With bank stability, we expect a positive coefficient of profitability. Fourth, to control for efficiency, following Ashraf *et al.* (2016) and (Bitar *et al.* (2020), we use the cost-to-income ratio in our model. A positive coefficient would indicate that increased efficiency contributes to the increased stability of IBs. Fifth, following Bitar *et al.* (2016), to account for how the bank's TA have changed this year compared with the last, we use a metric called "growth of total assets." Using this metric, Abedifar *et al.* (2013) determines a bank's long-term strategy for expansion. Sixth, following Saif-Alyousfi and Saha (2021), we use the off-balance sheet items to TA ratio to reduce the impact of the bank's off-balance sheet activities considering Basel III requirements.

In terms of macrolevel variables, following the studies of Ashraf *et al.* (2016); Mateev *et al.* (2022a); and Mateev and Bachvarov (2021) using the Herfindahl-Hirschman index (HHIA) and GDP growth as industry and country-specific control variables. HHIA is calculated as the squared market shares of all domestic banks (measured in terms of TA). It is a control measure for the variation in how market concentration affects financial stability across nations. Finally, higher GDP growth results a higher level of *Z*-score.

Dummy variables

Following the research of Ashraf *et al.* (2016) and Saif-Alyousfi and Saha (2021), we included a dummy variable that takes the value of one during 2008 and 2009, and zero otherwise, to account for the effects of the 2008–2009 GFC. We also use the D_COVID variable during this COVID-19 pandemic period to control for the impact of the COVID-19 (Lee *et al.*, 2022), which has a value of one during 2020–2021 and zero otherwise.

Econometric model

The framework used in this paper is based on the method of Lee and Hsieh (2013), which applies the two-step system GMM technique and dynamic panel data approach to estimate the parameters. This methodological framework for the GMM technique was proposed and developed by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998, 2000). We adopt this method for six reasons. First, according to Roodman (2009), the endogeneity, unobserved heterogeneity and autocorrelation issues are all considered by the GMM estimation method. Second, under the moment conditions, the system estimator offers a variance–covariance structure that is more adaptable (Lee and Hsieh, 2013). Third, our system GMM is especially well-suited to our two-step estimator, which is more efficient than a one-step estimator in general (Lee and Hsieh, 2013). In addition, we use the finite-sample correlation method proposed by Windmeijer (2005) to report standard errors of the two-step estimation, as doing so without it will cause a substantial downward bias in the reported standard errors (Lee and Hsieh, 2013). Fourth, dynamic panel techniques are used to analyze the panel data and determine whether risk is persistent (Lee and Hsieh, 2013). Fifth, Ali *et al.* (2022) and Šeho *et al.* (2021) reported that this method is commonly used by empirical studies on IBs, such as Kanapiyanova *et al.* (2022), Ledhem and Mekidiche (2021); and Parmankulova *et al.* (2022). Sixth, Lee and Hsieh (2013) claim that when analyzing the movements of financial variables, the GMM approach is superior to ordinary least squares (OLS). Harkati *et al.* (2020) also argue that the corresponding fixed effect (FE) estimate is a lower-bound estimate, whereas the pooled ordinary least squares (POLS) estimator is an upper-bound estimate. In addition, a system GMM estimator should be taken into consideration if the obtained difference GMM estimator is close to or lower than the FE estimate because of unsatisfactory instrumentation (Bond Stephen *et al.*, 2001). The reasons system GMM is more trustworthy in this study than difference GMM are shown in Table 2.

Consequently, the relationship between IBs capital and stability in this study can be specified as follows:

$$Stability_{it} = \alpha_0 + Stability_{it-1} + \sum_{K=1}^{4} B_1 CAP_{it} + \sum_{L=1}^{2} B_2 X_{it} + B_3 Dummy_{\,t} + \varepsilon_{it} \qquad (2)$$

Here, t and i denote time period and banks, respectively; Stability$_{it}$ is dependent variable (*Z*-score); Stability$_{it-1}$ is the first lagged dependent variable (*Z*-score), measure persistence over time; CAP refers to four capital ratios (discussed above); X refers to two macro variables; Dummy refer to dummy variables; and $\varepsilon_{it}$is the error term.

Results and discussion

Descriptive statistics

Table 3 provides a statistical overview of all variables. Two key findings are deserving of summary here. We intend to demonstrate in our sample that the average regulatory TCR is 24.77%, as compared with the 8% required by Basel III, and that the average T1CR is 20.06%, as compared with the 6% required by Basel III. Figures 1 and 2 depict the results of our breakdown of the number of means and observations for the two key regulatory capital ratios over time. Figure 1 compares the trend of Basel III requirements on the two ratios with the mean of these ratios for IBs, whereas Figure 2 depicts a different pattern in the observations of these two regulatory capital ratios, which IBs deviated from during the Basel II to Basel III transition. From 2004 to 2021, Figure 1 demonstrates that the mean of these two ratios is significantly higher. Figure 2 demonstrates that the disclosure of capital ratios has increased over time, reflecting IBs' adoption of the BCBS's global disclosure requirements for capital information. These reported proxy values are consistent with previous studies (Bitar *et al.*, 2016; Mateev *et al.*, 2022a, 2022c; Mateev and Bachvarov, 2021).

Main results

Table 4 reports the correlation matrix for the primary variables. The sign and significance are in accordance with economic theory and international IB research (Ashraf *et al.*, 2016;

Estimators	Lagged dependent variable coefficient
Pooled OLS	0.9298***
Fixed effect	0.5831***
Two-step diff. GMM	0.5845***
Two-step system GMM	0.6236***

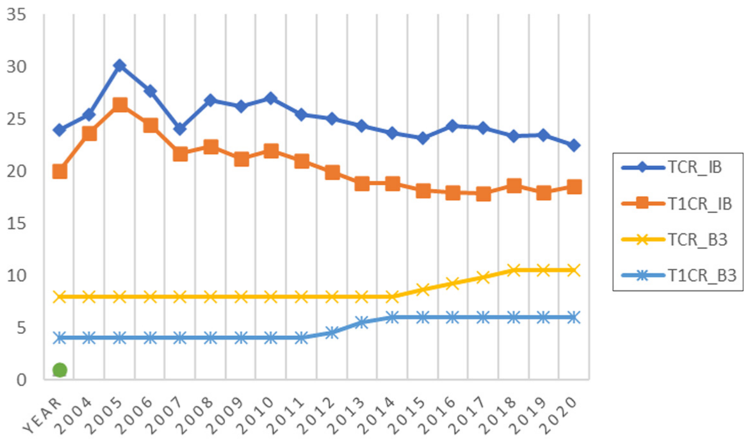
Note: ***$p < 0.01$
Source: Authors' own

Table 2. OLS, fixed effect and difference and system GMM estimators' results

Variable	Obs	Mean	SD	Min	Max
Z_SCORE	1,523	17.3578	17.7465	−6.9541	108.9672
lnZ_SCORE	1,492	2.5192	0.8591	0.1559	4.7227
TCR	1,368	24.7718	17.9425	11.07	81.6
BTCR	1,368	16.7718	17.9425	3.07	73.6
TETA	1,643	20.6962	21.8709	4.94	86.75
T1CR	1,146	20.0628	12.5219	8.37	58.58
BT1CR	1,146	14.0628	12.5219	2.37	52.58
TITA	1,238	0.1509	0.1516	0.043	0.6709
SIZE	1,643	21.2092	1.8707	16.5034	24.8682
ROE	1,523	12.1031	16.3004	−49.74	68.26
NIITOI	1,624	33.8889	27.4722	−12.4	133.01
EFF	1,633	68.4503	74.7118	0	574.95
OBSITA	1,459	0.2157	0.2443	0.0002	2.4473
GTA	1,510	23.689	45.0725	−31.15	323.11
HHIA	1,643	0.4307	0.2523	0.0977	1
GDPG	1,628	3.7098	4.349	−11.3242	18.3332

Note: To account for outliers, data is winsorized at the 1 and 99% percentiles
Source: Authors' own

Table 3. Descriptive statistics of banks



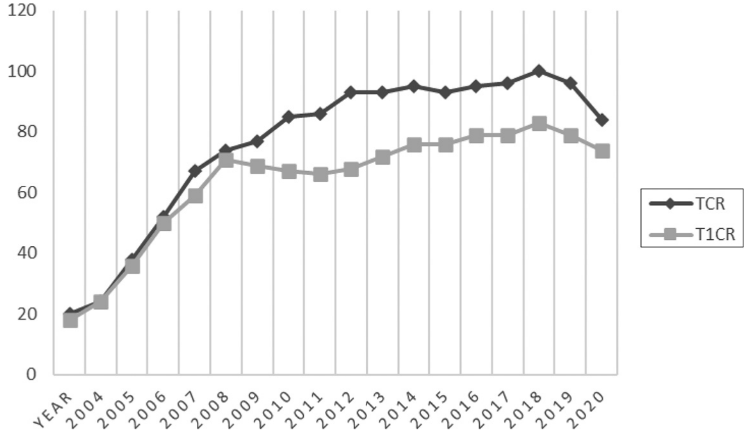
Source: FitchConnect database

Figure 1. Trend of the mean of TCR and T1 ratio in IB and Basel III requirement

Nosheen and Rashid, 2021). According to the correlation matrix, there are no significant correlations between the explanatory variables. Furthermore, the absence of multicollinearity is further evidenced by the low correlation.

Table 5 reports the empirical findings of the entire sample when equation (2) is taken into consideration. These findings concentrate on the situations in which the two-step GMM and the dynamic panel data approach are used, and they also present the estimation outcomes concerning capital ratios and bank stability. As the lagged *Z*-score coefficient is positive and statistically significant, we can infer that the past years' stability of IBs has contributed to the stability in the present year (Lee and Hsieh, 2013).

Following Ashraf *et al.* (2016), we performed empirical estimates using the two model specifications as in equation (2). Both the first and second specifications use variables that



Source: FitchConnect database

Figure 2. Trend of the disclosure transformation of TCR and T1 in IB

Table 4. Pairwise correlation matrix

Variable	Z_SCORE	TCR	SIZE	ROE	NIITOI	EFF	OBSITA	GTA	HHIA	GDPG
TCR	0.2402*	1								
SIZE	0.0069	−0.5454*	1							
ROE	−0.0236	−0.2372*	0.2656*	1						
NIITOI	−0.0723*	0.3230*	−0.3082*	−0.0416	1					
EFF	−0.1062*	0.2774*	−0.3550*	−0.5009*	0.1115*	1				
OBSITA	0.0983*	0.0006	−0.0703*	0.036	0.0838*	−0.0878*	1			
GTA	0.0446	0.0409	−0.0851*	0.1427*	0.04	0.0915*	0.0462	1		
HHIA	−0.028	0.2753*	−0.3449*	−0.0899*	0.1732*	0.1533*	−0.0837*	0.0431	1	
GDPG	0.0686*	0.0289	−0.0857*	0.1086*	−0.0743*	−0.0447	0.0313	0.0997*	−0.0553*	1

Note: $*p < 0.1$
Source: Authors' own

are unique to banks and countries, respectively. Table 5 displays the results of empirical estimations, columns (1)–(4) show the first bank-specification and (5)–(8) the second. Our testable hypothesis is based on the moral hazard theory. Throughout the study period and across all six models, we consistently observed a significant positive relationship between the capital ratio and *Z*-score, with a significance level of 1%. This finding provides support for the validity of the moral hazard hypothesis. The capital coefficients of TCR and T1CR are approximately 0.0808% and 0.1275%, indicating that a 1% increase in total capital and T1 capital increases stability by 0.08% and 0.13%, respectively. The Hansen and serial-correlation tests do not reject the null hypothesis of correct specification, indicating that the instruments are valid and that there is no serial correlation.

In terms of regulations, these findings are in line with the goal of Basel III, which is to improve capital ratios to make banking system more stable. These results, when compared with empirical studies, are consistent with those of Abbas *et al.* (2021), Abbas and Ali (2020); and Abbas and Younas (2021), who report a negative relationship between bank regulatory capital ratios and bank risk using a two-step GMM method for 937 large commercial banks in the USA from 2003 to 2019. The findings, however, are inconsistent with empirical

Table 5. Two-step system GMM baseline results

VARIABLES	(1) Z_SCORE	(2) Z_SCORE	(3) Z_SCORE	(4) Z_SCORE	(5) Z_SCORE	(6) Z_SCORE	(7) Z_SCORE	(8) Z_SCORE
L.Z_SCORE	0.6267*** (0.0869)	0.6070*** (0.0823)	0.4174*** (0.1306)	0.4866*** (0.1168)	0.6236*** (0.0860)	0.6094*** (0.0861)	0.4930*** (0.1310)	0.5173*** (0.1044)
TCR	0.0714*** (0.0226)				0.0808*** (0.0221)			
TETA		0.1583*** (0.0563)				0.1525*** (0.0534)		
T1CR			0.1289*** (0.0468)				0.1275** (0.0524)	
TITA				19.5872*** (5.2768)				20.3391*** (5.4956)
SIZE	−0.8157*** (0.2530)	−0.5745* (0.3039)	−1.0872*** (0.3233)	−0.9079*** (0.3030)	−0.7311*** (0.2506)	−0.5482* (0.2938)	−0.9721*** (0.3523)	−0.7620** (0.3028)
ROE	0.0654*** (0.0105)	0.0436*** (0.0136)	0.0567*** (0.0115)	0.0469*** (0.0105)	0.0646*** (0.0099)	0.0466*** (0.0128)	0.0552*** (0.0112)	0.0488*** (0.0107)
NIITOI	0.0108** (0.0054)	0.0165*** (0.0050)	0.0104 (0.0065)	0.0164*** (0.0046)	0.0100* (0.0055)	0.0145*** (0.0051)	0.0104 (0.0069)	0.0159*** (0.0052)
EFF	−0.0113** (0.0053)	−0.0140** (0.0069)	−0.0074* (0.0040)	−0.0086** (0.0041)	−0.0115** (0.0052)	−0.0127* (0.0070)	−0.0071** (0.0035)	−0.0078* (0.0040)
OBSITA	3.2098*** (1.0853)	2.5187*** (0.8013)	2.2388** (1.0241)	3.8095*** (0.9836)	3.0181*** (1.0738)	2.4825*** (0.7676)	2.3655** (1.0673)	3.2739*** (0.9836)
GTA	−0.0143* (0.0085)	−0.0153** (0.0066)	−0.0038 (0.0071)	−0.0057 (0.0061)	−0.0161* (0.0090)	−0.0170** (0.0065)	−0.0098 (0.0088)	−0.0072 (0.0060)
HHIA					−1.5402 (1.8675)	−0.2623 (1.6774)	−2.8473 (3.4786)	−0.7399 (2.0658)
GDPG					0.0330 (0.0249)	0.0128 (0.0212)	0.0353* (0.0189)	0.0201 (0.0192)
Constant	19.2709*** (6.0094)	14.2026* (7.3509)	27.4277*** (7.8676)	22.2458*** (7.3580)	17.9501*** (6.1448)	13.8365* (7.1690)	25.0956*** (8.6597)	19.0900** (7.3318)
Observations	987	1,091	834	910	972	1,076	819	895
Number of B_ID	104	107	92	94	104	107	92	94
AR(2)	0.444	0.752	0.607	0.638	0.414	0.668	0.481	0.467
Hansen	0.268	0.317	0.306	0.445	0.570	0.370	0.390	0.575
Number of instruments	25.000	25.000	25.000	25.000	27.000	27.000	27.000	27.000

Notes: Standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$ and *$p < 0.1$
Source: Authors' own

studies in MENA IBs, such as Mateev *et al.* (2022a) and Mateev *et al.* (2022b). The Tier 1 ratio results are in line with TCR, and these results are in line with empirical studies of Mateev *et al.* (2022a) and Mateev *et al.* (2022b).

The impact of bank traditional capital, non-risk-based capital ratios, on stability is also positive and significant at the 1% significance level, which is consistent with the findings of Bitar *et al.* (2016). The effect of bank-specific control variables, i.e. size, efficiency and growth of TA, is significant negative on bank stability; profitability, income diversification, off-balance sheet items to TA, are significant positive on bank stability, which are consistent with Ashraf *et al.* (2016); Bitar *et al.* (2016, 2018, 2020); and Saif-Alyousfi and Saha (2021). In terms of country-level control variables, both of HHIA and GDPG show no significant impact on bank stability, which is consistent with Ashraf *et al.* (2016) but inconsistent with Nosheen and Rashid (2021).

Theoretical frameworks suggest a connection between capital and risk, as proposed by Bitar *et al.* (2016), Bitar *et al.* (2018) and Lee and Hsieh (2013). They explain this relationship through the moral hazard theory, stating that capital negatively affects bank risk. In our study, we used the *Z*-score as an indicator of a bank's insolvency risk. The *Z*-score consists of two components: the first, ROA/SD(ROA), measures asset risk, whereas the second, (K/A)/SD(ROA), measures leverage risk. A negative correlation was observed between the *Z*-score and the likelihood of a financial institution's failure. A positive *Z*-score indicates a lower likelihood of default and higher stability. In the Islamic banking system, implementing PLS principles with IAHs can benefit IBs by leveraging IAHs' investment accounts to maximize profits. However, IBs cannot always transfer losses to IAHs as they may discontinue investing. Therefore, IBs may maintain larger capital ratios than conventional banks to mitigate solvency issues and provide shareholders with more influence over investment decisions. Our research supports the moral hazard hypothesis and demonstrates the applicability of the PLS concept in Islamic banking. In addition, banks with higher capital quality are less likely to rely on public sector funds for covering losses, which aligns with existing literature and the descriptive results obtained.

Findings of global financial crisis and COVID-19

Table 6 reports the impact of GFC (columns 1–4) and COVID-19 (column 5–8) on IB stability. At this stage, we introduce two dummies to differentiate the effect of bank capitals on stability for GFC and COVID-19 period. The results show that the GFC did not have any significant impact on IBs, which is consistent with Ashraf *et al.* (2016). In terms of capital ratios, bank-specific variables and country-level variables, the outcomes are comparable to the baseline models presented in Table 6.

Robustness tests

Capital buffer ratios and bank stability

One of the primary objectives of Basel III capital requirements is to strengthen the banking system's resilience by increasing the regulatory capital ratio and improving capital quality. According to the new agreement, the TCR (Tier 1 plus Tier 2) must be 8%, and the T1CR must be 6%. These ratios are performed higher than the regulatory requirements in IBs. As a result, the capital buffer ratios are used as a robustness test to gain a better understanding of the relationship between regulatory capital ratios and IB stability. The findings of these tests are summarized in Table 7, and they provide further evidence in support of our earlier findings. The results of the robustness checks are consistent with previous research, such as that of Abbas *et al.* (2021), Abbas and Ali (2020); and Abbas and Younas (2021).

Table 6. Two-step system GMM results during GFC and COVID-19

VARIABLES	(1) Z_SCORE	(2) Z_SCORE	(3) Z_SCORE	(4) Z_SCORE	(5) Z_SCORE	(6) Z_SCORE	(7) Z_SCORE	(8) Z_SCORE
L.Z_SCORE	0.6202*** (0.0850)	0.6098*** (0.0852)	0.4986*** (0.1241)	0.5098*** (0.1024)	0.6166*** (0.0839)	0.6161*** (0.0866)	0.4938*** (0.1195)	0.5476*** (0.1150)
TCR	0.0806*** (0.0224)				0.0821*** (0.0220)			
TETA		0.1550*** (0.0554)				0.1742** (0.0755)		
T1CR			0.1220** (0.0501)				0.1254** (0.0527)	
TITA				20.6021*** (5.5140)				20.8957** (8.0678)
SIZE	−0.8178*** (0.2437)	−0.6794** (0.3128)	−0.9641*** (0.3246)	−0.8946*** (0.2988)	−0.6905*** (0.2440)	−0.4590 (0.3830)	−0.6598** (0.3264)	−0.5932 (0.3581)
ROE	0.0652*** (0.0100)	0.0482*** (0.0132)	0.0566*** (0.0110)	0.0495*** (0.0107)	0.0606*** (0.0101)	0.0478*** (0.0132)	0.0507*** (0.0109)	0.0538*** (0.0110)
NIITOI	0.0093 (0.0056)	0.0137** (0.0053)	0.0103 (0.0069)	0.0152*** (0.0054)	0.0097 (0.0059)	0.0138** (0.0063)	0.0129 (0.0078)	0.0166*** (0.0062)
EFF	−0.0117** (0.0053)	−0.0131* (0.0077)	−0.0066* (0.0035)	−0.0083* (0.0043)	−0.0126* (0.0069)	−0.0127* (0.0072)	−0.0084* (0.0047)	−0.0072 (0.0043)
OBSITA	3.0821*** (1.0814)	2.4745*** (0.7804)	2.3442** (1.0483)	3.3205*** (0.9918)	3.1375*** (1.1448)	2.2922*** (0.8732)	3.2676*** (1.0372)	3.2550*** (1.1476)
GTA	−0.0158* (0.0090)	−0.0167** (0.0066)	−0.0102 (0.0084)	−0.0061 (0.0058)	−0.0138 (0.0086)	−0.0170** (0.0069)	−0.0117 (0.0074)	−0.0085 (0.0066)
HHIA	−1.4688 (1.9015)	−0.1845 (1.6644)	−2.5537 (3.5347)	−0.7459 (2.0571)	−1.1126 (1.9811)	−0.4018 (1.7620)	0.3710 (3.6873)	−1.2964 (2.1174)
GDPG	0.0286 (0.0261)	0.0027 (0.0206)	0.0345* (0.0186)	0.0121 (0.0193)	0.0181 (0.0274)	0.0131 (0.0235)	0.0272 (0.0208)	0.0208 (0.0209)
D_GFC	−0.3615 (0.4565)	−0.6685* (0.3914)	−0.1195 (0.4905)	−0.5828 (0.3636)				
D_COV19					−0.2963 (0.2533)	0.0689 (0.2622)	−0.4747* (0.2704)	0.0397 (0.2742)
Constant	19.9117*** (5.7938)	16.7120** (7.5104)	24.8031*** (7.8421)	22.1533*** (7.1008)	17.2812*** (5.9392)	11.6818 (9.1445)	17.1620** (7.5697)	15.0822* (8.6171)
Observations	972	1,076	819	895	972	1,076	819	895
Number of B_ID	104	107	92	94	104	107	92	94
AR(2)	0.413	0.660	0.468	0.459	0.435	0.675	0.539	0.490
Hansen	0.567	0.351	0.405	0.603	0.642	0.271	0.630	0.370
Number of instruments	28.000	28.000	28.000	28.000	28.000	28.000	28.000	28.000

Notes: Standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$ and *$p < 0.1$
Source: Authors' own

VARIABLES	(1) Z_SCORE	(2) Z_SCORE
L.Z_SCORE	0.6236*** (0.0860)	0.4930*** (0.1310)
BTCR	0.0808*** (0.0221)	
BT1CR		0.1275** (0.0524)
SIZE	−0.7311*** (0.2506)	−0.9721*** (0.3523)
ROE	0.0646*** (0.0099)	0.0552*** (0.0112)
NIITOI	0.0100* (0.0055)	0.0104 (0.0069)
EFF	−0.0115** (0.0052)	−0.0071** (0.0035)
OBSITA	3.0181*** (1.0738)	2.3655** (1.0673)
GTA	−0.0161* (0.0090)	−0.0098 (0.0088)
HHIA	−1.5402 (1.8675)	−2.8473 (3.4786)
GDPG	0.0330 (0.0249)	0.0353* (0.0189)
Constant	18.5965*** (6.2027)	25.8607*** (8.7513)
Observations	972	819
Number of B_ID	104	92
AR(2)	0.414	0.481
Hansen	0.570	0.390
Number of instruments	27.000	27.000

Notes: Standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$ and *$p < 0.1$
Source: Authors' own

Table 7. Two-step system GMM results on the capital buffer ratios and bank stability

The role of Basel membership

The Basel Committee has 45 members from 28 jurisdictions, including central banks and authorities with formal responsibility for banking supervision. In addition to the members of the Committee, there are eight observers from three countries. The Islamic banking system and the conventional financial system coexist in parallel in 8 of those 31 nations: Germany, Indonesia, Saudi Arabia, Singapore, Turkey, UK, Malaysia and United Arab Emirates. In keeping with Siddika and Haron (2020), we also add a membership dummy variable to examine its effects on the stability of IBs. The findings of these tests are shown in Table 8. It demonstrates that Basel membership in IBs has no significant impact on stability, and it serves as additional evidence to support our previous findings.

Alternative stability measure

Following Ashraf *et al.* (2016) and Harkati *et al.* (2020),we also used the *Z*-logarithmic score's transformation in the estimation for an alternative predictor of bank risk-taking to test for robustness. This was done because it is widely contended in the academic literature that the *Z*-score is highly skewed (Laeven and Levine, 2009; Schaeck and Cihák, 2012). Table 9 summarizes the results of these tests, which support our previous findings.

Other estimation techniques

To increase robustness, the analysis also uses alternative estimators, such as POLS, fixed effect and difference GMM, which are used in studies on the stability of IBs (Alshammari, 2021; Harkati *et al.*, 2020; Mateev *et al.*, 2022c). Table 10 presents the results of these tests, which confirm our previous findings.

Conclusion

This study adds to the previous useful and informative research by delving even deeper into the connection between BCBS capital guidelines and the reliability of IBs. To provide a

VARIABLES	(1) Z_SCORE	(2) Z_SCORE	(3) Z_SCORE	(4) Z_SCORE
L.Z_SCORE	0.5845*** (0.1042)	0.5513*** (0.0794)	0.4942*** (0.1277)	0.5020*** (0.0996)
TCR	0.0886*** (0.0251)			
TETA		0.1766*** (0.0631)		
T1CR			0.1283** (0.0508)	
TITA				20.3092*** (5.7969)
SIZE	−0.8692*** (0.3238)	−0.7071** (0.3231)	−0.9871*** (0.3556)	−0.8160** (0.3145)
ROE	0.0635*** (0.0098)	0.0418*** (0.0126)	0.0553*** (0.0110)	0.0499*** (0.0104)
NIITOI	0.0092 (0.0057)	0.0142** (0.0056)	0.0103 (0.0070)	0.0163*** (0.0055)
EFF	−0.0111** (0.0048)	−0.0119* (0.0065)	−0.0070* (0.0036)	−0.0081* (0.0041)
OBSITA	3.0426*** (1.0811)	2.5086*** (0.7671)	2.3474** (1.1120)	3.2939*** (0.9441)
GTA	−0.0152 (0.0092)	−0.0142** (0.0064)	−0.0098 (0.0094)	−0.0062 (0.0060)
HHIA	−1.9086 (1.8798)	−0.5106 (1.5809)	−3.0395 (3.2280)	−1.3555 (2.0533)
GDPG	0.0383* (0.0231)	0.0194 (0.0206)	0.0357* (0.0185)	0.0222 (0.0184)
D_MEM	−5.7431 (12.2370)	−13.5292 (22.6544)	−2.2093 (15.2210)	−3.3249 (14.7824)
Constant	24.1876** (12.1461)	23.9376* (13.4758)	26.5565** (12.5517)	22.1579** (10.9222)
Observations	972	1,076	819	895
Number of B_ID	104	107	92	94
AR(2)	0.367	0.508	0.465	0.422
Hansen	0.552	0.308	0.313	0.459
Number of instruments	27.000	27.000	27.000	27.000

Notes: Standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$ and *$p < 0.1$
Source: Authors' own

Table 8. Two-step system GMM results with membership dummy

VARIABLES	(1) lnZ_SCORE	(2) lnZ_SCORE	(3) lnZ_SCORE	(4) lnZ_SCORE
L.lnZ_SCORE	0.7424*** (0.1158)	0.6779*** (0.1551)	0.7268*** (0.1198)	0.7603*** (0.1005)
TCR	0.0044** (0.0021)			
TETA		0.0143*** (0.0054)		
T1CR			0.0053* (0.0029)	
TITA				1.2063*** (0.3472)
SIZE	−0.0345 (0.0275)	−0.0059 (0.0278)	−0.0212 (0.0214)	0.0025 (0.0201)
ROE	0.0112*** (0.0018)	0.0106*** (0.0016)	0.0098*** (0.0023)	0.0104*** (0.0018)
NIITOI	0.0005 (0.0005)	0.0009** (0.0005)	0.0007 (0.0007)	0.0011* (0.0006)
EFF	−0.0005 (0.0008)	−0.0004 (0.0006)	−0.0013 (0.0013)	−0.0007 (0.0010)
OBSITA	0.1126** (0.0502)	0.0363 (0.0555)	0.1730** (0.0817)	0.1063 (0.0752)
GTA	−0.0022** (0.0009)	−0.0021** (0.0010)	−0.0019** (0.0008)	−0.0019** (0.0008)
HHIA	−0.1842 (0.1530)	−0.1757 (0.1118)	−0.2380 (0.2151)	−0.2354 (0.1616)
GDPG	0.0003 (0.0018)	−0.0002 (0.0015)	0.0023 (0.0018)	0.0014 (0.0018)
Constant	0.8633 (0.8273)	0.3414 (0.8945)	0.6785 (0.6635)	0.0426 (0.6040)
Observations	952	1,049	802	877
Number of B_ID	103	106	91	93
AR(2)	0.264	0.678	0.142	0.141
Hansen	0.102	0.007	0.073	0.075
Number of instruments	27.000	27.000	27.000	27.000

Notes: Standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$ and *$p < 0.1$
Source: Authors' own

Table 9. Two-step system GMM results with alternative dependent variable: L.lnZ_score.

VARIABLES	(1) POLS	(2) POLS	(3) POLS	(4) POLS
Panel A: using pooled ordinary least squares model (POLS)				
L.Z_SCORE	0.9298*** (17.45)	0.9025*** (17.78)	0.9969*** (17.03)	1.0149*** (18.17)
TCR	0.0249 (1.33)			
TETA		0.0234* (1.83)		
T1CR			0.0187 (0.94)	
TITA				1.6069 (0.92)
Constant	4.3568** (2.03)	3.9151** (2.22)	5.9764*** (2.78)	5.6040*** (2.93)
Observations	972	1,076	819	895
R-squared	0.960	0.958	0.966	0.965
Number of B_ID				
Panel B: using fixed effects model (FE)				
	(5)	(6)	(7)	(8)
VARIABLES	FE	FE	FE	FE
L.Z_SCORE	0.5831*** (11.67)	0.4932*** (10.53)	0.5163*** (10.24)	0.4937*** (9.65)
TCR	0.1110*** (4.99)			
TETA		0.2687*** (3.19)		
T1CR			0.1386*** (3.86)	
TITA				22.1438*** (3.90)
Constant	25.4100*** (3.94)	18.2249** (2.11)	24.7441*** (3.83)	23.6556*** (3.22)
Observations	972	1,076	819	895
R-squared	0.683	0.703	0.722	0.755
Number of B_ID	104	107	92	94
Panel C: using difference GMM model (DGMM)				
	(9)	(10)	(11)	(12)
VARIABLES	DGMM	DGMM	DGMM	DGMM
L.Z_SCORE	0.5845*** (5.61)	0.5513*** (6.94)	0.4942*** (3.87)	0.5020*** (5.04)
TCR	0.0886*** (3.53)			
TETA		0.1766*** (2.80)		
T1CR			0.1283** (2.53)	
TITA				20.3092*** (3.50)
Observations	868	969	727	801
Number of B_ID	100	104	88	92

Notes: Robust t-statistics in parentheses; ***$p < 0.01$, **$p < 0.05$ and *$p < 0.1$
Source: Authors' own

Table 10.
Other estimation techniques

global perspective on Islamic banking studies, we use variable forms of capital ratios and buffers, in addition to different stability measures. Also, our data set has been updated to cover the effects of the COVID-19 outbreak up to the year 2021. In addition, the Basel membership of IBs is introduced in this study to shed light on the implementation of the Basel III international standard in countries still in the Basel II stage or that have yet to begin.

Our findings implied that first, based on the results of the descriptive statistics, there are now more IBs that publicly disclose their regulatory capital ratios, and the mean total capital and Tier 1 ratios are significantly higher than those mandated by Basel II and Basel III. Second, our findings indicate that in Islamic banking, the regulatory capital position exceeds the minimum requirements set by Basel III, as revealed by descriptive statistics. This has a positive impact on stability, reducing bank insolvency risk, as demonstrated in the regression results. These results provide new evidence supporting the moral hazard theory within the context of Islamic banking. The implications of our findings suggest that regulatory authorities should strengthen their policies to ensure better alignment of banks with Basel III regulatory capital requirements during the COVID-19 pandemic, thus improving the financial stability of the banking sector. Third, according to our findings, the stability of IBs around the world was not significantly impacted by either the GFC of 2008–2009 or COVID–19 (2020–2021). Fourth, the findings hold up to different stability measures, additional capital buffers, dummy variables and other estimation methods.

Our research has several limitations, but the following three stand out. As a first issue, we are unable to analyze the impact of various quality of capital ratios due to a lack of bank level observations, particularly for Basel III regulatory ratios like common equity Tier 1 ratio, additional Tier 1 ratio and leverage ratio. In addition, the effect of the Basel III new liquidity capital ratios on IB stability cannot be analyzed using the liquidity coverage ratio or the net stable funding ratio. Finally, future research should be able to use reasonably large samples to conduct regressions investigating the connections between capital and bank stability once more data becomes available.

The findings of our research have important repercussions for those in regulatory agencies, policymaking bodies and bank management. First, the increased attention on international banking regulations like the Basel III Accord and IFSB standards highlights the significance of our work. Second, our findings have broad implications for policymakers and regulators worldwide. Third, there is a strong relationship between risk-based capital ratios and bank stability/risk taking, and this relationship holds true for both risk-based and non-risk-based capital ratios. For this reason, it is imperative that Islamic banking authorities advocate for Basel III, which strengthens bank stability and bank protection against risk, particularly during times of stress like the GFC and the COVID-19 outbreak. It is important for bank risk management that managers take steps to mitigate the potential negative effects of capital buffer depletion. A future expansion of this research will examine how regulatory capital ratios affect the management of credit risk, liquidity risk and asset risk in IBs from a variety of perspectives.

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Corresponding author
Xiao Ling Ding can be contacted at: ayisha.ding@hotmail.com