Sociology & Cultural Research Review (SCRR)
Available Online: https://scrrjournal.com
Print ISSN: 3007-3103 Online ISSN: 3007-3111
Platform & Workflow by: Open Journal Systems
https://doi.org/10.5281/zenodo.22734748

Islamic Banking and Bank Stability in Pakistan: Evidence from the Post-2021 Macro-Financial Stress Period

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Abstract

This study analyzes the correlation between Islamic banking and bank stability in Pakistan in the period of macro-financial stress after 2021. The study is inspired by the serious deterioration in the macroeconomic scenario of Pakistan since 2021, which has led to high inflation, monetary tightening, exchange-rate pressures, fiscal vulnerabilities, external financing constraints and increasing uncertainty. The study creates a balanced panel of seven Pakistani banks (five conventional and two full-fledged Islamic banks) for a period of 2022–2024 using the financial information provided by the banks in their annual reports, PACRA and VIS financial summaries, stock exchange filings, and publications of the State Bank of Pakistan (SBP). The most important indicators of bank stability are based on accounting metrics, such as the Z-score, which uses ROA, EQUITY, and the volatility of ROA from 2020 to 2024. Based on empirical results, Islamic banks were found to be more profitable than conventional banks in the study period. The average ROA of Islamic Banks was 2.04% compared to 1.26% of conventional banks and average ROE was 40.17% and 23.31% respectively. The stability results give a more complicated result. Conventional banks' average Z-Score ($M = 38.97$, $SD = 22.96$) was significantly higher when compared to that of Islamic banks ($M = 11.88$, $SD = 1.69$). The difference between the two is statistically significant ($t = 4.54$, $p < .001$) and is confirmed by a non-parametric Mann–Whitney test ($U = 90$, $p < .001$). A robustness check excluding one conventional bank (United Bank Limited), which has an unusually low historical ROA volatility and therefore mechanically inflates its Z-score, was also performed; the direction and significance of the result did not change and was strengthened ($t = 8.14$, $p < .001$, Cohen's $d = 2.96$). It can therefore be concluded that the results do not support the proposition that Islamic banks were automatically more stable than conventional banks during the post-2021 period. The results, on the other hand, indicate that Islamic banks had a higher profitability, with also a lower variableness of profitability, leading to a lower distance-to-insolvency measure under the used Z-score specification. The findings are supported by overall macro-balance of the SBP that the Islamic banking industry remained well capitalized, liquid, able to handle asset quality and continuously expanded its balance-sheet. The study findings indicate that Islamic banking was resilient and that resilience cannot be confused with a higher bank-level Z-score for Islamic banking. The conclusions drawn have far-reaching implications for the risk management in Islamic banks, macroprudential regulation, liquidity management, and future development of Pakistan's dual banking system.

Keywords: *Islamic banking, bank stability, Z-score, financial stability, macro-financial stress, Pakistan, conventional banking, profitability, banking risk.*

1. Introduction

Stability of the banking system is crucial to economic development for its role in saving, channeling credit, payments, investment, and in the transmission of monetary policy. Banking-sector stability is especially crucial in emerging economies, in which financial institutions are subject to macroeconomic volatility, fiscal pressures, exchange-rate fluctuations, and external financing constraints. Pakistan offers a significant context to explore bank stability. There was considerable macro-financial stress after 2021. The inflation rate jumped up, monetary policy was tightened greatly, the Pakistani rupee depreciated significantly, external financing conditions were made difficult, and the country faced major economic disruptions due to the floods of 2022. This was a difficult operating situation for financial institutions. Meanwhile, Islamic banking grew by a healthy pace. Islamic Banking Institutions (IBIs) have grown to be an integral part of Pakistan's financial system and are playing an important role. The State Bank of Pakistan has established a comprehensive regulatory and supervisory framework of Islamic banking, and Islamic banks have extended their branches, deposits, financing, investments and capital. This expansion of Islamic banking will have an interesting question on financial stability. Islamic banking is different from the conventional banking system due to its prohibition of riba, gharar, maysir and its focus on Shariah-compliant transactions. Islamic contracts of financing are indirectly linked with economic activity or assets. These traits have given rise to research, which suggests that Islamic banking perhaps has less vulnerability in times of financial crisis. But theoretical gains do not necessarily translate into experimental reliability. Islamic banks continue to be vulnerable to credit risk, liquidity risk, market risk, operational risk, concentration risk and sovereign risk. Moreover, the significant rise of government Sukuk in the investment portfolio of Islamic financial institutions may result in a linkage between Islamic banks balance sheets and the sovereign risk. The post-2021 period is particularly relevant for the application of the stability argument. SBP revealed that Islamic Banking Institutions' financial status was healthy in 2023. Capital adequacy ratio rose to 20.7%, capital-to-assets rose to 7.3%. In terms of liquid-assets-to-total-assets, they achieved 49.1% (State Bank of Pakistan [SBP] 2023). This improvement was sustained in 2024. Islamic Banking Institutions' (IBIs) assets grew to PKR 11.07 trillion, while their deposits reached PKR 7.905 trillion, says SBP. Islamic banking thus accounted for around 20.6% of banking sector assets and 24.9% of deposits as of end 2024 (SBP, 2024). An imperative research gap still exists, however. Most of the available literature in Pakistan deals with pre-financial crisis or with the period prior to or coinciding with the outbreak of the pandemic COVID-19 or the early years of islamization of banking. Very little empirical evidence has been found for the resilience of Islamic and conventional banks in the particular post-2021 macro-financial stress environment. Hence, this study examines if there was financial stability between Islamic banks and conventional banks during 2022-2024.

2. Research Problem

Macro-financial stress period after 2021 did not impact the operational performance of the banking sector in Pakistan but the sources and distribution of risks has undergone a significant change. The performance of Islamic banks was characterized by rapid growth in both assets and deposits, financing and investments, as well as profitability. But it is not clear that this expansion led to better bank stability. Thus the central research problem is: Are Islamic banks financially more stable than the conventional banks in Pakistan in the post-2021 macro-financial stress period?

3. Research Objectives

The study aims at five main objectives: 1. To analyze the financial performance of Islamic and conventional banks in the period of 2022-2024. 2. To determine the stability of the bank through the Z score. 3. To compare the stability of Islamic and conventional banks. To analyze changes in profitability and stability in the stress period since 2021. 5. To formulate policy suggestions for the regulation of Islamic banking and financial stability in Pakistan.

4. Research Questions

RQ1

Did Islamic banks demonstrate higher profitability than conventional banks during 2022–2024?

RQ2

Did Islamic banks demonstrate greater financial stability than conventional banks during the post-2021 stress period?

RQ3

Did the stability of Islamic banks improve between 2022 and 2024?

RQ4

What are the implications of the findings for banking regulation and financial stability in Pakistan?

5. Literature Review

5.1 Islamic Banking and Stability

The distinctive institutional structure of Islamic banking has made it the subject of great interest. Islamic Banks are established on the basis of Shariah principles and apply the following contracts: Murabaha, Musharakah, Mudarabah, Ijarah and diminishing Musharakah. Islamic banking has a potential in theory to help stability through asset-backed financing, limiting speculative activities, and risk-sharing. The Islamic Banks have unique risk profile as observed by Abedifar et al., (2013) due to their financing system and depositor relationships. According to Beck et al. (2013), there is a difference between the business models, efficiency and stability characteristics of Islamic and conventional banks.

5.2 Islamic Banking During Financial Stress

During financial panic, Farooq and Zaheer (2015) state that Islamic bank branches were less affected with withdrawal of deposits, and showed relatively stable lending patterns in

Pakistan. Rashid et al. (2017) examine the stability of Islamic and conventional banks in Pakistan on the basis of Z-scores and conclude that Islamic banking can play a positive role to ensure financial stability in Pakistan. Hassan et al. (2021) note that Islamic banks were more stable in their sample when compared with conventional banks in Pakistan. These studies do not apply to the present time, however. The macroeconomic environment post-2021 was much different from the one that was commonly found throughout much of the literature.

6. Theoretical Framework

The study is based on two complementary perspectives.

6.1 Financial Stability Theory

The relatedness of bank stability is bank's ability to sustain losses without becoming bankrupt. The Z-score is an accounting measure that shows how far a bank's return is from the return that equals losses that would wipe out the bank's capital. The higher the Z score, the further away from bankruptcy and thus more stable.

6.2 Risk-Sharing Perspective of Islamic Finance

Islamic finance also, in theory, diminishes some aspects of excessive risk-taking by prohibiting interest and speculation, and by placing increased importance on asset-based and risk-sharing arrangements. But, these features are theoretical and don't remove the risk. Hence, the empirical stability benefit of Islamic banking needs to be tested and not taken for granted.

7. Hypotheses

H1: Islamic banks have higher profitability than conventional banks during the post-2021 stress period.

H2: Islamic banks have higher financial stability than conventional banks during the post-2021 stress period.

H3: Bank stability differs significantly between Islamic and conventional banks.

H4: The stability of Islamic banks improves during the post-2021 period as their capitalization, liquidity, and profitability strengthen.

8. Data and Methodology

8.1 Data Sources

The study uses secondary data from publicly available sources, which are not limited to any one repository, with cross checking of multiple sources, due to the absence of a single public source in Pakistan for providing the bank-level data on equity and total-assets from all sampled institutions and years. The return on assets (ROA) and return on equity (ROE) have been prepared from banks' year-end results announcements made to the Pakistan Stock Exchange (PSX) and annual financial statements audited by the banks. The balance-sheet figures (total assets and shareholders' equity, including surplus on revaluation of assets) needed for the Z-score to compile equity-to-total-assets (ETA) data were taken mainly from the entity rating report published by the Pakistan Credit Rating Agency (PACRA) and VIS Credit Rating Company, which present audited balance-sheet information in standardized multi-year tables. If a bank's own six-year financial data summary (from its annual report) was available, this was used as the primary source and checked with the figures provided by the rating agencies. Equity and/or total-asset amounts were calculated for a subset of bank-years (mainly Fiscal 2024, where the annual reports have not yet been audited at the time of writing) from interim (nine-month) disclosures, investor briefings, or back-calculated from reported return-on-equity and profit-after-tax amounts. These observations, which are derived, must be treated as indicative and are explicitly flagged in Appendix A, and must be substantiated against the final audited accounts for FY2024. The macroeconomic and sectoral data were sourced from Islamic Banking Bulletins and Financial Stability Reviews of the SBP.

8.2 Sample

The empirical sample consists of seven banks:

Conventional banks

MCB Bank Limited
Bank of Punjab
Bank Alfalah Limited
United Bank Limited
Askari Bank Limited

Islamic banks

Meezan Bank Limited
BankIslami Pakistan Limited

The final balanced panel is 21 (7 X 3) bank-year observations of 2022-24. The historical volatility of ROA in the calculation of Z-score is estimated using the 2020-2021 observations.

9. Variable Measurement

9.1 Bank Stability

The Z-score is the main dependent variable:

$$\mathbf{Z_{it} = (ROA_{it} + ETA_{it}) / \sigma(ROA_i)}$$

where ROA = return on assets; ETA = equity-to-total-assets ratio; σ(ROA) = standard deviation of ROA over 2020–2024. Higher Z-scores indicate greater distance from insolvency.

The natural logarithm of the Z-score can also be used in regression analysis: $LNZSCORE_{it} = \ln(Z_{it})$.

9.2 Islamic Banking

Islamic banking is represented by a dummy variable: ISLAMIC = 1 for Meezan Bank and BankIslami, and ISLAMIC = 0 for conventional banks.

9.3 Profitability

Profitability is measured through:

ROA = Profit After Tax / Average Total Assets
ROE = Profit After Tax / Average Shareholders' Equity

10. Construction of the Z-Score

Five years of ROA observations are used to calculate the Z-score (2020-2024). This is better than using only 2022–2024, since 2021–2024 is the time period that is of interest; a time period of three observations would give an unstable estimate of the volatility of ROA. For example, the MCB ROA series used in the calculation was 1.77% (2020), 1.65% (2021), 1.61% (2022), 2.64% (2023), and 2.25% (2024), giving σ(ROA) = 0.447. This gives the resulting standard deviation to use for the computation of 2022-2024 Z-scores. The total σ(ROA) of all banks is presented with Table 2. To be methodologically clear, and to caution against misinterpreting the results: the Z-score is highly sensitive to the denominator, that is the ROA of a bank that happens to be unusually stable over the estimation window will mechanically, and without any reason, get a very high Z score if the absolute ROA and capitalization are unremarkable. The sensitivity is directly demonstrated by United Bank Limited (UBL) below and is a known weakness of the simple Z-score specification (see Section 15.1 and Section 29).

11. Descriptive Analysis

Table 1 **Sample Composition**

Category	Banks	Number
Conventional	MCB, BOP, BAFL, UBL, Askari	5
Islamic	Meezan, BankIslami	2
Total	—	7

Table 2 **Bank-Level ROA, ROE, Equity-to-Assets, and Z-Score (2022–2024)**

Bank	Type	Year	ROA (%)	ROE (%)	ETA (%)	Z-score	Data
MCB	Conventional	2022	1.61	19.78	9.09	23.94	V
MCB	Conventional	2023	2.64	31.60	9.51	27.19	V
MCB	Conventional	2024	2.25	26.56	8.40	23.85	E
Bank of Punjab	Conventional	2022	0.81	17.53	4.39	25.31	V
Bank of Punjab	Conventional	2023	0.61	15.50	3.91	22.01	V
Bank of Punjab	Conventional	2024	0.58	16.36	3.78	21.21	E
Bank Alfalah	Conventional	2022	1.06	19.23	4.52	28.54	V
Bank Alfalah	Conventional	2023	1.36	31.67	4.17	28.26	V

Bank	Type	Year	ROA (%)	ROE (%)	ETA (%)	Z-score	Data
Bank Alfalah	Conventional	2024	1.15	24.83	4.88	30.82	V
UBL	Conventional	2022	1.20	18.00	7.58	104.89	V
UBL	Conventional	2023	1.30	26.60	4.54	69.78	V
UBL	Conventional	2024	1.20	35.80	3.75	59.20	E
Askari	Conventional	2022	1.01	21.76	4.80	39.72	V
Askari	Conventional	2023	1.17	25.15	4.57	39.22	V
Askari	Conventional	2024	0.91	19.22	5.04	40.65	E
Meezan	Islamic	2022	2.01	44.59	4.45	10.21	E
Meezan	Islamic	2023	3.02	56.27	6.24	14.63	V
Meezan	Islamic	2024	2.60	47.00	4.98	11.98	E
BankIslami	Islamic	2022	0.99	20.78	5.43	10.05	V
BankIslami	Islamic	2023	1.93	39.81	5.57	11.74	V
BankIslami	Islamic	2024	1.70	32.55	6.39	12.66	E

Note. Equity to total assets ratio (ETA) for the year; reported here for full reproduction (see Appendix A). The five-year volatility window for ROA is 2020–2024 and the five-year ROA volatility is denoted as σ(ROA) for each bank (Table 2a). Data column: V = figure taken directly from an audited annual report, PACRA/VIS rating report or a PSX filing; E = figure estimated or derived (either interim-period proxy or back-calculated from reported ROE/profit) as an audited year-end figure was not available at the time of writing (see Appendix A for the specific derivation used in each case).

Table 2a **σ(ROA), 2020–2024, by Bank**

Bank	σ(ROA)
MCB	0.447
Bank of Punjab	0.205
Bank Alfalah	0.196
UBL	0.084
Askari	0.146
Meezan	0.633
BankIslami	0.639

Note. UBL's markedly lower σ(ROA) relative to every other sampled bank is the principal driver of its high Z-score in Table 2 and is discussed in Sections 15.1 and 29.

12. Group-Level Descriptive Statistics

***Table 3* Islamic versus Conventional Banks**

Measure	Conventional	Islamic
Observations	15	6
Mean ROA (%)	1.26	2.04
Mean ROE (%)	23.31	40.17
Mean Z-score	38.97	11.88
SD of Z-score	22.96	1.69
Minimum Z-score	21.21	10.05
Maximum Z-score	104.89	14.63

The descriptive results produce an important and somewhat unexpected finding.
Islamic banks' profitability was significantly higher. The average ROA for their group of banks was around 2.04%, whereas it was 1.26% for traditional banks. The average ROE ratio for their banks was about 40.17% compared to 23.31% for conventional banks. The conventional banks' average Z score, however, was significantly higher. A mean score of 11.88 (SD = 1.69) was found for the Islamic-bank group and 38.97 (SD = 22.96) for the conventional-bank group. The high standard deviation for the conventional group is due to the effect of UBL's high Z-score (Section 15.1). The profitability advantage of Islamic banks did not lead to an increase in the Z score of the selected methodology.

13. Year-by-Year Analysis

***Table 4* Average Performance by Year**

Year	Conv. ROA	Isl. ROA	Conv. ROE	Isl. ROE	Conv. Z	Isl. Z
2022	1.14	1.50	19.26	32.69	44.48	10.13
2023	1.42	2.48	26.10	48.04	37.29	13.19
2024	1.22	2.15	24.55	39.78	35.15	12.32

13.1 2022

The first year of the observation period is a very difficult time. The ROA for conventional banks was 1.14% and for Islamic banks it was 1.50%. Islamic banks thus achieved an average ROA of around 32% higher than conventional banks. The gap was more pronounced in the case of ROE where the performance of Islamic banks was 32.69% and conventional banks was 19.26%. The average Z-score for conventional banks was, however, significantly higher at 44.48 as opposed to 10.13 for Islamic banks. This difference in 2022 is very much driven by the very high individual Z-score of UBL which is 104.89 (Table 2).

13.2 2023

The profit margin was larger in 2023. Islamic banks achieved an average ROA of around 2.48% whereas conventional banks posted 1.42%. The average ROE of Islamic banks was about 48.04% compared to 26.10% for the conventional banks. The Islamic-bank average Z score went up from 10.13 to 13.19. Year-over-year performance of the conventional bank Z score fell from 44.48 to 37.29, although the gap with the Islamic-bank average widened slightly due to a drop in UBL's Z score year over year (Table 2).

13.3 2024

The profitability of both groups eased in 2024. The ROA of the Islamic banks fell from 2.48% to 2.15% and conventional banks fell from 1.42% to 1.22%. The ROE of Islamic banks fell from 48.04% to 39.78% and conventional banks from 26.10% to 24.55%, respectively. Even though the figures were down, Islamic banks remained to be highly profitable. The Z score for Islamic banks decreased marginally from 13.19 to 12.32. Conventional-bank Z-score was still in downtrend mode, and fell from 37.29 to 35.15. Despite this being a large difference between the two groups' average Z-scores throughout the three years, 2024 seems to be a year of profitability normalisation for both groups, not that it became more financially unstable.

14. Inferential Statistical Analysis

Two tests were done on the complete 21-bank-year sample (Sections 14.1-14.2) and another robustness test was performed excluding the single most influential bank-year (Section 15.1) to determine if the observed difference in stability is statistically significant.

14.1 Welch Independent-Samples t-Test

The Welch test was chosen, given that the sample sizes and variance of the two groups is different.

Results: $t = 4.54$, $p < .001$ (two-tailed).

The p-value is well into the significant range of 1%. The null hypothesis that the mean Z-scores of both groups is the same is rejected. Based on the evidence, it can be concluded that there is a statistically significant difference between the Z-scores of Islamic banks and conventional banks in the sample. Importantly the direction of the difference is contrary to the original hypothesis as conventional banks have a significantly higher score for Z than Islamic banks.

15. Mann–Whitney U Test

The Z-score distribution was also influenced by the high values for one conventional bank (UBL) and a non-parametric test was therefore also performed.

Results: $U = 90$, $p < .001$.

There was no change in the result, which still maintains its statistical significance. Finally, the end is not purely based on the assumption of normally distributed observations.

15.1 Robustness Check: Excluding UBL

When excluding UBL, Robustness Check is not required. UBL's ROA is unusually stable over 2020–2024 (σ(ROA) = 0.084, about half of the lowest bank in the list), so that mechanically it has very high Z-scores (59–105) according to the specification, despite its not being particularly high in absolute terms relative to peers (Table 2). As a single bank has undue weighting on a conventional-group of five banks, the comparison was re-estimated without the UBL.

Table 4a **Robustness Check Excluding UBL**

Measure	Conventional (excl. UBL)	Islamic
Observations	12	6
Mean Z-score	29.23	11.88
SD of Z-score	6.99	1.69
Welch t-test	$t = 8.14, p < .001$	—
Mann–Whitney U	$U = 72, p < .001$	—
Cohen's d	2.96	—

The direction and statistical significance of the result are unchanged when UBL is excluded — if anything, the effect becomes both larger and more precisely estimated (Cohen's d rises from 1.37 in the full sample to 2.96), because removing UBL sharply reduces the conventional group's variance without materially changing its mean. This indicates that the core finding is not an artifact of a single outlying observation, although UBL's specific Z-score values should still be interpreted with the sensitivity described in Section 10 in mind.

16. Hypothesis Testing

Table 5 **Hypothesis Results**

Hypothesis	Statement	Result
H1	Islamic banks have higher profitability	Supported
H2	Islamic banks have higher stability	Not supported
H3	Stability differs significantly between groups	Supported
H4	Islamic-bank stability improves during the study period	Partially supported

The findings are thus mixed. Islamic banks clearly outperform conventional banks in terms of profitability, but do not outperform the conventional banks in terms of stability (Z score) as the Islamic-bank average Z score increased from 2022 to 2023, but fell slightly in 2024 and the difference between the two groups was reduced (but not eliminated) over the three years (Table 4).

17. Interpretation of the Z-Score Finding

The fact that Islamic banks are found to be less risky in terms of z scores should not be taken as necessarily implying that Islamic banks are financially weak. The Z-score represents three things: (1) profitability; (2) capitalization; (3) volatility of profitability. Islamic banks in the sample achieved higher profitability but also had significant variation in ROA from 2020 to 2024. For instance, the ROA at BankIslami grew from about 0.55% in 2020 to 1.93% in 2023, but fell back to 1.70% in 2024. Meezan Bank also suffered significant adverse shifts in profitability with rapid growth on its balance sheet. Therefore, if ROA in the current year is good, the Z score can be lowered by the denominator — the historical volatility of ROA. This is a significant methodological discovery and applies both ways: the same mechanism that leads to UBL's abnormally high Z-score on the conventional side (Section 15.1). The findings indicate that profitability and stability are not synonymous, and that merely interpreting a numerical value of the ratio without also considering the ratio's sensitivity to its inputs can be misleading.

18. Evidence from the Islamic Banking Industry

The results at the bank level should be considered together with the aggregate Islamic-banking evidence. Islamic Banking Institutions (IBIs) have reported strong financial soundness during 2023, according to SBP. The coverage of provisioning increased to >90% while the NPF-to-Total-Financing ratio rose to 3.8%. The capital adequacy ratio rose to 20.7% and capital-to-total-assets ratio rose to 7.3%. Liquidity also improved as liquid assets increased to 49.1% of total assets (SBP, 2023). The ratio of NPF to financing also rose in 2024, reaching 3.5%, and provisioning coverage also grew, to 117.7%, while net NPF to net financing turned negative. The CAR stayed at 19.8% and the capital/total-asset ratio went up to 7.9% (SBP, 2024). The resilience of the sector is good as shown by these indicators. Thus, the below-average Z-score for the sample of selected banks does not mean that the entire Islamic banking industry was unstable.

19. Growth of Islamic Banking During the Stress Period

The Islamic banking was spread during the stress period.Islamic banking developed in the stress period. The growth of Islamic banking was significant over the study period. At the end of 2024:

The value of Islamic banking assets was valued at around PKR 11.07 trillion.

The total amount of deposits amounted to around PKR 7.91 trillion.

The amount of financing was estimated to be at about PKR 4.04 trillion.

The net investments stood at around PKR 4.99 trillion.

Islamic banking assets accounted for about 20.6% of the banking sector assets.

About 24.9% of the banking-sector deposits were in Islamic banking.

This growth is significant because it was in a time of much macro-economic uncertainty. Thus, Islamic banking has been found to be growth and institutional resilient as the evidence supports the argument.

20. Liquidity Analysis

Liquidity is a vital part of banking stability since a bank could face liquidity concerns even if it is solvent. The SBP data reveals that the Islamic Banking Institutions were operating with good liquidity during the period of study. Liquid assets-to-total-assets increased from 41.6% in 2022 to 49.1% in 2023 before moderating to 47.1% in 2024. Liquid assets-to-total-deposits increased from 58.2% in 2022 to 65.4% in 2023 and 66.0% in 2024. The figures show that Islamic banks had good liquidity buffers.

21. Capitalization Analysis

It serves as a first layer of protection to banks from unexpected losses. Islamic Banking Institutions' capitalization was found to be strong. The total capital to risk-weighted-assets ratio rose from 17.8% in 2022 to 20.7% in 2023 but eased slightly to 19.8% in 2024. This ratio was well above the minimum required by regulation even in 2024. Capital-to-total-assets also increased from 5.9% in 2022 to 7.3% in 2023 and 7.9% in 2024. This finding confirms the view that Islamic banks have good solvency buffers.

22. Asset Quality

Also important in determining stability is asset quality. For Islamic Banking Institutions NPFs as percentage of total financing were:

Year	NPF/Financing (%)
2022	2.6
2023	3.8
2024	3.5

The increase in 2023 indicates some deterioration in financing quality. The increase did not result in a substantial solvency issue, however, as the provisioning coverage also fell, dropping from 130.9% in 2023 to 117.7% in 2024. The negative net NPF-to-financing ratio of SBP in 2024 also suggests that provisions were higher than the net problematic financing exposure.

23. Profitability Analysis

The evidence of profitability is especially compelling. SBP's Sector-level Financial Soundness Indicators show that Islamic Banking Institutions reported an after-tax ROA of 2.8% in 2024, 2.8% in 2023 and 1.7% in 2022. There was also a considerable income for the industry. IBIs saw a rise in their after-tax profit from PKR 225 billion in 2023 to PKR 273 billion in 2024. IBIs contributed approximately 42.3% of the banking sector's after-tax earnings in 2024 despite having a much smaller share of total banking assets. This shows the profitability of Islamic banking in the period.

24. Discussion

The empirical results offer a more detailed analysis of the stability of Islamic banking in Pakistan. The first important conclusion is that Islamic banks were more profitable than the conventional banks. Islamic banks' average ROA was about 2.04% while conventional banks' average ROA was 1.26%. The difference in ROE averaged was even greater. The result is aligned with high profitability of Islamic Banking Institutions which was reported by SBP for the years 2023 and 2024. The second major finding is that the profitability was not necessarily correlated with an increase of the Z-score. The average Z-score is much higher for conventional banks (38.97 versus 11.88) and this is not sensitive to the removal of the most influential observation (Section 15.1). The finding is against the initial hypothesis that the Islamic banks were to be more stable. One possible explanation is the historical volatility aspect of the Z-score. Islamic banking remained dynamic throughout the study period and resulted in significant changes in profitability and balance-sheet composition. Even if the current profitability is high, a higher volatility can reduce the Z score. The result also indicates that the traditional-dialogue-Islamic divide might not be sufficient to account for bank stability. Other factors – such as bank size, capital structure, business diversification, sovereign exposure, liquidity management and risk-management practices – could be more influential.

25. Why Islamic Banks May Have Lower Z-Scores Despite Higher Profitability

There are multiple reasons.

25.1 Rapid Expansion

Islamic Banking had very high growth rate of its assets and deposits. High growth may lead to higher profitability, but also to higher variability of earnings.

25.2 High Investment Concentration

Islamic banks made more investments in government Sukuk. This will offer liquidity along with relatively low sovereign risk, but also concentration in sovereign exposure.

25.3 Business Model Differences

Islamic banks use a financial structure that can generate income recognition and risk profile distinct from that of conventional banks.

25.4 Historical Volatility

The Z-score is based on the volatility of ROA in the past. There are significant changes in policy rates and economic conditions in the short time leading up to the post-2021 stress period. Thus, a history of the fluctuations of earnings is taken into account in the stability measure.

26. Comparison with Previous Literature

The results have some variation with previous Pakistani studies. In a study made by Farooq and Zaheer (2015), they observed that during financial panic, Islamic bank branches proved more resilient. Rashid et al. (2017) found the evidence to support the contribution of Islamic banking towards financial stability. Hassan et al. (2021) also found that the Islamic banks were found to be more stable than the conventional banks in their sample. This study does not contradict these results. Instead, it implies that the stability relationship might be time-dependent. Many previous studies focus on the pre-2021 Pakistani context while the post-2021 context is significantly different from these studies. Islamic banking now plays a bigger, more systemically important role and is more tied to the government Sukuk markets. Thus, earlier conclusions cannot be extrapolated to the post-2021 world.

27. Policy Implications

27.1 Strengthen Islamic Liquidity Infrastructure

SBP needs to further expand liquidity instruments compliant with Shariah.

27.2 Monitor Sovereign Concentration

The rising investments by Islamic banks in government Sukuk should be monitored with great care.

27.3 Strengthen Capital Buffers

Part of the profitability should be kept to build up capital buffers.

27.4 Improve Stress Testing

Islamic banks should be separated in stress tests. These should include:

- financing risk
- liquidity risk
- sovereign concentration
- rate risk-profit
- compliance risk-Shariah non
- displaced commercial risk

27.5 Encourage Diversification

Islamic banks must be more active in financing small and medium enterprises, agriculture, manufacturing, exports and other productive activities, and not overinvest in government securities.

27.6 Improve Stability Measurement

The Z score should not be the sole stability indicator used by the regulators and researchers, especially in view of the fact that its ROA-volatility denominator has been shown to be sensitive to the Z score (Section 10 and Section 15.1). A more comprehensive stability program would incorporate:

- (ROA) and ETA are reportedσ The Z score along with its underlying components
- capital adequacy
- liquidity
- NPF ratio
- provisioning coverage
- testing outcomes-stress
- based indicators-market

28. Conclusion

In this study, the author analyzes the Islamic banking and the stability of the banks in Pakistan in the macro-financial stress period post-2021. The evidence gives an in-depth conclusion. The Islamic banks experienced greater profitability compared to conventional banks. The average ROA and ROE were significantly higher in 2022-24. The Islamic banking segment also grew at a fast pace and continued to have favourable aggregate liquidity, capital adequacy and asset quality ratios. The proposition that Islamic banks were more stable than conventional banks, however, is not supported by the bank-level Z-score analysis. The mean Z score for the conventional-bank sample was 38.97 (SD =

22.96) while the Islamic-bank sample had a mean Z score of 11.88 (SD = 1.69). The difference was statistically significant in both paired ($t = 4.54$, $p < .001$) and unpaired ($U = 90$, $p < .001$) tests, and was actually even more significant if the most influential conventional-bank observation was removed from the analysis ($t = 8.14$, $p < .001$). It thus appears that the results indicate Islamic banking's resilience and profitability, not clear superiority, in the accounting-based distance-to-insolvency measure. The distinction is important: a bank need not be highly capitalised or especially profitable to have a low Z-score, but it could be very profitable and exceptionally well capitalised to have a very high Z-score, as UBL did in this sample (due to more volatile earnings). The findings in this paper thus question simple notions of Islamic banking stability and suggest that there is a need to look at stability from a number of different angles and report on the individual elements of the index that is based on standard accounting practices rather than the index value as a whole. However, based on the industry level, the resiliency of the Islamic banking sector is unarguable during the stress period. The data provided by SBP indicate that the capitalization, liquidity, asset quality, profitability and growth on the balance sheet have been strong. Based on the available bank-level evidence, it is thus best to conclude that Islamic banking in Pakistan was fairly resilient in the post-2021 macro-financial stress period, but that there was no overall stability advantage compared to conventional banking.

29. Limitations

There are some limitations in the study. The bank-level balanced panel has seven banks as there was a need to have consistent historical information so that the Z-score calculation could be done. Secondly, there are only three observation years for the post 2021 period. Third, the Z-score is an accounting-based measure and may not capture market perceptions of bank risk. Third, the Z-score also accounts for the volatility of ROA over time, so that the resulting measure of stability is reflective of the events that preceded 2022 as well as the results of the stress period. Fifth, Islamic and conventional banks have structural differences, which makes it difficult to be completely comparable. Sixth, the equity-to-total-assets inputs used in the calculation of the Z-score were sourced from a mix of audited annual reports, credit-rating-agency summaries and for a subset of bank-years (largely FY2024) from interim-period proxies or figures based on reported ROE, as final audited accounts were not available for all banks at the time of writing. These extrapolations of their observations are identified separately in Appendix A and should be updated when the audited statements are published. Seventh, the Z-score's sensitivity to the ROA-volatility denominator implies that the results of the present application are not necessarily robust to a single bank that has unusually stable historical earnings (UBL in this sample); the robustness check in Section 15.1 illustrates that this is a case where the results of the present application are robust. Last, the study does not use a large dynamic panel estimator as the sample of the post-2021 period is too short to be useful for a high-dimensional dynamic model.

30. Recommendations for Future Research

The findings of this study call for further investigation to cover all banks in Pakistan for which annual observations can be made. If a longer term (2015-2025) were available, researchers could make use of:

- effects models-fixed
- effects models-random
- system GMM
- score models-dynamic Z
- differences approaches-in-difference
- macroeconomic interaction models

In addition, further studies should be conducted to look into the differential impacts of monetary tightening on Islamic and conventional banks. A second line of research is to investigate the impact of the ratio of Sukuk and government securities in Islamic banks' portfolios on stability. Last but not least, further studies could create a new Islamic Banking Stability Index that combines the profitability, liquidity, capital adequacy, asset quality, earnings volatility and market indicators, each of which can be reported independently instead of a single index.

Appendix A: Bank-Level Source Data Used in the Analysis

ROA and ROE figures below have been included as originally collected in the data, and have been verified against the banks' own results announcements made to primary filings (e.g., the figures for banks in MCB 2024 and Meezan 2023 match exactly with their results announcements). The figures of equity-to-total-assets (ETA) are newly reported here, and the source of each figure and the confidence level are reported for each bank-year, directly addressing the reproducibility of Table 2.

Conventional Banks

MCB Bank

ROA: 2020 = 1.77%; 2021 = 1.65%; 2022 = 1.61%; 2023 = 2.64%; 2024 = 2.25%.
ROE: 2020 = 18.88%; 2021 = 19.11%; 2022 = 19.78%; 2023 = 31.60%; 2024 = 26.56%.

Year	Total Assets (PKR mn)	Equity (PKR mn)	ETA (%)	Source / confidence
2020	1,757,462	190,102	10.82	PACRA rating report (Jun-2024), audited
2021	1,970,468	174,407	8.85	PACRA rating report (Jun-2024), audited
2022	2,085,355	189,495	9.09	PACRA rating report (Jun-2024), audited
2023	2,427,179	230,707	9.51	PACRA rating report (Jun-2024), audited

Year	Total Assets (PKR mn)	Equity (PKR mn)	ETA (%)	Source / confidence
2024	~2,703,300	~227,200	8.40	Estimated: total assets from PACRA press release; equity derived from book value per share × shares outstanding (interim disclosure). Update against FY2024 audited accounts.

Bank of Punjab
ROA: 2020 = 0.71%; 2021 = 1.09%; 2022 = 0.81%; 2023 = 0.61%; 2024 = 0.58%.
ROE: 2020 = 15.85%; 2021 = 24.27%; 2022 = 17.53%; 2023 = 15.50%; 2024 = 16.36%.

Year	Total Assets (PKR mn)	Equity (PKR mn)	ETA (%)	Source / confidence
2020	1,095,446	52,262	4.77	PACRA rating report (Jun-2023), audited
2021	1,196,952	54,833	4.58	PACRA rating report (Jun-2023), audited
2022	1,481,890	65,052	4.39	PACRA rating report (Jun-2023 & Jan-2025), audited
2023	2,136,483	83,567	3.91	PACRA rating report (Jan-2025), audited
2024	~2,250,000	~85,000	3.78	Estimated: proxy from Sep-2024 interim balance sheet (PACRA, Jan-2025). Update against FY2024 audited accounts.

Bank Alfalah
ROA: 2020 = 0.87%; 2021 = 0.92%; 2022 = 1.06%; 2023 = 1.36%; 2024 = 1.15%.
ROE: 2020 = 11.55%; 2021 = 15.30%; 2022 = 19.23%; 2023 = 31.67%; 2024 = 24.83%.

Year	Total Assets (PKR mn)	Equity (PKR mn)	ETA (%)	Source / confidence
2020	~1,550,000	~96,000	6.19	Estimated: interpolated from 2021 audited balance sheet and disclosed growth trend; no direct FY2020 balance-sheet source located.

Year	Total Assets (PKR mn)	Equity (PKR mn)	ETA (%)	Source / confidence
2021	1,736,773	101,874	5.87	stockanalysis.com (PSX financials), consistent with audited accounts
2022	2,256,720	102,063	4.52	stockanalysis.com (PSX financials), consistent with audited accounts
2023	3,349,668	139,623	4.17	stockanalysis.com (PSX financials), consistent with audited accounts
2024	3,717,056	181,387	4.88	stockanalysis.com (PSX financials), consistent with audited accounts

United Bank Limited (UBL)
ROA: 2020 = 1.10%; 2021 = 1.30%; 2022 = 1.20%; 2023 = 1.30%; 2024 = 1.20%.
ROE: 2020 = 13.90%; 2021 = 19.10%; 2022 = 18.00%; 2023 = 26.60%; 2024 = 35.80%.

Year	Total Assets (PKR mn)	Equity (PKR mn)	ETA (%)	Source / confidence
2020	2,049,580	184,000	8.98	VIS rating report (2021) for assets; UBL investor presentation for equity, both audited
2021	~2,400,000	205,000	8.54	Total assets estimated by interpolation between audited 2020 and 2022 figures; equity from UBL investor presentation, audited
2022	2,758,753	209,000	7.58	VIS rating report (2025) and UBL investor presentation, audited
2023	5,574,998	253,000	4.54	VIS rating report (2025) and UBL investor presentation, audited
2024	~9,374,300	~351,800	3.75	Estimated: third-party financial-data aggregator (simplywall.st),

Year	Total Assets (PKR mn)	Equity (PKR mn)	ETA (%)	Source / confidence
				approximate period-end date not independently confirmed against UBL's own audited FY2024 accounts.

Askari Bank
ROA: 2020 = 1.18%; 2021 = 0.86%; 2022 = 1.01%; 2023 = 1.17%; 2024 = 0.91%.
ROE: 2020 = 22.31%; 2021 = 17.57%; 2022 = 21.76%; 2023 = 25.15%; 2024 = 19.22%.

Year	Total Assets (PKR mn)	Equity (PKR mn)	ETA (%)	Source / confidence
2020	992,517	54,546	5.50	PACRA rating report (Jun-2023), audited
2021	1,259,144	55,902	4.44	PACRA rating report (Jun-2023), audited
2022	1,526,134	73,322	4.80	PACRA rating report (Jun-2023) & Askari analyst briefing, audited
2023	2,124,000	97,100	4.57	Askari Bank analyst briefing (Dec-2023), audited
2024	~2,293,000	~115,600	5.04	Estimated: proxy from Sep-2024 corporate briefing (9-month figures). Update against FY2024 audited accounts.

Islamic Banks
Meezan Bank
ROA: 2020 ≈ 1.50%; 2021 = 1.70%; 2022 = 2.01%; 2023 ≈ 3.02%; 2024 ≈ 2.60%.
ROE: 2020 ≈ 30.70%; 2021 ≈ 34.60%; 2022 = 44.59%; 2023 ≈ 56.27%; 2024 ≈ 47.00%.

Year	Total Assets (PKR mn)	Equity (PKR mn)	ETA (%)	Source / confidence
2020	1,521,600	69,200	4.55	VIS rating report (2022), audited (Net Worth)
2021	1,907,659	86,600	4.54	stockanalysis.com (assets) & VIS rating report (equity), audited

Year	Total Assets (PKR mn)	Equity (PKR mn)	ETA (%)	Source / confidence
2022	2,581,901	~115,000	4.45	Assets: stockanalysis.com, audited. Equity: derived from reported ROE and profit-after-tax (back-calculated), interpolated between audited 2021 and 2023 figures.
2023	3,019,316	188,460	6.24	Assets: stockanalysis.com; equity: Wikipedia infobox sourced to company disclosure — both audited
2024	3,912,189	~195,000	4.98	Assets: stockanalysis.com, audited. Equity: derived from reported ROE and profit-after-tax (back-calculated). Update against FY2024 audited accounts.

BankIslami
ROA: 2020 = 0.55%; 2021 = 0.57%; 2022 = 0.99%; 2023 = 1.93%; 2024 = 1.70%.
ROE: 2020 = 10.67%; 2021 = 11.87%; 2022 = 20.78%; 2023 = 39.81%; 2024 = 32.55%.

Year	Total Assets (PKR mn)	Equity (PKR mn)	ETA (%)	Source / confidence
2020	336,297	19,895	5.92	BankIslami 'Six Years' Financial Summary', 2023 annual report, audited
2021	408,390	22,511	5.51	BankIslami 'Six Years' Financial Summary', 2023 annual report, audited
2022	487,239	26,450	5.43	BankIslami 'Six Years' Financial Summary', 2023 annual report, audited
2023	654,866	36,466	5.57	BankIslami 'Six Years' Financial Summary', 2023 annual report, audited

Year	Total Assets (PKR mn)	Equity (PKR mn)	ETA (%)	Source / confidence
2024	~720,000	~46,000	6.39	Estimated: equity proxy from Sep-2024 PACRA press release; total assets interpolated from reported deposit/financing growth. Update against FY2024 audited accounts.

Appendix B: Statistical Tests
Welch Test (full sample, n = 21)
Mean Z-score — Conventional Banks: 38.97
Mean Z-score — Islamic Banks: 11.88
t-statistic: 4.54
p-value: < .001
Decision: Significant difference.
Mann–Whitney U Test (full sample, n = 21)
U: 90.00
p-value: < .001
Decision: Significant difference.
Robustness Check (excluding UBL, n = 18)
Mean Z-score — Conventional Banks (excl. UBL): 29.23
Welch t-statistic: 8.14, p < .001
Mann–Whitney U: 72.00, p < .001
Cohen's d: 2.96
Decision: Significant difference; result strengthens relative to the full sample.
Appendix C: Interpretation of Findings

The main conclusion of the study can be stated as:

In this study, Islamic banks were more profitable but not more stable than conventional banks based on the Z - score indicator. This is significant as it prevents making an unsubstantiated claim that Islamic banking automatically is more stable. Rather, the evidence lends credence to a more defensible argument:

Islamic banking performed exceptionally well in terms of bank-level DFIs, profitability, capitalization, and liquidity during the period of macro-financial stress following 2021, while the bank-level DFIs was lower than that of the selected conventional banks, but this finding is robust to excluding the single most influential conventional-bank observation and should be read in conjunction with the revealed σ(ROA) and ETA components rather than separately as a mere index. This difference is the main finding of the study.

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