

THE FINANCIAL STABILITY OF THE BANKING SECTOR: AN EMPIRICAL INVESTIGATION USING THE CAMEL RATING APPROACH

Lamaan Sami *, Farhin Anjum **, Mohd Shamim Ansari *, Baby Iffat *

* Department of Commerce, Aligarh Muslim University, Aligarh, India

** Corresponding author, Department of Commerce, Aligarh Muslim University, Aligarh, India
Contact details: Department of Commerce, Aligarh Muslim University, Aligarh, Uttar Pradesh, India



Abstract

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The study compares the CAMEL ratings of five central Indian commercial banks over 12 years (2011–2022). The findings indicate that most banks received a rating of 1, with an average capital adequacy ratio (CAR) of 15.18 percent. Maintaining low non-performing loan (NPL) rates is a priority for Indian banks, as reflected in the average of 1.98 percent with a grade of 2. The research concludes that these banks are well-managed, showcasing an average operational efficiency/income ratio of 40 percent (rated 3), signifying good managerial efficiency. This suggests banks can meet short-term customer commitments and withdrawals adequately. Notably, State Bank of India (SBI) and Punjab National Bank (PNB) received a grade of 2, while Axis Bank, Industrial Credit and Investment Corporation of India (ICICI) Bank, and Housing Development Finance Corporation (HDFC) Bank scored a rating of 1. The study indicates that private sector banks outperform their public sector counterparts across all CAMEL model parameters, showcasing more robust performance metrics. The paper advises Indian banks to invest in the long run, watch their risks, and aim for steady growth and profit. The study emphasises the importance of capital, assets, and management for a healthy banking system, suggesting improvements in earnings and liquidity management for overall stability and growth.

Keywords: Capital Adequacy, Asset Quality, Return on Assets, Liquidity, Composite CAMEL Rating

Authors' individual contribution: Conceptualisation — F.A.; Methodology — F.A.; Resources — B.I.; Writing — Original Draft — F.A.; Writing — Review & Editing — F.A.; Supervision — M.S.A.; Funding Acquisition — L.S.

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1. INTRODUCTION

The banking sector is one of the pillars on which the global economy's development, specifically the Indian national economy, depends. As the primary source of business funding, it is

crucial for fostering economic progress. According to Ally (2022), financial markets and institutions rely heavily on the banking system. Hawaldar et al. (2017) state that the banking industry significantly affects financial inclusion in the national economy. To provide a wide range of banking services throughout India and to maintain a competitive edge

in the region, Indian commercial banks are adopting proactive measures to enhance the quality of financial services. The banking industry's efficiency is measured using the Uniform Financial Institution Rating System (UFIRS), created in 1997 and based on the CAMEL financial supervision system. The Basel Committee suggested this structure in 1988 to standardise supervisors' ratings. This methodology further breaks into ratios that assess capital adequacy, asset quality, operational efficiency, earnings, and liquidity (Anjum & Ansari, 2023).

A chief executive officer's (CEO's) primary responsibility is to increase the profit for the shareholders, who are the company's financial backers (Haroon & Zaka, 2023; Andrian & Pangestu, 2022; Banyu & Bull Schaefer, 2022; Debnath et al., 2021). As a result, technical analysis methods are utilised to evaluate financial institutions. There have been several recent attempts to use the CAMEL model to evaluate bank performance (Kumari, 2017; Ishaq et al., 2016; Kumar & Sayani, 2015; Gupta, 2014); however, the results have been mixed. Financial ratios are employed to establish the connection between variables and the impact one might have on the others. In terms of performance, many company valuation models direct the companies.

Nevertheless, many past studies have verified CAMEL's suitability for evaluating financial institutions (Kumar et al., 2019). Therefore, according to Roman and Şargu (2013), CAMEL should be used as a benchmark to assess the banking industry's health. It is also categorised as a system for ranking foreign supervisors. This research, therefore, proposes that the CAMEL framework may prove helpful in evaluating the economic health of Indian commercial banks. This research compares the CAMEL ratings of different Indian commercial banks to conclude their relative performance.

The article aims to:

1) measure financial performance: using the CAMEL rating, it evaluates how different banks perform financially, considering factors like capital adequacy, asset quality, management efficiency, earnings, and liquidity;

2) identify differences: it aims to uncover and analyse the variations in financial performance among selected banks, highlighting their distinct strengths and weaknesses.

In simpler terms, the objectives are to assess how well banks are doing financially using the CAMEL rating and to pinpoint what makes each bank's financial performance different from the others. In addition, the findings provide a way to empirically rate Indian commercial banks' vulnerabilities and risks, which these institutions may use to manage their growth better.

The remainder of this paper is structured as follows. Section 2 examines the literature that evaluates banks using the CAMEL framework. Section 3 provides background information on the data and sample selection as well as the CAMEL composite rating criteria and findings. Section 4 lays out the primary results. Section 5 presents the discussion. Section 6 offers the conclusion of the research work.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Researchers and academics have used the CAMEL approach to analyse bank performance and methodologies over various periods. This part fills in some of the gaps in the current study by describing the critical components of CAMEL and discussing several necessary empirical investigations that try to evaluate the financial soundness of banks.

HakizakubanaNgoboka and Gatauwa (2020) used Rwanda as an example, employing the CAMEL rating system to determine the financial soundness of commercial banks between 2014 and 2018. They investigated the existence of eleven banks in the Rwandan market in depth. Panel regression was utilized. The investigation demonstrated that capital sufficiency and asset quality had a beneficial impact on measuring financial success. There is a negative correlation between efficient management, managing liquidity, and managing earnings. For return on assets (ROA) prediction, however, only managerial efficiency is statistically significant. While financial stability was employed in the current study, ROA was used in the previous research to assess bank performance.

Huu Nguyen et al. (2020) used the CAMEL model to evaluate the performance of Vietnam's commercial banks. The survey included 31 Vietnamese commercial banks during six years from 2013 to 2018. CAMEL's four core indicators were employed as independent variables in the fixed effects model (FEM), ordinary least squares (OLS), and random effects model (REM), while ROA, return on equity (ROE), and net interest margin (NIM) were used as dependent variables. The study's findings revealed that the performance of Vietnamese commercial banks was impacted by capital sufficiency, asset quality, liquidity, and management efficiency, which are all critical considerations.

This ratio-based model was established in 1979 and was eventually approved by the Federal Financial Institutions Examination Council in the United States of America (Barr et al., 2002). To guarantee that all banks are evaluated uniformly, UFIRS revised capital requirements, asset quality, managerial efficiency, profitability, liquidity, and market risk sensitivity (Dang, 2011). These factors quantify the efficiency and efficacy of global financial systems (Krainer & Lopez, 2004). Dembel (2020) investigated commercial and non-commercial banks in Iran to analyse the financial soundness of the chosen institutions using the CAMEL model. They selected eleven commercial and eleven non-commercial banks for this investigation. The logistic regression model and correlation were employed to investigate the variables' connection. The study outcomes revealed a substantial link between capital, asset quality, management quality, and profit quality, which are CAMEL model components. The Capital Adequacy Ratio Index is for public and private non-commercial banks and credit institutions. It was also discovered that there were no substantial disparities in capital adequacy levels between commercial and non-commercial banks or financial stability.

The evaluation works according to this model, which considers the level of sophistication of the bank's activities and risk profile. The CAMEL

rating method considers five financial ratios to estimate a bank's economic performance. This strategy emphasises the bank's managerial and financial records to identify weaknesses and evaluate risk exposure. Samuel (2018) claimed that CAMEL was an efficient and reliable instrument for analysing banks' financial results since it could assist managers in spotting the origins of economic troubles in the bank. CAMEL was considered an efficient and accurate instrument. One of the reasons CAMEL was regarded as an excellent and dependable approach to evaluating the monetary efficiency of financial institutions like banks is that. In addition, Babu and Kumar (2017) suggested that a model like this would be suitable for maintaining the responsibility of banks and their continuous existence.

According to what has previously been said in the research, the particular financial measures applied within the context of the CAMEL framework are the basis for the financial examination of the performance of banks. This approach assigns a rating to the banking industry based on performance in five crucial areas. These areas are capital standards, asset utilisation, operational efficiency, earnings, adequate liquidity, and sufficiency of liquidity.

In addition, each of the five CAMEL components receives a rating between 1 and 5, with 1 denoting a solid financial situation and 5 meaning a bad one. The following provides a definition and explanation of each of these parameters. According to Ezeagba (2014), capital adequacy ratio (CAR) refers to a circumstance wherein the modified capital can absorb unanticipated losses. In addition, it indicates the bank's ability to meet the minimum capital requirements to control the possibility of loss.

In light of this, having sufficient capital should motivate the bank manager to have at least the required capitalization amount. Chen (2003) contends that CAR significantly boosts depositors' confidence and keeps the financial institution from going bankrupt, two mutually supportive goals. The classification of capital into Tier 1 and Tier 2 is necessary for the calculation of CAR. The first category comprises reserves and owners' equity, whereas the second comprises subordinated bank debt (Basel Accords 1 and 2). The ratio of the bank's financial health to the lost value of its assets is a measure of asset quality. Banks can mitigate risk and recoup bad loans. Non-performing loan (NPL) ratios and loan provision adequacy are also quantified in this manner (Dang, 2011).

In Basel 2, asset quality was required to contain crucial characteristics, including the amount and duration of banking activities and loan provisions. Furthermore, this is another Basel 2 requirement for comparing non-accrual and non-performing loans. Because of this, there is an increased chance of credit risks in assets when there is a high usage of advance funds and loans.

Basel 2 states that an organisation's management effectiveness indicates how well it can adapt to changing conditions inside the business. Compliance with banking rules in managerial competence, management, human capital, and corporate governance are also assessed. Similarly, Misra (2012) emphasised the importance of management's capacity to perceive, evaluate, and

respond to the bank's exposure to risk while developing strategic initiatives. However, managerial traits are more qualitative. As a result, making any inferences about the quality of management needs to be revised.

Nonetheless, various indicators were employed to measure management efficiency. These included operational revenue to operating expenditure ratio, operational expenses per employee, and loans and advances to deposits ratio. As such, it is regarded as an essential CAMEL criterion for enhancing bank quality and effective management. This metric may help banks manage their operational costs and put more of their customers' money to work in the form of profitable loans and advances. In addition, the quality of the bank's management system may be evaluated by looking at its management soundness. This study proposes utilising off-set bank assessment ratios such as loans, advances to deposits, and operational costs to operating revenue as indicators of managerial competence.

Strong earnings are considered a sign of financial soundness under Basel 2. The bank's financial performance, capacity to remain profitable in the long run, and potential for future profit growth are evaluated. In addition to this, it is an indication of the bank's potential to profit from the overall value of its holdings (Dang, 2011). Return on assets is the profitability metric that has been utilised in the majority of past research. This ratio specifies the degree to which the profits left over after taxes are applied to each dollar invested in the bank's assets.

According to Diakomihalis et al. (2016), this refers to the ability of banks to fulfil their immediate obligations and permit sporadic withdrawals from depositors. When a bank has acceptable liquidity, it has sufficient cash to meet all its short-term commitments. Because of this, the proportion of assets used to evaluate the bank's liquidity situation in this paper is the bank's liquid assets, which include cash on hand and cash held at other financial institutions.

The CAMEL model was utilised by Abdelmoneim and Yasser (2023) in 13 listed banks in Shanghai throughout the 2008-2011 period to evaluate the performance of the banks. They discovered that the CAR ratio, the non-performing financing ratio, the interest margin ratio, and the loans-to-deposits ratio all substantially impacted their performance.

Using the CAMEL methodology, Kumar and Sayani (2015) analysed the financial stability of Islamic banks across five locations in the Gulf from 2008 to 2014. According to the findings, each of the eleven Islamic banks had an acceptable amount of capital. During the period that the research was being carried out, it was discovered that both the profitability of the banks and the quality of their assets had declined.

Using the CAMEL model, Rahman and Islam (2018) examined the economic performance of typical financial institutions in Bangladesh from 2010 to 2016, focusing on the country's economy as a whole. They discovered that the Eastern Bank was in the top spot among the considered banks. In addition, the research indicated that all commercial banks had attained strong capital adequacy ratios, which were more significant than the minimum

requirement of 10%. The chosen bank also had a more substantial percentage of loans that were considered to be non-performing, commonly known as NPLs. As a result, the National Bank of Bangladesh (CBB) should prioritise eliminating the possibility of financial loss from increased NPLs.

Desta (2017) researched South Africa to investigate the financial performance of African banks from 2012 to 2014 using the CAMEL approach. According to the findings of this survey, the selected banks all received top marks for their profitability and capital sufficiency levels. On the other side, both the quality of the assets and the efficiency with which they were managed were judged as less than satisfactory and inefficient, respectively. In the end, our study concluded that all banks operated well.

Gupta (2014) analysed India using the CAMEL approach from 2009 to 2013 to determine the level of financial stability of India's banks. According to the findings, Indian public banks had underperformed and needed to improve their performance to meet the required minimum requirements.

Using the CAMEL model, this study analyses the performance of Indian commercial banks.

The following different hypotheses were developed and tested during the study:

H1: The financial performance of Indian commercial banks examined by the composite CAMEL rating shows promising results.

H2: There are significant differences in performance among commercial banks examined by the CAMEL rating Approach.

3. RESEARCH METHODOLOGY

3.1. Data collection and sampling

The researcher obtained the data for the 12 years (2011–2022) from several commercial banks in India. For evaluation, five banks have been considered, as these banks have a vast network of branches, a solid customer base and an excellent customer service system. The financial institutions' annual reports served as the source material for the data. The other information related to the present research work has been collected from the annual reports of select private and public banks.

The list of financial institutions used in the sample is presented in Table 1.

Table 1. Financial positions of listed banks (in million rupees)

Name	Total assets	Deposits	Advances	Net profit
State Bank of India (SBI)	4,987,5974.1	4,051,5341.2	2,733,9665.9	31,6759.8
Housing Development Finance Corporation (HDFC) Bank	2,068,5350.5	1,559,2174.4	1,368,8209.3	36,9613.6
Industrial Credit and Investment Corporation of India (ICICI) Bank	1,411,2977.4	1,064,5716.1	859,0204.4	23,3394.9
Punjab National Bank (PNB)	1,314,8050.2	1,146,2184.5	728,1856.8	3,4569.6
Axis Bank	1,175,1781.1	821,7209.1	707,6959.5	13,0254.8
Total	96426082	86432625.3	63976895.5	1084592.7

Source: Authors' calculation.

The entire market value of all sample banks' assets in India is shown in Table 1; it comes to 96426 billion rupees. Meanwhile, the overall amount of customer deposits increased to 86433 billion rupees, while the total amount of credit facilities was 63977 billion rupees. Despite this, at the end of 2022, the company had generated an annual profit of 1085 billion rupees.

3.2. CAMEL model (measuring variables)

The CAMEL, a ratio-based model, has widespread use in contemporary empirical research. Therefore, the researcher employs particular financial ratios to determine the various characteristics of the CAMEL grading system. The CAMEL grading system is broken down into its component acronyms, and Table 2 outlines the financial ratios that assess each abbreviation.

3.3. Composite CAMEL rating

The weights assigned to parameters in the CAMEL rating system are typically determined by regulatory bodies, central banks, or supervisory authorities overseeing the banking sector within a country or region. These entities establish guidelines or frameworks that outline the relative importance of each component in the overall assessment of a bank's financial health.

According to the bank's financial standing, the composite CAMEL rating is scaled from 1 to 5. Thus, a grading system is used to evaluate bank performance. According to the bank's financial status, the composite CAMEL rating is scaled from 1 to 5. Rating 1 suggests that banks within this range are strong, indicating excellent performance and robust financial health. On the other hand, a rating of 5 signifies an unsatisfactory status, suggesting a high risk of the bank facing severe financial problems, potentially leading to bankruptcy or closure.

Thus, a rating system shown in Table 3 is used to evaluate bank performance. Several researchers, including Debnath et al. (2021) and Desta (2017), have endorsed this evaluation method.

The classifications of the CAMEL rating system are presented in Table 4. The selected ratios are evaluated using this grading system; 1 indicates excellent performance, while 5 indicates inadequate performance.

Table 2. Ratio-based model (CAMEL)

Ratio	Acronym	Description
Capital adequacy ratio	C	Capital / Risk-weighted assets
Asset quality	A	Net performing assets (NPA) / Net advances
Management efficiency	M	Operating expenses / Total assets
Earnings	E	Net profit / Total assets
Liquidity	L	Quick assets / Total assets

Source: Authors' calculation.

Table 3. Composite rating based on CAMEL

<i>Rating</i>	<i>Composite Range</i>	<i>Status</i>	<i>Description</i>
1	1-1.49	Strong	The bank's performance is highly robust.
2	1.5-2.49	Superior	The performance of the bank is good. However, there are certain areas for improvement.
3	2.5-3.49	Fair	The bank's performance is satisfactory; however, certain risks are linked to it.
4	3.5-4.49	Marginal	The bank suffers from several financial flaws, which can obstruct its growth and progress.
5	4.5-5	Unsatisfactory	The bank may go out of business and declare bankruptcy.

Source: Author's calculation.

Table 4. Rating of CAMEL parameters

<i>Ratios</i>	<i>Composite rating</i>				
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Capital adequacy	> 13%	12-12.99%	8-11.99%	6-7.99%	< 5.99%
Asset quality	< 1.5%	2.5-1.51%	3.5-2.6%	5.5-3.6%	> 5.6%
Management efficiency	< 60%	60-74.9%	75-89.99%	90-99.99%	> 100%
Earnings	> 1%	0.6-0.99%	0.5-0.59%	0.3-0.49%	< 0.29%
Liquidity	> 50%	40-49.99%	30-30.99%	20-29.99%	< 19.99%

Source: Authors' calculation.

Table 4 outlines the CAMEL composite ratings based on different ranges of ratios for each parameter:

Capital adequacy:

1) Rating 1 (> 13%). Banks with a capital adequacy ratio exceeding 13% receive the highest rating, indicating robust financial health.

2) Rating 2 (12-12.99%). Falls slightly below the highest tier but still reflects an excellent capital adequacy level.

3) Rating 3 (8-11.99%). Indicates an average capital adequacy range, suggesting moderate stability.

4) Rating 4 (6-7.99%). Represents a lower capital adequacy level, signifying increased risk.

5) Rating 5 (< 5.99%). Banks with a capital adequacy ratio below 6% receive the lowest rating due to weak financial health.

Asset quality:

1) Rating 1 (< 1.5%). Banks with NPLs under 1.5% receive the highest rating for excellent asset quality.

2) Rating 2 (2.5-1.51%). Falls slightly below the highest tier but still denotes good asset quality.

3) Rating 3 (3.5-2.6%). Reflects an average asset quality range.

4) Rating 4 (5.5-3.6%). Indicates a higher proportion of NPLs, suggesting increased risk.

5) Rating 5 (> 5.6%). Banks with NPLs exceeding 5.6% receive the lowest rating due to poor asset quality.

Management efficiency:

1) Rating 1 (< 60%). Represents highly efficient management.

2) Rating 2 (60-74.9%). Denotes good management efficiency.

3) Rating 3 (75-89.99%). Suggests average management efficiency.

4) Rating 4 (90-99.99%). Indicates less efficient management.

5) Rating 5 (> 100%). Banks with operational inefficiencies exceeding 100% receive the lowest rating.

Earnings:

1) Rating 1 (> 1%). Banks with strong earnings exceeding 1% receive the highest rating.

2) Rating 2 (0.6-0.99%). Denotes good earnings performance.

3) Rating 3 (0.5-0.59%). Represents average earnings.

4) Rating 4 (0.3-0.49%). Indicates lower profitability.

5) Rating 5 (< 0.29%). Banks with earnings below 0.29% receive the lowest rating due to poor profitability.

Liquidity:

1) Rating 1 (> 50%). Banks with high liquidity exceeding 50% receive the highest rating.

2) Rating 2 (40-49.99%). Denotes good liquidity.

3) Rating 3 (30-30.99%). Represents average liquidity.

4) Rating 4 (20-29.99%). Indicates lower liquidity.

5) Rating 5 (< 19.99%). Banks with liquidity below 19.99% receive the lowest rating due to poor liquidity management.

4. RESULTS

4.1. Capital adequacy

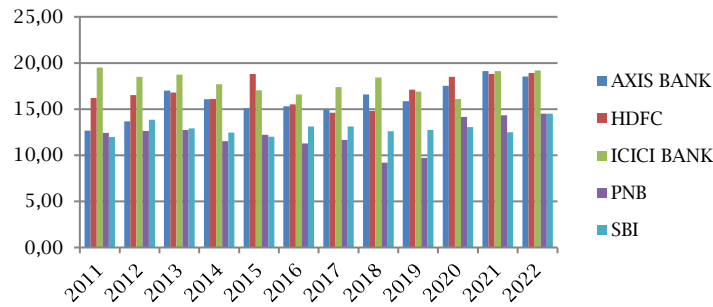
Table 5 shows each bank's mean, standard deviation, and composite capital adequacy ratios during the previous 11 years. The result shows that the lowest mean value of CAR is 12.19% for SBI, whereas ICICI Bank has 17.93% as the highest mean value. All banks meet Basel Committee capital criteria of 9%. The result shows that all public sector banks have a rating of 2, and all private sector banks have a rating of 1. Using their current capital, Indian commercial banks may generate a minimum annual return of 6.18% (15.18%-9%) for investment purposes. That way, Indian commercial banks can keep their investors and depositors happy and weather any storms that may come their way.

Table 5. Average capital adequacy ratio

Bank	Mean	SD	Composite rating	Evaluation
Axis Bank	16.03	1.89	1	Strong
SBI	12.90	0.72	2	Superior
ICICI Bank	17.93	1.12	1	Strong
PNB	12.19	1.67	2	Superior
HDFC Bank	16.88	1.55	1	Strong
Industry average	15,18	1.39	1	Strong

Source: Authors' calculation.

Figure 1. Capital adequacy ratio of the sample banks (2011-2022)



4.2. Asset quality

Table 6 displays the outcomes of NPLs during the research period and the quantities of bank loans that have been written off due to the inability to collect the payments owed on those loans. According to the data, ICICI Bank and HDFC Bank have controlled their NPLs for the previous 12 years. The average percentage of loans that were considered to be non-performing was 1.98%, and they received a grade of 2 for their performance.

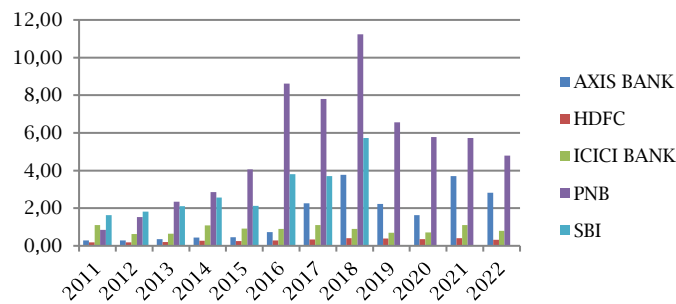
This indicates that ICICI and HDFC Banks' credit policies are well articulated. However, due to a more significant rate of NPLs during the research period, Punjab National Ban (PNB) has a much higher

credit risk. The standard deviation for PNB NPLs was 3%, with a mean value of 5.18.

Table 6. Average net advances to net assets

Bank	Mean	SD	Composite rating	Evaluation
Axis Bank	1.58	1.34	2	Superior
SBI	1.96	1.81	2	Superior
ICICI Bank	0.88	0.18	1	Strong
PNB	5.18	3.08	4	Marginal
HDFC Bank	0.29	0.08	1	Strong
Industry average	1.98	1.29	2	Superior

Figure 2. Net performing assets (NPA) to net advances of sample banks (2011-2022)



This suggests that PNB bank's management made at least some effort to have a moderating influence over its loan policy by increasing collateral requirements. Axis and SBI Bank had NPL averages of 1.58% and 1.96%, respectively. Hence, they both received a grade of 2. Thus, NPLs are used to evaluate asset quality, and they have fluctuated significantly over the previous 12 years, averaging 1.98% across Indian commercial banks. This suggests that the bank's asset quality is enough to manage credit risks. Since the Indian macroeconomy

is unstable and unqualified projects continue to be financed, NPLs are constantly in flux.

4.3. Managerial efficiency

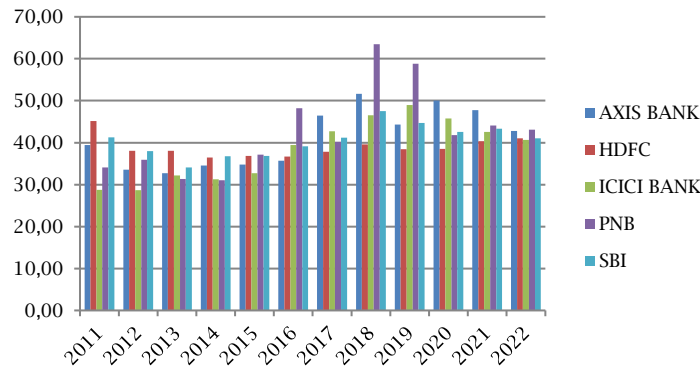
Table 7 shows that all the listed banks have an average mean below 60%, which tends to give them a rating of 1. This indicates that all the banks are efficient at running their business and have been able to handle their operational risks.

Table 7. Average operating expenses to operating income

Bank	Mean	SD	Composite rating	Evaluation
Axis Bank	41.13	6.87	1	Strong
SBI	40.52	3.77	1	Strong
ICICI Bank	38.35	7.27	1	Strong
PNB	42.42	10.19	1	Strong
HDFC Bank	38.91	2.4	1	Strong
Industry average	40.26	6.1	1	Strong

Source: Authors' calculation.

Figure 3. Operational efficiency ratio of sample banks (2011–2022)



4.4. Earnings

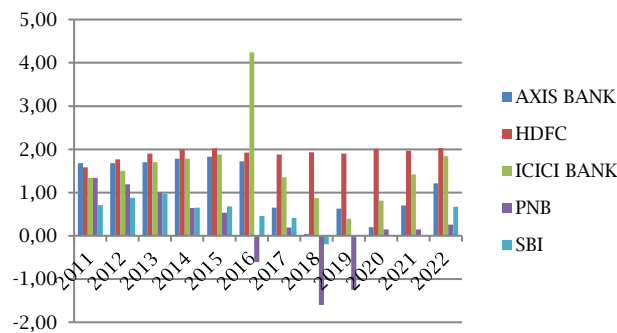
The effectiveness of Indian banks in investing the proceeds of their loans and advances is outlined in Table 8. On average, the ROA ratio fell between 1.9% and 0.2%. In addition, Axis Bank, ICICI Bank and HDFC Bank demonstrated good profits, coming in at 1.15%, 1.59% and 1.90%, respectively. All of them were given a score of 1 out of 5. PNB, on the other hand, had the lowest average, which came in at 0.2% and earned a rating of 5. This suggests that these financial institutions adhere to a cautious lending policy to minimise risk.

Table 8. Average return on assets

Bank	Mean	SD	Composite rating	Evaluation
Axis Bank	1.15%	0.66%	1	Strong
SBI	0.43%	0.39%	4	Marginal
ICICI Bank	1.59%	0.95%	1	Strong
PNB	0.16%	0.91%	5	Unsatisfactory
HDFC Bank	1.90%	0.127%	1	Strong
Industry average	1.04	0.60	1	Strong

Source: Authors' calculation.

Figure 4. Return on assets of sample banks (2011–2022)



4.5. Liquidity

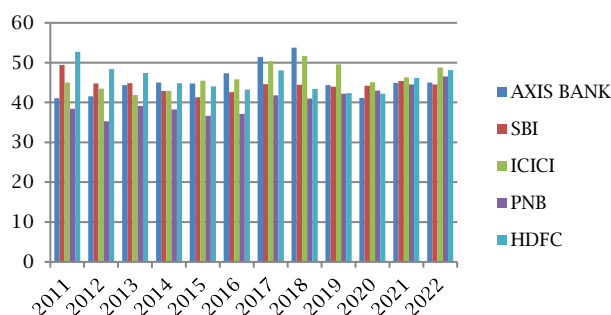
According to the findings of Table 9, the liquid asset ratios of all of the listed commercial banks have seen no shifts during the twelve years of

the research period. Banks are reluctant to lend out their money, which indicates that the sample banks could be more efficient in using their capital, such as loans and long-term investments.

Table 9. Average liquid ratio

Bank	Mean	SD	Composite rating	Evaluation
Axis Bank	45.39	3.28	2	Superior
SBI	44.42	1.94	2	Superior
ICICI Bank	46.36	3.09	2	Superior
PNB	40.33	3.39	2	Superior
HDFC Bank	45.90	3.13	2	Superior
Industry average	44.48	2.96	2	Superior

Source: Authors' calculation.

Figure 5. Quick asset ratio of sample banks (2011-2022)

The average liquidity ratio is 44.48%, with a 12% standard deviation and a rating of 2. As a result, Indian commercial banks can pay their short-term debts and devise effective measures for expanding liquidity during financial insecurity.

4.6. Overall CAMEL assessment

The results shown in Table 10 show that Axis Bank, ICICI Bank, and HDFC Bank delivered an outstanding performance, earning a score of 1 for their efforts.

Table 10. Composite rating based on the CAMEL rating system

Bank	C	A	M	E	L	Average rating	Composite rank
Axis Bank	1	2	1	1	2	1.4	1
SBI	2	2	1	4	2	2.2	2
ICICI Bank	1	1	1	1	2	1.2	1
PNB	2	4	1	5	2	2	2
HDFC Bank	1	1	1	1	2	1.2	1

Source: Authors' calculation.

Meanwhile, SBI and PNB ranked second among the other commercial banks and exhibited superior performance.

5. DISCUSSION

According to the findings, each of the selected institutions has demonstrated dedication to adhering to the Basel Accords' capital requirements. This study suggests that Indian banks can withstand any possible financial losses and shield investors from external risks. Therefore, this finding aligns with that of Chen (2003), who suggested that higher capital adequacy prevents banks from declaring bankruptcy and going out of business altogether.

Regarding the quality of assets, the findings show that the percentage of loans considered to be non-performing has changed during the research period. The average amount of NPLs held by banks has been reduced to only 4%. This demonstrates that

Indian banks have a clearly defined credit strategy and are competent in risk management. This discovery supports earlier research by Rahman and Islam (2018).

An operational efficiency to operating income (OE/OI) ratio of 40%, on average, is considered a relatively efficient measure of operational efficiency. This suggests that the bank's operational revenue exceeds its operating costs.

The rate of return on assets throughout the period under consideration was below 1.5% on average, indicating that the degree of profitability achieved during this period was sufficient. As a result of the political climate in India, commercial banks in the country have adopted a more cautious approach to the granting of credit and the provision of loans to cut down on the amount of credit risk. This policy was put into effect in an attempt to reduce the amount of credit risk. This discovery aligns with what Doorasamy (2016) discovered in their earlier research. The findings also revealed that the chosen financial institutions have superior levels of liquidity. During the period under consideration, the average ratio of banks' liquid assets to their total assets was 44.48%. The banks could pay their short-term debts, which is in direct opposition to the findings of Dash and Das (2010).

6. CONCLUSION

Commercial banks in the Indian economy have reached satisfactory financial soundness despite the volatile investment climate. However, all commercial banks remain susceptible to financial volatility due to political unpredictability. As a result, this study aims to investigate the financial stability of Indian banks and evaluate their performance using the CAMEL grading method over a twelve-year period (2011-2022). The overall performance of the banks included in the study was graded on a scale ranging from 1 to 5 based on this grading methodology.

According to the findings of the study, Indian commercial banks have demonstrated their dedication to the Basel Accords and other international norms by maintaining an adequate capitalisation level of 9%. Over the previous 12 years, the overall CAR for all banks averaged 15.18%. Consequently, most of the mentioned banks received a rating of 1, indicating that Indian banks adhere to conservative strategies regarding their invested capital. According to the findings of this study, Indian financial institutions are careful to keep their write-off rates for NPLs at a proportion that is as low as possible. As a result, the overall average percentage of NPLs across all banks is 1.98%, with a grade of 2. In addition, management effectiveness in Indian banks ranges widely from institution to institution. However, the findings of this study indicate that Indian financial institutions are pretty effective, with an average ratio of OE/OI of 40% and a rating of 3. This suggests that Indian commercial banks have a strong performance in terms of their management efficiency. In addition, the liquidity levels of the listed Indian commercial banks are well controlled, and the banks have adequate money to repay customers if they make periodic withdrawals or have short-term obligations.

The composite CAMEL grading method is used to examine the overall performance of Indian banks. The average surplus cash constitutes 48% of total assets and ranks second. According to the study's findings, Axis Bank, ICICI Bank, and HDFC Bank came out on top of their respective competitors by receiving a rating of 1, while the SBI and PNB were given a rating of 2. In conclusion, the findings of this study demonstrate that the CAMEL grading method indicates substantial variance in the overall performance of the Indian banks that are examined. This study recommends that publicly traded Indian banks prioritise investments with a longer time horizon rather than those with a shorter

time horizon and carefully monitor their risk management procedures. This paper suggests that when funding investment projects, governments take into account the issue of managing credit risk and provide guarantees. This advice was created as a consequence of one of the other findings in the research.

The current study has some limitations. Therefore, the readers should cautiously consider the limits while using the result of the study:

1. The sample is restricted to only banks, and all non-banking financial institutions are excluded from the sample as different acts govern them. Therefore, the result of the study cannot be generalised to these institutions.

2. Data unavailability was the major hindrance of the study. The study data was collected from the RBI database and annual reports for 2011-2022. However, much bank data needed to be included, which made it challenging to select the right bank and the correct variables. The result would have been more robust with a large sample size and more extended data.

The limitations discussed above give way to future research:

1. Further, researchers can include foreign sector banks in the sample to evaluate the overall performance of Indian banks.

2. More extensive data coverage leads to a greater degree of freedom, which results in a symmetrical distribution of data from where more conclusive and precise findings can be drawn. Therefore, future research can be on a larger dataset.

3. The present study has used the CAMEL rating approach to evaluate the financial performance of banks. However, researchers can use other methods, i.e., ratio analysis, credit rating, market-based metrics, etc., to further studies to check the persistence of banks' performance.

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