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Research Article

The Impact of Basel Standards on Default Risk: A Case of Islamic Banks in Bangladesh

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Abstract
Default risk is a major concern for banks and is shaped by both internal and external factors. Regulatory frameworks like Basel III aim to mitigate such risks. This study investigates the impact of Basel III standards on the default risk of Islamic banks in Bangladesh, focusing on three key indicators: Capital Adequacy Ratio (CAR), Liquidity Coverage Ratio (LCR), and Net Stable Funding Ratio (NSFR). The research covers all Islamic banks in Bangladesh and utilizes secondary data from annual reports. Default risk is assessed using the z-score, where a higher score indicates a lower probability of insolvency. Control variables include credit risk, investment propensity, off-balance sheet exposure, economic growth, and lending rates. A Random Effects Model is employed, with Panel-Corrected Standard Errors (PCSE) applied to address heteroskedasticity, autocorrelation, and cross-sectional dependency. Findings reveal that CAR, LCR, and NSFR significantly reduce default risk, highlighting the effectiveness of Basel III measures in strengthening financial stability. This study uniquely emphasizes Islamic banks and explores the alignment between globally recognized regulatory standards and Sharia-compliant banking. The results offer valuable insights for regulators, policymakers, and bank managers striving to balance regulatory compliance with the principles of Islamic finance.

Keywords: Basel III, Capital Adequacy Ratio, Liquidity Coverage Ratio, Net Stable Fund Ratio, Default Risk, Islamic Banks, Random Effect Model, PCSE

JEL Classification: G21, G28, G32, E58, P34

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1. Introduction

The global financial crisis of 2007–2009 exposed the limitations of the Basel II Accord in protecting banks from systemic failure. In response, the Basel Committee on Banking Supervision (BCBS) introduced the Basel III framework, designed to enhance the stability and resilience of the banking system. The Basel III regulations, through requirements such as higher-quality capital, leverage constraints, liquidity norms, and enhanced disclosures, seek to fortify banks against potential financial instability (Jayadev, 2013). The Bangladesh Bank has responded by implementing these standards through the "Guidelines on Risk-Based Capital Adequacy in line with Basel III" (BRPD Circular No. 18, 2014).

Amid concerns about the stability of Shariah-compliant banks in Bangladesh highlighted by liquidity challenges recently reported by national dailies (Hasan, 2023; Saad, 2024; Staff Correspondent, 2023; Report, 2023) this study examines whether Basel III's regulations mitigate default risk specifically in Islamic banks. The choice to focus on Islamic banks reflects their distinct structure and operational dynamics, which pose unique challenges in terms of liquidity management and capital adequacy.

Thus, the primary aim of this research is to analyze the impact of Basel III standards, specifically the Capital Adequacy Ratio (CAR), Liquidity Coverage Ratio (LCR), and Net Stable Funding Ratio (NSFR), on the default risk of Islamic banks in Bangladesh. We measure default risk using the z-score, a widely accepted distance-to-default metric, to evaluate whether enhanced regulatory measures bolster the financial resilience of Islamic banks. This study contributes to the broader understanding of how regulatory frameworks, such as Basel III, affect financial stability in Islamic banking systems, providing insights into potential risk mitigation strategies for regulators and stakeholders alike.

The following section of the study presents a literature review, highlighting earlier research conducted in relevant fields. The third section of the study presents the materials and methods, outlining the process of determining the proper model. Based on the methods, the fourth section highlights the empirical results. The fifth section presents a discussion based on the study's results. Finally, the concluding remarks summarize the study's significance and outline its scope for further research.

The novelty of this study lies in its exclusive focus on fully-fledged Islamic banks in Bangladesh an under-researched area using z-score as a proxy for default risk. Unlike conventional banks, Islamic banks face distinct challenges in meeting Basel III's capital and liquidity requirements due to the prohibition on interest and their reliance on Sharia-compliant instruments.

By examining the effects of the Capital Adequacy Ratio (CAR), Liquidity Coverage Ratio (LCR), and Net Stable Funding Ratio (NSFR), this study contributes to the scarce literature on the efficacy of Basel III in Islamic financial systems. It also provides empirical evidence on whether global regulatory frameworks can be effectively applied to Islamic finance, offering practical insights for regulators, policymakers, and bank managers seeking to enhance financial stability without undermining Sharia compliance.

Following this introduction, the literature review explores existing research on Basel III and Islamic banking. The methodology section details data sources and econometric models, while subsequent sections present and discuss the empirical findings. The paper concludes with key takeaways, policy implications, and directions for future research.

2. Literature Review and Hypothesis

According to Gabriel (2016), Basel III has increased earnings for European banks with higher capitalization. According to Giordana and Schumacher's (2017) analysis of Basel III's effects on bank default risk, following CAR, LCR, and NSFR lowers the possibility of a default, as indicated

by the z-score. Based on an analysis of African banks, Obadire (2022) found that while LCR greatly increased stability, Basel III's minimum capital requirement and capital buffer premium had a small and negative impact.

Sood (2015) examined whether CAR is associated with bank failures, finding that the relationship becomes significant only when the Tier 1 capital ratio falls below 6%, based on a study of 560 US bank holding firms from 2003 to 2009. Karugu, Achoki, and Kiriri (2018) determined that CAR is a reliable predictor of financial distress in Kenyan commercial banks. Buchdadi, Nguyen, Putra, and Dalimunthe (2020) found that both credit risk and capital adequacy have a significant impact on the financial distress of rural banks. Fiordelisi and Mare (2013) showed that adequate capital reduces the likelihood of default, as larger buffers absorb losses and mitigate moral hazard. Sang (2021) found a positive correlation between CAR and financial stability in Vietnamese commercial banks. Saputra, Najmudin, and Shaferi (2020) noted that while capital adequacy has a positive impact on bank stability in Indonesia, credit risk and liquidity risk have a negative impact on stability. Hossain, Khan, and Sadique (2017) highlighted the role of CAR in enhancing bank resilience in BRICS economies. Conversely, Aroghene (2023) found that CAR had a positive but insignificant effect on the stability of Nigerian banks, a conclusion supported by Aroghene and Ikeora (2022), who also found CAR's effect on stability to be insignificant when measured by z-score.

Imbierowicz and Rauch (2014) found no significant reciprocal or time-lagged relationship between credit risk and liquidity risk, although both individually increase the likelihood of bank default; their combined effect can either exacerbate or mitigate default risk, depending on the overall bank risk. Ghenimi, Chaibi, and Omri (2017) similarly concluded that while credit risk and liquidity risk separately influence bank instability, they do not have a direct relationship with each other. Abdesslem, Chkrir, and Dabbou (2022) found that both credit and liquidity risks significantly impact the probability of default in European commercial banks. Amara and Mabrouki (2019) observed that while each risk affects bank stability independently, their combined effect reduces the bank's stability. Du (2017) demonstrated that the Liquidity Coverage Ratio (LCR), when combined with the marginal projected deficit, can predict systemic losses in banks, as observed during the 2007–2008 financial crisis.

Mutarindwa, Schafer, and Stephan (2020) found that African banks complying with Basel III's risk-weighted Total Capital Ratio (TCR) lend more, while those adhering to the Net Stable Funding Ratio (NSFR) lend less. Only banks with above-median stability exhibit improvements in their z-score and non-performing loan ratio when they meet capital requirements. Alam, Hussain, and Saqib (2023) found that the NSFR significantly enhances financial stability and profitability for Malaysian Islamic banks, while the LCR has a negative impact on profitability and a negligible effect on stability. Sharma and Chauhan (2023) indicated that achieving Basel III capital and liquidity requirements benefits banks' z-scores, reducing default risk. Ashraf and Kouser (2017) found an inverse relationship between NSFR and bank failure or distress in Pakistan.

Ejoh, Okpa, and Inyang (2014) found that credit and liquidity risk are positively correlated in Nigerian banks, with rising credit risk leading to increased bank illiquidity and default risk. Kashian and Tao (2014) found a general correlation between moderate profitability improvements and higher insolvency probabilities resulting from increased off-balance sheet exposure. Atkan, Chan, Zikovic, and Mandaci (2012) found that off-balance sheet activities positively correlate with bank-specific and foreign exchange rate risks in Turkey. Keffala (2024) noted that off-balance sheet activities are increasingly affecting credit risk in African banks, but can be mitigated with moderate activities. Tahat and Abunqira (2016) found significant correlations between off-balance sheet activities and market, liquidity, and revenue growth risks, but a negative correlation with capital adequacy risk, with no significant link to leverage and credit risk.

Kiemo, Olweny, Muturi, and Mwangi (2019) identified regulatory capital, bank funding, and corporate governance as positive determinants of financial stability in Kenyan commercial banks, while credit exposure negatively impacted stability. Karim, Al-Habshi, and Abduh (2016) found a

long-term correlation between macroeconomic indicators and overall banking sector stability in Indonesia, though the link to Islamic banks was weak. Gumbo and Zoromedza (2016) developed a bank failure prediction model for Zimbabwe, utilizing GDP growth rate data to assess its impact on default probability. Amollo (2015) demonstrated that profit rates have a significant impact on profitability in Kenyan commercial banks, with a linear relationship between profit rates and financial performance.

To the best of the authors' knowledge, no study has been conducted on Islamic banks in Bangladesh that examines the impact of Basel III standards on the default risk. Therefore, this study has addressed this gap and employed the necessary techniques to achieve the research objective. Based on the above literature, the hypothesis for this study is as follows:
H1: There is a significant effect of Basel III standards on the default risk of Islamic Banks in Bangladesh

3. Data and Method

This study analyzes the impact of Basel III on ten full-fledged Islamic banks in Bangladesh, encompassing 90 observations from 2014 to 2022. The data sources include annual reports from the banks, macroeconomic data from the World Bank Data Center, and contemporary newspapers and articles. The research is quantitative, utilizing panel data to assess the effects of Basel III regulations as outlined in Bangladesh Bank's BRPD Circular No. 18 (December 21, 2014) and the Revised Regulatory Capital Framework. The Hausman test indicated the use of the Random Effect Model for empirical analysis. To address issues of cross-sectional dependency, autocorrelation, and heteroskedasticity, the study applied Panel-Corrected Standard Errors (PCSE).

3.1 Variables

The study incorporates one dependent variable and eight independent variables, including five control variables. The definition of dependent and independent variables is as follows:
The only dependent variable in this study is the z-score, which measures bank distance to default. This metric is widely used in literature (Bandyopadhya, 2005; Giordana & Schumacher, 2017; Kaliyev & Nurmakhanova, 2020). It compares the buffer of a country's banking system (World Bank). It is estimated as follows:

$$\text{Z-score} = \frac{CAR+ROA}{sd(ROA)} \tag{1}$$

Where CAR is Capital-Asset Ratio, ROA is Return on Assets, which is calculated by dividing net profit after tax by total assets. The denominator of the equation is the standard deviation of return on assets. Capital acts as a cushion to withstand loss. Profitability, as denoted by ROA, is the ability of the bank to generate returns out of its total assets. According to the equation, banks with higher capital-to-asset ratios and profitability will have a greater Z score, which ultimately proves to be more resilient and has a lower chance of default.

As per the title of the study, three independent variables are considered, along with five more as control variables. The first one is the Capital Adequacy Ratio (CAR), which is one of the measures of a bank's ability to fulfill its responsibilities. The formula for CAR is as follows:

$$\text{CAR} = \frac{Tier\ 1\ Capital+Tier\ 2\ Capital}{Risk\ Weighted\ Assets} \tag{2}$$

The second variable is LCR, which is used to assess a bank's ability to meet its short-term obligations. It estimates the ratio of a bank's highly liquid asset holdings to its anticipated net cash withdrawals over a given time frame, usually 30 days. The formula for calculating LCR is as follows:

$$\text{LCR} = \frac{High\ Quality\ Liquid\ Assets}{Net\ Cash\ Outflows} \tag{3}$$

The third variable of the study is Net Stability Funding Ratio (NSFR). In contrast to the LCR, which addresses immediate liquidity issues, the NSFR aims to promote a more sustainable, longer-term financial structure. It is calculated as follows:

$$\text{NSFR} = \frac{Available\ Stable\ Funding}{Required} \quad (4)$$

Besides these three variables, the study considers three bank-specific factors and two macroeconomic factors as control variables. To address credit risk, provisions to total investments have been considered. Besides balance sheet variables, the study also considers the off-balance sheet effect. For this reason, off-balance sheet exposure to total assets has been considered as a control variable. The degree of risk depends on the level of investment activity. Hence, as a relative measure, investment-to-total-assets has been considered as a control variable. As a proxy for economic growth, the GDP growth rate has been considered another control variable. The last control variable is profit rate, which is basically the average profit rate of Islamic Banks throughout the timeframe.

Table 1. Variable description

Types	Variable	Acronym	Measurement	Expected Sign	Source
Dependent	Z-score	z-score	(ROA+CAR)/sd(ROA)		(Kaliyev & Nurmakhanova, 2020)
Independent	Capital Adequacy Ratio	car	Total Capital/ Risk-Weighted Assets	(+)	(Karugu et a., 2018; Hossain & Khan, 2017)
	Liquidity Coverage Ratio	lcr	High Quality Liquid Assets / Net Cash Outflows	(+)	(Amara & Mabrouki 2019)
	Net Stability Funding Ratio	nsfr	Available Stable Funding / Required Stable Funding	(+)	(Mutarindwa et al., 2020; Alam et al., 2023)
Control	Provision to Total Investment	provinv	Total provision for the year/ Total Investment	(-)	(Ejoh et al., 2014)
	Off-balance sheet to Total Assets	offblta	Total Off-Balance Sheet Exposure to Total Assets	(+/-)	(Atkan et al., 2012; Keffala, 2024)
	Investment to Total Assets	invta	Total Investment / Total Assets	(+/-)	(Kiemo et al., 2019)
	GDP Growth Rate	gdpgr	GDP Growth Rate of the Respective Year	(+/-)	(Karim et al., 2016)
	Profit rate	profitrate	Average profit rate of Islamic Banks	(+/-)	(Amollo, 2015)

Source: Authors' elaboration

3.2 Model of the study

The model of the study is as follows, as per the literature:

$$z\text{-}score_{i,t} = \beta 0 + \beta 1 \times CAR_{i,t} + \beta 2 \times LCR_{i,t} + \beta 3 \times NSFR_{i,t} + \beta 4 \times PROVINV_{i,t} + \beta 5 \times OFFBLTA_{i,t} + \beta 6 \times INVTA_{i,t} + \beta 7 \times GDPGR_{i,t} + \beta 8 \times PROFITRATE_{I,t} + \varepsilon_{i,t} \quad (5)$$

3.3 Diagnostic test

The study conducted several tests and ultimately determined that the most appropriate model was being used in order to satisfy the assumptions of the underlying Panel Data Analysis. The results and tests are explained in the section.

Normality test: The study included the Shapiro-Wilk Test for Normality to determine whether the selected variables had a normal distribution. The p-value, which is less than 0.05, indicates that the test results suggest none of the study's variables have a normal distribution. However, the study employs a Panel Corrected Standard Errors (PCSE) model, which is robust to violations of normality assumptions.

Table 2. Shapiro-Wilk Normality Test

Variable	Observations	z	Prob>z
z-score	90	7.625	0.00000
car	88	8.396	0.00000
lcr	66	4.706	0.00000
nsfr	66	5.724	0.00000
provinv	90	8.478	0.00000
offblta	90	7.594	0.00000
invta	90	3.238	0.00060
gdpgr	90	6.454	0.00000
profitrate	90	2.651	0.00402

Source: Data processed

Multicollinearity test: Since none of the explanatory variables has a correlation coefficient higher than 0.80, it is clear from the Pearson Correlation Coefficient finding that none of them exhibits multicollinearity problems. The Variance Inflation Factor (VIF) was another tool used in the study to verify the presence of multicollinearity. The test indicates that the mean VIF is 1.76. Its value of less than 10 suggests that multicollinearity is not present.

Table 3. Variance Inflation Factor (VIF) Test

Variable	VIF	1/VIF
car	3.09	0.32348
lcr	1.30	0.76757
nsfr	1.17	0.85207
provinv	1.46	0.68395
offblta	1.85	0.53963
invta	2.59	0.39
gdpgr	1.08	0.93
profitrate	1.51	0.66
Mean VIF	1.76	

Source: Data processed

Heteroskedasticity test: Utilizing the Breusch-Pagan / Cook-Weisberg test, the study verified the heteroskedasticity. The Chi-square value is 89.09, and the p-value is close to 0.000. Therefore, the data exhibit heteroskedasticity.

Table 4. Breusch-Pagan / Cook-Weisberg Test for Heteroskedasticity

Model	chi2	Prob>chi2	Presence of Heteroscedasticity
1	89.09	0.0000	Yes

Source: Data processed

Autocorrelation test: The Wooldridge test has been performed to check autocorrelation for this model. The F-value is 257.122, and the p-value is 0.000. Considering a 5% significance level, the test suggests that there is a presence of autocorrelation in the dataset.

Table 5. Wooldridge Test for Autocorrelation in Panel Data

Model	F value	Prob>F	Presence of Autocorrelation
1	257.122	0.0000	Yes

Source: Data processed

Cross-sectional dependency: The study performed Pesaran's methods to check the cross-sectional dependence among the panel data set. Pesaran's value is 5.101, and the P-value is 0.00, indicating the presence of cross-sectional dependence at a 5% significance level.

Table 6. Pesaran's Test of Cross-Sectional Independence

Model	Pesaran's Value	P-Value	Presence of Cross-Sectional Dependence
1	5.101	0.000	Yes

Source: Data processed

Hausman test: The study explored the Hausman test while deciding between the Fixed Effects Model and the Random Effects Model. Based on the Hausman test, with a P-value of 0.00, the study employed the Random Effects Model.

Table 7. Hausman Test

Test Name	chi2	Prob > chi2	Decision
Hausman	-4.78	0.0000	Random Effect Model

Source: Data processed

Since the data exhibit heteroskedasticity, autocorrelation, and cross-sectional dependence, choosing Panel Corrected Standard Errors (PCSE) over the Random Effects (RE) model can be a more effective decision. PCSE is more robust to violations of the assumptions of the RE model, making it a safer choice when the data exhibit cross-sectional dependence, heteroskedasticity, and autocorrelation. Therefore, the study incorporated the RE model followed by the PCSE model.

4. Results

As stated above, the primary hypothesis of the study is that Basel III standards have a significant impact on the default risk of Islamic Banks in Bangladesh. In line with this hypothesis, the results found for the study are as follows:

Descriptive Statistics

The following table highlights the descriptive statistics of 90 observations.

Table 8. Descriptive Statistics

Variables	Observations	Mean	Standard Deviation	Minimum	Maximum
z-score	90.00	29.54	70.09	-114.11	406.51
car	88.00	-0.01	0.41	-1.39	0.16
lcr	66.00	1.33	0.69	0.22	3.91
nsfr	66.00	1.16	0.23	-0.15	1.64
provinv	90.00	0.01	0.02	-0.01	0.18
offblta	90.00	0.18	0.19	0.02	1.66
invta	90.00	0.07	0.02	0.02	0.18
gdpgr	90.00	0.07	0.01	0.03	0.08
profitrate	90.00	0.10	0.02	0.07	0.13

Source: Data processed

According to the table above, the average z-score is 29.54 with a standard deviation of 70.09, indicating that the z-scores vary significantly from bank to bank. The mean value of the Capital Adequacy Ratio is -0.01 with a standard deviation of 0.41. This means that several banks fail to maintain a minimum capital adequacy ratio of 0.10 (or 10%). The average liquidity coverage ratio (LCR) is 1.33 (or 133%) with a standard deviation of 0.69. The mean value of the net stability funding ratio (NSFR) is 1.16 (116%), with a standard deviation of 0.23. The mean value of provision to investment is 0.01, which means that for every BDT 01 of investment, banks keep BDT 0.01 as provision on average. The average value of off-balance exposure to total assets is 0.18, which means that, on average, all banks have BDT 0.18 off-balance sheet exposure for every BDT 1 of assets. The average value for investment to total assets is 0.07, which means that on average, all Islamic banks provide an investment of BDT 0.07 for every BDT 1 in assets. The average economic growth, as denoted by GDP growth, is 7% whereas the average profit rate has been around 10%.

Results of Re and PCSE model

Based on the diagnostic tests outlined in the Methodology section, the study employs both the RE and PCSE models. The following table highlights the findings based on the RE and PCSE Model:

Table 9. Results based on the RE and PCSE Model

Variables	Random Effect Model		PCSE Model	
	Coef.	Std. Err.	Coef.	Std. Err.
car	105.344***	20.970	107.465***	9.905
lcr	22.920***	8.956	21.460***	6.342
nsfr	48.829**	25.435	56.695***	9.617
provinv	-197.046	448.797	-377.409	294.377
offblta	-89.195	60.719	-78.746**	41.703
invta	-274.512	367.300	-221.251	148.060
gdpgr	142.761	425.209	77.639	249.053
profitrate	1536.614***	458.143	1741.880***	301.843
cons	-172.315***	56.367	-192.782***	33.775
R Square	**61.24%**		**61.62%**	
p-Value	**0.0000**		**0.0000**	

Source: Data processed

Based on the RE model, the three independent variables (CAR, LCR, and NSFR) of the study are significant at a 5% significance level. The coefficient of the first variable (car) is 105.344, which means that when banks improve car by 1 unit, their distance to default increases by 105.344 units. The coefficient of the second variable (LCR) is 22.920, which means that a one-unit increase in the LCR is associated with an increase of approximately 22.920 units in distance to default (z-score). The coefficient of the third variable is 48.829, which means that a one-unit increase in the NSFR is associated with an increase of approximately 48.829 units in the z-score. Precisely, when banks' NSFR increases by one unit, their distance to default increases by 48.823 units. Therefore, all three variables studied demonstrate that when these three metrics are improved, banks' resilience increases, thereby increasing the distance to default. Among the five control variables, only the profit rate variable is significant at 5% level. Overall, the R-squared of the model is 61.24% which means that approximately 61.24% of the variation in the dependent variable is explained by the independent variables included in the model. Finally, based on the p-value, which is close to 0.00, the model is overall significant.

Based on the PCSE model, three variables of the study (CAR, LCR, and NSFR) are statistically significant at the 1% significance level. The coefficient of the first variable is 107.465, which means that when banks' CAR improves by 1 unit, its distant to default increases by 107.465 units, holding other variables constant. The second coefficient (LCR) suggests that a one-unit increase in the Liquidity Coverage Ratio is associated with an increase of approximately 21.460 units in z-score,

holding other variables constant. The third coefficient (NSFR) of 56.695 suggests that a one-unit increase in the Net Stable Funding Ratio is associated with an increase of approximately 56.695 units in the z-score, holding other factors constant. Hence, the results regarding all three variables show that when banks improve either their CAR, LCR, or NSFR, their distance to default increases substantially. Among the control variables, off-balance sheet exposure to total assets and profit rate are significant at the 5% and 1% level, respectively. The R-squared value in this model is 61.62%, indicating that approximately 61.62% of the variation in the dependent variable is explained by the independent variables included in the model. The P-value, which is close to 0.000, indicates that the overall model is significant.

Based on both the RE and PCSE models, we can reject the null hypothesis and conclude that Basel III regulations have a significant effect on the default risk of Islamic banks in Bangladesh.

5. Discussion

Research has shown varied results on the impact of the Capital Adequacy Ratio (CAR) on bank financial distress. Some studies have found that CAR significantly influences banks' financial distress (Buchdadi et al., 2020; Fiordelisi & Mare, 2013; Sang, 2021; Saputra et al., 2020). However, others report that CAR has an insignificant effect on bank stability (Aroghene, 2023; Aroghene & Ikeora, 2022). This study reveals a strong positive correlation between bank default risk and higher CAR, as indicated by positive and statistically significant coefficients. Specifically, a higher CAR corresponds to an increased z-score, which measures financial soundness and suggests a greater distance from default. This supports Basel III's objectives to reinforce banks' resilience and capital buffers, as a higher Common Equity Tier 1 (CET1) ratio provides a substantial equity buffer against potential losses, functioning as a safeguard in economic downturns. Our findings, based on CAR measures, imply that Basel III capital requirements are associated with a reduced probability of bank failure.

Similarly, liquidity risk, as measured by the Liquidity Coverage Ratio (LCR), has a significant impact on bank default risk, according to prior research (Ghenimi et al., 2017; Abdesslem et al., 2022; Amara & Mabrouki, 2019). Our study reveals a positive association between higher LCR and a lower probability of bank default, as indicated by positive and statistically significant coefficients. In other words, a higher LCR is associated with a reduced risk of default, as assessed by the z-score, which evaluates financial health. This aligns with the purpose of the LCR: to ensure that banks maintain adequate, high-quality liquid assets to meet short-term funding needs during crises. A higher LCR reflects a more readily accessible pool of liquid assets, helping the bank meet immediate obligations, such as depositor withdrawals or loan repayments, thereby minimizing liquidity crisis risks that could escalate into insolvency.

Furthermore, previous studies suggest that the Net Stable Funding Ratio (NSFR) enhances banks' financial stability (Alam et al., 2023; Ashraf & Kouser, 2017). Consistent with this, our findings show a robust positive correlation between a higher NSFR and a decreased likelihood of bank default, evidenced by positive and statistically significant coefficients. A higher NSFR is associated with an increased z-score, indicating a lower risk of default. This supports the NSFR's goal of helping banks secure stable, long-term funding, thereby mitigating potential liquidity mismatches and enhancing solvency. A high NSFR indicates a reliance on longer-term, stable funding sources over volatile short-term financing, reducing liquidity shortage risks during market stress, which can lead to bank failures. The NSFR incentivizes alignment between asset and liability maturities, reinforcing banks' stability.

6. Conclusion

This research has investigated the impact of Basel III standards on default risk in Islamic banks operating in Bangladesh. Employing the z-score as a measure of default risk, the study examined the impact of three key Basel III regulations: the Capital Adequacy Ratio (CAR), the Liquidity Coverage Ratio (LCR), and the Net Stable Funding Ratio (NSFR). Additionally, the study considered the provision-to-investment ratio, investment-to-total-asset ratio, off-balance-sheet-to-

total-asset ratio, GDP growth rate, and profit rate as control variables. The results are reassuring for policymakers, regulators, and relevant stakeholders in Bangladesh. All three Basel III regulations CAR, LCR, and NSFR were found to have a statistically significant and positive impact on bank default risk as measured by the Z-score. This implies that Islamic banks with stronger capital adequacy, robust liquidity buffers, and stable funding sources exhibit a lower probability of default. The robustness of these findings across both the Random Effect and PCSE models strengthens the case for Basel III's effectiveness in promoting a more stable Islamic banking sector within Bangladesh.

The implications of these findings are multifold. First, regulators, such as the Bangladesh Bank, should intensify enforcement and monitoring of Basel III compliance, particularly in Islamic banks that face liquidity mismatches. Second, Islamic banks should prioritize strategic capital planning and develop more Sharia-compliant long-term funding instruments to meet NSFR and LCR requirements. Third, policymakers should provide supportive legal and infrastructural frameworks that enable the development of Islamic liquidity instruments such as sukuk and interbank markets tailored for Islamic banks. Lastly, continuous capacity building and risk management training for Islamic bank personnel is recommended to ensure the effective implementation of these regulatory standards and to reduce systemic vulnerabilities in the sector further.

Limitations and avenues for future research

Looking forward, this research opens the door to further exploration. Longitudinal studies can offer valuable insights into the long-term effects of Basel III on default risk. Stress testing various economic scenarios can assess the resilience of the Islamic banking sector under different levels of capital, liquidity, and funding stability. Additionally, investigating the impact on different bank types (large vs. small) or conducting a comparative analysis with other countries can reveal potential variations and inform policy adjustments where necessary. By pursuing these avenues for further research, a more comprehensive understanding of the relationship between Basel III and bank default risk in Islamic banking arena can be established, contributing to a more robust and stable financial environment.

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