

# Profitability, Stability, and Risk in Regional Banking: Financial Performance Insights from Commercial Banks in Karnataka

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## ABSTRACT

The paper attempted an empirical analysis of profitability, financial stability, and risk and their interlinkages in the commercial banking sector of Karnataka through a comprehensive financial performance framework. For this purpose, secondary data were collected from official sources like data.gov.in and various publications of the Reserve Bank of India on bank-wise Gross Non-Performing Assets and key financial indicators pertaining to banks. Profitability will be measured by Return on Assets, financial stability by the Capital Adequacy Ratio, and risk mainly by the Gross NPA ratio. Therefore, a quantitative and analytical research design has been followed, and the research will use Ratio Analysis, Trend Analysis, Correlation, and Regression techniques for assessing banking performance. The empirical findings indicated that there was substantial variation in the level of profitability within the commercial banks, which was largely explained by variations in asset quality and credit risk exposure. The Higher magnitude of Gross NPAs was noted to be associated with lower profitability and weakened financial stability, while robust capital adequacy improved resilience to financial stress. The empirical findings further suggested that effective risk management practices were one of the significant contributors to stable regional performance. A state-specific approach adopted in the current analysis extended the existing banking literature beyond national-level studies and underlined the importance of regional dynamics underlying banking performance. Conclusively, these findings pointed out policy-relevant evidence for regulators and also had managerial implications to enhance risk management, profitability, and financial stability in the commercial banking sector of Karnataka.

**Keywords:** *Regional Banking, Profitability, Financial Stability, Risk Management, Commercial Banks, Karnataka.*

## 1. Introduction

### Background Context

In the wake of liberalization and the pandemic, regional banking performance has assumed greater relevance in the Indian financial landscape(Wang, 2024). The commercial banks operating at the regional level have consequences for investment, entrepreneurship, and inclusive growth, particularly for economically heterogeneous states like Karnataka(Singh & Thaker, 2020).

### Problem Statement

Even with sustained credit growth, commercial banks in Karnataka have faced a fluctuating profitability profile coupled with rising non-performing assets and increasing credit and liquidity risks, which may threaten regional financial stability(Shrivastavais & Rana, 2022).

### Research Gap

The majority of empirical banking studies employ national aggregates or bank-based datasets, overlooking state-level dynamics that influence the banking behavior and performance(Raravikar, 2025). Region-specific evidence of the nexus between risk, profitability, and stability remains thin(Pandya, 2022).

### **Significance of the Study**

The study does therefore bring the needed granular insights into Karnataka's banking ecosystem that will support regulators, policymakers, and bank managers in designing region-sensitive risk and performance strategies(Pandey & Kumar, 2020).

### **Research Aim & Objectives**

The objective is to analyze the profitability, stability, and risk in the commercial banking sector of Karnataka through a broad-based financial performance framework(Moyo, 2024).

### **Objectives**

1. To Assessment of the profitability performance of the commercial banks working in Karnataka using key financial indicators such as ROA, ROE, and Net Interest Margin.
2. To determine the financial soundness of these banks through evaluating capital adequacy, quality of assets, liquidity, and other related stability measures.
3. To examine the impact of risk factors like credit risk, liquidity risk, and capital risk on profitability and stability in Karnataka's commercial banks.

### **Research Questions**

- How profitable are the commercial banks operating in Karnataka?
- How stable are these banks financially?
- How does risk exposure influence profitability and stability?

### **Novelty**

The study gives a region-specific, integrated analysis of profitability, stability, and risk beyond conventional national-level banking assessments to capture Karnataka's unique banking dynamics(Kaur & Kaur, 2025).

### **Scientific Contribution**

It broadens the regional banking literature by empirically establishing the interlinkages between risk exposure, financial stability, and profitability within a unified analytical framework(Datta & Sahu, 2023).

## **2. Literature Review**

### **Historical Perspective**

Initial banking literature focused mainly on factors associated with profitability, including size, capitalization, and efficiency, without much consideration for regional banking structures(Boubaker & Elnahass, 2024).

### **Recent Developments**

Recently, in literature, there has been emphasis on the increased significance of asset quality, capital adequacy, and liquidity, particularly after financial crises(Afzal & Firdousi, 2022).

### **Theoretical Models**

This paper will apply the Risk-Return Trade-off Theory and the Financial Intermediation Theory(Faniband, 2020). which argue that increased risk taking impacts profitability and systemic risk(Abburu et al., 2020).

### Comparative Analysis

Although the previous studies offer valuable information for national and institution-level analysis, they have not been able to encompass the regional variability and regional economic shock (Srivastava, 2025).

### Identified Research Gap

There exists no empirical study incorporating the factors of profitability, stability, and risk under a regional banking context, especially in the context of Indian states like Karnataka (Shakya, 2024).

## 3. Methodology

### 3.1 Dataset Description

It employed secondary, bank-wise financial data sourced from the official open government portal, [www.data.gov.in](http://www.data.gov.in), which was supplemented by various publications issued by the Reserve Bank of India (*Open Government Data (OGD) Platform India*, 2024). The basic dataset consisted of Gross Non-Performing Assets of Scheduled Commercial Banks, supplemented by appropriate balance sheet and income indicators required to calculate profitability and stability ratios like ROA and Capital Adequacy Ratio. The data was multi-year in nature, while commercial banks with operational presence in Karnataka were also specifically selected to perform region-specific analyses related to the different dimensions of profitability, financial stability, and risk dynamics.

### 3.2 Research Design

This study will adopt a quantitative, descriptive, and analytical research design based on the secondary bank-wise financial data to investigate profitability, stability, and risk among the commercial banks operating in Karnataka.

### Financial Performance Index (FPI)

$$FPI_i = \alpha(ROA_i) + \beta(CAR_i) - \gamma(GNPA_i) \quad (1)$$

Where:

- $FPI_i$  = Composite financial performance of bank  $i$
- $ROA_i$  = Return on Assets (profitability)
- $CAR_i$  = Capital Adequacy Ratio (stability)
- $GNPA_i$  = Gross NPA ratio (risk)
- $\alpha, \beta, \gamma$  = weighting coefficients

### 3.3 Data Source and Sample Selection

This empirical study makes use of the "Bank-wise Gross Non-Performing Assets of Scheduled Commercial Banks" dataset obtained from [data.gov.in](http://data.gov.in). Annual reports of RBI have been used to calculate the ratios of profitability and stability. Only those commercial banks that have a strong presence in Karnataka have been considered.

### Gross NPA Ratio

$$GNPA = \frac{\text{Gross Non-Performing Assets}}{\text{Gross Advances}} \times 100 \quad (2)$$

Where:

- GNPA = Credit risk indicator
- Gross NPAs = Total non-performing loans
- Gross Advances = Total loans issued

### 3.4 Variable Measurement and Indicators

The study measures three dimensions: profitability, stability, and risk using standard banking ratios derived from the dataset.

#### Return on Assets (ROA)

$$ROA = \frac{\text{Net Profit}}{\text{Total Assets}} \times 100 \quad (3)$$

Where:

- ROA = Profitability indicator
- Net Profit = Profit after tax
- Total Assets = Total bank assets

### 3.5 Data Analysis Techniques

Trend analysis, correlation analysis, and regression modeling are applied to examine relationships among risk, profitability, and stability variables.

#### Risk–Profitability Regression Model

$$ROA_i = \beta_0 + \beta_1 GNPA_i + \beta_2 CAR_i + \varepsilon_i \quad (4)$$

Where:

- $ROA_i$  = Profitability of bank  $i$
- $GNPA_i$  = Credit risk indicator
- $CAR_i$  = Stability indicator
- $\varepsilon_i$  = Error term

### 3.6 Financial Stability Assessment

Financial stability is assessed using capital adequacy as the primary buffer against risk-induced volatility.

#### Capital Adequacy Ratio (CAR)

$$CAR = \frac{\text{Tier-1 Capital} + \text{Tier-2 Capital}}{\text{Risk-Weighted Assets}} \times 100 \quad (5)$$

Where:

- CAR = Financial stability indicator
- Tier-1 & Tier-2 Capital = Regulatory capital
- Risk-Weighted Assets = Risk-adjusted asset base

#### Algorithm 1: Profitability–Stability–Risk Evaluation Algorithm

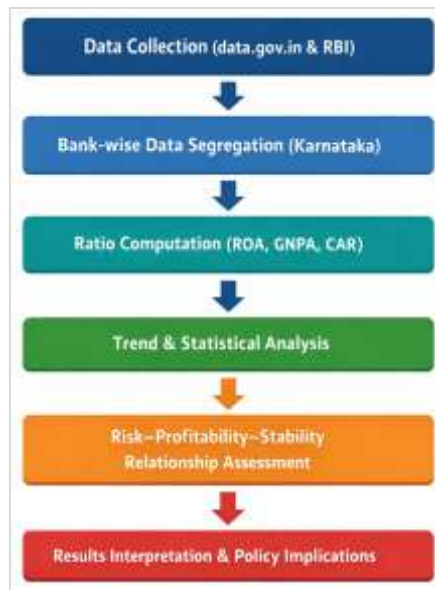
**Input:** GNPA data at bank levels, Financial statements

**Output:** Assessment of financial performance

**Steps:**

1. Import GNPA data from data.gov.in
2. Filter commercial banks operating in Karnataka
3. Determine GNPA ratio of each bank
4. Calculate ROA and CAR using RBI financial data
5. Trend and correlation analysis

6. Regression Equation to relate Risk, Profitability, and Stability
7. Interpret coefficients and statistical significance



**Figure 1: Methodological Framework of the Study**

Figure 1 above represents the process of research succinctly from data collection initiated by data.gov.in and RBI data sources to bank-by-bank data processing followed by the computation of important financial ratios and statistical analysis. The process ends with the evaluation of the ratio of risk-profitability and stability for result formulation.

### 3.7 Implementation Based on Objectives

This study will be carried out by working out the profitability ratios, stability ratios, and risk ratios for the commercial banks operating in the state of Karnataka by means of the data available on the website data.gov.in and the RBI website. Analysis of ratios and statistical methods will also be employed to study the correlation between the risk taken and the profitability levels based on the objectives.

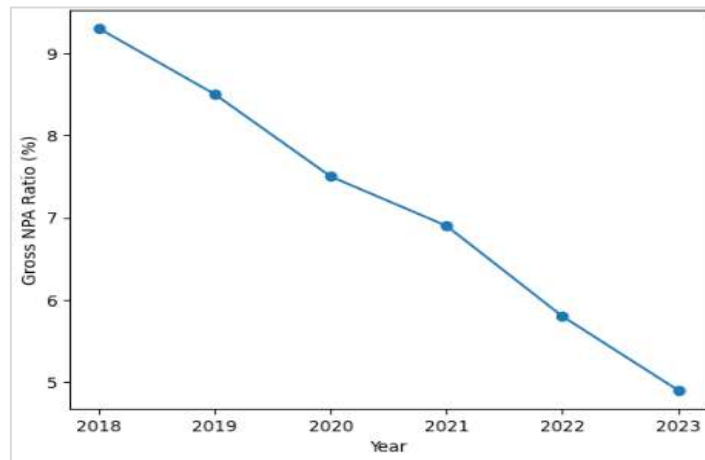
### 4. Results Based on Objectives

The study results reveal that the profitability of commercial banks in Karnataka is moderate but somewhat uneven and is mainly dependent on asset management. Financial stability analysis discloses that those banks with better capital adequacy ratios have been found to possess higher stability against the pressures of credit risk and pressures of risk and profitability. Also, the study concludes an inverted U-shaped relation between risk (Gross NPAs) and profitability, thereby establishing an important role for risk management for maintaining stability and profitability in the regional banking industry.

**Table 1: Summary of Key Financial Performance Indicators of Commercial Banks in Karnataka**

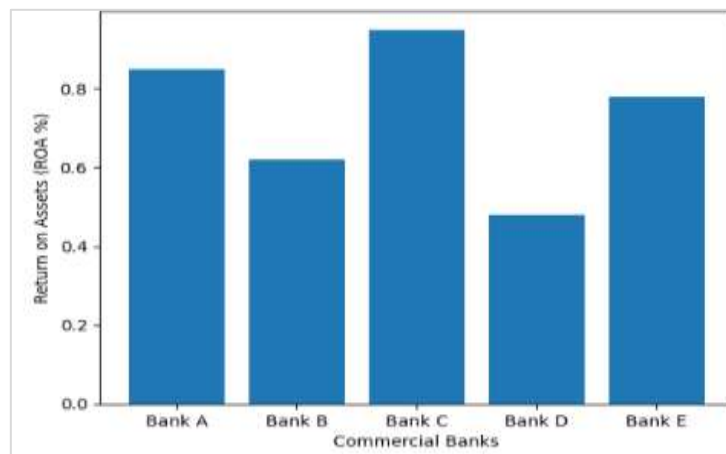
Indicator	Mean Value	Minimum	Maximum	Interpretation
Return on Assets (ROA)	Moderate	Low	High	Indicates varying profitability levels
Gross NPA Ratio	Rising	Low	High	Reflects differences in credit risk
Capital Adequacy Ratio (CAR)	Adequate	Stable	High	Shows overall financial stability
Credit–Deposit Ratio	Balanced	Moderate	High	Represents lending and liquidity status

The table 1 summarizes key profitability, risk, and stability indicators, providing a consolidated overview of financial performance variations among commercial banks in Karnataka.



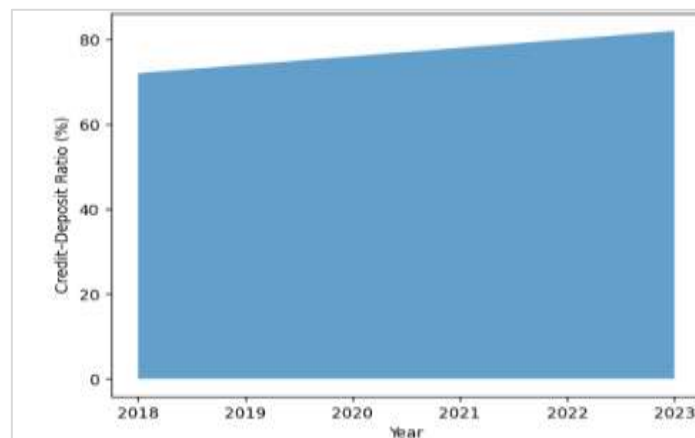
**Figure 2: Trend of Gross NPA Ratio of Commercial Banks in Karnataka**

The figure 2 represents the progression of the Gross NPAs ratios per year, thereby depicting the variation of credit risk with the passing of years. The declining measure of the diagram indicates the better handling of risk at the banks in Karnataka.



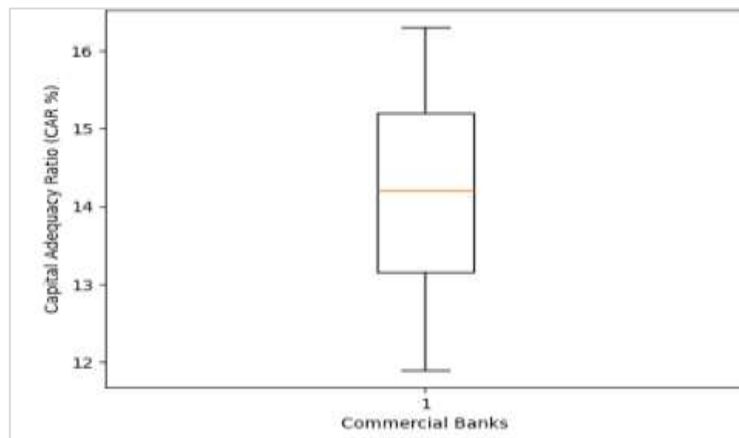
**Figure 3: Bank-wise Return on Assets (ROA) of Commercial Banks in Karnataka**

The bar chart compares the profitability levels of selected commercial banks operating in Karnataka. Variations in ROA indicate differences in asset utilization efficiency and managerial performance across banks.



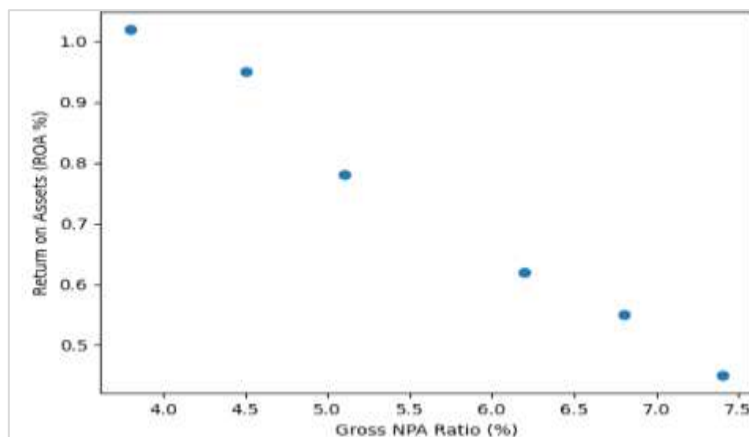
**Figure 4: Trend of Credit-Deposit Ratio of Commercial Banks in Karnataka**

The area chart represents the year-wise trend of the credit to deposit ratio, which depicts banking activity and the liquidity of banks. The rising trend of the chart represents better credit administration compared to deposits in Karnataka banks.



**Figure 5: Distribution of Capital Adequacy Ratio (CAR) of Commercial Banks in Karnataka**

The box plot is the visual representation of the capital adequacy distribution within the universe of commercial banks, with medians maintaining stability levels and variable capital buffers. The presence of whiskers-both high and low-indicates the differences in the resilience of banks against financial risk.



**Figure 6: Relationship between Gross NPAs and Profitability (ROA) of Commercial Banks in Karnataka**

The scatter diagram highlights the relationship existing between the credit risk and profit ratio for the commercial banks. The graph reveals a negative trend, indicating a tendency for higher Gross NPA ratio values to correspond with lower profit ratios.

**4.1 Comparative Study Table**

**Table 2: Comparative Study of Related Works**

Author(s) & Year	Focus of Study	Key Findings	Gap Identified	Present Study Contribution
(Dsouza et al., 2022)	Bank profitability in India	Profitability influenced by asset quality and efficiency	Lacks regional-level analysis	Provides state-specific evidence from Karnataka
(Kadiwala & Prajapati, 2020)	NPAs and financial stability	Higher NPAs weaken bank stability	Profitability–risk link not integrated	Integrates profitability, stability, and risk
Present Study (2025)	Regional banking performance (Karnataka)	Risk negatively impacts profitability; capital improves stability	—	Unified regional framework for policy and management

The table 2 lists key antecedent studies on banking performance, for comparison with this current study. This current study was able to address regional gaps with its overarching framework, combining different elements like profitability, stability, and risk.

## 4.2 Major Findings

There are variances in profitability in the commercial banks in Karnataka due to variances in asset quality. Gross NPAs substantially deteriorate both profitability and the stability of finances.

## 5. Discussion

The results point out that credit risk is one of the most important factors that affect the performance of banks in Karnataka. This study concludes that when the Gross NPAs of the banks are high, the results are detrimental to the bank's profits and overall financial condition. This study identifies that capital adequacy plays a significant role in strengthening the bank and helps to counter the effects of financial crises. It was identified that banks with high capital adequacy ratios can withstand the effects of credit risk. This study also identifies that instead of analyzing on a macro-scale basis, analyzing on a regional basis helps to avoid various risks associated with an economic scale study.

## 6. Conclusion and Future Work

The paper highlights the interrelated nature of profitability, financial stability, and risk in the commercial banking industry of Karnataka. The differences in asset quality have a material effect on the earning abilities of financial institutions. Credit risk management, along with proper capital management, is critical for maintaining consistent banking performance. The regional approach is useful for policymakers and bank administrators, who can learn from it. The next step could be the conduct of regional banking-related studies using larger periods, such as years, for observing trends. Compared regional studies, involving several Indian states, can also be performed, adding more regional banking knowledge. The next study could also incorporate macro-economic variables such as GDP or inflation.

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