

Stability, Funding Risk and Bank Performance: Evidence from Pakistan

Mohsin Siraj Vohra* Muhammad Mubeen** Kashif Arif *** Khuram Perwez****

Abstract

This study analyzes how banks' stability and funding risk affect their profitability in the case of Pakistan. For this purpose, data from 19 Banks were used from 2000 to 2016. The independent variable was Bank Performance for which Return on Assets was used. The dependent variables were first, Bank Stability, which was calculated as the Z-Score of RoA and Equity to Assets, and second, Funding Risk, which was calculated as the Z-Score of Deposits to Assets Ratio and Equity to Assets. Our control variables were Bank Size, Credit Risk, Liquidity Risk, Diversification, and Capital to Asset Ratio. Our results indicated that Funding Risk, Liquidity Risk, Credit Risk, and Bank Size are negatively affecting bank performance whereas bank stability is positively affecting bank performance. From the result of size, we may conclude that in the case of Pakistan, Larger Banks are not getting the benefits of economies of scale. Our findings suggest that policymakers and banking institutions in Pakistan should prioritize efforts to enhance bank stability and mitigate funding risk in order to improve bank profitability.

Keywords: Bank Performance; banking sector; bank stability; funding risk.

JEL Classification: E44, G21, G24

*Manager, Internal Audit Department, Pakistan Stock Exchange Limited, Karachi, Pakistan.

Email: ms.vohra@yahoo.com

** Lecturer, Department of Business Administration, IQRA University, Karachi, Pakistan.

Email: mubin@iqra.edu.pk

*** Lecturer, Department of Accounting and Finance Salim Habib University Karachi, Pakistan.

Email: kashifspectrum@gmail.com

****Assistant Professor, Faculty of Business Administration, IQRA University Karachi, Pakistan.

Email: khuramperwez@iqra.edu.pk

1. Introduction

1.1 *Bank Profitability*

The flow of funds' support is the leading and primary role of a financial system. A competent financial system should not only demonstrate better quality services for consumers but, profitability improvements and collect the bulk of funds from savers for debtors.

To any economy, as a whole, it's very critical to have a fit and healthy banking sector (Gazi et al ., 2022). This demands the study of banking sector performance in developing economies of greater significance. Although a sufficient literature background is available on developing economies, our primary motive is to bring this convergingly to the Pakistani context.

As we initiate, discussion about the origin of banking is inevitable. The origin of modern banking was marked by financial historians in Italy in the thirteenth century with the rise of financial houses (Schefold, 2022). Whereas, 33 A.D is considered as the earliest crises recorded, where the convergence of factors like foreign debt defaults, frauds, government policy for liquidity draining, and some ships sinking loaded with uninsured commodities forced some Roman banking houses to shut down. Reliable bankers were then provided with funds by Tiberius Caesar and some debtors for recovery. Caesar had to suspend government policies and forgive some interest but as a payoff to it, some institutions recovered.

Bank performance evaluation is not simple but rather a complex process as it encompasses assessing environmental elements interaction, external factors and internal operations. A generally accepted pattern used to narrate bank performance is assessing performance through a number of empirical financial ratios from which financial intermediaries' performance is normally gauged. Ratios provide a broader view of the bank's performance as ratios are calculated from accounting data i.e. extraction from financial statements and banks' balance sheets. As considered by many studies, operating efficiency is another key element for management to assess performance. While measuring efficiency, cost control information is depicted by the spread. The difference between rates paid on deposits and the rates charged on loans provides cost efficiency in numeric terms. Whereas for Islamic banks, participation in many non-interest-based investments can be used to attain spread (Al-Harbi, 2019).

Ratios and spread both provide a macro view of the performance. Other measures of performance are Return on Equity (ROE) and Return on Assets (ROA). ROE and ROA both are tightly attached to net revenue derived from the income statements; not income. Both measures of performance are used previously in many performance-related studies to estimate bank performance. In a simple manner, ROE represents shareholder funds' effective usage by the management. On the other hand, ROA is dependent upon policy decisions and

many economic and other external factors including government interferences. Regulators believe that ROA represents bank performance more than any other measure. ROA reflects the earned profit per rupee of assets, this means the assets utilization through management ability; mainly financial assets.

With significantly higher returns than other parts of the world, commercial banks in Pakistan appear very profitable too, similar to few other emerging economies of the globe. Malamud et al. (2022) described standard asset pricing models signify that riskier assets be compensated with greater returns and this must be ensured through an arbitrage. Performance reflected in many commercial banks of Pakistan, along with regulatory, supervisory and structural reforms, for promoting financial development parallelly reducing the concerned risks. However, some institutions still operate in a risky financial environment which compels them to charge higher returns to compensate for high risks. An increase in loan defaults and deterioration in loan quality as a consequence of low economic growth too can severely impact banking sector performance as weak economic performance exposes banks to more risks. Bank performance is not only impacted by internal factors but it has relations with external factors/determinants, as supported by literature, the factors include but are not limited to variables representing market characteristics, taxation, GDP per capita, GDP development and last but not least, inflation rate. A very trivial impact is of the tax burden on bank performance as banks easily transfer the tax burden's large part onto its associates such as borrowers, depositors and fee-generating purchasers (Barrdear & Kumhof, 2022).

'Deregulation and financial stabilization made important implications on the banks' income statements (Al-Harbi, 2019). It's about from traditional financial income by making a shift to non-interest income from a complete interest base. Interest margin's decline changes the role traditionally played by the banks and a thrust of new avenues for revenue is felt, such as service, trading and other operations (Kumar et al., 2022). Furthermore, fee income increased its importance as a new revenue avenue such as financial innovation, new information technology and industry deregulation sort of structural changes are taking place, and due to this phenomenon, gross income and non-interest income ratio have increased sharply in every country (Ghorbani et al., 2019). Albertazzi and Gambacorta (2009) stated that this ratio of non-interest income to gross income increased in Western countries consequently demonstrates a sharp increase in banking performance. But apart from the UK which leads in this ratio, the rest of the banks in the region like Portuguese, Spanish, German, and Italian lag behind in this ratio.

This lower ratio denotes the stock market's lower development in the country and a strong lending-borrowing relationship which often characterizes these countries. The banking sector in Pakistan is a lucrative area of study for researchers as due to its heterogeneity, research studies can focus on any part of this multi-branched tree. Public sector banks, fully privatized banks, and partially privatized banks may and can have the same sort of operations

and financial structure and are operating in a comparable environment but on the contrary, the environment of Islamic, SME, and Microfinance is holistically different in regulatory ambit as well as the operations and performance are concerned.

The pivotal role played by the banking sector forces both i.e. academia and professionals to raise a relevant fundamental question about the efficacy of operational performance mechanisms (Akther & Rahman, 2022). Precisely stating, how should the banking sector operate either Market-based or state-controlled? Further, a concern is raised pertaining to the transition phase from state-owned to private-owned or vice versa. The answer to such scrutiny itself is evidence that the sector under consideration is progressing up the liking table of professionals and academia alike. Pakistan too, in alignment with changing environment of the economic world, underwent phases of banking sector reforms. Imperative to mention some studies connected to the regulatory regime and banking performance relationship. Ahmad and Burki (2016) studied deregulation's impact on banking sector performance by analyzing market perception. Results indicated that key banking reforms proved to be helpful in fixing glitches and an improvement in the banking sector of Pakistan's cost inefficiency score. Khan & Hanif (2017) adopted a microeconomic approach to analyze the competition among banks in Pakistan which is linked to the performance of the banking sector itself. Khan and Hanif (2017) used financial capital cost, physical capital and cost of labor as input while taking earning assets as an output. Ali (2020) while assessing the impact of financial sector reforms on the Pakistani economy discussed and debated on the success of the banking sector denationalization scenario which again links towards banking sector's performance.

The operating environment for banks in Pakistan has observed substantial changes since the implementation of financial sector reforms in the early 1990s. Specifically, the privatization of state-owned commercial banks was commenced, and the private sector was encouraged to open new banks; directed-credit schemes were gradually stopped; the cap on lending rate was abolished; licensing of branch policy was liberalized; and the use of information technology for the provision of financial services was facilitated. Moreover, the State Bank of Pakistan (SBP) has been actively facilitating Islamic banking, branchless operations, and microfinancing, to promote access to financial services. All these changes were planned to implant healthy competition, create a sound, effective and efficient banking system capable of supporting the growing economic activity. Understating of the degree and evolution of bank competition is also important as it has strong implications for the way changes in monetary policy stance impact the ultimate underlying objectives.

Khan and Hanif (2017) narrated that in an emergent economy like Pakistan, the role of the banking system can be barely over-emphasized. While the acknowledgment of the impact of sectors' reforms on the banking structure of Pakistan is there, both the management and academics question the level of efficiency of the banking sector. The Competition Commission of Pakistan (CCP) has also been critical of competition in the banking sector. The

reforms of the financial sector, including the most material one made the banking sector in Pakistan competitive. Exploring empirical bank performance precisely, researchers viewed the banking sector altogether such an important area of research they even explored the angle of regulatory regimes of the banking sector in detail. A few contributions from around the world are included for reference and emphasis purposes. Studies such as Berger et al. (1995) revealed that even in the US, liberalization of deposit rates has little or no effect on bank deposit rates which are linked with bank performance. Few contrary studies supporting the phenomenon are also found (Kumar et al., 2022; Phan et al., 2020). Despite its importance seen through the binoculars of existing literature, very less work is conducted in the context of Pakistan. Abbas and Malik (2008) conducted a study to capture market perception about the performance of the Pakistani banks observed from spectacles of the central bank's deregulation and liberalization measures.

Banking performance is generally taken as inversely proportional to insolvency. The higher a bank's performance would be the lower it has risks of insolvency. When banks go insolvent many adverse effects encompass it. The primary factor considered in the literature regarding the transparency of reporting both sectors is that the non-financial sector is more transparent as compared to the financial sector. Some reasons specified are that banks have less transparent operational processes than operations/production processes of the non-financial sector, banks' products, in general, are payable in future (banks' inability to pay will be exposed at a later stage) whereas non-financial deals on the day-to-day basis and all weaknesses are very much identified to market. Financial firms can roll over with loans or even increase deposits for the same purpose too. High return promises can attract new clients when inevitable situations are to be faced coming from old clients. In this manner, the financial sector is at a high risk of insolvency; banking performance in general term reduces this risk.

The distinct features of a very high spread compared to other countries of the world and a day-by-day stiffer regulatory environment make the sound foundation to empirically investigate the banking sector and its performance (Phan et al., 2020; Wang & Luo, 2022). The current research's focal point is the same. A similar sort of work done on bank profitability is acknowledged which was previously done by Adusei (2015) which examines Bank profitability in Rural and Community Banks (RCB) of only Ghana. However, the current research differs from (Adusei, 2015). Firstly, Adusei focused on RCBs of Ghana having restrictions of operations for certain geography and not allowed to open branches (single branch banks) whereas this paper focuses on the complete banking sector of Pakistan which consists of 22 numbers of banks operating in Pakistan and having branches across the country with no significant territorial restrictions. Secondly, the sampling framework for the paper constitutes of only 112 RCBs whereas this research has access to a secondary database through Thomson Reuters of all banks operating in the country. For which, results extracted from this paper will provide deep insights into the banking performance as compared to the base paper.

1.2 *Research Problem*

Although a variety of factors affecting bank performance was researched with different fusions in order to find the most prominent ones which influence bank performance, it is an interesting and inducing research topic to find out the results for more influential factors to affect bank performance.

“This research study will examine which factors of Bank performance are more dominant/influential among factors of prevailing literature i.e. Bank Size, Liquidity Risk, Credit Risk, Bank Stability, Diversification, Funding Risk, and Capitalization in the case of Pakistan”

1.2.1 *Research Question*

This study will be investigating the following Research Questions:

- What is the most influential factor among the factors in determining bank performance?
- Are the effects of the prominent factors consistent across the entire banking sector or do they vary from bank to bank?

1.3 *Study Objectives*

The experimental and theoretical evidence proposed that many financial crises, troubling a lot of underdeveloped and even developed economies in the world (Caprio & Klingebiel, 1996), resulted in designing indicators for monitoring financial vulnerability (Kanas et al., 2012). When a prudent list of macroeconomic indicators is to be made for the purpose of banking performance, its future outlook ascends the list in debate. The principle focus of the study is to drill down the variables which in numeric terms stimulate the bank performance in Pakistan’s financial market scenario. The essential motive to commit research is the sector’s own importance in providing funding from the micro to macro economical level while pooling idle funds from the scratch of the economy for this purpose. Furthermore, the goal is to investigate the different variants/ i.e. Bank Size, Liquidity Risk, Funding Risk, Bank Stability, Credit Risk, Diversification, and Capitalization in the Pakistani scenario.

1.4 *Limitations*

The study may be specific to the context of Pakistan’s banking sector. Extrapolating these results to other countries or regions should be done cautiously, as banking systems and market conditions can differ significantly. The reason for differentiation is that they can have different capital structures. In addition, there can be one more contrast, the legislative requirement of banking from nonbanking financial firms. This maybe as a shutdown of a nonbanking financial firm affects somewhat a limited stakeholder but a shutdown of a large bank affects

larger related parties from stakeholders in contrast. Also, this study analyzed data from 2000 to 2016, which may not reflect the current banking landscape and dynamics. Changes in the regulatory environment, market conditions, and banking practices over time could influence the validity and relevance of the findings. Also, this study includes control variables such as credit risk, liquidity risk, diversification, and capital-to-asset ratio. However, there may be other relevant factors that were not considered, potentially influencing the relationship between bank stability, funding risk, and bank profitability.

2. Literature Review

2.1 *Why Banking? Why Banking Performance?*

In every economy, a pivotal part is played by the banking sector. Banking allocates funds to the most productive uses as this sector mobilizes savings and supports in the payment system. The role of the banking sector is central, for utmost value use, the bank allocates funds, to limit costs and risks, and generate economic activities (Jaffee & Levonian, 2001). Likewise, the study by Porter (1965) revealed that an efficient financial system does provide growth and financial development. Because of banking's fluid significance in any economy, policy devising, and everlasting efforts are made to keep the playing field leveled and opportunities are to be provided on an equal basis, this enables them to operate efficiently, and play competitively.

2.2 *Global Perspective*

2.2.1 *Developed Countries Banking Sector*

A great deal of literature now exists, that consents that bank performance at large is pertinent to management/manipulation of resources, and financial resources to be exact. Many studies focused on the US banking system and the banking systems in the developed world have agreed that the main factor backing the bank's performance is the efficient allocation of available funds and other resources.

China was a centrally controlled economy. It went through a comprehensive reform in the banking sector, initialized in 1997, and the aim was to make the banking sector a profitable contributing sector. The focus of the reforms was state-owned four commercial banks which lend to the state's own enterprises. Mainly two restructurings were undertaken in two ways, to carve out non-performing loans and more importantly, capital injection. Besides this, the government took other steps and regulatory reforms like lifting the restrictions on deposit and lending rates, also gradual capital account opening (Tan & Floros, 2012). The results suggest that foreign participation increases and a reduction in state ownership can lead to banking efficiency in China (Yao et al., 2008). Moreover, there exists relevant literature

studying banking sector profitability and their determinants employing ROA, ROE and interest margin. In this regard, the study of Adelopo et al. (2022) found a positive relationship between liquidity and the performance of banks in Europe while a negative relationship between asset quality and performance.

Changes in the factors of the macroeconomic environment influenced the profitability of banking in EU countries. A relatively weak relationship was investigated in size and profitability. Albertazzi and Gambacorta (2009) while using 5 indicators for banking profitability analyzed the volatility of stock market impact on banking profitability in industrialized main developed countries. Results revealed that apart from profit before tax and provisions other determinants are positively related. Further, provision has no relationship and profit before tax has a negative relationship. A similar study by Albertazzi reveals that net interest income has a negative relationship and other variables have a positive relationship.

For an international sample of banks, Demirgüç-Kunt and Huizinga (2010) revealed that there is a positive relationship between non-deposit funding and non-interest income share with absolute bank size. But bank activity and funding patterns may not be potential factors of bank performance.

2.2.2 Developing Countries Banking Sector

Unlike studies available for developed countries rarer material investigated the same topic in developing and/or under developing economies. Out of this vast topic few may be discussed for reference i.e. Bank performance determinants of seventeen (17) commercial banks of Malaysia (Guru et al.,2002), Thailand's local domestic and foreign banks' performance (Chantapong, 2005), the impact of macroeconomic situation and bank financial structure on the bank performance (Ben Naceur & Goaid, 2008).By contrast, fewer studies have looked at bank performance in developing and/or underdeveloped economies. Guru et al. (2002) inspect the determinants of bank performance in seventeen (17) Malaysian commercial banks, the impact of Middle East and North Africa (MENA) countries' commercial banks' performance under the influence of concentration, institutional and financial development, and bank regulation.

2.2.3 Diverse Perspective

Quotable cross-border and diverged explorations on the topic are discussed which added value and helped discover new relationships. First, an exploration of factors of bank performance in a set of countries is offered (Molyneux & Thornton, 1992). While using bank-level data of eighty (80) countries to determine bases of bank performance Demirgüç-Kunt and Huizinga (2010) contributed a comprehensive study. Further, taking a larger number of developed and developing countries in the sample Demirgüç-Kunt and Huizinga (2010)

contributed effects of structure and financial development on the bank performance (Wang & Luo, 2022; Yakubu & Musah, 2022).

2.3 *Pakistani Banking Perspective*

2.3.1 *Historical Reforms*

A crucial part is played by the banking sector in the development of the nation of Pakistan. Snapshot of important occurrences is conferred. In the mid of 1,970s significant changes occurred in the financial scenery of the country. Not only banks' nationalization and afterwards control of interest rates but an intricate system of credit ceiling introduction and subsidized credit schemes and many digressive decisions were also taken. Then a series of disruptions followed. The government started interrupting the business affairs of banks. A much-tilted behavior was observed, especially the nationalized banks were given primary importance to cater borrowing needs of the government. While the needs of the private sector were either met hardly or even ignored. The efficiency of banks was severely affected as a repercussion of the policy alterations. By the 1980s, the banking sector of Pakistan could merely contribute to cope with the ever-growing needs of the nation. At that point in time, deregulation and financial liberalization in the banking sector were predominantly important in order to have constructive far-reaching implications for the sector.

2.3.2 *Current Issues and Arguments*

Between the two-phased reforms designed to let the banking sector play its real role in the economy, the initial phase of reforms was subsequently implemented whereas the implementation of the later phase of the long-awaited reforms is about to reach its resultant conclusion. Two of the stakeholders, the central bank and the government, claimed that said reform program provided positive outcomes. Even despite large claims on many fronts by policymakers of banking reforms, uneven distribution of credit, low return, non-performing loans of high level, risky investments/exposures etc. keep affecting banks' balance sheets from liability and assets sides as well. Policymakers' keen interest and attention were required to make as the overall economy can have negative implications because of the ineffective and incompetent banking sector. The incorporation of deregulation of controls and liberalization of banking practices helped improve the efficiency and performance of banks.

The improvement observed in the privatized banks' profitability is a contribution of the privatization process, though intermediation spread was enhanced not reduced (Akhtar, 2006). The banking sector's financial health still continues to improve. This reform process improved the overall health of the banking sector and further strengthens it. A study was published in 2006 on the topic of "Getting Finance in South Asia" by the World Bank. Evaluation shown in the study reflects that our country has, after India, higher capital adequacy rates,

stable liquidity position and non-performing loans are low among the South Asian Countries.

To curb non-performing loans, the adoption of a multi-track strategy was planned, including but not restricted to a genuine case incentive package, a new law was enacted for the recovery of bad loans created by an institution. “The Financial Institutions (Recovery of Finance) Ordinance 2001” was promulgated for the same purpose. Stuck-up loans’ expeditious recovery was made possible as this law provided a mechanism for it. Transfer of cases from other courts to banking court and mortgage properties’ sale and foreclosure was possible through this enacted law.

Furthermore, Banking Companies Ordinance 1962 was amended for recovery expeditions of loans. The Committee on Revival of Sick Industrial Units (CRSIU) and Corporate and Industrial Restructuring Corporation (CIRC) were set up for resolving stuck-up loans’ portfolios on banks. CIRC was incorporated for banks to partly transfer their loan burden, which stuck up in the past, and CIRC could pursue it independently. CRSIU’s task was to examine the viability of closed sick units otherwise viable for continuing operations but had to curtail them due to unsustainable debts. Cases of willful defaulters were referred to NAB and customers who were keen to regularize themselves were offered incentives. Pakistan’s banking sector, within South Asia, is well ahead on all indicators. The financial sector’s performance improved with advances in high growth but in a disproportionate manner that raised financial institutions’ risk exposure too. Still, the risk is mitigated with fresh loans, better quality and capital adequacy ratio improvement simultaneously.

3 Research Methodology and Econometric Modeling

3.1 Research Design

The nature of this study is quantitative and was carried out by incorporating financial figures of total equity, capitalization, total deposits, total revenue, total assets, loan to other financial institutions, net profit, and current assets of banks listed on the Pakistan Stock Exchange (PSX). The time period was from 2000 to 2016. The above financial figures were converted into financial variables of return on equity, liquidity risk, credit risk, bank size, bank stability, funding risk, return on assets and diversification and Capitalization. Return on assets and return on equity as performance indicators of banks were regressed as Dependent Variables and Independent Variables were Bank Stability and Funding Risk. Our Control Variables were Bank Size, Liquidity Risk, Credit Risk, Diversification, and Capitalization.

3.2 Sampling Framework

Convenient sampling was done on banks listed in PSX. Convenient sampling was employed in this research due to practical constraints and the availability of data. Given the

limited resources and time, the researchers chose to select the banks listed in the Pakistan Stock Exchange (PSX) for their analysis. The convenience sampling technique allowed them to access the necessary data from Thompson Reuters, which was readily available and accessible. While this method may introduce some bias and limit the generalizability of the findings, it was a pragmatic approach given the research constraints.

3.3 Source of Data

Secondary data is available with Thomson Reuters Data Stream which was used for the extraction of relevant data. The extensive filtration process for financial variables of ROA, ROE, Bank Size, Funding Risk, Bank Stability, Liquidity Risk, Credit Risk, Diversification, and Capitalization was required for banks listed in PSX for the period from 2000 to 2016.

3.4 Hypothesis

3.4.1 Factors of profitability (Regression)

HA1: Bank Stability has a statistically significant impact on the performance of banks in the case of Pakistan.

HA2: Funding Risk has a statistically significant impact on the performance of banks in the case of Pakistan.

HA3: Bank Size has a statistically significant impact on the performance of banks in the case of Pakistan.

HA4: Liquidity has a statistically significant impact on the performance of banks in the case of Pakistan.

HA5: Credit Risk has a statistically significant impact on the performance of banks in the case of Pakistan.

HA6: Diversification has a statistically significant impact on the performance of banks in the case of Pakistan.

HA7: Capitalization has a statistically significant impact on the performance of banks in the case of Pakistan.

3.5 Econometric Modeling

Following were the econometric models utilized for hypothesis testing.

$$\underline{\mathbf{ROA}}_{it} = a + b_1 \underline{\mathbf{SIZE}}_{i,t-1} + b_2 \underline{\mathbf{LRISK}}_{i,t-1} + b_3 \underline{\mathbf{CRISK}}_{i,t-1} + b_4 \underline{\mathbf{FUNDRISK}}_{i,t-1} + b_5 \underline{\mathbf{DBSTAB}}_{i,t-1} + b_6 \underline{\mathbf{DIV}}_{i,t-1} + b_7 \underline{\mathbf{CAP}}_{i,t-1} + \underline{\mathbf{Uit}} \quad (1)$$

$$\underline{\mathbf{ROE}}_{i,t} = a + b_1 \underline{\mathbf{SIZE}}_{i,t-1} + b_2 \underline{\mathbf{LRISK}}_{i,t-1} + b_3 \underline{\mathbf{CRISK}}_{i,t-1} + b_4 \underline{\mathbf{FUNDRISK}}_{i,t-1} + b_5 \underline{\mathbf{DBSTAB}}_{i,t-1} + b_6 \underline{\mathbf{DIV}}_{i,t-1} + \underline{\mathbf{Uit}} \quad (2)$$

where ROA is the return on assets; ROE is the return on equity; SIZE is the bank size; LRISK is the liquidity risk; CRISK is the credit risk; FUNDRISK is the funding risk; DIV is the diversification (diversification in the business model); BSTAB is the bank stability; CAP is the capitalization); a, b and u are the parameter and stochastic error term, respectively; i, t are the individual bank and time effect, respectively.

The following table explains the above econometric terms and definitions of same:

Table 1
Variable Description and Definition

Definition	Variables	Notation
Profit before interest and tax divided by total assets (%)	Return on Assets	ROA
Profit before interest and tax divided by Shareholder's Equity (%)	Return on Equity	ROE
Natural logarithm of total assets	Bank Size	BSIZE
Cash to total deposits	Liquidity risk	LRISK
Total loans divided by total assets	Credit risk	CRISK
Z-score = Total deposits to asset ratio + Equity to assets ratio divided by the standard deviation of total deposits to assets ratio	Funding risk	FUNDRISK
Profit before interest and tax to assets ratio plus equity to assets ratio divided by the standard deviation of profit before interest and tax to assets ratio	Bank Stability	BSTAB
Total investment in financial securities (short and long-term) divided by total assets	Diversification	DIV
Equity capital divided by total assets	Capitalization	CAP

3.6 Plan of Analysis

The Plan of Analysis for this research is as follows:

- Descriptives and Correlation of all the variables have been calculated and analyzed.
- Hypothesis of HA1 to HA7 regarding Factors of profitability has been tested by Multiple Regression Analysis.
- Model Selection Criteria of the Hausman Test (in case of Panel Regression) has been applied to discover whether the Fixed Effect Model or Random Effect Model is better.

4. Results and Analysis

In this Section, Results and Analysis are shown.

Table 2
Descriptive Result

Variable	Obs	Mean	Std. Dev.	Min	Max
Roa	201	.0134205	.0234506	-.0975125	.0585539
Roe	201	.0723923	1.621123	-21.58582	3.191828
Bsize	291	18.83105	1.775736	8.061487	21.64243
Lrisk	287	58.92645	17.72301	19.05	127.48
crisk	253	.5154361	.1245081	.0817651	.8662684
friskz	291	15.9582	6.716912	.4315158	29.88914
bstabz	200	12.99349	10.85402	-5.140077	42.79041
div	290	.3422855	.1332096	.0262728	.8531384
capital	291	.0873878	.0673196	-.0418613	.5431475

Table 2 shows the summary statistics of all the variables used in this study. We can see that on average, the return on assets for our banks is 1.34% whereas the return on equity is 7.2%. High standard deviation along with the minimum and maximum value of ROE indicates the diversity of our sample banks. It also shows that our banks are not homogenous as we have included available data of all the possible banks working in Pakistan which includes small banks as well as large banks. Funding Risk and Bank Stability are Z-Score Values defined in Table 1 so this is a relative number and there is no need to explain this due to its unitless nature.

Table 3
Correlations Analysis

	Roa	Bsize	Lrisk	Crisk	Friskz	Bstabz	Div	Capital
Roa	1.0000							
Bsize	0.4002	1.0000						
Lrisk	0.2869	0.2535	1.0000					
Crisk	-0.2833	-0.2837	-0.9343	1.0000				
Frisk	0.4155	0.2582	0.1650	-0.1575	1.0000			
bstabz	0.4428	0.4228	0.3750	-0.3863	0.5050	1.0000		
Div	0.1927	0.2890	0.9036	-0.8808	0.1233	0.3352	1.0000	
Capital	0.2223	-0.1948	0.2408	-0.2509	0.2884	0.2515	0.0466	1.0000

Table 3 shows the correlation of all the variables used in this study. Most of the values are less than 0.5 which shows that our data is not affected due to multicollinearity issues and we can use panel multiple regression. However, the highest correlation is between credit risk and liquidity risk at -0.93 and the lowest relation is between diversification and capitalization.

4.1 *Fixed Effect Model versus Random Effect Model*

After checking the correlation among the used variables, we decided to go for the fixed effect model, as our sample banks are not homogenous and if cross sections of panel data are heterogenous, we should go for Fixed effect model while applying multiple regression. In Table 4, We also applied Hausman test which shows whether fixed effect model or random effect model is better. Our results indicate that we should go for Fixed Effect Model due to systematic difference in our coefficients.

Table 4
Hausman Test Coefficients

	(b) fixed	(B) random	(b-B) Difference	Sqrt (diag (V_b-V_B) S.E.
bsize	-0.0053625	0.0002213	-0.0055838	0.0011107
lrisk	-0.0009822	0.0001702	-0.0011524	0.0002795
crisk	-0.1758911	-0.0795359	-0.0963552	0.0232175
friskz	-0.0052412	0.0005254	-0.0057667	0.0018591
bstabz	0.0027852	0.0009436	0.0018416	0.0006076
div	-0.0070537	-0.0719117	0.0648581	0.0205974
capital	0.0026952	0.0698501	-0.0671549	0.0556297

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\text{Chi2 (7)} = (\mathbf{b}-\mathbf{B})' [(\mathbf{V}_b-\mathbf{V}_B)^{-1}](\mathbf{b}-\mathbf{B})$$

$$= 42.17$$

$$\text{Prob}>\text{chi2} = 0.0000$$

(V_b-V_B is not positive definite)

4.2 Regression Analysis

Table 5 shows different versions of our model 1. Model (M1) shows the effects of funding risk and bank stability on bank performance. Both funding risk and Bank Stability are the main variables of this study and have not been studied in the case of Pakistan to the best of our knowledge. Funding Risk has negative signs and is also significant which shows that the higher the funding risk, the lower the profitability or performance of a bank. Also, Bank stability is positively significant which means the more stable the bank is, the higher the performance is. In our Model (M2) to Model (M6) we start including our control variables to see whether the sign or coefficient of our Model is changing or not. In model two we

only include Bank Size, which appears to be negatively significant. Literature has shown its significance but mixed results of positive and negatives are there. In Model M3, we include the liquidity of banks along with the bank size and both Bank size and liquidity risk remain significant. However, in the presence of Liquidity Risk, the significance of our main variable of credit risk disappears. It shows that as liquidity risk and funding risk are correlated, it is liquidity risk which is more significantly affecting bank performance as compared to funding risk. In model M4 when we include all three risks of our study, liquidity risk, credit risk and funding risk, all three appear to be negatively significant. Model 4 shows that Bank performance is severely affected by how they manage their risk. As all three types of risk of our study, liquidity, credit and funding are negatively significant, so, higher the Risk in the banks of Pakistan, the lower will be the profitability.

Although it is a well-known phenomenon in banking literature as funding risk has not been studied in the case of Pakistan earlier and the way we calculated funding risk (as Z-Score of Funding fluctuations), shows the importance of including this variable. In model M5 and M6 we also control for diversification and equity capital. The results of M5 show that although diversification matters for bank performance, it may be qualitatively affecting the bank's performance as regression results are not significant in the case of diversification and equity to assets. Also, diversification in the case of Pakistan is negatively affecting bank performance but is not significant. It may also be concluded from M5 and M6 that higher diversification may lead to lower profitability.

Table 5
Stepwise regression of our Model (ROA)

Variables	M1	M2	M3	M4	M5	M6
	ROA	ROA	ROA	ROA	ROA	ROA
Bsize		-0.00328*	-	-	-0.00536**	-0.00536**
			0.00554***	0.00553***		
		(0.00185)	(0.00212)	(0.00207)	(0.00225)	(0.00226)
Lrisk			0.000232**	-	-	-
				0.00102***	0.000981**	0.000982**
			(0.000109)	(0.000342)	(0.000393)	(0.000395)
Crisk				-0.174***	-0.176***	-0.176***
				(0.0449)	(0.0468)	(0.0475)
Friskz	-0.00258**	-0.00260**	-0.00114	-	-	-
				0.00536***	0.00524***	0.00524***
	(0.00129)	(0.00128)	(0.00144)	(0.00180)	(0.00191)	(0.00192)
Bstabz	0.00259***	0.00270***	0.00267***	0.00283***	0.00280***	0.00279***
	(0.000400)	(0.000402)	(0.000398)	(0.000392)	(0.000420)	(0.000674)
Div					-0.00755	-0.00705
					(0.0394)	(0.0417)
Capital						0.00270
						(0.0727)
Constant	0.0256	0.0874**	0.0921**	0.328***	0.325***	0.325***
	(0.0233)	(0.0419)	(0.0415)	(0.0734)	(0.0754)	(0.0757)
Observations	200	200	200	196	196	196
R-squared	0.203	0.217	0.236	0.297	0.298	0.298

5. Conclusion Conclusion

Banking reforms after the financial crisis in Pakistan have triggered the need to investigate the performance of banks. Our results indicate that Funding Risk is negatively affecting the bank's performance whereas Bank Stability is positively affecting bank performance. The results from our control variable suggest that as the coefficient of Bank Size is significantly negative, it means that in the case of Pakistan, banks are not able to avail of economies of scale benefits. It may be attributed to the phenomenon that larger banks are not efficiently utilizing their funds thus the size of the bank is not supporting to perform well. Also, Liquidity Risk is negatively affecting the bank's performance and it shows that banks having too much liquidity risk may not be able to capitalize in terms of performance. Also, diversification and credit risk too are negatively associated with bank performance in the case of Pakistan. So, we may conclude that Pakistani Banks need to focus more on risk management especially funding risk and credit risk to enhance their performance for a better outlook. Also, Bank Stability was found to be a significant factor in bank performance, so the more stable the bank is, the more it will perform.

6. Discussion

The back-bone of every modern economy of the world is the effective flow of funds. The prime responsibility lies with the banking system of the economy to saturate it with sufficient needed funds at every single spot. This puts a lot of responsibility on the banking sector of the economy to keep progressing in order to keep the economic cycle rolling at a reasonable pace. This context puts stress on the performance of the banking sector more than any other sector. Measurement of the banking sector performance is a multi-faceted study, but this research strives to bring into discussion the majority of the factors responsible for the performance of the banking sector. The banking sector with complete interest-based income not only depends on single-sourced income but contributes less to the development of the economy.

The research conclusions derived from the quantitative analysis of the referred data depict that Funding Risk and Bank Stability are affecting bank performance. There exists a negative relationship between Banking Performance and Funding Risk whereas a positive relationship exists between Banking Performance and Bank Stability. This research contributes that Banks in Pakistan are unable to cater to economies of scale. This may be due to the reason that efficient utilization of funds might not be taken care of by large banks. Bank Stability plays a vital role in bank performance; hence, better performance is expected from stable banks. Effective risk management is also a must for bank performance; research reveals that Pakistani banks need to focus on managing risk i.e. funding risk and credit risk.

7. Managerial Implication

The research findings have several managerial implications for policymakers and banking institutions in Pakistan. Some of these implications include:

Prioritizing Bank Stability: Given that bank stability positively affects bank performance, policymakers and banking institutions should focus on implementing robust risk management frameworks and practices. This includes monitoring and maintaining healthy levels of capital adequacy, asset quality, and liquidity to enhance overall stability.

Mitigating Funding Risk: The study highlights the negative impact of funding risk on bank profitability. It is crucial for banking institutions to carefully manage their funding sources and maintain a well-diversified funding base to reduce dependence on volatile funding channels. This could involve optimizing the mix of deposits and other funding sources to ensure a stable and sustainable funding structure.

Addressing Credit Risk and Liquidity Risk: The research identifies credit risk and liquidity risk as significant factors negatively affecting bank performance. Policymakers and banking institutions should focus on effective credit risk management practices, including robust loan underwriting standards, monitoring of borrower creditworthiness, and appropriate risk mitigation measures. Similarly, maintaining adequate liquidity buffers and implementing liquidity risk management strategies are essential to ensure smooth operations and mitigate potential liquidity crises.

Consideration of Bank Size: The study reveals that larger banks in Pakistan do not seem to benefit from economies of scale in terms of improved bank performance. This suggests that policymakers and banking institutions should carefully evaluate the impact of bank size on operational efficiency, cost management, and profitability. Strategies should be designed to enhance efficiencies and reduce costs, regardless of the size of the bank.

Strategic Focus on Bank Performance: The research underscores the importance of bank performance for overall profitability. Policymakers and banking institutions should adopt a holistic approach to managing performance by actively monitoring key performance indicators (such as Return on Assets) and implementing strategies to improve operational efficiency, asset quality, and profitability.

Overall, the research suggests that enhancing bank stability, mitigating funding risk, addressing credit risk and liquidity risk, and strategic evaluation of bank size can significantly contribute to improving bank profitability in Pakistan. Policymakers and banking institutions should consider these implications and integrate them into their decision-making processes and operational strategies.

References

- Abbas, K., & Malik, M. H. (2008). Impact of Financial Liberalisation and Deregulation on Banking Sector in Pakistan. *The Pakistan Development Review*, 47(3), 287–313. <http://www.jstor.org/stable/23234712>.
- Adelopo, I., Vichou, N., & Cheung, K. Y. (2022). Capital, liquidity, and profitability in European banks. *Journal of Corporate Accounting & Finance*, 33(1), 23-35.
- Adusei, M. (2015). The impact of bank size and funding risk on bank stability. *Cogent Economics & Finance*, 3(1), 1-19,1111489.
- Ahmad, S., & Burki, A. A. (2016). Banking deregulation and allocative efficiency in Pakistan. *Applied Economics*, 48(13), 1182-1196.
- Akhtar, S. (2006). Pakistan's financial services sector: A future perspective. *Money Plus*, July 31, 2006.
- Akther, S., & Rahman, M. S. (2022). Investigating training effectiveness of public and private banks employees in this digital age: an empirical study. *International Journal of Manpower*, 43(2), 542-568.
- Al-Harbi, A. (2019). The determinants of conventional banks' profitability in developing and underdeveloped OIC countries. *Journal of Economics, Finance, and Administrative Science*.
- Albertazzi, U., & Gambacorta, L. (2009). Bank profitability and the business cycle. *Journal of financial stability*, 5(4), 393-409.
- Ali, G. (2020). Financial sector reforms and its impact on the economy of Pakistan. *Asian Journal of Law and Economics*, 11(2),1-18.
- Barrdear, J., & Kumhof, M. (2022). The macroeconomics of central bank digital currencies. *Journal of Economic Dynamics and Control*, 142, 104148.
- Ben Naceur, S., & Goaid, M. (2008). The determinants of commercial bank interest margin and profitability: evidence from Tunisia. *Frontiers in finance and economics*, 5(1), 106-130.
- Berger, A. N., Kashyap, A. K., Scalise, J. M., Gertler, M., & Friedman, B. M. (1995). The transformation of the US banking industry: What a long, strange trip it's been. *Brookings Papers on economic activity*, 1995(2), 55-218.

- Caprio, G., & Klingebiel, D. (1996). Bank insolvencies cross-country experience. Policy Research Working Paper 1620, World Bank Publications, Washington.
- Chantapong, S. (2005). Comparative study of domestic and foreign bank performance in Thailand: The regression analysis. *Economic Change and Restructuring*, 38(1), 63-83.
- Demirgüç-Kunt, A., & Huizinga, H. (2010). Bank activity and funding strategies: The impact on risk and returns. *Journal of Financial Economics*, 98(3), 626-650.
- Gazi, M. A. I., Nahiduzzaman, M., Harymawan, I., Masud, A. A., & Dhar, B. K. (2022). Impact of COVID-19 on financial performance and profitability of banking sector in special reference to private commercial banks: empirical evidence from Bangladesh. *Sustainability*, 14(10), 1-26.
- Ghorbani, F., Dinmohammadi, M., & Jabbari, A. (2019). The effect of business cycles on profit public and private banks in Iran. *Journal of Iranian Economic Issues*, 5(2), 53-78.
- Guru, B. K., Staunton, J., & Balashanmugam, B. (2002). Determinants of commercial bank profitability in Malaysia. *Journal of Money, Credit, and Banking*, 17(1), 69-82.
- Jaffee, D., & Levonian, M. (2001). The structure of banking systems in developed and transition economies. *European Financial Management*, 7(2), 161-181.
- Kanas, A., Vasiliou, D., & Eriotis, N. (2012). Revisiting bank profitability: A semi-parametric approach. *Journal of International Financial Markets, Institutions, and Money*, 22(4), 990-1005.
- Khan, M. H. & Hanif, M. N. (2017). A Formal Test of Competition in the Banking Sector of Pakistan: An Application of PR-H Statistic. SBP Working Paper Series 91, State Bank of Pakistan, Research Department.
- Kumar, V., Thrikawala, S., & Acharya, S. (2022). Financial inclusion and bank profitability: Evidence from a developed market. *Global Finance Journal*, 53, 100609.
- Malamud, S., Wang, N., & Zhang, Y. (2022). Asset Pricing with “Buy Now, Pay Later”. *Swiss Finance Institute Research Paper*(22-85).
- Molyneux, P., & Thornton, J. (1992). Determinants of European bank profitability: A note. *Journal of Banking & Finance*, 16(6), 1173-1178.

- Phan, D. H. B., Narayan, P. K., Rahman, R. E., & Hutabarat, A. R. (2020). Do financial technology firms influence bank performance? *Pacific-Basin Finance Journal*, 62, 101210.
- Porter, R. C. (1965). Narrow security markets and monetary policy: Lessons from Pakistan. *Economic Development and Cultural Change*, 14(1), 48-60.
- Schefold, B. (2022). The Significance of Economic Knowledge for Welfare and Economic Growth in History Ancient Economies in Comparative Perspective: Material Life, Institutions and Economic Thought (pp. 25-53): Springer.
- Tan, Y., & Floros, C. (2012). Stock market volatility and bank performance in China. *Studies in Economics and Finance*, 29(3), 211-228.
- Wang, R., & Luo, H. R. (2022). How does financial inclusion affect bank stability in emerging economies? *Emerging Markets Review*, 51, 100876.
- Yakubu, I. N., & Musah, A. (2022). The nexus between financial inclusion and bank profitability: a dynamic panel approach. *Journal of Sustainable Finance & Investment*, 1-14.
- Yao, S., Han, Z., & Feng, G. (2008). Ownership reform, foreign competition and efficiency of Chinese commercial banks: A non-parametric approach. *World Economy*, 31(10),1310-1326.



This work is licensed under a Creative Commons Attribution 4.0 International License.