ARTS AND SCIENCE
ARTS AND SCIENCE PRESS PTE. LTD

Research Article

Profitability Outlook: Analyzing Firm and Country Level Drivers in the Banking Sector

Jhansi Rani Boda[1,a],*, Kainat Iftikhar[2,b],*, Tanveer Bagh[3,c],*, Muhammad Nadir Shabbir[4,d],*

[1] *Assistant Professor, GITAM School of Business Hyderabad India*

[2] *School of Finance, Central University of Finance and Economics, China*

[3] *School of Finance, Central university of Finance and Economics, China*

[4] *Department of Theoretical Economics, Renmin University of China, China*

* Corresponding author: [a] jboda@gitam.edu, [b] kainatiftikhar0298@gmail.com, [c] baghtanveer@gmail.com, [d] *muhammadnadir948@gmail.com*

ABSTRACT

This study investigates the determinants of bank profitability at both firm and country levels in Pakistan, with profitability assessed using key indicators: Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM). We analyzed a diverse set of financial institutions 41, including commercial banks, specialized banks, foreign banks, microfinance banks, development financial institutions, and investment banks from 2013-222. We explore bank-specific variables, including size, capital adequacy, operating expenses, productivity, asset quality, liquidity, deposits, asset management, operating efficiency, and leverage. Additionally, we examine the influence of macroeconomic determinants, such as gross domestic product rate, inflation rate, exchange rate, interest rate, financial crises, and government changes. A two-step GMM approach was applied to manage endogeneity issues, providing robust, reliable insights into the determinants of profitability and the findings uncover intricate correlations within Pakistan's diverse banking landscape, highlighting both positive and negative influences on bank profitability. This study enhances existing literature by offering a comprehensive perspective on bank profitability determinants in Pakistan, integrating micro and macroeconomic factors. It provides valuable insights for stakeholders within the banking industry, emphasizing the relevance of its findings within Pakistan's evolving banking sector.

Keywords: Bank-specific, financial crisis; Government change; Profitability; Banks, Pakistan

JEL Classification: G21; G32; O16; E44;O50

1. Introduction

In today's global economy, commercial banks serve as vital catalysts for economic growth by facilitating the allocation of funds to businesses, firms, and governments. They are the cornerstone of investment, bolstering trade, commerce, and overall economic trends[1-3]. Over the past two decades, the global banking landscape has undergone significant transformations, shaped by a multitude of external and domestic forces. While bank disintermediation has gained traction in several nations, banks continue to play

a pivotal role in funding various economic sectors[4-6]. A robust and profitable banking sector not only bolsters resilience against adverse events but also upholds financial system stability. The long-term viability of financial institutions is critical to maintaining a stable economy because of the pivotal role they play in driving growth[7-9]. This includes banks, investment firms, mutual funds, credit unions, as well as insurance companies[5, 10, 11].

As such, the determinants of bank profitability have garnered significant attention from academics, banking executives, financial markets, and regulatory bodies, all eager to decode the keys to banking success. In Pakistan, commercial banks are crucial in enabling businesses to thrive in a competitive environment through a variety of products and services. Indeed, the overall health of the global economy is deeply interconnected with the robustness of its financial institutions.

Despite past financial challenges, Pakistan's banking sector has consistently maintained a prominent position in Asia due to steadfast financial policies. Commercial banks are indispensable to numerous industries, providing essential financing for growth and fostering global competition. Banks profitability, a key accounting metric, signifies sustained earnings exceeding expenditures, reflecting banks' multifaceted economic contributions to Pakistan's growth. It is paramount in banking, fostering trust among shareholders and ensuring long-term financial stability. Profitability primarily arises from substantial revenue generated through lending funds to customers, leading to interest-based profits. Profitable banks can extend loans, catalyzing business activities and yielding substantial interest-based profits, emphasizing their pivotal role in supporting economic growth. In the banking area, the high earnings and huge profit provide direction to policymakers to evaluate and judge the financial strength of their specific sector.

Historically, the profitability of banks, as measured through metrics such as Return on Assets (ROA) and Return on Equity (ROE), has been a focal point for researchers and practitioners aiming to understand and enhance financial performance[12-14]. These studies primarily focus on the impact of internal bank-specific variables and external macroeconomic conditions on profitability, revealing the complexities of financial operations within fluctuating economic environments[15-17].

Despite the extensive studies, there remains a significant gap in comprehensive, up-to-date research specifically focused on the Pakistani banking sector that integrates both firm-level and macroeconomic[1] influences on profitability. Most previous research has tended to focus on either one aspect or the other, or not sufficiently considered the unique dynamics of Pakistan's economic and regulatory environment. Additionally, the recent global economic shifts and the unique challenges faced by Pakistani banks, such as competition from international banks and internal efficiency issues, suggest a need for renewed focus in this area. An in-depth study that examines both internal bank-specific factors and broader economic conditions could provide valuable insights for bank executives, policymakers, and investors alike. In this study, we aim to investigate the determinants of bank profitability in Pakistan, considering both internal efficiencies and external economic pressures. By understanding these dynamics, the study seeks to contribute to the strategic planning and regulatory frameworks essential for enhancing the stability and profitability of Pakistan's banking sector.

The study of both firm-level and country-level determinants of bank profitability in Pakistan is crucial for several reasons: as, the Banks play a vital role in Pakistan's economy by financing business growth, managing consumer credit, and enabling government projects. Understanding what drives bank profitability

---

[1] In this perspective, bank profitability is highly influenced by the stability of the macroeconomic environment, which includes elements like GDP growth, inflation rates, and monetary policy stability (Mishkin, 1999).

helps in assessing how banks can contribute to sustainable economic growth and stability. Ultimately, detailed knowledge of the factors influencing bank profitability can aid policymakers in crafting regulations that enhance the stability and efficiency of the banking sector. For example, insights into capital adequacy[2] and liquidity management can inform regulatory frameworks that ensure banks remain resilient against financial shocks. Moreover, for banking executives, understanding both internal and external factors affecting profitability enables more informed strategic decision-making. This includes resource allocation, managing operational efficiencies[3] and strategic planning against macroeconomic changes. Furthermore, Investors looking into the banking sector benefit from understanding how various drivers affect profitability. This knowledge helps in making informed decisions regarding investment in Pakistani banks, assessing potential returns based on how well banks manage internal efficiencies and external challenges. Additionally, In the face of globalization, Pakistani banks must compete with international banks not only in domestic markets but also in global finance. Understanding the drivers of profitability helps these banks position themselves competitively on an international stage. Moreover, Identifying the factors that impact profitability also helps in pinpointing potential risks. This is crucial for banks to develop robust risk management strategies that mitigate the impacts of adverse economic conditions or internal inefficiencies. Lastly, the study benefits in understanding how broader economic conditions such as GDP growth, inflation, and interest rates impact bank operations.

This study investigates the banks profitability drivers, specifically by exploring its determinants at both firm and country levels within Pakistan's dynamic banking sector. A comprehensive analysis is conducted, encompassing a diverse array of financial institutions, including commercial banks, specialized banks, foreign banks, microfinance banks, development financial institutions, and investment banks. Data spanning from 2013 to 2022 is meticulously examined. To assess bank profitability, the study employs key indicators, such as return on assets, return on equity, and net interest margin. It thoroughly investigates a spectrum of bank-specific variables, including size, capital adequacy, operating expenses, productivity, asset quality, liquidity, deposits, asset management, operating efficiency, and leverage. Furthermore, the research scrutinizes the impact of macroeconomic determinants, such as the gross domestic product rate, inflation rate, exchange rate, interest rate, financial crises, and government changes. The findings, extracted through a-stage generalized method of moments (GMM), unveil intricate correlations within Pakistan's diverse banking landscape. These findings reveal both positive and negative influences on bank profitability. By providing a holistic perspective on bank profitability determinants in Pakistan, this study augments existing literature, offering valuable insights for stakeholders operating within the country's evolving banking sector.

This study makes a substantial contribution by thoroughly examining the determinants of bank profitability in Pakistan. By considering a comprehensive dataset spanning from 2013 to 2022 and encompassing diverse financial institutions, including commercial banks, specialized banks, foreign banks, microfinance banks, development financial institutions, and investment banks, it provides a holistic view of the country's banking sector. The research delves into both firm-level determinants, such as bank size, capital

---

[2] Theoretically, banks can use strong capital adequacy and liquidity indicators to communicate to the market their financial health, therefore affecting their reputation and the stability of the market.

[3] Efficiency Structure theory states that banks are typically more profitable when they achieve higher operational efficiency, which is determined by lowering operating expenses in relation to income. It is frequently linked to the work of (Berger, 1995) and others. This idea serves as the basis for examining bank operations procedures and how they affect bank profitability.

adequacy, operating expenses, productivity, asset quality, liquidity, deposits, asset management, operating efficiency, and leverage, and country-level macroeconomic factors, including gross domestic product rate, inflation rate, exchange rate, interest rate, financial crises, and government changes. These determinants are found to exert significant and varied influences on bank profitability, shedding light on the intricacies of Pakistan's banking landscape. In addition, the study offers valuable insights that extend beyond academia. It informs bankers, policymakers, regulators, analysts, and academics about the nuanced factors shaping bank profitability in Pakistan. The study's robust and consistent results align with previous research, further emphasizing the relevance of its findings within the dynamic context of the country's banking sector.

The subsequent sections of this paper are organized as follows: Section 2 presents a comprehensive review of the literature, while Section 3 outlines our methodology. Moving forward to Section 4, we present and discuss the results and a detailed discussion, and finally, Section 5 offers our concluding remarks.

2. Literature Review

The profitability of banks is essential for a nation's economic stability. We must consider internal and external aspects to understand a bank's profitability. Size, capital, costs, productivity, deposits, asset quality, liquidity, efficiency, leverage, and branches are internal factors. Inflation, GDP growth, exchange rates, interest rates, government changes, and financial crises are beyond the bank's control. The goal of this study is to determine how these variables affect bank profitability. It illuminates a nation's economy and banking system. These elements must be understood to maintain the economy and financial system. Initially, important theoretical models for studying variables will be discussed. The paper links theoretical patterns to real-world applications using these models. This part of the study establishes rational relationships between variables and builds the conceptual and theoretical framework.

2.1.Theoretical Background

According to Economies of Scale Philosophy (1974) large companies can increase revenue by taking the cost-benefit of large-scale product and service delivery. The cost per component decreases as product and service sizes rise. Thus, economies of scale assess the positive relationship between bank size and profitability. Bashir[18], states that huge banks can increase profits by cutting costs through economy of scale and information processing and collection. The "Bankruptcy Cost Theory" is a positive association between bank capital adequacy and financial performance. Banks had to maintain more equity and strengthen their capital ratio when bankruptcy costs were high owing to environmental changes, thus they cut bankruptcy costs to avoid financial hardship[19].

Capital sufficiency and a bank's profitability are shown to have a progressive relationship in the "Signaling Theory" presented by Aremu, Ekpo[19]. High capital banks define their worth and send a good signal to the market. Another opinion is that high-profit margin banks can attract high volume capital because they can increase the equity ratio without affecting profitability. The bank's high capital and low leverage suggest good performance relative to competitors. In short, higher capital markets indicate profitable institutions. If the future vision is optimal, the bank will have to expand capital to make greater profit, hence capital and bank profitability are optimistically linked. Efficiency Structure Theory (1963) states that banks with large production advancement technologies and better management to manage operational activities can minimize business costs and earn high profits compared to banks with low-level management and technologies. Fungáčová and Poghosyan[20], the "Market Discipline Argument" (1983) describes the negative relationship between loan loss reserve to gross loan and profitability. This bank is high credit risk when loan losses are large, thus depositors demand high premiums. When deposit rates rise, the interest margin falls, lowering the bank's profitability. Market Power Hypothesis (1962) states that

organizations can influence market pricing, quantity, and quality. Olweny[21], noted that large banks can influence prices through significant market share to take advantage of high loan rates and low deposit rates and generate noncompetitive revenue.

The "regulatory theory" criticizes banks' capital ratio performance. According to this argument, banks must keep minimal capital, which lowers their profitability because rules limit their risk-taking[22]. In referencing with Wasiuzzaman and Tarmizi[23], GDP positively affects bank profitability. Under the Financial Intermediation Concept (1980), they explained that when the country's GDP rises, banks' financial operations change because consumer loans demand finances and resources to finance the economy, giving them an opportunity to make more. A rise in financial services can boost GDP growth, which boosts bank profits. This was exemplified by taking the "Financial Intermediation Theory" by the researcher[24]. As an intermediary, banks' balance surplus and deficit finances in an economy. When GDP rises, banks may use resources more efficiently and profitably, but when GDP falls, profits fall.

2.2. Banks' Profitability Review

Profit is essential to any business's survival and growth. Product and service companies aim to make more than they spend. Profitability indicates a financial institution's strength and ability to generate profits. In today's global and dynamic economy, organizations use diverse financial methods to ensure long-term viability. In the financial sector like a bank's profitability can be measured by the (ROA) and (ROE). (ROA) is used to calculate the bank's profitability. Return on assets plays an important role in the measuring of the bank's profitability. (ROA) is calculated by the total net income of the business over the total assets. Many researchers, including Gul, Irshad[25], Obamuyi[26] and Jamal, Hamidi[27] uncovered that ROA is an excellent measure of the efficiency with which a bank turns its financial resources into cash. Sufian and Chong[28] can be impacted by the bank's own policy decisions. A financial ratios like (ROE), return on investment and (NIM) are metrics used to assess a company's financial health and make business decisions[29,30]. Jha and Hui[17], found, potential investors may easily comprehend financial ratios to evaluate the financial strength of banks and select the best investment according to their preferences. Banks have a great capacity for growth in an adverse environment while keeping their solvency, as shown by Golin and Delhaise[16], who outline the path for the bank's total financial performance through positive revenue and profitability.

Jha and Hui[17], state that a sound economy can boost investment. So, an effective financial system helps the organization allocate the best resources, regulate funds, and achieve financial product business chances. Bashir[18], calculated ROE by dividing net income by total equity to indicate how well banks use shareholders' capital to make a profit. He also notes that ROE ignores the business's debt and financial leverage. Tan[31] used ROA, ROE, and NIM bank profitability indicators and internal variables like bank-specific and external macroeconomic variables of 41 Chinese commercial banks and found that exterior and interior dynamics positively affect banks' profitability in the Chinese banking sector. Sinha and Sharma[32] inspected the profitability of 42 Indian commercial banks and found that GDP, diversification, capitalization HHI, and deposit have a positive impact on ROA, while poor asset quality and inflation rate have a negative effect. Bougatef[33] study Tunisian bank profitability and found that liquidity and capitalization are strongly correlated, while corruption hurts ROE but helps ROA. Davydenko[34], stated that a high ROE indicates low capital, which increases financial leverage and risk. He said that the decision-maker and regulator of an organization determine capitalization, thus ROE is not an ideal indicator of bank profitability.

2.3. Firm level (Bank- Specific) Determinants

In the banking sector, internal drivers including bank-specific characteristics affect growth and profitability. Sritharan[35] describe business size determines a bank's industry expertise and ability to offer clients through its products and services. The number, quality, and capacity of production for present, potential, and prospective consumers best describe the size of a business or bank by the services they provide. The bank's management diversity, management groupings, and asset strength compared to competitors boost the market. The size of the banking business determines its economies of scale, which allow it to profit despite low costs. Small firms can't manage their operational costs due to their low asset capacity and small market size; therefore, large enterprises have more time, effort, and market intelligence. Other research shows a negative relationship between business size and profitability. Obamuyi[26], found that managerial disorganization, agency cost, and bureaucratic procedure might negatively impact them. Many studies have shown that in the US, banks' profitability has a positive impact and has the best ability to tackle shareholder risk, defend losses, and anticipate bankruptcy costs due to good capitalization[36]. Larger deposits, market share, and capital structure investment lead to increased revenue and optimal profit participation[37]. The robust capital structure has low risk and low constraints to confront problems and provides opportunity to enhance products and services to improve corporate income.

Almazari[38], Ongore and Kusa[39], conducted studies on how capital adequacy affects bank profitability. Mathuva[40], found that banks with little capital are riskier. They may profit under high-risk conditions. In Nigeria, another study found that banks' capital sufficiency and profitability are negatively correlated in the long and short term because they are not deploying their capital correctly. Olweny[21], indicate that banks with high equity-to-asset ratios have poor ROE and equity risk. Abor[41], examined how capital structure affects organizational profitability using GSE list enterprises. Capital structure is linked to marketing contribution since the organization uses its financial securities to improve and advance market dominance. It boosts earnings, maximizes return, and fights competition, making this a crucial capital management option for businesses. Companies choose short-term debt over long-term debt in this case. When a borrower can't pay on time, the business faces credit risk. Return on investment and credit risk are strongly correlated. The organization's capital structure is high-risk when the borrower uses projected cash to pay down recent debt. Hakim and Neaime[42], examined how capital, liquidity, and credit affect banking sector strength. The findings demonstrate that banks with risk management agreements have rigid requirements. In another study, when enterprises had a high amount of non-performing credits, ROE outcomes were different for diversified institutions. states that enterprises who cannot assess their credit risk suffer financial losses. The opponent argues that credit risk and loan non-performance damage bank profits[43]. Any ineffective management in a corporation will adversely impact profitability and threaten the firm. Profitability is divided into margin and return ratios. Margin is converting sales into revenue, and return ratio is shareholder return as organization profitability. The efficiency ratio analyses business liabilities, equity, and receivables. Sufian and Chong[28], examined the determinants of commercial banks' profitability in the Philippines and they found that operating expense, size, and credit risk negatively affect profitability, while capitalization and non-interest revenue positively affect it. They also discovered that money supply,

market capital, commercial development, and inflation had no favorable effect on Philippine profitmaking banks.

Flamini, McDonald[29], found that portfolio diversity, bank size, and private business operations affect asset returns and notes that external (macroeconomic) factors affect bank profitability, hence the research focuses on increasing capital to stabilize banks. Cardone-Riportella, Samaniego-Medina[44] examined how asset quality, asset structure, financial structure, and capitalization affect bank profitability, as well as interest rates, inflation, and economic growth. This showed that the bank's profitability depends on the management's judgement on the above issue. Alexiou and Vogiazas[45], study the causes of the active financial presentation of six Greek commercial banks. So, the findings how that banks' internal factors like operating costs and capital structure play a significant role in describing their financial strength, and external factors also boost banking business profitability. Weersainghe and Perera[46], found that operating cost and liquidity are negatively correlated, and interest rates boost commercial bank profits. This study stated that giant banks make a lot of money due to tight regulatory procedures and economics of scale. Naceur and Omran[30], examined the impact of official improvement and bank regulation on North Africa commercial banks and Middle East banks' profitability. They found that capital structure and credit risk affect bank (NIM) and cost, while external factors do not. During the 2007–2009 financial crisis, banks' performance must be monitored because it influences national and international financial performance[21].

H1: Firm-level (bank-specific) determinants have significant impact on banks' profitability.

2.4. Country level (Macroeconomic) Determinants

Some macroeconomic issues affect bank profitability. These elements are important since they are beyond the organization's control and affect the banking sector. Gross domestic product, interest rates, inflation, exchange rates, financial crisis, and government change affect. Many scholars have studied the impact of macroeconomic and microeconomic factors on bank profitability worldwide. Gross domestic product is a key economic metric in a country. Any changes in a country's GDP will affect imports and exports, government spending, investments, consumption, and savings and loans. In Riaz and Mehar[47], gross domestic product annual growth rate was utilized to measure economic events in Pakistan. measured Malaysia's financial growth using GDP per capita. Another study evaluated Ukraine's economic trend using GDP as the logarithm of nominal. According to the study of the commercial banks of Romania of the 15 commercial banks, Roman and Dănuleţiu[48] found that GDP positively and significantly affects banks' profitability and when GDP rises, loans demand and the economy rise. On the other hand, if GDP falls owing to the global crisis, bank efficiency will suffer, and non-performing loans will rise. Curak, Poposki[49], examine the strong relationship between GDP and bank profitability. When the economy grows, it exhibits a good economic trend that maximizes organizational financing and household savings. Davydenko[34], notes that favorable economic growth will increase debt service capability, allowing banks to take on more debt and expand their loan offerings. Some experts discover no positive relationship between GDP and bank profitability. These are the result similar to the Ghazouani, Ameur[50], who found a negative relationship between GDP, NIM, and ROE among Tunisian commercial banks. Another study found a strong insignificant relationship between GDP and bank profit at 1, 5, and 10% significance. He said Sub-Saharan states' declining economies will lead to negative GDP.

Beckmann[51] examined the bank's financial performance and interest rate. The researcher says credit quality decreases as interest rates reduce credit demand. This illustrates that interest rates and

ROA have an insignificant relationship. Commercial banks depend on interest rates for revenue, which is crucial to their portfolio. Almaqtari, Al - Homaidi[52], examined how bank-specific and macroeconomic factors affected Indian bank profitability. Bank financial performance is affected by macroeconomic variables like interest, inflation, and exchange rates. Pan and Pan[53], found that inflation increases commercial bank profits in China. They explain this correlation by saying that nominal income is based on saving and investment decisions, so inflation will rise, and residents will invest and save more, which will boost the bank's profitability. Another similar study is examined by Haron[54] and found that banks can change their interest rates to match inflation, increasing income faster than cost. They establish a positive correlation between inflation and bank profitability. also found that banks believe they can gain more revenue and profit by forecasting a proper inflation rate in the future and taking advantage without hardship or decline in product and service demand. Despite certain studies showing that inflation doesn't affect banks' profits. Muda, Shaharuddin[55], found a negative correlation between inflation and ROE for Malaysian international and local banks. This negative relationship is because banks that don't predict future inflation rates have higher costs than profits. Tariq, Usman[56], also investigated that due to the unexpected inflation trend that will create a negative found that banks cannot regulate their profit and interest margin due to unexpected inflation trends that produce a negative association between inflation and profitability. They also noted that inflation rate mishandling has raised costs for banks with greater operations and networks. Loan management will finish early and the organization will lose money[57]. Alper and Anbar[58] and Scott and Ovuefeyen[59], found that inflation does not affect bank profitability in Turkey or Nigeria. This study also shows that banks cannot benefit from inflation due to unanticipated inflation predictions.

H2: Country-level (macroeconomic) determinants have significant impact on banks' profitability.

The theory states that massive companies can increase income by taking the cost-benefit of large-scale delivery. The cost per component decreases as product and service sizes rise. Thus, economies of scale assess the favorable relationship between bank size and profitability. Bashir[18], states that large financial institutions can increase profits by cutting costs through economies of scale and information processing and collection. The "Signaling Theory" by Aremu, Ekpo[19], states that bank profitability and capital adequacy increase together. High capital banks define their worth and send a good signal to the market. The bank's high capital and low leverage suggest good performance relative to competitors. Wong, Wong[60], examined China's fourteen banks' foreign exchange exposure and found a positive link between bank size and foreign exchange exposure. The result also showed that rising global exchange rates lower shareholder values, stifling bank performance. Cerovic, Suljić Nikolaj[61] compared regular and Islamic banks before, during, and after the global economic crisis. The survey found Islamic banks more stable and profitable than traditional banks. We argue that managing financial markets and bodies is crucial for the bank's financial stability and effectiveness. Farooq and Zaheer[62] compared Islamic and commercial banks using Pakistani financial data during the financial crisis. IBs were less sensitive to deposit withdrawals during the financial crisis, according to our research. Almaqtari, Al-Homaidi[52], examined how bank-specific and macroeconomic factors affected Indian bank profitability and found that bank size, leverage ratio, operational efficiency, liquidity ratio, branch count, assets quality ratio, and assets management ratio affect profitability. Bank financial performance is affected by macroeconomic variables including inflation, interest, and exchange rates. According to the relevant literature and the theoretical model the last hypothesis is as follows:

H3: Firm-level (bank-specific) determinants and Country-level (macroeconomic) determinants have significant impact on public and private banks' profitability.

2.5. Theoretical Framework

The theoretical framework for analyzing the firm and country level drivers of bank profitability can be dissected through the lens of several economies of scale, market power hypothesis, efficiency structure theory and signaling theoretical perspectives. Furthermore, we believe that our study theoretical framework offers a framework for analyzing profitability outlook specifically, in analyzing firm and country level drivers in the banking sector. First of all, economies of Scale implies that larger banks can operate more efficiently, achieving lower costs per unit through enhanced operational capabilities and expansive service networks. Moreover, market Power Hypothesis suggests that larger banks can exert more control over pricing, thus enhancing profitability through greater market share and pricing advantages. Finally, Efficiency Structure Theory proposes that banks with advanced technological and management efficiencies can reduce operational costs, thus driving profitability. Finally, Signaling Theory indicates that well-capitalized banks signal financial health and stability to the market, attracting more investments and supporting profitability. Figure 1 represents the conceptual framework determinants of banks' profitability in Pakistan.
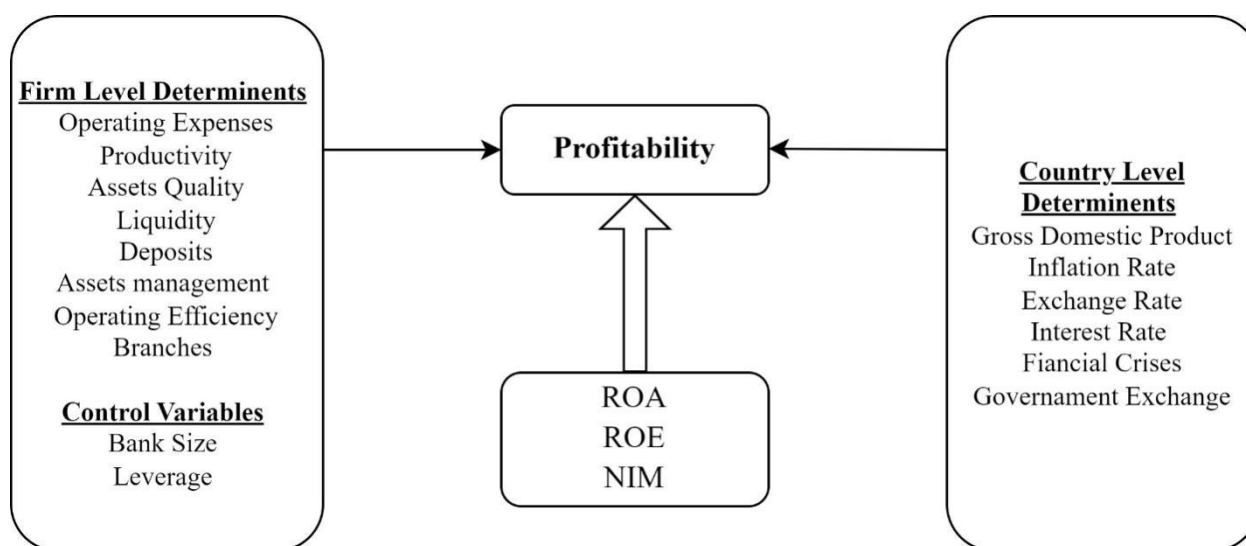

Firm Level Determinents
Operating Expenses
Productivity
Assets Quality
Liquidity
Deposits
Assets management
Operating Efficiency
Branches

Control Variables
Bank Size
Leverage

Profitability

ROA
ROE
NIM

Country Level Determinents
Gross Domestic Product
Inflation Rate
Exchange Rate
Interest Rate
Fiancial Crises
Government Exchange

Figure 1. The conceptual framework.

The research framework for analyzing bank profitability in Pakistan is built around two primary sets of determinants: firm-level and country-level factors. Firm-level (bank-specific) determinants encompass internal characteristics such as bank size, capital adequacy, operational efficiency, asset quality, and liquidity. These factors are directly under the control of the banks and have a direct impact on their profitability. In contrast, country-level determinants include external factors like GDP growth, inflation, interest rates, and macroeconomic stability, which, though outside the direct influence of individual banks, indirectly affect their profitability. This study aims to explore how these determinants affect the profitability of both private and state-owned banks within Pakistan's banking system. By analyzing these drivers, the research intends to offer significant insights that are crucial for enhancing economic stability and growth. The findings are expected to assist policymakers, banking executives, and investors in crafting better financial regulations, making informed strategic decisions, and developing robust investment strategies. Furthermore, understanding these factors will aid in developing effective risk management strategies and preparing for potential economic crises, ultimately bolstering the health and sustainability of the banking sector in Pakistan. By linking theoretical models with empirical data, the research aims to provide valuable insights for

stakeholders across the financial services industry, enhancing understanding and guiding practical actions to improve the sector's performance.

3. Data And Methodology

3.1. Data and Sample Description

This section outlines the research methodology, focusing on design and data collection. The main objective was to assess bank profitability using indicators like ROA, ROE, and NIM, considering both internal (bank-specific) and external (macroeconomic) variables. Data from 41 banks, including public, private, specialized, foreign, development finance institutions, investment banks, and microfinance banks in Pakistan, spanning 2013 to 2022, sourced from bank financial reports were analyzed. The study population included all financial institutions operating in Pakistan, such as government banks, private banks, specialized banks, development finance institutions, foreign banks, Islamic banks, microfinance banks, and investment banks. Data collection involved examining financial statements and the State Bank of Pakistan (SBP) website. This comprehensive research aimed to investigate factors influencing bank profitability within Pakistan's dynamic financial landscape. **Table 1** provides the study sample details.

Table 1. Sample Details.

Banks	Public	Private	Islamic	Specialized	Foreign	DFI	Microfinance	Inv. Banks	Total
No.	5	16	4	4	4	7	11	7	58
Sample	4	15	4	4	2	6	2	4	41
Sample %	80%	94%	100%	100%	50%	86%	18%	57%	70%

Note: This table provides the study sample details

3.2. Variables Specifications of Measurements

3.2.1. Dependent Variables

Return on assets (ROA), return on equity (ROE) and net interest margin (NIM) are our measures of firms' profitability. ROA is a key financial indicator used to assess a bank's profitability in the financial sector[63]. It is considered a dependent variable that other variables affect. ROA is a tool banks use to measure the returns generated by their available funds. It is calculated as net profit divided by total assets[64]. ROE is employed to evaluate a bank's profitability and is used as a dependent variable in this study. It assesses the yield by considering the assets of shareholders capitalized in the corporation. ROE is regarded as a crucial element for evaluating business performance and is calculated as net profit divided by total equity. NIM serves as a dependent variable used to evaluate and measure the difference between a bank's interest income and the interest paid to depositors or lenders. It represents the gap between interest earnings and interest expenses relative to average earning assets. NIM is calculated as Interest Earned minus Interest Paid divided by average earning assets Kasman, Tunc[65].

3.2.2. Independent Variables

There are several interrelated aspects that determine a bank's profitability. These include the bank's size, capital adequacy, operational cost, productivity, asset quality, liquidity, deposit levels, asset management, profitability, leverage, and branch network[1, 5, 8-10]. Each plays a critical role in determining a bank's ability to manage risks and generate returns effectively. For instance, capital adequacy, represented by the ratio of total equity to total assets, is essential for gauging a bank's capacity to absorb losses and mitigate risks, directly impacting profitability. Similarly, operational efficiency, measured through the ratio of total operating

expenses to total assets, reflects how well a bank manages its day-to-day expenses like salaries and rent, which in turn affects its bottom line.

Furthermore, asset quality, liquidity, and deposit levels are pivotal; high-quality assets and liquidity indicate a lower likelihood of default and the ability to meet obligations promptly, boosting profitability[2, 9, 10]. The ratio of deposits to total assets highlights the role of deposits in revenue generation, underscoring their importance in profitability metrics. Additionally, the effectiveness of asset management, calculated as total operating profit divided by total assets, reveals how efficiently a bank utilizes its assets to generate profits.

Beyond internal factors, macroeconomic conditions such as GDP growth, inflation, exchange rates, interest rates, financial crises, and governmental policy changes also significantly influence bank profitability. These external variables shape the operational landscape for banks, affecting performance across various dimensions. As stated in studies by[28, 47, 66], a comprehensive understanding of both bank-specific and macroeconomic factors is crucial for evaluating a bank's financial health and profitability. This holistic approach provides a clearer picture of the financial stability and operational efficiency of banks in fluctuating economic environments.

3.2.3. Control Variables

Bank size is a critical measure of a bank's economic health and operational scale within the financial industry. This variable is indicative of the economies of scale that can be achieved in the finance sector, as larger banks are often able to reduce costs through more efficient financial service delivery[1, 5, 8-10, 28]. Typically, researchers use the logarithm of total assets to estimate bank size, encompassing elements such as assets, plant, machinery, investments, and loans. A bank is considered large if it possesses significant assets, which, when utilized effectively, enable it to lower operational costs and reap the benefits of economies of scale. Consequently, larger banks have the potential to enhance their profitability by expanding their operations and reducing marginal costs. However, the relationship between bank size and profitability is not straightforward and is often non-linear; larger sizes can also introduce bureaucratic inefficiencies that may negatively impact earnings. Therefore, bank size is quantitatively measured using the natural logarithm of total assets: Size of bank = log (total assets).

Leverage is another strategic variable used by banks, involving the use of borrowed funds to strengthen returns[63, 65]. This financial strategy enables banks to finance their assets primarily through debt rather than equity. In the banking sector, leverage is typically assessed by the debt-to-asset ratio, a critical metric that helps gauge the extent of a bank's financial leverage. Generally, banks with lower leverage tend to have higher returns on assets compared to their equity and ROE, highlighting the impact of borrowing on financial performance: Total liabilities / total assets = leverage (LEV) (Kasman et al., 2010). The variables Table 2 presents a comprehensive breakdown of variable definitions and their construction methods.

Table 2. Proxies for banks' profitability variables.

Variable	Acronym	Measure/construction method
Dependent variables Profitability	ROA	ROA = Net Profit / Total Assets
Return on assets	ROE	ROE = Net Profit / Total Equity
Return on equity and net interest margin	NIM	NIM=Interest Earn -Interest Paid / Average Earning Assets
Independent variables: Bank-specific		
Capital Adequacy	CAPAD	Total Equity / Total Assets
Operating cost	COST	Total operating expense / Total Assets
Productivity	PROD	Profit per share ratio
Assets quality	AQ	Loan / Total Assets
Liquidity	LIQ	Liquid Assets / Total Assets
Deposit	DEP	Deposits / Total Assets
Asset management	AM	Operating Income / Total Assets
Operating Efficiency	OPEF	Total Operating Expense / Net Interest Income
Branches	RNCH	Number of Branches
Independent variables: Macroeconomic		
Gross domestic product	GDPR	Annual Real GPD growth rate
Inflation	INF	Annual Inflation rate
Exchange Rate	EXCH	Conversation rate of $ in a year
Interest rate	INTR	Lending Interest rate
Financial crisis	CRISIS	Dummy Variable: (1 for the phases of 2008 and 2009 and 0 for the other phases)
Government Change	GOVC	Dummy Variable: (1 for the phases of 2008 and 2009, and 2013 and 2014 and 0 for the other phases)
Control Variables		
Bank Size	LNAS	Natural logarithm of total assets
Leverage	LEV	Total Liabilities / Total Assets

Note: This table offers a comprehensive breakdown of variable definitions and their construction methods. The Data for selected variables are collected from Pakistan stock exchange (PSX), Bank's Annual reports and World Development Indicators (WDI) covering the time period from 2013-2022 for 41 banks.

3.3. Econometrics Models and Empirical Strategy

We employ the following three regression models to examine the correlation between the factors influencing profitability at both the firm and country levels in the banking sector.

Model A

$$ROA_{i,t} = \alpha_0 + \beta_1 ROA_{i,(t-2)} + \beta_2 logSIZE + \beta_3 CAPAD + \beta_4 COST + \beta_5 PRO + \beta_6 AQ + \beta_7 LIQ + \beta_8 DEP + \beta_9 AM + \beta_{10}OPEF + \beta_{11} LEV + \beta_{12} BRNCH + \beta_{13}GDP + \beta_{14}INF + \beta_{15}EXCH + \beta_{16}INTR + \beta_{17}CRISIS + \beta_{18}GOV + \varepsilon_{i,t} \tag{1}$$

Model B

$$ROE_{i,t} = \alpha_0 + \beta_1 ROE_{i,(t-2)} + \beta_2 logSIZE + \beta_3 CAPAD + \beta_4 COST + \beta_5 PRO + \beta_6 AQ + \beta_7 LIQ + \beta_8 DEP + \beta_9 AM + \beta_{10}OPEF + \beta_{11} LEV + \beta_{12} BRNCH + \beta_{13}GDP + \beta_{14}INF + \beta_{15}EXCH + \beta_{16}INTR + \beta_{17}CRISIS + \beta_{18}GOV + \varepsilon_{i,t} \tag{2}$$

Model C

$$NIM_{i,t} = \alpha_0 + \beta_1 NIM_{i,(t-2)} + \beta_2 logSIZE + \beta_3 CAPAD + \beta_4 COST + \beta_5 PRO + \beta_6 AQ + \beta_7 LIQ + \beta_8 DEP + \beta_9 AM + \beta_{10} OPEF + \beta_{11} LEV + \beta_{12} BRNCH + \beta_{13} GDP + \beta_{14} INF + \beta_{15} EXCH + \beta_{16} INTR + \beta_{17} CRISIS + \beta_{18} GOV + \varepsilon_{i,t}$$ (3)

Were, Value of assets = ROA, ROI = Return on Investment, ROE = Return on Equity Net interest margin (NIM) = WIDTH = Length of Bank, Financial sufficiency; CAPAD. COST = Expense of operation, PRO = Effectiveness, AQ = Quality of Assets, LIQ is Liquidity, Deposits = DEP, Asset Management = AM, Operational Effectiveness and Leverage (OPEC) Number of Branches (BRNCH) Gross domestic product growth rate equals GDP What does INF stand for? SYM = Standard deviation, INTR = Rate of interest, CRISIS = Economic downturn, Change in Government (GOVC) = Error Term (ε). We can summaries our model equation as: Bank-specific characteristics; macroeconomic variables = profitability (ii) This equation calculates bank profitability using ROE, ROA, and NIM. Bank factors include asset size, quality, capital sufficiency, liquidity, asset management, deposits, leverage, operational efficiency, costs, productivity, and branches. Inflation, GDP, exchange rate, interest rate, government changes, and financial crises are macroeconomic issues. Three models are proposed to analyse how internal (bank-specific) and external (macroeconomic) factors affect Pakistani banks' profitability. These models explain how these variables affect Pakistan's banking sector's profitability.

In the initial phase of our analysis, we conducted a thorough examination using descriptive statistics and correlation analysis to understand the data's fundamental characteristics and relationships. To address the concern of multicollinearity, we employed the variance inflation factor (VIF) to assess the degree of correlation among the independent variables. To combat issues of serial correlation and heteroskedasticity in our fixed effect model[4], we applied robust standard errors (SE).

Given the common challenge of endogeneity in economic and corporate finance studies, we implemented three distinct identification strategies. Consistent with recent studies by[67-70],we utilized the system generalized method of moments (GMM) model, as developed by[71].This approach is particularly effective as it generates reliable results through the creation of an instrumental variable (IV), which helps to correct for potential endogeneity biases in the model.

4. Empirical Results

4.1. Descriptive Statistics and Correlation Matrix

Table 3 summarizes the descriptive statistics for firm-specific and macroeconomic determinants of profitability from 2008 to 2017. Minimum and maximum values for ROA, ROE, and NIM are provided, with means of 0.009, 0.055, and 0.033, respectively, consistent with prior research. The table also reveals deviations between average values and standard deviations for independent variables. Bank-specific factors such as LOGSIZE (mean: 18.334) and CAPAD, COST, PROD, AQ, LIQ, and DEP (with respective means of 0.005, 0.030, 5.109, 0.057, 0.086, and 0.583) are presented along with their standard deviations. Additionally, variables AM, OPEF, LEV, and BRNCH exhibit means of 0.014, 1.970, 0.978, and 303.274, with corresponding standard deviations. For macroeconomic variables, the table displays averages for GDP (3.742) and INFR (9.467) alongside their standard deviations. These variables exhibit variations over the study period, with GDP ranging from 1.607 to 5.701 and INFR from 2.529 to 20.286. Similarly, EXCH and

---

4 To conserve space in our presentation, we have omitted the detailed outputs of the fixed effect models from this report. However, these are available upon request.

INTR have averages of 96.19 and 10.225, with standard deviations. EXCH fluctuates between 70.408 and 105.455, while INTR varies from 8.21 to 14.538.

   Table 4 displays the correlation matrix, illustrating the relationships among the variables. Positive correlations exist between Return on Assets (ROA) and several bank-specific factors (SIZE, PROD, AQ, LIQ, AM, and LEV), while negative correlations are observed with CAPAD, COST, DEP, OPEF, and BRNCH. Macro-level factors, including GDP, INFR, and EXCH, show positive correlations with ROA, while INTR, CRISIS, and GOVC have negative correlations. For Return on Equity (ROE), positive correlations are found with SIZE, CAPAD, COST, PROD, AQ, DEP, and AM, and negative correlations with the remaining factors. In terms of Net Interest Margin (NIM), positive correlations are evident with SIZE, CAPAD, COST, PROD, AQ, LIQ, and AM, while negative correlations are observed with DEP, OPEF, LEV, and BRNCH. Macro-level variables INFR, INTR, and GOVC positively correlate with NIM, while GDP, EXCH, and CRISIS exhibit negative correlations. Table 4 the correlations between independent variables, indicating minimal multicollinearity issues, aligning with established criteria. Furthermore, to confirm the absence of multicollinearity Table 4A is showing the VIF matrix which denies the presence of multicollinearity issue.

Table 3. Descriptive Statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	410	0.029	0.034	-0.265	0.409
ROE	410	0.055	1.659	-14.742	0.258
NIM	410	0.033	0.021	-0.095	0.143
ln_size	410	18.334	1.778	12.857	21.71
CAPAD	410	0.005	1.022	-7.209	0.989
COST	410	0.03	0.018	0.002	0.188
PROD	410	5.109	17.821	-225.281	110.14
AQ	410	0.057	0.079	0.0004	0.597
LIQ	410	0.086	0.057	0.002	0.499
DEP	410	0.583	0.29	8.588	0.885
AM	410	0.014	0.039	-0.263	0.208
OPEF	410	1.97	14.992	-57.251	260.285
LEV	410	0.978	1.026	0.01	8.129
BRNCH	410	303.274	421.547	1	1703
GDP	410	3.742	1.412	1.607	5.701
INFR	410	9.467	5.28	2.529	20.286
EXCH	410	93.28	11.295	70.408	105.455
INTR	410	12.029	2.194	8.21	14.538
CRISIS	410	0.2	0.4	0	1
GOVc	410	0.4	0.49	0	1

Note: This table presents descriptive statistics for key banking variables. Definitions are as follows: ROE: return on equity; ROA: return on assets; NIM: net interest margin LOGSIZE: Bank size; COST: operating expense; AQ: assets quality; DEP: deposits; OPEF: operating efficiency; BRNCH: number of branches; CAPAD: capital adequacy; PROD: productivity; LIQ: liquidity; AM: assets management; LEV: leverage; EXCH: exchange rate; GDP: annual GDP; INFR: inflation; INTR: interest rate; CRISIS and GOVC are dummy variables with 1 for 2008 and 2009 and 0 for the other years.

Table 4. Matrix of Correlation.

Variables	ROA	ROE	NIM	LogSIZE	CAPAD	COST	PROD	AQ	LIQ	DEP	AM	OPEF	LEV	BRNCH	GDP	INFR	EXCH	INTR	CRISIS
ROE	0.1261	1																	
NIM	0.1412	0.0744	1																
LogSIZE	0.0023	0.0111	0.0115	1															
CAPAD	-0.1515	0.0054	0.3515	0.1860	1														
COST	-0.2473	0.0516	0.1737	-0.2914	-0.0178	1													
PROD	0.3465	0.2893	0.2919	0.1105	-0.075	-0.0173	1												
AQ	0.1606	0.0315	0.0401	-0.4187	-0.1535	0.1165	0.1049	1											
LIQ	-0.0321	-0.0268	0.2035	0.0261	0.1773	0.1565	0.0363	0.2585	1										
DEP	-0.2297	0.0167	-0.2100	0.2139	0.0545	0.0045	0.0368	-0.1086	0.1749	1									
AM	0.1625	0.1140	0.2286	0.0019	-0.1043	-0.2555	0.3636	0.1744	-0.0008	-0.2733	1								
OPEF	-0.0042	-0.0747	-0.1056	-0.0921	-0.3415	0.0966	-0.0039	0.0365	-0.0648	-0.0641	-0.0197	1							
LEV	0.1430	-0.0012	-0.3701	-0.1807	-0.0974	0.0113	0.0725	0.1565	-0.1848	-0.0336	0.0953	0.3378	1						
BRNCH	-0.0573	-0.0282	-0.1009	0.3280	0.0546	-0.1692	0.1949	-0.2591	0.1188	0.3889	0.0768	-0.0510	-0.0581	1					
GDP	0.1411	0.1042	-0.0761	0.1522	-0.0324	-0.1072	0.1163	0.0294	-0.2149	-0.0238	0.1614	0.0377	0.0289	0.1098	1				
INFR	0.1566	-0.0991	0.0638	-0.1569	0.0364	0.1185	-0.1248	0.0003	0.2315	0.0178	-0.1803	-0.0341	-0.0331	-0.1078	-0.0233	1			
EXCH	0.1539	0.1069	-0.0614	0.1569	-0.038	-0.1145	0.1282	0.0008	-0.2356	-0.0115	0.1751	0.0517	0.0341	0.1064	0.3296	-0.6721	1		
INTR	-0.1218	-0.1361	0.1062	-0.1296	0.0214	0.1228	-0.1117	-0.0493	0.1609	0.0369	-0.1440	0.0109	-0.0207	-0.1087	-0.2621	0.1647	-0.5572	1	
CRISIS	-0.1253	-0.1219	-0.0161	-0.1251	0.031	0.1113	-0.1469	0.069	0.2063	-0.0075	-0.1558	-0.0182	-0.0297	-0.0731	-0.1232	0.4112	-0.0633	0.3897	1
GOVC	-0.0401	-0.0904	0.0545	-0.0825	0.0113	0.1130	-0.0696	0.0486	0.1043	0.0126	-0.0683	0.0649	-0.0155	-0.0516	-0.1977	0.4237	-0.3307	0.2863	0.5124

Note: This table presents the correlation matrix outcome and remarkably, this study demonstrates low correlations between independent variables, signifying the absence of significant multicollinearity issues.

Table 4A: VIF Matrix.

Variables	VIF	1/VIF
LogSIZE	3.5	0.286
CAPAD	4.2	0.238
COST	2.8	0.357
PROD	3	0.333
AQ	1.9	0.526
LIQ	2.5	0.4
DEP	3.1	0.323
AM	2.2	0.455
OPEF	1.8	0.556
LEV	4.5	0.222
BRNCH	2.9	0.345
GDP	3.6	0.278
INFR	3.3	0.303
EXCH	4.1	0.244
INTR	1.7	0.588
CRISIS	3	0.333
GOVC	1.9	0.526
Mean VIF	**2.941**	

4.2. Generalized method of moments estimation: Overall Banks profitability

In **Table 5**, Column 1, Model 1 analyzes the impact of firm-level and country-level determinants on Return on Assets (ROA) from 2013 to 2022. Key findings from generalized method of moments estimation include positive and significant coefficients for ln (Size), AQ, AM, and LEV (0.021, 0.015, 0.590, and 0.024), indicating their positive influence on ROA. Conversely, CAPAD, COST, DEP, OPEF, INTR, CRISIS, and GOVC (-0.040, -0.001, -0.012, -0.031, -0.031) negatively affect ROA. PROD (0.002) has a positive impact, while LIQ and BRNCH (-0.013 and -0.031) don't significantly affect ROA. Regarding country-level factors, GDP, INFR, and EXCH (0.006, 0.002, 0.001) positively influence ROA, while INTR, CRISIS, and GOVC (-0.004, -0.009, -0.011) have negative associations. These results demonstrate the importance of both firm and country-level determinants in explaining ROA.

In **Table 5**, Column 2, Model 2 examines the impact of firm-level and country-level determinants on return on equity (ROE) for 2013-2022. Generalized method of moments estimation reveals significant patterns: ln (Size), COST, PROD, AQ, DEP, AM, and CAPAD (0.043, 0.115, 0.263, 0.031, 0.28, 0.115, 0.108) positively affect ROE, while LIQ, OPEF, LEV, INFR, INTR, CRISIS, and GOVC (-0.095, -0.002, -0.767, -0.02) negatively impact ROE. BRNCH has an insignificant effect. On the country level, GDP and EXCH (0.001, 0.006) positively relate to ROE, whereas INFR, INTR, CRISIS, and GOVC (-0.115, -0.087, -0.995, -0.229) have negative associations. These findings emphasize the significance of both firm and country-level determinants in explaining ROE, in line with prior studies[56, 72].

In **Table 5**, Column 2, Model 2 investigates the impact of firm-level and country-level determinants on Net Interest Margin (NIM) from 2013 to 2022. Notably, ln_SIZE, COST, AQ, LIQ, and AM (0.038, 0.853, 0.001, 0.098, 0.998) positively influence NIM, while DEP, OPEF, LEV (-0.108, -0.13, -0.605) negatively affect it. CAPAD and PROD (0.010, 0.051) show positive relationships, while BRNCH (-0.06) has an insignificant impact. At the country level, INFR, INTR, and GOVC (0.108, 0.146, 0.208) positively impact NIM, while GDP, EXCH, and CRISIS (-0.017, -0.128, -1.051) have negative associations. These results highlight the importance of both firm and country-level determinants in explaining NIM, aligning with previous research[52, 73, 74].

Table 5. Generalized method of moments estimation (overall banks).

	Including all banks		
	(1)	**(2)**	**(3)**
VARIABLS	**ROA**	**ROE**	**NIM**
L2. ROA	0.590***		
	-5.06		
L2. ROE		-0.002*	
		(-1.96)	
l.2 NIM			-0.605***
			(-2.54)
Bank-specific Determinants			
ln_SIZE	0.021**	0.043***	0.038**
	-1.99	-3.71	-2.91
CAPAD	-0.040**	0.115	0.01
	(-2.63)	-0.42	-0.74
COST	-0.001*	0.263***	0.853**
	(-1.97)	-5.98	-2.1
PROD	0.002	0.031*	0.051
	-1.44	-1.99	-1.42
AQ	0.015**	0.286***	0.001**
	-2.66	-4.87	-2.34

	Including all banks		
	(1)	**(2)**	**(3)**
VARIABLS	**ROA**	**ROE**	**NIM**
LIQ	-0.013	-0.095**	0.098
	(-0.39)	(-2.50)	-1.63
DEP	-0.012**	0.115***	-0.108**
	(-1.98)	-4.37	(-2.69)
AM	0.590***	0.108*	0.998***
	-5.06	-1.97	-3.17
OPEF	-0.031**	-0.002*	-0.13***
	(-2.60)	(-1.96)	(-2.38)
LEV	0.024***	-0.767***	-0.605***
	-4.19	(-2.79)	(-2.54)
BRNCH	-0.031	-0.02	-0.06
	(-1.45)	(-1.13)	(-1.33)
Macroeconomic Determinants			
GDP	0.006*	0.001*	-0.017**
	-1.99	-1.97	(-2.01)
INFR	0.002*	-0.115***	0.108**
	-1.98	(-4.37)	-2.69
EXCH	0.001*	0.006***	-0.128***
	-1.96	-2.9	(-3.84)
INTR	-0.004***	-0.087*	0.146*
	(-2.02)	(-1.99)	-1.97
CRISIS	-0.009***	-0.995**	-1.051***
	(-3.99)	(-1.96)	(-3.13)
GOVC	-0.011***	-0.229***	0.208***
	(-6.58)	(-3.23)	-3.6
Constant	0.331**	-.674***	-.490***
	-2.71	(-3.57)	(-4.84)
Number of ids	41	41	41
AR (1)	0	0	0
AR (2)	0.231	0.401	0.101
Sargan test	0.13	0.203	0.221
Hansen test	0.093	0.135	0.341
Wald chi-square	0	0	0

Note: *ROE: return on equity; ROA :Return on assets; NIM: net interest margin; LOGSIZE: Bank size; COST: operating expense; AQ: assets quality ;DEP: deposits ;OPEF: operating efficiency ;BRNCH: number of branches; CAPAD: capital adequacy ; PROD: productivity ;LIQ: liquidity; AM: assets management; LEV: leverage; INFR: inflation rate ; GDP: annual gross domestic product rate ; EXCH: exchange rate ;INTR: interest rate; CRISIS: a dummy variable of 1 for the financial years 2008 and 2009 and 0 for the other years; GOVC: a dummy variable of 1 for the years 2008 and 2009,and 2013 and 2014 and 0 for the other years. Robust t-statistics in parentheses,* *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

4.3. Generalized method of moments estimation: across private and public sector

Table 6 provides the generalized method of moments estimation: across private and public sector to find out the impact of firm and country level determinants on the bank's profitability in Pakistan financial sector. Table 6 column 1 presents the results of the " generalized method of moments estimation results for private banks. Regarding firm-level (bank-specific) determinants, CAPAD, PRO, AQ, LIQ, DEP, AM, OPEF, LEV, and BRNCH, with values of (0.031), (0.001), (0.027), (0.010), (0.001), (0.544), (0.001), (0.073), and (0.001) respectively, exhibit positive and significant effects on ROA. Conversely, LN_SIZE and COST,

with coefficients of (-0.30) and (-0.031) respectively, have a negative and substantial impact on ROA. Regarding country-level (macroeconomic) determinants, GDP, INTR, and CRISIS, with values of (0.009), (0.001), and (0.002) respectively, demonstrate positive and significant effects on ROA, while INFR, EXCH, and GOVC, with coefficients of (-0.001), (-0.000), and (-0.002) respectively, exert negative and significant impacts on ROA. These results indicate statistically significant and meaningful relationships between firm and country-level determinants and ROA in the private ownership banking sector from 2013 to 2022. These findings align with prior research earlier studies[52, 72, 73].

Table 6 column 2 displays results from generalized method of moments estimation for public banks. Among firm-level determinants, CAPAD, COST, PRO, AM, OPEF, and LEV (0.007, 0.015, 0.006, 1.083, 0.001, 0.072) exhibit positive and significant effects on ROA, while LN_SIZE, AQ, and LIQ (-0.026, -0.071, -0.244) have a negative and significant impact. DEP and BRNCH (0.011, -0.021) show no significant impact on ROA. At the country level, GDP, INTR, and CRISIS (0.038, 0.011, 0.001) positively affect ROA, whereas INFR, EXCH, and GOVC (-0.04, -0.006, -0.037) negatively impact ROA. These results signify statistical significance and rationality in explaining ROA in the public banking sector. These findings align with prior studies, like Almaqtari, Al‑Homaidi[52], Tariq, Usman[56], Dawood[72], Shah and Khan[74], Masood and Ashraf[75], correspondingly.

Table 6 column 3 presents generalized method of moments estimation results for private banks. For firm-level determinants, LN_SIZE, CAPAD, COST, PROD, AQ, LIQ, and LEV (0.011, 0.24, 0.078, 0.030, 0.010, 0.224, 0.108) have positive and significant effects on ROE. Conversely, DEP, AM, OPEF, and BRNCH (-0.097, -1.120, -0.007, -0.02) show negative and significant impacts on ROE. Among country-level factors, GDP and INFR (0.373, 0.123) positively influence ROA, while EXCH, INTR, CRISIS, and GOVC (-0.30, -0.097, -1.217, -0.317) negatively affect ROE. These findings highlight the significance and rationality of determinants in explaining ROE in private banks. Table 6, Column 4, presents generalized method of moments estimation results for public banks. Firm-level determinants LN_SIZE, CAPAD, PROD, LIQ, AM, OPEF, and LEV (0.071, 0.039, 0.075, 0.0288, 1.033, 0.042, 0.048) positively affect ROE, while COST and AQ (-0.035, -0.034) negatively impact it. DEP and BRNCH have an insignificant effect. Country-level determinants INFR and EXCH (0.132, 0.046) positively influence ROA, while GDP, INTR, CRISIS, and GOVC (-0.004, -0.083, -0.710, -0.030) negatively affect ROE. These results indicate significant and rational performance in explaining ROE in public banks, aligning with prior research. congruently. **Table 5**, Column 5, presents generalized method of moments estimation results for private banks. Firm-level determinants LN_SIZE, CAPAD, COST, PROD, AM, and OPEF (0.003, 0.713, 13.877, 0.064, 0.125, 0.003) positively affect Net Interest Margin (NIM), while AQ, LIQ, DEP, LEV, and BRNCH (-0.05, -0.482, -0.099, -0.13) have a negative impact. Among country-level factors, GOVC (2.249) positively influences NIM, while GDP, INFR, EXCH, INTR, and CRISIS (-1.062, -0.139, -0.200, -0.099, -0.292) negatively impact NIM.

Table 6. Generalized method of moments estimation: across private and public sector.

Variables	Private (1) ROA	Public (2) ROA	Private (3) ROE	Public (4) ROE	Private (5) NIM	Public (6) NIM
L2. ROA	0.224*	0.288*				
	-1.99	-1.97				
L2. ROE			0.003*	-0.072*		
			-0.06	(-1.99)		
l.2 NIM					0.001*	0.001**
					-2.02	-2.42
Bank-specific Determinants						
LN_SIZE	-0.30***	-0.026**	0.011**	0.071**	0.003***	0.633**
	(-2.90)	(-1.96)	-2.06	-3.59	-3.35	-1.97
CAPAD	0.031**	0.007**	0.24***	0.039**	0.713***	0.862**
	-2.23	-2.1	-3.87	-2.74	-3.32	-2.85
COST	-0.070**	0.015*	0.078**	-0.035**	13.877***	0.287*
	(-2.19)	-1.97	-2.82	(-2.26)	-5.43	-1.97
PROD	0.001*	0.006*	0.030***	0.075***	0.064*	0.058**
	-2.16	-1.98	-3.63	-6.01	-2	-1.99
AQ	0.027***	-0.71***	0.010***	-0.340**	-0.05***	-0.626**
	-5.32	(-3.39)	-3.16	(-2.26)	(-3.56)	(-2.74)
LIQ	0.010*	-0.244*	0.224*	0.288*	-0.482***	-0.607*
	-2.52	(-2.04)	-1.99	-1.97	(-2.95)	(-0.79)
DEP	0.001*	0.011	-0.097**	-0.083	-0.099*	-0.366**
	-1.99	-0.72	(-3.02)	(-0.42)	(-2.89)	(-2.91)
AM	0.544***	1.083***	-1.120**	1.033**	0.125**	0.015***
	-5.54	-4.28	(-3.75)	-2.48	-2.03	-2.86
OPEF	0.001*	0.001**	-0.007*	0.042**	0.003*	-0.072*
	-2.02	-2.42	(-2.68)	-2.48	-0.06	(-1.99)
LEV	0.073**	0.072**	.108**	0.148*	-0.204*	0.417**
	-2.23	-2.27	-1.97	-2.54	(-2.66)	-2.12
BRNCH	0.001*	-0.021	-0.02***	-0.01	-0.13***	0.006
	-2	(-1.66)	(-2.90)	(-0.82)	(-2.47)	-0.61
Macroeconomic Determinants						
GDP	0.009*	0.038	0.373**	-0.044	-1.062**	-0.424
	-1.99	-1.63	-2.63	(-0.49)	(-2.56)	(-1.04)
INFR	-0.001**	-0.004**	0.123*	0.132**	-0.139*	0.140*
	(-2.38)	(-3.97)	-2.11	-2.98	(-4.43)	-5.53
EXCH	-0.000*	-0.06***	-0.30***	0.046**	-0.200**	0.138**
	(-2.37)	(-4.80)	(-4.53)	-3.18	(-2.05)	-3.17

Variables	Private	Public	Private	Public	Private	Public
	(1)	(2)	(3)	(4)	(5)	(6)
	ROA	ROA	ROE	ROE	NIM	NIM
INTR	0.001*	0.011*	-0.097**	-0.083**	-0.099*	-0.366*
	-1.99	-2.83	(-3.02)	(-2.93)	(-2.89)	(-2.95)
CRISIS	0.002**	0.001**	-1.217*	-0.71	-0.292**	0.590**
	-2.24	-3.03	(-2.76)	(-2.22)	(-2.30)	-3.64
GOVC	-0.002***	-0.037*	-0.317*	-0.030*	2.429*	-0.078*
	(-4.21)	(-3.62)	(-2.17)	(-3.14)	-2.97	(-3.17)
Constant	0.466**	0.785*	0.111*	-.631**	-13.314*	-.782**
	-2.19	-2.02	-1.98	(-2.92)	(-1.97)	(-1.98)
Number of ids	29	12	29	12	29	12
AR (1)	0.001	0	0.001	0	0.001	0
AR (2)	0.091	0.221	0.312	0.923	0.212	0.073
Sargan test	0.241	0.232	0.211	0.134	0.081	0.237
Hansen test	0.123	0.154	0.132	0.139	0.512	0.097
Wald chi-square	0.001	0	0.001	0	0.001	0

Note: This table provides the generalized method of moments (GMM) estimation results for various determinants of banking profitability, comparing private and public sectors. Dependent variables include Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM) across six models. The lagged dependent variables (L2. ROA, L2. ROE, L2. NIM) and a range of bank-specific and macroeconomic determinants. Definitions of variables are as follows: LOGSIZE: Bank size; COST: operating expense; AQ: assets quality ;DEP: deposits ;OPEF: operating efficiency ;BRNCH: number of branches; CAPAD: capital adequacy ; PROD: productivity ;LIQ: liquidity; AM: assets management; LEV: leverage; GDP: annual gross domestic product rate ; INFR: inflation rate ;EXCH: exchange rate ;INTR: interest rate; CRISIS: a dummy variable of 1 for the years 2008 and 2009 and 0 for the other years; GOVC: a dummy variable of 1 for the years 2008 and 2009,and 2013 and 2014 and 0 for the other years. Robust t-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1

These findings signify statistical significance and rationality in explaining NIM in Pakistan's private banking sector Almaqtari, Al‑Homaidi[52], Tariq, Usman[56], Dawood[72], Shah and Khan[74], Masood and Ashraf[75] respectively. Table 6, Column 6, displays Generalized Method of Moments (GMM) estimation results for public banks in Pakistan. The study examines firm-level determinants' impact on Net Interest Margin (NIM) and finds positive and significant effects for LN_SIZE, CAPAD, COST, PROD, AM, and LEV, with coefficients of 0.633, 0.862, 0.287, 0.058, 0.015, and 0.417, respectively. However, AM, LIQ, DEP, and OPEF have negative and significant impacts on NIM, with coefficients of -0.626, -0.007, -0.366, and -0.072, respectively. BRNCH has a positive but insignificant impact (0.61) on NIM. Additionally, at the country level, macroeconomic determinants INFR, EXCH, and CRISIS show positive and significant impacts on NIM, with coefficients of 0.140, 0.138, and 0.590, while GDP, INTR, and GOVC have adverse and significant effects, with coefficients of -0.424, -0.360, and -0.078. These results align with previous studies Almaqtari, Al‑Homaidi[52], Tariq, Usman[56], Dawood[72], Shah and Khan[74], Masood and Ashraf[75], supporting the empirical significance of firm and country-level determinants in explaining NIM variations in Pakistan's public banking sector.

5. Discussion

This study carefully examines the complex relationship between bank profitability and an array of determinants within Pakistan's dynamic financial sector. The research draws from an extensive data set, comprising financial data from 41 small and medium-sized banks, providing valuable insights into this vibrant emerging market. The study's empirical findings resoundingly affirm the substantial impact of both firm-specific and macroeconomic determinants on bank profitability. These determinants exert a profound influence, touching various facets of the banking industry. Moreover, the study's results demonstrate the nuanced nature of these impacts when subjected to rigorous regression analysis across private and public sector banks.

These findings harmonize with an established body of research conducted by renowned scholars such as Almaqtari, Al‑Homaidi[52], Tariq, Usman[56], Dawood[72], Batten and Vo[73], Shah and Khan[74], Masood and Ashraf[75], and numerous others, collectively reinforcing the enduring significance of these determinants within the financial landscape. Furthermore, the study explores the concept of economies of scale, shedding light on its intrinsic connection to bank profitability. It posits that as organizations engage in larger-scale operations, they harness cost efficiencies, leading to a decrease in costs per unit as products and services expand—a phenomenon elegantly expounded by[18]. This empirical correlation underscores the intricate economic dynamics shaping the profitability of banks in Pakistan's financial sector.

On policy side, given the positive impact of factors like Asset Quality (AQ) and Operating Efficiency (OPEF) on profitability metrics such as ROA and ROE, regulators should consider frameworks that encourage banks to enhance their asset management practices and operational efficiencies. Furthermore, the negative correlation of Capital Adequacy (CAPAD) with profitability indices suggests that overly stringent capital requirements may hamper profitability. This calls for a balanced approach in regulatory capital policies to ensure stability without stifling financial performance. Ultimately, with size (LOGSIZE) and productivity (PROD) showing strong positive correlations with profitability, policy measures that support bank growth and operational enhancements could be beneficial. This might include supporting mergers and acquisitions in the banking sector and encouraging technological advancements. Fourth, the influence of GDP, inflation (INFR), and exchange rates (EXCH) on profitability underscores the need for macroeconomic policies that foster economic stability, directly benefiting banking sector performance.

Regarding theoretical policy implications, from starting the correlations observed suggest a theoretical reinforcement of the importance of economies of scale (reflected through LOGSIZE) and the impact of macroeconomic conditions on banking profitability. This finding supports theories that posit economic growth and stable macroeconomic environments as critical components of banking sector success. Furthermore, the varying impacts of regulatory metrics like Capital Adequacy and Liquidity on profitability can contribute to ongoing debates in financial regulation theory about the optimal balance between regulation and bank performance. Lastly, the negative correlations of certain variables with profitability, such as operating expenses and leverage, reflect the delicate balance banks must maintain between growth and risk, highlighting the theoretical trade-offs emphasized in financial growth models.

Moreover, our study has some implications for strategic management. First of all, banks should focus on improving asset management capabilities as indicated by the positive effects of Asset Management (AM) on profitability metrics. Moreover, the significant impact of leverage (LEV) on profitability highlights the need for banks to carefully consider their capital structures to optimize financial performance. Finally, given the negative impact of certain macroeconomic factors like interest rates (INTR) and economic crises

(CRISIS) on profitability, banks must enhance their risk management strategies to mitigate these external risks.

Additionally, policymakers should consider the implications of economic indicators such as GDP growth and inflation on banking sector performance, adjusting economic policies to foster a conducive environment for bank profitability. Finally, the mixed effects of regulatory factors like Capital Adequacy on different profitability measures suggest a need for ongoing regulatory review to align with evolving banking practices and economic conditions.

Overall, the empirical evidence from the generalized method of moments estimation provides a robust basis for both refining theoretical models of banking profitability and for the formulation of targeted policies that address identified drivers within specific banking contexts.

5.1. Managerial Implications

The findings of this study have different interesting consequences for Pakistani bank managers:

Optimizing Bank-Specific Factors for Profitability: Given their considerable influence on profitability—capital adequacy, asset quality, and operational efficiency—managers should give internal variables first consideration. While improving asset quality can reduce loan default risk and boost revenues, focusing on capital adequacy—for example—can strengthen financial resilience, draw investments, and cut the cost of capital.

Leverage is a two-edged weapon since the results suggest that it influences both risk and profitability. This means that it influences balanced growth. Managers are advised to use balanced leverage strategies in order to provide steady growth without needless financial volatility of the bank exposed to. Risk management techniques appropriate for the capital structure of the company will enable one to balance risk with profitability.

Managers should add macroeconomic forecasts into strategy planning considering the outside components like GDP growth, inflation, and interest rates influencing profitability. Knowing how changes in the economy influence bank performance allows managers to adjust lending rates, asset allocation, and liquidity management to maintain profitability amid economic crises.

Raising operational efficiency helps to show profitability in operations by means of innovation and efficiency. Managers can consider employing digital banking technology, automating repetitive operations, and investing staff development in order to raise efficiency and service quality—which finally supports profitability.

Results show that government policies among other factors affect bank performance in relation to the market and regulatory surroundings. Managers should actively engage stakeholders like lawmakers, regulators, and investors to predict changes in rules and stay in step with the bigger economic and legal environment.

Since deposit mobilization strategies clearly affect bank profitability, managers should optimize them and maintain sufficient liquidity buffers since deposits and liquidity exhibit clear impact. This approach enables banks to maintain financial stability, meet unmet demand, and boost customer confidence by means of consistent policies.

6. Conclusion and Recommendations

This study aimed to investigate the impact of firm-level (bank-specific) and country-level (macroeconomic) determinants on the profitability of Pakistan's banking sector during the period 2013-2022.

It sought to identify key indicators affecting bank profitability, including factors such as bank size, capital adequacy, operating expenses, asset quality, liquidity, macroeconomic variables, and more. The research analyzed a sample of 41 banks, encompassing private, public, specialized, foreign, development financial institutions, and investment banks, utilizing descriptive statistics, correlation analysis, and the Pooled OLS fixed effect model. The findings reveal that several determinants significantly influence bank profitability in Pakistan. Factors such as bank size, assets quality, assets management, and macroeconomic indicators like gross domestic product rate, exchange rate, and inflation rate exhibit positive and significant impacts on profitability. Conversely, capital adequacy, operating expenses, deposits, operating efficiency, interest rate, financial crises, and government changes have negative and significant effects on profitability.

The findings of this study have significant policy implications for various stakeholders involved in Pakistan's banking sector. Enhanced regulatory oversight is essential to monitor factors like capital adequacy, operating expenses, and asset quality, which significantly affect bank profitability. Policymakers need to prioritize maintaining macroeconomic stability, focusing on controlling inflation rates and managing exchange rates effectively to safeguard bank profitability. Central banks should adopt a balanced approach to interest rate management, considering its substantial impact on bank profitability, and strive to strike a harmonious equilibrium between stimulating economic growth and protecting bank profitability. Governments should implement policies that encourage prudent lending practices and discourage excessive risk-taking by banks, emphasizing the importance of maintaining adequate capital buffers and effective asset management. Management financial literacy and risk management education for both banking institutions and consumers can enhance decision-making and risk awareness, contributing to overall banking sector stability and sustainability.

The study predominantly concentrated on quantitative data from financial statements, neglecting qualitative aspects related to management and internal control systems. The study's focus on core operating activities may not encompass the full scope of the dynamic banking sector, which constantly evolves with technological advancements and new product introductions.

Future research could incorporate additional profitability indicators, such as net profit margin (NPM), to gain a more comprehensive understanding of bank-specific factors' impact on financial performance. Comparative studies spanning developing and developed nations can provide insights into determinants of bank profitability across different economic contexts. Further research could differentiate between public, private, specialized, foreign, development financial institutions, and investment banks within Pakistan to explore sector-specific drivers of profitability.

References

1. Parmankulova, I., et al., *The drivers of financial vulnerability and profitability: evidence from conventional and Islamic banks in Islamic finance-oriented countries.* Journal of Islamic Accounting and Business Research, 2022. **13**(6): p. 902-919. https://doi.org/10.1108/JIABR-06-2021-0155.

2. Ramlall, I., What Are the Drivers of Bank Profitability in the World? A Critical Review of the Empirical Literature with the Layout of a Blueprint Model. Journal of African Business, 2024: p. 1-32. https://doi.org/10.1080/15228916.2024.2344135.

3. Khan, M.A., et al., *Country-level institutional quality and financial system efficiency: An international evidence.* Plos one, 2023. **18**(8): p. e0290511. https://doi.org/10.1371/journal.pone.0290511.

4. Bernardelli, L.C. and C.E. Carrasco-Gutierrez, Macroeconomic, industry-specific and bank-specific determinants of the profitability of Brazilian banks: dynamic panel evidence. Empirical Economics, 2024: p. 1-34. https://doi.org/10.1007/s00181-024-02568-1.

5.   Hasanov, F.J., N. Bayramli, and N. Al-Musehel, *Bank-specific and macroeconomic determinants of bank profitability: Evidence from an oil-dependent economy.* International Journal of Financial Studies, 2018. **6**(3): p. 78. https://doi.org/10.3390/su15010708.

6.   Yakubu, I.N. and A. Musah, *The nexus between financial inclusion and bank profitability: A dynamic panel approach.* Journal of Sustainable Finance & Investment, 2024. **14**(2): p. 430-443. https://doi.org/10.1080/20430795.2022.2105792.

7.   Poretti, C. and C.Y. Heo, *COVID-19 and firm value drivers in the tourism industry.* Annals of Tourism Research, 2022. **95**: p. 103433. https://doi.org/10.1016/j.annals.2022.103433.

8.   Bapat, D., *Profitability drivers for Indian banks: A dynamic panel data analysis.* Eurasian Business Review, 2018. **8**(4): p. 437-451. https://doi.org/10.1007/s40821-017-0096-2.

9.   Yuan, D., et al., *Profitability determining factors of banking sector: Panel data analysis of commercial banks in South Asian countries.* Frontiers in psychology, 2022. **13**: p. 1000412. https://doi.org/10.3389/fpsyg.2022.1000412.

10.   Saona, P. and M.A.K. Azad, *Bank-and country-based determinants of banks' performance in Asia.* Journal of the Asia Pacific Economy, 2018. **23**(3): p. 428-446. https://doi.org/10.1080/13547860.2018.1469585.

11.   Khan, M.A., et al., *Do institutional quality, innovation and technologies promote financial market development?* European Journal of International Management, 2024. **22**(3): p. 484-507. https://doi.org/10.1504/EJIM.2024.136453.

12.   Beck, T., A. Demirgüç-Kunt, and O. Merrouche, *Islamic vs. conventional banking: Business model, efficiency and stability.* Journal of Banking & Finance, 2013. **37**(2): p. 433-447. https://doi.org/10.1016/j.jbankfin.2012.09.016.

13.   Ghosh, S., *Political transition and bank performance: How important was the Arab Spring?* Journal of Comparative Economics, 2016. **44**(2): p. 372-382. https://doi.org/10.1016/j.jce.2015.02.001.

14.   Houston, J.F., et al., *Creditor rights, information sharing, and bank risk taking.* Journal of Financial Economics, 2010. **96**(3): p. 485-512. https://doi.org/10.1016/j.jfineco.2010.02.008.

15.   Apergis, N., *The long-term role of non-traditional banking in profitability and risk profiles: Evidence from a panel of U.S. banking institutions.* Journal of International Money and Finance, 2014. **45**: p. 61-73. https://doi.org/10.1016/j.jimonfin.2014.03.003.

16.   Golin, J. and P. Delhaise, *The bank credit analysis handbook: a guide for analysts, bankers and investors*. 2nd ed. Wiley Finance Series. 2013: John Wiley & Sons. 800. https://doi.org/978-0-470-82944-8.

17.   Jha, S. and X. Hui, *A comparison of financial performance of commercial banks: A case study of Nepal.* AFRICAN JOURNAL OF BUSINESS MANAGEMENT, 2012. **6**. https://doi.org/10.5897/AJBM11.3073.

18.   Bashir, A.-H., *Risk and profitability measures in Islamic banks: The case of two Sudanese banks.* Islamic Economic Studies, 1999. **6**, https://www.africabib.org/rec.php?RID=I00010183.

19.   Aremu, M., et al., *Determinants of Capital Structure in Nigerian Banking Sector.* International Journal of Academic Research in Economics and Management Sciences, 2013. **2**. https://doi.org/10.6007/IJAREMS/v2-i4/50.

20.   Fungáčová, Z. and T. Poghosyan, *Determinants of bank interest margins in Russia: Does bank ownership matter?* Economic Systems, 2011. **35**(4): p. 481-495. https://doi.org/10.1016/j.ecosys.2010.11.007.

21.   Olweny, T., *Effects of banking sectoral factors on the profitability of commercial banks in Kenya.* Economics and Finance Review, 2011. **Vol. 1**: p. 01-30, https://www.researchgate.net/publication/263542674_EFFECTS_OF_BANKING_SECTORAL_FACTORS_ON_THE_PROFITABILITY_OF_COMMERCIAL_BANKS_IN_KENYA.

22.   Adeusi, S., F. Kolapo, and O. Aluko, *Determinants of commercial banks' profitability panel evidence from Nigeria.* International Journal of Economics, Commerce and Management United Kingdom, 2014. **2**(12), https://ijecm.co.uk/wp-content/uploads/2014/12/21228.pdf.

23. Wasiuzzaman, S. and H. Tarmizi, *Profitability of Islamic Banks in Malaysia: An Empirical Analysis.* Journal of Islamic Economics, Banking and Finance, 2010. **6**, https://ibtra.com/pdf/journal/v6_n4_article3.pdf.

24. Vejzagic, M. and H. Zarafat, *An Analysis of Macroeconomic Determinants of Commercial Banks Profitability in Malaysia for the Period 1995-2011.* Asian Economic and Financial Review, 2014. **4**(1): p. 41–57, https://archive.aessweb.com/index.php/5002/article/view/1141.

25. Gul, S., F. Irshad, and K. Zaman, *Factors Affecting Bank Profitability in Pakistan.* Romanian Economic Journal, 2011. **14**: p. 61-87, https://www.researchgate.net/profile/Sehrish-Gul/publication/227487619_Factors_Affecting_Bank_Profitability_in _Pakistan/links/5471849d0cf24af340c3bfa3/Factors-Affecting-Bank-Profitability-in-Pakistan.pdf.

26. Obamuyi, T., *Determinants of Banks' Profitability in a Developing Economy: Evidence From Nigeria.* Organizations and Markets in Emerging Economies, 2013. **4**(2): p. 97-111. https://doi.org/10.15388/omee.2013.4.2.14251.

27. Jamal, A.A.A., M. Hamidi, and M.R.A. Karim, *Determinants of commercial banks' return on asset: panel evidence from Malaysia.* International Journal of Commerce, Business and Management, 2012. **1**(3): p. 55-62, https://www.researchgate.net/publication/235962256_Determinants_of_Commercial_Banks'_Return_on_Asset_Pa nel_Evidence_from_Malaysia.

28. Sufian, F. and R. Chong, *Determinants of Bank Profitability in a Developing Economy: Empirical Evidence from the Philippines.* Asian Academy of Management Journal of Accounting and Finance, 2008. **4**: p. 91-112, https://www.redalyc.org/pdf/6923/692375801005.pdf.

29. Flamini, V., C. McDonald, and L. Schumacher, *The Determinants of Commercial Bank Profitability in Sub-Saharan Africa.* IMF Working Papers, 2009. **09**. https://doi.org/10.5089/9781451871623.001.

30. Naceur, S.B. and M. Omran, *The effects of bank regulations, competition, and financial reforms on banks' performance.* Emerging Markets Review, 2011. **12**(1): p. 1-20. https://doi.org/10.1016/j.ememar.2010.08.002.

31. Tan, Y., *The impacts of risk and competition on bank profitability in China.* Journal of International Financial Markets, Institutions and Money, 2016. **40**: p. 85-110. https://doi.org/10.1016/j.intfin.2015.09.003.

32. Sinha, P. and S. Sharma, *Determinants of bank profits and its persistence in Indian Banks: a study in a dynamic panel data framework.* International Journal of System Assurance Engineering and Management, 2016. **7**(1): p. 35-46. https://doi.org/10.1007/s13198-015-0388-9.

33. Bougatef, K., *Determinants of bank profitability in Tunisia: does corruption matter?* Journal of Money Laundering Control, 2017. **20**(1): p. 70-78. https://doi.org/10.1108/JMLC-10-2015-0044.

34. Davydenko, A., *Determinants of Bank Profitability in Ukraine.* Undergraduate Economic Review, 2010. **7**(1), https://digitalcommons.iwu.edu/uer/vol7/iss1/2.

35. Sritharan, V., *Does firm size influence on firm" s Profitability? Evidence from listed firms of Sri Lankan Hotels and Travels sector.* Research Journal of Finance and Accounting, 2015. **6**(6): p. 201-207, https://core.ac.uk/download/pdf/234630609.pdf.

36. Berger, A.N., *The Relationship between Capital and Earnings in Banking.* Journal of Money, Credit and Banking, 1995. **27**(2): p. 432-456. https://doi.org/10.2307/2077877.

37. García-Herrero, A., S. Gavilá, and D. Santabárbara, *What explains the low profitability of Chinese banks?* Journal of Banking & Finance, 2009. **33**(11): p. 2080-2092. https://doi.org/10.1016/j.jbankfin.2009.05.005.

38. Almazari, A.A., *Capital Adequacy, Cost Income Ratio and the Performance of Saudi Banks (2007-2011).* International Journal of Academic Research in Accounting, Finance and Management Sciences, 2013. **3**(4): p. 284-293, https://www.econbiz.de/Record/capital-adequacy-cost-income-ratio-and-the-performance-of-saudi-banks-2007-201 1-almazari-ahmad-aref/10010727947.

39. Ongore, V.O. and G.B. Kusa, *Determinants of Financial Performance of Commercial Banks in Kenya.* International Journal of Economics and Financial Issues, 2013. **3**(1): p. 237-252, https://www.econjournals.com/index.php/ijefi/article/view/334.

40. Mathuva, D., *Capital Adequacy, Cost Income Ratio and the Performance of Commercial Banks: The Kenyan Scenario.* The International Journal of Applied Economics and Finance, 2009. **3**. https://doi.org/10.3923/ijaef.2009.35.47.

41. Abor, J., *The effect of capital structure on profitability: an empirical analysis of listed firms in Ghana.* The Journal of Risk Finance, 2005. **6**(5): p. 438-445. https://doi.org/10.1108/15265940510633505.

42. Hakim, S. and S. Neaime, *Performance and Credit Rating in Banking: A Comparative Study for Egypt and Lebanon*, in *ERF Working Papers Series*. 2001: Economic Research Forum, https://erf.org.eg/publications/performance-and-credit-rating-in-banking-a-comparative-study-for-egypt-and-lebanon/.

43. Kithinji, A.M., *Credit risk management and profitability of commercial banks in Kenya*, in *SCHOOL OF BUSINESS*. 2010, UNIVERSITY OF NAIROBI: NAIROBI – KENYA. , http://erepository.uonbi.ac.ke/bitstream/handle/11295/40437/aibuma2011-submission232.pdf.

44. Cardone-Riportella, C., R. Samaniego-Medina, and A. Trujillo-Ponce, *What drives bank securitisation? The Spanish experience.* Journal of Banking & Finance, 2010. **34**(11): p. 2639-2651. https://doi.org/10.1016/j.jbankfin.2010.05.003.

45. Alexiou, C. and S. Vogiazas, *Determinants of bank profitability: Evidence from the Greek banking sector.* Economic Annals, 2009. **54**. https://doi.org/10.2298/EKA0982093A.

46. Weersainghe, V. and T.R. Perera, *Determinants of profitability of commercial banks in Sri Lanka.* International Journal of Arts and commerce, 2013. **2**(10): p. 141-170. http://doi.org/10.31357/fmscmst.2015.00198.

47. Riaz, S. and A. Mehar, *The impact of Bank Specific and Macroeconomic Indicators on the Profitability of Commercial banks.* Romanian Economic Journal, 2013. **16**(47): p. 91-110, https://www.econbiz.de/Record/the-impact-of-bank-specific-and-macroeconomic-indicators-on-the-profitability-of-commercial-banks-riaz-samina/10010934766.

48. Roman, A. and A. Dănuleţiu, *An empirical analysis of the determinants of bank profitability in Romania.* Annales Universitatis Apulensis Series Oeconomica, 2013. **15**. https://doi.org/10.29302/oeconomica.2013.15.2.23.

49. Curak, M., K. Poposki, and S. Pepur, *Profitability Determinants of the Macedonian Banking Sector in Changing Environment.* Procedia - Social and Behavioral Sciences, 2012. **44**: p. 406-416. https://doi.org/10.1016/j.sbspro.2012.05.045.

50. Ghazouani, I., B. Ameur, and S. Mhiri, *Explanatory Factors of Bank Performance Evidence from Tunisia.* International Journal of Economics Finance and Management, 2013. **2**(1), https://www.ejournalofbusiness.org/archive/vol2no1/vol2no1_13.pdf.

51. Beckmann, R., *Profitability of Western European banking systems: panel evidence on structural and cyclical determinants*. Available at SSRN 1090570. Vol. 2. 2007: Deutsche Bundesbank Eurosystem. 52.

52. Almaqtari, F.A., et al., *The determinants of profitability of Indian commercial banks: A panel data approach.* International Journal of Finance & Economics, 2019. **24**(1): p. 168-185. https://doi.org/10.1002/ijfe.1655.

53. Pan, Q. and M. Pan, *The Impact of Macro Factors on the Profitability of China's Commercial Banks in the Decade after WTO Accession.* Open Journal of Social Sciences, 2014. **02**: p. 64-69. https://doi.org/10.4236/jss.2014.29011.

54. Haron, S., *Determinants of Islamic bank profitability: Some evidence.* Jurnal Pengurusan, 1997. **16**(1): p. 33-46. https://doi.org/10.3366/edinburgh/9780748621002.003.0008.

55. Muda, M., A. Shaharuddin, and A. Embaya, *Profitability determinants and the impact of global financial crisis: A panel data analysis of Malaysian Islamic banks.* Research Journal of Finance and Accounting, 2013. **4**(7): p. 121-130, https://iiste.org/Journals/index.php/RJFA/article/view/6286.

56. Tariq, W., et al., *Determinants of Commercial Banks Profitability: Empirical Evidence from Pakistan.* International Journal of Accounting and Financial Reporting, 2014. **4**. https://doi.org/10.5296/ijafr.v4i2.5939.

57. Ghazouani, I., B. Ameur, and S. Mhiri. *Explanatory Factors of Bank Performance Evidence from Tunisia.* 2013. https://api.semanticscholar.org/CorpusID:55775330.

58. Alper, D. and A. Anbar, *Bank Specific and Macroeconomic Determinants of Commercial Bank Profitability: Empirical Evidence from Turkey.* 2011. **2**: p. 139-139, https://www.researchgate.net/publication/227489043_Bank_Specific_and_Macroeconomic_Determinants_of_Commercial_Bank_Profitability_Empirical_Evidence_from_Turkey.

59. Scott, A.O. and E.J. Ovuefeyen, *Effects of economic openness and inflation on commercial banks' profitability: Panel data evidence from Nigeria, PostBanking sector consolidation (2005-2012).* European Journal of Business and Management, 2014. **6**(30): p. 87-96, https://www.iiste.org/Journals/index.php/EJBM/article/view/15618.

60. Wong, E., J. Wong, and P. Leung, *The Foreign Exchange Exposure of Chinese Banks.* Working Papers, 2008. **20**(2): p. 9. https://doi.org/10.1016/j.chieco.2009.03.003.

61. Cerovic, L., S. Suljić Nikolaj, and D. Maradin, *Comparative analysis of conventional and Islamic banking: Importance of market regulation.* Ekonomska misao i praksa / Economic Thought and Practice, 2017. **XXVI**(1): p. 241-263, https://urn.nsk.hr/urn:nbn:hr:192:637417.

62. Farooq, M. and S. Zaheer, *Are Islamic Banks More Resilient During Financial Panics?* Pacific Economic Review, 2015. **20**(1): p. 101-124. https://doi.org/10.1111/1468-0106.12096.

63. Bagh, T., et al., *The causative impact of liquidity management on profitability of banks in Pakistan: An empirical investigation.* International Journal of Academic Research in Economics and Management Sciences, 2017. **6**(3): p. 153-170. https://doi.org/10.6007/IJAREMS/v6-i3/3151.

64. Athanasoglou, P.P., S.N. Brissimis, and M.D. Delis, *Bank-specific, industry-specific and macroeconomic determinants of bank profitability.* Journal of International Financial Markets, Institutions and Money, 2008. **18**(2): p. 121-136. https://doi.org/10.1016/j.intfin.2006.07.001.

65. Kasman, A., et al., *Consolidation and commercial bank net interest margins: Evidence from the old and new European Union members and candidate countries.* Economic Modelling, 2010. **27**(3): p. 648-655. https://doi.org/10.1016/j.econmod.2010.01.004.

66. Kanwal, S. and M. Nadeem, *The impact of macroeconomic variables on the profitability of listed commercial banks in Pakistan.* European journal of business and social sciences, 2013. **2**(9): p. 186-201, https://www.researchgate.net/publication/261439377_THE_IMPACT_OF_MACROECONOMIC_VARIABLES_ON_THE_PROFITABILITY_OF_LISTED_COMMERCIAL_BANKS_IN_PAKISTAN.

67. Bagh, T., J. Fuwei, and M.A. Khan, *Corporate ESG investments and Firm's value under the real-option framework: Evidence from two world-leading economies.* Borsa Istanbul Review, 2024. https://doi.org/10.1016/j.bir.2024.01.002.

68. Iftikhar, K., T. Bagh, and M.A. Khan, *The role of Corporate Governance in the nexus between Litigation Risk and Corporate Innovation.* Borsa Istanbul Review, 2024. https://doi.org/10.1016/j.bir.2024.04.005.

69. Naseer, M.M., *Sustainable Investments in Volatile Times: Nexus of Climate Change Risk, ESG Practises, and Market Volatility.* SSRN, 2024. https://doi.org/10.2139/ssrn.4649208.

70. Hossain, A.T. and A.-A. Masum, *Does corporate social responsibility help mitigate firm-level climate change risk?* Finance Research Letters, 2022. **47**: p. 102791. https://doi.org/10.1016/j.frl.2022.102791.

71. Arellano, M. and O. Bover, *Another look at the instrumental variable estimation of error-components models.* Journal of Econometrics, 1995. **68**(1): p. 29-51. https://doi.org/10.1016/0304-4076(94)01642-D.

72. Dawood, U., *Factors impacting profitability of commercial banks in Pakistan for the period of (2009-2012).* International Journal of Scientific and Research Publications, 2014. **4**(3): p. 1-7, https://www.ijsrp.org/research-paper-0314/ijsrp-p27110.pdf.

73. Batten, J. and X.V. Vo, *Determinants of Bank Profitability—Evidence from Vietnam.* Emerging Markets Finance and Trade, 2019. **55**(6): p. 1417-1428. https://doi.org/10.1080/1540496X.2018.1524326.

74. Shah, M.H. and S. Khan, *Factors effecting commercial banks profitability in Pakistan.* Journal of Business and Tourism, 2021. **3**(1): p. 22. https://doi.org/10.34260/jbt.v3i1.55

75. Masood, P. and M. Ashraf, *Bank-specific and macroeconomic profitability determinants of Islamic banks.* Qualitative Research in Financial Markets, 2012. **4**: p. 255-268. https://doi.org/10.1108/17554171211252565.