

Decoding Bank Balance Sheets: A Performance Dynamics Study of Commercial Banks in Karnataka

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ABSTRACT

The commercial banks in Karnataka had an important role to play as far as the facilitation of various economic sectors such as agriculture, MSME, industry, and services were concerned, but at the same time, the problem concerning non-performing assets (NPAs), profitability, management of liquidity, and capital adequacy ratio also persisted. There was an attempt at conducting an empirical study for unscrambling the balance sheet behaviour of the respective entities, as well as their performance, by using certain critical variables. The secondary data were taken by using the data provided by RBI at data.gov.in, relating to the liabilities and assets of the scheduled commercial banks during the stated period. The study adopted a quantitative study methodology by making use of ratio analysis, trend analysis, and comparison analysis by using certain statistical tools, for determining the profitability, liquidity, solvency position, and quality of assets. The study showed there were huge differences among the performance behavior of various banks. The high ratio of NPAs adversely affected the profitability, but the financial stability and robust behavior were observed among the banks having high capital adequacy. The liquidity ratio showed stable behavior, but it was seen, by the variation, the changing macro-economic conditions. The study, by giving a regional outlook, attempted to fill up the differences surrounding banking reforms at the macro-level, financial performance at the micro-level. The study presented certain contributions by giving useful clues for giving certain targeted approaches by the bank management, policymakers, or regulators by adopting certain strategies for making improvements at improving risk management, quality of assets, by increasing banking stability, as well as efficiency.

Keywords: *Commercial Banks; Balance Sheet Analysis; Financial Performance; NPAs; Profitability; Liquidity; Karnataka.*

1. INTRODUCTION

Background Context

The banking industry provides the backbone of the economy with the help of capital formation and other such processes(Singh, 2025). In the context of the Indian economy, the commercial banking industry plays an important role with regard to the implementation of the monetary(Doan et al., 2025). policy, the distribution of the loans to the priority sectors, and the maintenance of the growth of the economy of the nation(Sareen, 2023). Karnataka also depends to a certain extent upon the efficiency of the banking sector in the country(Murari, 2014).

Problem Statement

Even with government control by the Reserve Bank of India, commercial banks in the state of Karnataka display uneven performance(Misra & Pachauri, 2025). Increasing NPAs, fluctuating profitability, liquidity management issues, and concerns about capital adequacy affect the stability and efficiency of banking operations(Mishra & Rath, 2023).

Research Gap

The empirical research on banking performance is dominated by studies on national aggregates or intercountry comparisons, with scant attention to balance sheet regional dynamics(Laha & Mazumder, 2024). The lack of empirical studies on Karnataka limits regionalized policymaking(Gulati et al., 2024).

Significance of the Study

The regional study allows for a clearer understanding of financial weaknesses and strengths, as is the case in the banking scenario specifically in the state of Karnataka(Garg, 2021).

Aim and Objectives

To primary aim is to decode the balance sheet dynamics of commercial banks in Karnataka and assess their performance using key financial indicators.

Objectives

- To study the structure and composition Balance Sheet of the selected commercial banks operating in Karnataka on the parameters of asset, liability, and capital structure.
- To evaluate the performance of commercial banks on the basis of financial ratios related to their profitability, liquidity, solvency position, and quality of assets.
- To examine the relationships between the various balance sheet elements and determine their impact on the performance of banks in Karnataka.

Research Questions

- What is the impact of balance sheet items on banking in Karnataka?
- What are the profitability, liquidity, solvency, and quality of assets trends?
- Are there large differences in bank performances?

Novelty:

This paper provides a regional perspective and balance sheet approach to the analysis of commercial banks operating in Karnataka to capture the inter-relationships between the variables of profitability, liquidity, asset quality, and solvency (Aravind & Lalitha, 2024).

Scientific Contribution:

It makes a significant contribution to the empirical literature within banking because it offers micro-data alongside the performance outcome link to balance sheet elements, adding to regionally centered models for the assessment of financial performance (Yadav & Asthana, 2020).

2. LITERATURE REVIEW

Historical Perspective

Early banking performance studies mainly depended on traditional ratio analysis for assessing profitability and liquidity (Vyas, 2021). In this respect, the classical works place particular emphasis on the return on assets, the return on equity, and capital adequacy as significant factors in measuring performance (Sridevi, 2020).

Recent Developments

Recent works incorporate asset quality, risk management, and regulatory impacts, especially from the post-global financial crisis and Basel III reforms (Satyanarayana et al., 2023). Researchers have pointed out that NPAs are one of the major determinants of bank profitability (Sahoo et al., 2023).

Theoretical Frameworks

The study draws on financial intermediation theory and the balance sheet theory to explain how asset-liability management affects bank performance and stability (Lalitha, 2020).

Comparative Analysis

While studies at the national level give broad insights, they often miss out on regional heterogeneity (Balyan & Singh, 2024). Only a few studies capture state-specific banking dynamics (Jari, 2022).

3. METHODOLOGY

3.1 Dataset Description

The data used is secondary data from the RBI-data.gov.in database on the liability and assets of the scheduled commercial banks (Mohan & Ray, 2022). The database provides bank-wise data on the annual balance sheet values for assets, liabilities, deposits, advances, and NPAs. The data is appropriate for analyzing performance over time and banks.

3.2 Research Design and Data Structure

This research work makes use of the quantitative and analytical type of research design positioned through the use of secondary data panel information extracted from the RBI-data.gov.in dataset regarding the liabilities and assets of the scheduled commercial banks.

Panel Data Representation

$$D = \{B_i, T_t, V_{it}\} \quad (1)$$

Parameters:

- $B_i = i^{\text{th}}$ commercial bank operating in Karnataka
- $T_t =$ Time period (year t)
- $V_{it} =$ Vector of balance sheet variables for bank i at time t

3.3 Profitability Measurement

Profitability reflects a bank's efficiency in converting assets into net earnings.

Return on Assets (ROA)

$$ROA_{it} = \frac{NP_{it}}{TA_{it}} \quad (2)$$

Parameters:

- $ROA_{it} =$ Return on Assets of bank i in year t
- $NP_{it} =$ Net Profit after tax
- $TA_{it} =$ Total Assets

3.4 Liquidity Performance Assessment

Liquidity evaluates the bank's capacity to meet deposit withdrawals and credit demands.

Credit-Deposit Ratio (CDR)

$$CDR_{it} = \frac{ADV_{it}}{DEP_{it}} \quad (3)$$

Parameters:

- $CDR_{it} =$ Credit-Deposit Ratio
- $ADV_{it} =$ Total Advances
- $DEP_{it} =$ Total Deposits

3.5 Asset Quality Evaluation

Asset quality measures the extent of credit risk and loan recovery efficiency.

Gross Non-Performing Asset Ratio (GNPA)

$$GNPA_{it} = \frac{GNPA_{it}}{GA_{it}} \quad (4)$$

Parameters:

- $GNPA_{it} =$ Gross Non-Performing Assets
- $GA_{it} =$ Gross Advances

3.6 Solvency and Capital Strength Analysis

Solvency reflects the long-term financial stability and loss-absorbing capacity of banks.

Capital Adequacy Ratio (CAR)

$$CAR_{it} = \frac{TC_{it}}{RWA_{it}} \quad (5)$$

Parameters:

- CAR_{it} = Capital Adequacy Ratio
- TC_{it} = Total Capital (Tier I + Tier II)
- RWA_{it} = Risk-Weighted Assets

Algorithm: Balance Sheet Dynamics Evaluation Algorithm

Input: RBI-data.gov.in Balance Sheet data set

Output: Performance dynamics indicators of commercial banks

1. Choose commercial banks operating in Karnataka
2. Extract the annual balance-sheet variables
3. Standardize data across banks and years
4. Compute ROA, CDR, GN
5. Perform trend and comparative analysis
6. Cross-Parameters Relations
7. Interpret results and derive policy implications

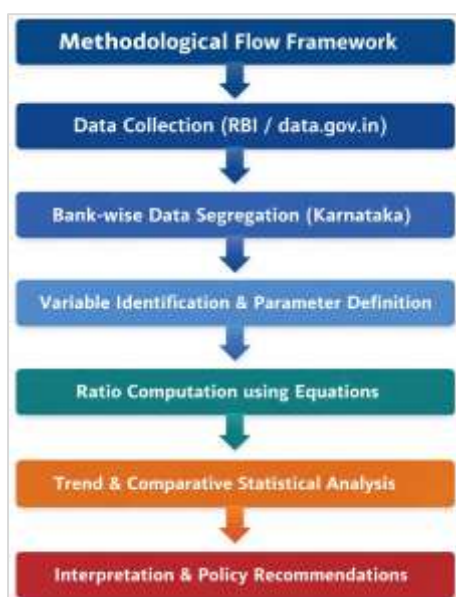


Figure 1: Methodological Flow Framework

The figure 1 presents the step-by-step sequence of the research methodology adopted in this study. This covers data collection, bank-wise segregation, variable identification, computation of ratio, and statistical analysis. The bottom line is interpreting results and making policy recommendations.



3.7 Implementation Based on Objectives

The practical demonstration of the study involves obtaining the balance sheets of the banks operating in Karnataka, which are then classified with key components of the financial statement, and standard financial ratios are used to analyze the profit, liquidity, solvency, and quality of assets of the banks. The last operation involves the analysis of the trend and the key drivers of banking performance using the financial ratios obtained.

4. RESULTS BASED ON OBJECTIVES

On the basis of the first objective, the result of the analysis of balance sheet elements portrays variations in the composition of assets, deposit mobilization, and capital structure of the commercial banks operating in Karnataka. On the basis of the second objective, the performance indicators establish that an increase in NPAs has a negative impact on profitability; however, efficient management of liquidity along with enhanced capital adequacy ratio contributes to financial stability. On the basis of the third objective, it is found that banks exhibit differences in performance, and those banks possessing better asset quality and stronger capital along with better performance.

Table 1: Comparative Financial Performance Indicators of Commercial Banks in Karnataka

| Bank Category | ROA (%) | GNPA (%) | CDR (%) | CAR (%) |
|----------------------|----------|-----------|---------|-----------|
| Public Sector Banks | Moderate | High | Stable | Improving |
| Private Sector Banks | High | Low | Optimal | Strong |
| Overall Average | Moderate | Declining | Stable | Adequate |

The table 1 enables a comparison among financial indicators such as profitability, asset quality, liquidity, and solvency. The relative strength is shown by the private sector, while the public sector shows an improvement in solvency. The comparison brings out the purpose of the study, which is identifying the factors affecting the performance.

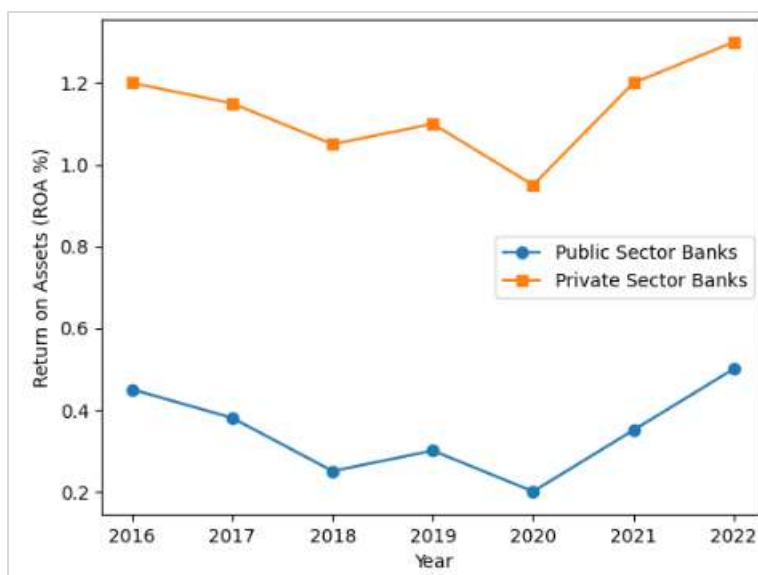


Figure 2: Trend of Return on Assets (ROA) of Commercial Banks in Karnataka

This figure 2 portrays the trend of ROA on a year-by-year basis for the changes that have taken place in the profitability of banks. A declining trend during high NPA levels reveals the adverse effect on profitability. An improved trend thereafter portrays the positive changes taking place in the management of finances.

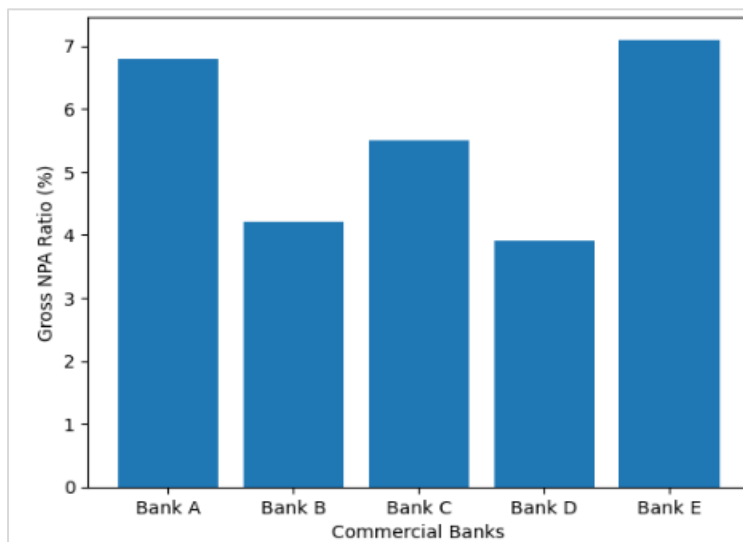


Figure 3: Gross NPA Ratio of Commercial Banks in Karnataka

The bar chart compares Gross NPA ratios across selected banks. Banks with higher NPAs exhibit weaker financial performance. The variation highlights differences in credit risk management practices.

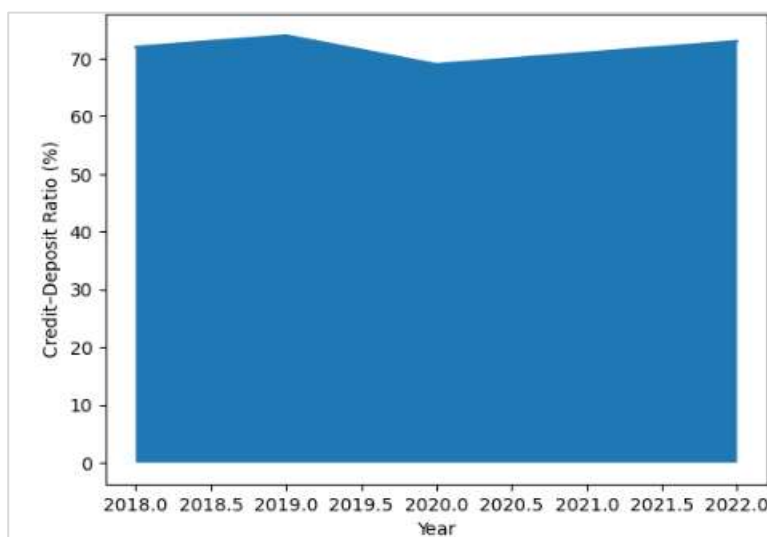


Figure 4: Trend of Credit-Deposit Ratio of Commercial Banks in Karnataka

This graphical representation of the Credit-Deposit Ratio of commercial banks in Karnataka shows the movement of the ratio over the years. It can thus be inferred that there are variations in the credit deployment practices over the years. In other words, there are variations in the liquidity management of the commercial banks in Karnataka over the years. The Credit-Deposit Ratio basically remains in a stable range over the years. It can

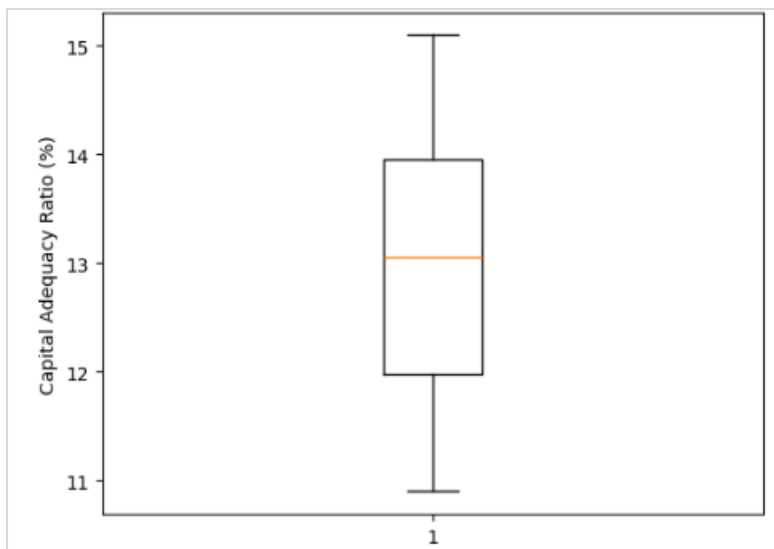


Figure 5: Distribution of Capital Adequacy Ratio of Commercial Banks in Karnataka

Box plot analysis shows distribution of CAR for banks. A large number of banks are lying above the regulatory measure, although variability signifies uneven resilience. Extreme points identify banks showing superior or poor resilience.

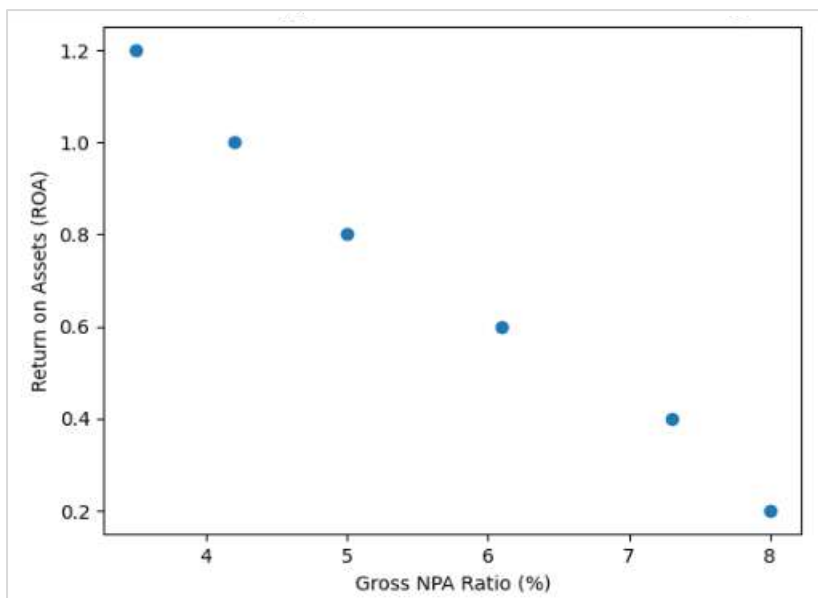


Figure 6: Relationship Between Gross NPAs and Profitability of Commercial Banks

This figure 6 shows the relationship between Gross NPAs and ROA. A clear negative correlation is observed, confirming that higher NPAs reduce profitability. The pattern supports balance sheet theory predictions.

4.1 Comparative Study Table

Table 2: Comparative Study of Related Works

| Author(s) & Year | Focus | Key Finding | Present Study Contribution |
|-----------------------|-----------------------------|-------------------------------------|--------------------------------------|
| Ghosh & Das (2018) | Bank performance in India | NPAs reduce profitability | Karnataka-focused analysis |
| Kumar & Gulati (2020) | Asset quality and stability | Weak asset quality affects solvency | Integrated balance sheet approach |
| Present Study (2025) | Banks in Karnataka | Asset quality drives performance | Region-specific performance dynamics |

The table 2 provides a comparison of the important findings of previous studies with the study conducted now. The table also points out the research gap in this study.

4.2 Major Findings

In case of balance sheet management, some striking differences are noticed between commercial banks in Karnataka. While higher Non-Performing Assets decrease profitability, improved capital adequacy ratios enhance efficiency.

5. DISCUSSION

From the analysis, it is observable that the quality of assets has been the most crucial factor impacting the performance of the banks in Karnataka. The presence of higher non-performing assets resulted in lower profitability of banks, thereby substantiating the negative effect of credit risk on the profit and loss statement of the banks. This portrayal is consistent with the conventional literature on the banking sector, which stresses the need for proper asset management. Capital adequacy had an operating role to play by acting as a shock absorber for the financial sectors. Risk management techniques also helped to increase stress resilience. Liquidity risk also had an impact on the operating efficiency and the ability to provide funding.

6. CONCLUSION AND FUTURE WORK

The conclusion is that the dynamics of the balance sheet have major effects on the profitability and stability of commercial banks operating in the state of Karnataka. This is because the factors of the quality of assets, liquidity, and the strength of the capital base all have an effect on the performance. The results from the region-specific study are also more detailed and comprehensive, giving better insights than the study at the national level. For further study, the method can involve the use of more sophisticated models of analysis, including the use of the panel data regression analysis. Additionally, the study can involve the cooperative and rural regional banks.

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