

FINANCIAL STABILITY AND PROFITABILITY IN BANKING: A QUANTITATIVE ANALYSIS OF KEY RATIOS AND RESULTS*Saydullayeva Ruhshona**Tashkent State University of Economics**Accounting faculty*ruhshonasaydullayeva8@gmail.com

Abstract: We analyze how bank profitability impacts financial stability from theoretical and empirical perspectives. We start by developing a theoretical model that explores the relationship between bank profitability and financial stability. This model elucidates how increased profitability can strengthen a bank's resilience to economic shocks. Additionally, it addresses the potential risks linked to excessive profit-seeking behavior. Excessive profit-seeking behavior can lead to risky lending practices and a focus on short-term gains, which may undermine long-term stability. As a result, our analysis underscores the critical need for a balanced approach to profitability. It is essential for banks to pursue sustainable growth while simultaneously mitigating systemic risks. By fostering a financial environment that values long-term stability over fleeting profits, we can promote a healthier banking sector that contributes positively to the economy as a whole.

Introduction

The Global Financial Crisis (GFC) of 2007-2009, along with the subsequent period of low interest rates, has reignited interest among policymakers in the significance of bank profitability for maintaining financial stability. Despite the recovery, many banks still struggle to achieve a return on equity that meets or exceeds their cost of equity. The market's assessment of banks' ability to overcome profitability challenges is pessimistic, given that their valuations are below their balance sheet values. Additionally, the existing literature on the relationship between bank profitability and financial stability presents mixed evidence. Some researchers have found that higher profitability can lead to increased "charter value" (long-term expected profitability), which may result in reduced risk-taking behavior by banks. This paper addresses key issues related to this topic. We examine the relationship between bank profitability and financial stability. This includes looking at different bank business models, such as retail and wholesale banks, as well as various types of net interest income (NII) activities. In this context, we examine not only the relationship between the level of bank profitability and financial stability but also the more profound issue of how the source of bank profitability influences financial stability. Various measures of bank business models and characteristics illuminate the origins of bank profitability.

Literature view

According to the opinions of Karamoy and Tulung (2020) [1], "Profitability is often regarded as the most precise metric for evaluating the performance of banks in the banking sector. Such performance is typically measured using two key indicators: ROA and ROE." Gutiérrez-Ponce

and Wibowo (2023) [2] discovered that “the environment does not significantly impact ROE. Allocating funds to support social programs and initiatives puts banks at a disadvantage compared to competitors who do not participate in such activities. These competitors' stakeholders do not prioritize the financial performance of environmental practices, specific investment decisions, and similar initiatives in the future.”

Najam (2022) [3] stated, “The ROA metric is used to assess the financial sustainability of banks, serving as the dependent variable in this research. It measures a company's capacity to generate profits that are enough to sustain the company's value. Furthermore, the profitability ratio quantifies the firm's performance.” Gutiérrez-Ponce and Wibowo (2023) [4] discovered that the environmental variable does not substantially impact the financial performance of banks, as assessed by ROA.

Another researcher, Alam and Islam (2022) [5], argued that the loan-to-asset ratio and total assets were shown to have a beneficial influence on profitability, especially NIM, ROA, and ROE.

In his work, Kumari (2024) [6] mentioned that NIM is used to assess the effectiveness of financial intermediation by banks and is calculated as the difference between the lending and deposit rates, measured against the average assets of the banks.

Tenriola (2019) [7] highlighted that “Profitability is a critical factor in assessing a bank's overall performance, and a decline in profitability can impact the bank's ability to operate and undermine public confidence. For this reason, ROA is an important measure of profitability in the banking sector. Higher ROAs indicate greater profitability and a stronger position regarding asset utilization.”

Methodology

In this study, I embarked on a comprehensive investigation of specialized literature related to the critical topics of financial stability and profitability within the banking sector. To delve into these complexities, I applied a combination of methods: empirical analysis, which relies on data and real-world observations; theoretical analysis, which explores existing theories and concepts; and trend analysis, which examines patterns over time. This multifaceted approach allowed me to thoroughly evaluate the intricate relationship between banking profitability and financial stability. By synthesizing the findings from these diverse analytical techniques, I was able to pinpoint essential indicators that significantly impact both profitability and stability among financial institutions. This synthesis aimed to provide actionable insights that can guide strategic decision-making within the banking industry, paving the way for enhanced risk management practices and more robust regulatory compliance. Ultimately, this could contribute to the development of a more resilient banking system that withstands economic fluctuations. Furthermore, a deep understanding of these dynamics equips stakeholders with the knowledge necessary to make informed decisions, fostering long-term sustainability and growth. This insight empowers banks to adapt to ever-changing economic conditions and shifting consumer preferences, encouraging a culture of innovation and competitive advantage. By leveraging these valuable insights, financial institutions can position themselves more effectively to tackle challenges, embrace opportunities, and nurture a thriving financial ecosystem.

Discussion and results

Financial stability is the foundation of any country's long-term economic growth. Economic growth relies on a stable financial system that fosters investment, encourages savings, and promotes consumer confidence. Without this stability, nations may face volatility that can hinder development and lead to economic crises.

Bank financial stability refers to the effective execution of critical economic functions, including resource allocation, risk management, and dispersion. This stability enables the banking system to absorb shocks, evaluate fluctuations in financial risks, and allocate resources efficiently. Bank financial stability shows the flexibility of all financial-related activities and sectors to minimize losses and bank crises. Bank instability arises from inefficient banks, which can result in liquidity risk and subsequent shocks. As a result, financial fluctuations can lead to a reduction in economic efficiency. Scholars widely use the Z-score as an indicator of bank financial stability. A higher Z-score indicates a more stable bank.

Bank profitability is a measure of how effectively a bank manages its resources to maximize profits while minimizing costs. It reflects a delicate balance between the outputs — services and products offered — and the inputs — the resources utilized to provide them. Commercial banks are focused on achieving the highest levels of production with the least input, striving for efficiency that leads to enhanced financial performance. This aspect of banking is of great significance to both managers and investors. High profitability serves as a financial buffer, allowing banks to preserve their capital reserves, increase their market share, and attract additional investments. Essentially, bank profitability is calculated as the net income after taxes have been deducted, revealing the bank's actual profit. This figure takes into account the return on initial investments and illustrates how much profit has grown in comparison to the operating costs. To assess bank profitability, several key metrics are used, including revenue, capital, total assets, and earnings per share. These metrics can provide a clear picture of a bank's financial health. Importantly, sustained profitability is a strong indicator of growth potential and operational success, reflecting the effectiveness of resource management. Moreover, as profitability increases, corporations tend to reap even greater benefits, making the financial landscape increasingly rewarding. Among the various profitability indicators, the return on equity (ROE) stands out as a favored measure due to its ability to provide insights into how well a bank uses its equity to generate profits. In the face of an increasingly competitive banking environment, profitability plays a pivotal role in ensuring that banks operate efficiently and continue to develop. It acts as a cornerstone of stability and growth, directly influencing a bank's trajectory and its ability to thrive in the marketplace.

Understanding Bank Profitability: A Regression Model

In the first phase, create the following model: $ROE = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \dots + \alpha_n X_n$ where ROE is the bank profitability of bank.

- **ROE** is the dependent variable
- α_0 is a constant, representing the baseline ROE when other factors are zero.

- The core of the model lies in its independent variables, X_{it} . These are **internal factors** specific to each bank, grouped by j . These factors include:
 1. **Liquidity:** How easily assets can be converted to cash.
 2. **Non-performing loans (NPL):** Loans unlikely to be repaid.
 3. **Loan loss provision:** Funds set aside for potential loan defaults.
 4. **Bank size:** The overall scale of the bank.
 5. **Leverage:** The use of borrowed money to finance assets.
 6. **Non-interest income:** Income from fees, commissions, etc., not just loans.
 7. **Efficiency:** How effectively the bank manages its costs.
 8. **Bank credit growth:** The rate at which the bank's loans are increasing.
- β_j represents the **impact (effect) of these internal factors** on the bank's performance. The "lag variable" note suggests that the model might be looking at how past values of these internal factors affect current ROE.
- ϵ_{it} is the **disturbance term**, accounting for everything else that influences ROE but isn't explicitly included in the model.

In essence, this model seeks to quantify how various internal operational and financial characteristics of a bank explain its profitability, with a potential focus on the lingering effects of these factors over time.

Dynamic Model Analysis

In the second phase, a **dynamic model** is used to understand how bank profitability (measured by **ROE**) and bank stability (measured by the **Z-score**) influence each other over time.

The model is:

$$y_{it} = \beta_0 + \beta_1 y_{i,t-1} + \beta_2 y_{i,t-2} + v_1 x_{i,t-1} + v_2 x_{i,t-2} + \mu_t + \delta_i + \epsilon_{it}$$

Here:

- y represents either **bank profitability (ROE)** or **bank stability (Z-score)**.
- The model includes **lagged values of the dependent variable** ($y_{i,t-1}$, $y_{i,t-2}$), meaning current profitability/stability is influenced by its past values.
- x represents the **other key variable** (if y is ROE, then x is Z-score; if y is Z-score, then x is ROE), with its own lagged effects ($x_{i,t-1}$, $x_{i,t-2}$). This helps capture the dynamic interplay.
- μ_t accounts for **time-specific effects** (like economic trends affecting all banks in a given year).

- δ_i accounts for individual bank-specific effects (unique characteristics of each bank that don't change over time).
- ϵ_{it} is the random error term.

The Z-score, a key measure of bank stability, is calculated as: $Z\text{-score} = [E(\text{ROAA}) + E_{bq}/A_{bq}] / \sigma(\text{ROAA})$. This formula essentially measures how many standard deviations a bank's return on assets (ROAA) is above its expected value, relative to its volatility. A higher Z-score indicates greater stability.

Final Phase: Impact of Profitability on Stability

The final phase uses a separate model to specifically study the **impact of profitability on bank financial stability**.

This model is: $Z\text{-score} = \beta_0 + \sum_{j=1}^J v_j X_{it,j} + \epsilon_{it}$

Here:

- **Z-score** is the dependent variable (bank stability).
- **$X_{it,j}$** represents a group of internal bank factors as independent variables, including:
 1. Liquidity
 2. Credit risk
 3. Capital ratio
 4. Bank size
 5. Operating expenses
- **v_j** captures the effect of these lagged internal factors on the bank's profitability (implied, as these factors were used to explain profitability in the first phase, and now their impact on stability is being tested).
- **β_0** is a constant, and ϵ_{it} is the disturbance term.

In summary, this research uses a sophisticated, multi-step approach to disentangle the complex dynamic and direct relationships between bank profitability and financial stability, considering both past influences and various internal bank characteristics.

Return on Assets (ROA) serves as an indicator of profitability and functions as the dependent variable in this study. Conversely, the independent variables include the capital adequacy ratio (CAR), non-performing loans (NPL), efficiency ratio, loan-to-deposit ratio (LDR), and green banking disclosure. The ability of management to generate overall profits is evaluated using Return on Assets (ROA) (Edi, 2022). ROA serves as a generalized metric within the profitability ratio, which is one of the statistics used to assess financial success (Utari et al.,

2014). The higher the ROA, the greater the potential profit a business can generate and the more effectively it can utilize its assets. This increased profitability can enhance the company's appeal to investors. The formula for calculating ROA can be found in Van Horne and & Wachowicz (2021)¹:

$$ROA = \frac{\text{Net Income}}{\text{Total Assets}}$$

As LDR plays a significant role in a bank's health, impacting profitability, risk exposure, and overall financial stability. Overall financial stability is essential for maintaining investor confidence and ensuring regulatory compliance. A well-managed LDR can help banks optimize their liquidity and support sustainable growth in a competitive market. By carefully balancing loans and deposits, banks can not only enhance their operational efficiency but also better navigate economic fluctuations and changing consumer demands.

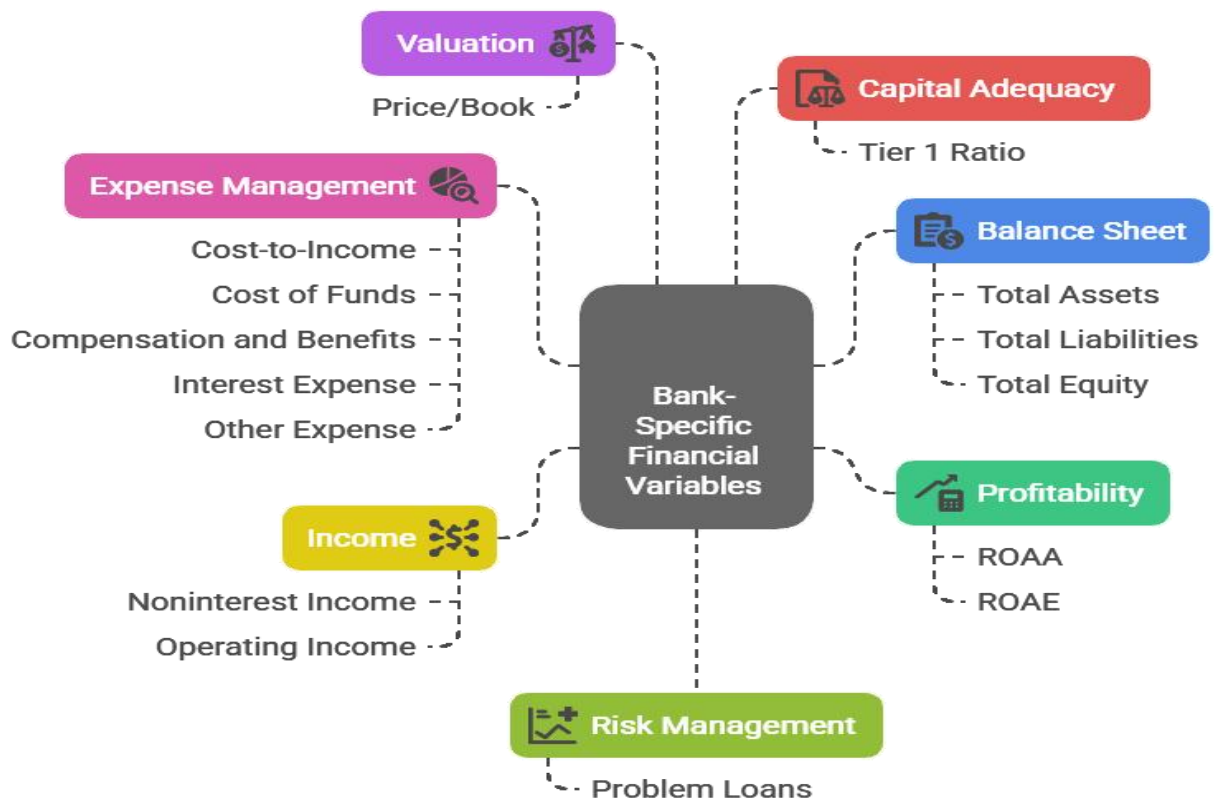


Figure 1. Bank – Specific Financial Variables

This graph provides a comprehensive overview of key bank-specific variables that are essential for analyzing the financial performance and stability of banking institutions. Each variable is defined clearly to facilitate understanding and application in financial assessments.

¹https://www.researchgate.net/publication/379820326_ARE_BANKING_FINANCIAL_PERFORMANCES_AND_GRE_EN_BANKING_DISCLOSURE_ASSOCIATED_WITH_BANK_PROFITABILITY

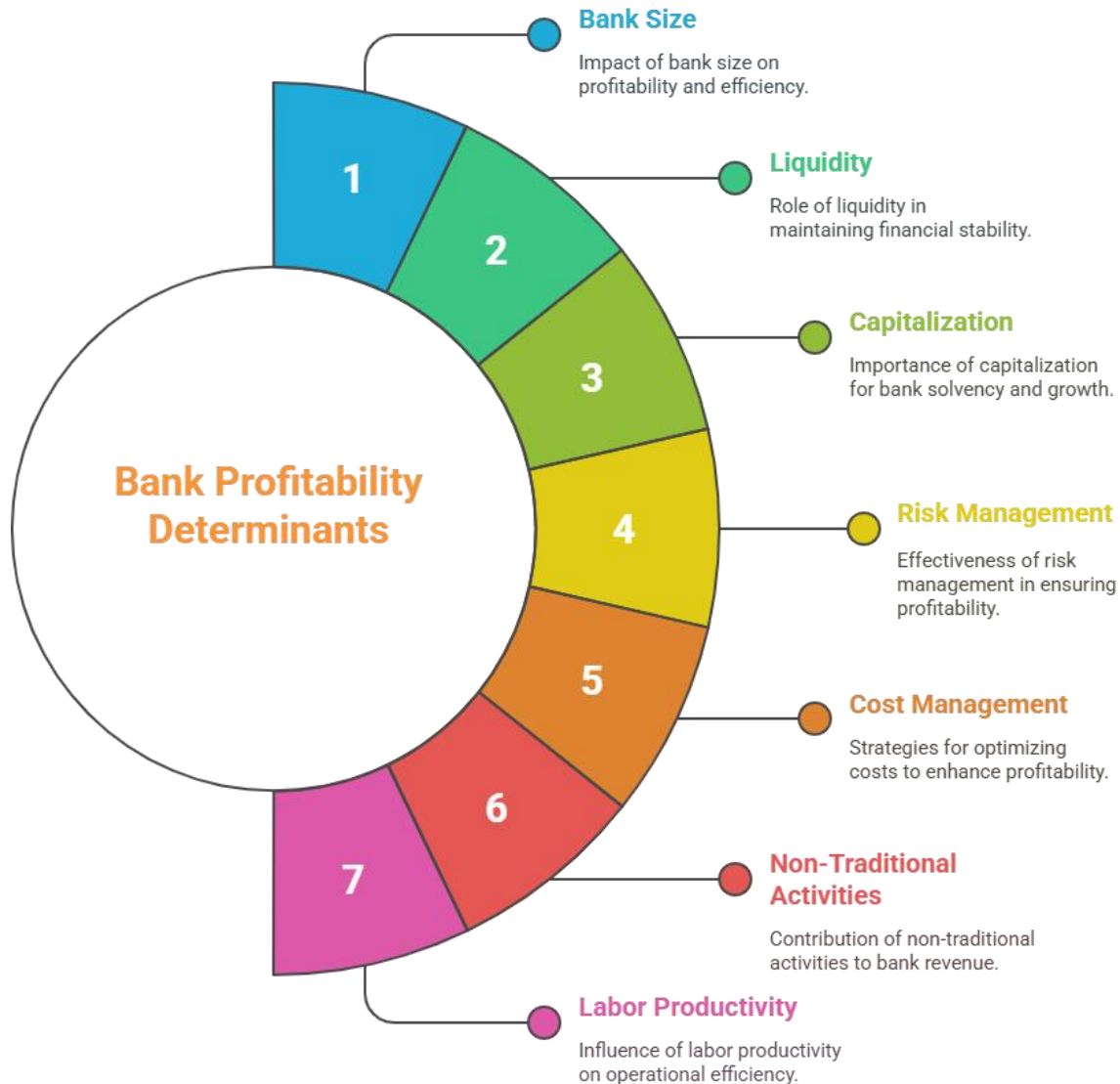


Figure 2. Bank-Specific Determinants of Bank Profitability

This graph explores the various bank-specific determinants that significantly influence bank profitability. Understanding these factors is crucial for stakeholders, including bank management, investors, and regulators, as they provide insights into how banks can optimize their operations and enhance their financial performance. The key determinants discussed include bank size, liquidity, capitalization, risk management, cost management, non-traditional activities, and labor productivity. Bank profitability is influenced by a variety of bank-specific determinants. By understanding and managing these factors effectively, banks can enhance their financial performance and ensure long-term sustainability in a competitive market. Stakeholders must pay close attention to these determinants to make informed decisions that drive profitability and growth.

According to the opinion of Athanasoglou in 2005 which “In performing its business, a State-owned banks have a purpose other than to serve the community; one of its main objectives is to

seek profit (profit-oriented). Profitability is the ability of banks to generate or obtain profits used to assess the extent to which banks can generate profits effectively and efficiently". Meanwhile, Duraj in 2015 conducted that, bank profitability is the ability of the company; in this case, the banking company in generating profits.

Conclusion

In conclusion, the quantitative analysis of key financial ratios and results reveals the critical and often intertwined nature of financial stability and profitability in the banking sector. The evidence suggests that maintaining adequate capital buffers, ensuring asset quality through effective credit risk management, and optimizing operational efficiency are paramount for banks to achieve both sustainable profitability and robust financial stability. These findings highlight the crucial need for bank management and regulatory bodies to vigilantly monitor these key ratios and strategically implement measures that cultivate a harmonious equilibrium between pursuing profitability and safeguarding the resilience of the financial system, thereby ensuring broader economic stability.

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