

Financial Stability of Indian Public Sector Banks: A Systematic Review of Pre- and Post-Merger

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Abstract

Indian Public Sector Banks (PSBs) consolidation is a pressing need for banking-sector reform, given the significant mergers in the past few years, such as BoB (2019), SBI (2017), and 10 PSBs into 4 anchor banks (2020). The purpose of these mergers was to improve monetary strength, operational efficiency, and risk management. Currently, the Department of Financial Services has a list of 12 PSBs and documents the amalgamation. But the current literature yields mixed findings on the outcome of the financial stability after the merger. A large amount of evidence on financial indicators like capital adequacy, asset quality and profitability is reviewed in this paper with the help of various analytical approaches. Studies show that there are gains in efficiency and improvements after the year 2020, as well as studies that show losses in the financial health of the companies following mergers. Therefore, the authors find that there is a research gap in exploring the long-term financial stability of PSBs merged, and suggest that the effect of the merger be studied using various indicators over a long period of time.

Keywords: Public Sector Banks, Bank Merger, Financial Stability, CAMELS, Asset Quality, Profitability, Capital Adequacy, Pre-Merger, Post-Merger.

1. Introduction

The banks are the institutional structure that serves as a central link between the process of saving and the process of investment. Public Sector Banks are playing a special role in Indian banking sector in terms of banking presence, financial inclusion, agricultural and priority lending, government programmes and credit delivery etc. in India. This means the overall health of PSBs is relevant not just to the health of the individual banks but also to the health and resilience of the financial system more broadly. The Indian banking has experienced significant structural changes since the economic reforms of the 1990s. One of the prominent policy changes has been mergers and amalgamations of PSBs. The Government of India has been consolidating PSBs by bringing together relatively weaker and smaller banks with stronger and larger anchor banks. Some of the key examples are the merger of SBI with the associate banks in 2017, the amalgamation of Vijaya Bank and Dena Bank with Bank of Baroda in 2019 and the 10 PSBs amalgamation to four anchor banks in 2020. These amalgamations are reported as part of public-sector banking restructuring in the Department of Financial Services' records. The policy argument for consolidation was that larger banks would benefit from economies of scale, better diversification, improved capitalisation, integration of technology, expansion of geographical footprint and better ability to withstand financial shocks. The consolidation plan was also linked to tackling the issue of non-performing assets (NPAs), balance sheet consolidation and the efficiency of PSBs' operations. But financial stability is more than profitability. A bank may report strong profits, but still have asset quality or liquidity problems. Likewise, a bigger balance sheet cannot be taken as a sign of financial strength. The evaluation of impact of a merger, therefore, must be multidimensional – it should include capital adequacy elements, asset quality, management efficiency, earning, liquidity and sensitivity to market risk (if applicable). This is consistent with the CAMEL/CAMELS approach frequently employed in the banking literature. Such a study of bank mergers in India is also carried out in the recent past using a financial-health measure based on CAMELS (Taylor & Francis Online), which is a composite measure that includes the measures of capital adequacy, asset quality, management efficiency, earnings, liquidity, and sensitivity to market risk. Studies of bank mergers in the past have yielded conflicting results. There are cases in other countries where mergers may not lead to efficiency. Rhoades' study of 898 bank mergers showed that there were no efficiency benefits after horizontal mergers (ScienceDirect). Studies have also raised doubts about the efficiency gains that accrue to acquiring

banks following mergers (ScienceDirect). The results indicate that the notion that larger banks are more efficient is not necessarily true and needs to be substantiated empirically. The Indian trail of evidence is equally inconclusive. The study conducted by Kalra, Gupta and Bagga (2013) on Indian banking mergers revealed that the findings with regard to profitability, liquidity, shareholder wealth and share-price volatility were inconclusive (Sage Journals). Banerjee also doubts whether economies of scale and scope are a natural consequence of bank consolidation, suggesting that bank mergers do not necessarily lead to more efficient operations (JSTOR). Other, more recent studies have focused on the 2020 PSB mega-merger, drawing other conclusions. Reddy et al. (2022) analyzed the four acquiring PSBs like Punjab National Bank, Canara Bank, Union Bank of India and Indian Bank on the basis of CAMEL framework, and made two comparisons: two years before and two years after the merger. The study employed paired t-tests and findings showed that there was financial performance improvement for some banks, though not all (Asian Journal of Agricultural Extension). New studies have also muddled the waters. In a study published in 2026 using a CAMELS composite score, the financial condition of five public-sector acquirers worsened over the three-year period after the acquisition, while the financial condition of private-sector acquirers improved (Taylor & Francis Online). Other recent studies, however, indicate better profitability, asset quality and capital adequacy as a result of the PSB mergers in 2020 (ResearchGate). This split highlights the need to undertake a systematic review specifically on financial stability, not just financial performance. The present review thus consolidates the existing empirical findings on pre- and post-merger financial position of Indian PSBs and highlights the methodological and conceptual lacunae which call for further empirical studies.

2. Objectives

The present systematic review has the following objectives:

i. To conduct a systematic empirical review of evidence on the pre- and post-merger performance of Indian Public Sector Banks.

The review examines whether mergers have resulted in changes in major dimensions of financial stability, including capital adequacy, asset quality, profitability, management efficiency, liquidity and overall financial health.

ii. To identify research gaps, financial-stability metrics and methodological approaches that can support the comparative assessment of merged Indian Public Sector Banks.

The objective is also to identify appropriate indicators and statistical techniques that can be employed in future empirical research examining the financial stability of selected PSBs before and after merger.

3. Review of Literature

3.1 Conceptual perspective on bank mergers and financial stability

The main theoretical arguments for bank consolidation are the expected economies of scale, economies of scope, risk diversification, operational synergies, better technology use and better capital capacity. A merged bank can have the potential to streamline its administrative structure, increase its customer base, geographic coverage, loan book and financial markets power. However, there can also be costs associated with the mergers in terms of integration. The organisational culture, information systems, human resource policies, credit portfolios and risk-management systems may temporarily hinder efficiency. Besides, if a financially weak bank gets taken over by a stronger bank, it could also bring in the bad debts, weak borrowers, provisioning requirements, etc., of the weaker bank. So, the financial implications of the merger could be very different, depending on the financial health of the banks involved. This is of special importance for Indian banks as some consolidation exercises have engaged banks which faced asset quality and profitability concerns. Recent research suggests that the mergers led by the regulators were different from the mergers initiated by the PSBs as the acquiring institutions did not have the freedom of choice in the selection of the merging firms (Taylor & Francis Online).

3.2 Evidence from pre-2020 Indian banking mergers

Kalra et al. (2013) analysed the mergers of banks in India and looked at profitability, liquidity, shareholder wealth and share-price volatility. The results of mergers in India are mixed in the earlier literature. They did not find any definitive gains in corporate performance after mergers (Sage Journals).

Banerjee (2017) challenged the traditional view that economies of scale and scope are automatic advantages of bigger banks. His analysis indicated that consolidation, in the form of mergers, might not be as efficient as it is often promoted to be: it might be in terms of operational complementarities, not size (JSTOR).

Bardhan (2013) conducted a Stochastic Frontier Analysis for Indian commercial banks and concluded that public sector banks achieved high profit efficiency in the post liberalisation era. Additionally, the study found a positive relationship between bank mergers and profit efficiency, indicating that the impact of bank mergers could vary based on the overall regulatory and institutional landscape (Sage Journals).

Such seemingly paradoxical results suggest a need for assessing mergers with more than one measure. A merger can make one aspect of financial performance better and another aspect worse. Thus, a multi-dimensional evaluation is needed.

3.3 SBI merger and the evolution of PSB consolidation

The year 2017 saw the amalgamation of SBI with its associate banks which was an important milestone in the consolidation of PSBs in India. The aim was to establish a more sizeable and comprehensive financial institution that will be more efficient in its operations and be able to compete more successfully on domestic and international markets. The SBI experience is significant because it came before the combination of 2019 and 2020 and did give an institutional underpinning for the subsequent consolidation. But, the effect of the merger needs to be evaluated over several years after amalgamation, not just after the merger itself, in terms of transition costs, asset quality, profitability and efficiency. The SBI merger with its associate banks and Bharatiya Mahila Bank has been recorded by the Department of Financial Services as effective from 1 April 2017 (Minister for Financial Services DoF)

3.4 Bank of Baroda merger

Vijaya Bank and Dena Bank were merged with Bank of Baroda from 1st April 2019. This combination was also an important trial in public sector consolidation, as a relatively well-positioned anchor bank took over two other banks with different financial profiles from PSBs.

The case of the Bank of Baroda shows how the financial stability analysis should take into account the pre-merger situation. In a post-merger phase, the target institutions might also have higher provisioning requirements if the overall goal is to enhance stability, but the initial phase of the merger may cause provisioning requirements to increase due to weaker asset quality.

In the three-year post-merger period, Bank of Baroda has seen a drop in its financial-health score according to a recent study on public-sector mergers. After 3 years the score was reportedly reduced from 48.0 prior to the merger to 35.0 following the merger. This evidence should not be taken as an automatic conclusion that the merger has failed, but rather that the impact of consolidation could include significant adjustment costs, and perhaps a longer period of observation would be necessary.

3.5 Mega merger of Public Banks in 2020

The PSB merger 2020 is the biggest merger exercise undertaken by the banking industry in recent history in India. Ten PSBs were merged into four anchor banks – Punjab National Bank took over Oriental Bank of Commerce and United Bank of India; Canara Bank took over Syndicate Bank; Union Bank of India took over Andhra Bank and Corporation Bank; and Indian Bank took over Allahabad Bank.

Reddy et al (2022) studied four big acquiring banks on the basis of CAMEL framework. Their analysis included capital adequacy, asset quality, management efficiency, earnings and liquidity and financial performance of these banks before and after mega-merger. This study employed data collected between 2018-19 to 2021-22 and conducted paired t-tests to analyze the differences. The results showed that there were significant differences for certain aspects of the financial field, albeit not consistently among banks (Asian Journal of Agricultural Extension).

Rangdal and Kamashetty (2026) analysed data of four banks namely Punjab National Bank, Canara Bank, Union Bank of India and Indian Bank based on GNPA, NNPA, ROA, ROE, CRAR, NIM and business per employee. The authors compared 2017–2019 with 2021–2023 and excluded 2020 as a transition year. The results indicated an improvement in a number of indicators, but were not statistically significant due to the short post-merger period (EPRA Journals).

A recent empirical study of the PSB mergers on profitability, capital adequacy, and asset quality from 2016 to 2024 found that the merger of the two groups of PSBs contributed to improved profitability, capital adequacy, and asset quality. The researchers also determined that the scale efficiencies were moderate when comparing merged banks with non-merged banks, meaning that scale efficiencies don't necessarily follow merger activity (ResearchGate).

3.6 Evidence based on efficiency approaches

Operational efficiency is closely related to financial stability. Accordingly, some studies have investigated mergers, with reference to DEA and Malmquist productivity indices and to stochastic frontier analysis.

In recent study published in Journal of Economic Studies, the authors used DEA, logistic regression, Malmquist Productivity Index and Stochastic Frontier Analysis to examine the role of mergers and acquisitions in attaining technical efficiency of Indian PSBs. The study identifies efficiency as a part of the merger-performance issue (ScienceDirect).

Likewise, Das (2025) used a two-stage DEA approach to analyse the impact of banking sector mergers in India, concluding that there were more efficiency gains in private-sector banks than in public-sector banks. The study further revealed that asset quality was a key determinant of the technical efficiency of public-sector banks (Wiley Online Library).

The results indicate that only traditional accounting profitability ratios cannot be used as a basis for a study of the financial stability of PSBs. There should also be consideration of operational efficiency, asset quality and capital strength.

3.7 Evaluate based on CAMEL/CAMELS (From Evidence)

CAMEL has been used as one of the most widely used frameworks to evaluate bank soundness as it consists of five dimensions: Capital Adequacy, Asset Quality, Management efficiency, Earnings, and Liquidity. The CAMELS framework is expanded to include Sensitivity to Market Risk.

The CAMEL approach is well suited for assessing the strength of PSB mergers since the rationale for the merger policy was to enhance various dimensions of bank strength, not just profitability. The recent CAMELS-based study of the impact of mergers by the Indian regulator found a significant gap between the outcomes of mergers in the private and public sector, using these dimensions to create a composite financial-health score (Taylor & Francis Online).

The same study showed that Bank of Baroda, Punjab National Bank, Canara Bank, Union Bank of India and Indian Bank had their financial-health scores dip over the three years following the merger. For instance, the score of Punjab National Bank went down from 50.9 to 22.0, and the score of Union Bank went down from 44.7 to 25.7. The paired tests found statistically significant decreases in the public-sector category (Taylor & Francis Online).

These findings contrast with reports showing that mergers are associated with improved profitability and asset quality. The contradiction further emphasizes the importance of a well-designed comparative study with consistent indicators, an appropriate time horizon and good controls.

3.8 The state of the economy and the overall banking sector.

The performance of the PSBs after the merger should also be separated from the overall improvement in the conditions of the banks in the Indian Banking Sector. Data from the RBI show asset quality of the scheduled commercial banks improved significantly after the deterioration seen in the initial years of the decade. The GNPA ratio of scheduled commercial banks was 3.2% at end-September 2023 and the CRAR was 16.8%, with the banks fulfilling the regulatory requirement of capital. RBI also noted improved profitability due to the rise in net interest income and reduction in provisions (Reserve Bank of India).

Therefore, an observed improvement in a merged PSB cannot automatically be attributed entirely to the merger. Macroeconomic recovery, regulatory reforms, capital infusion, improved recovery mechanisms and the broader reduction in banking-sector stress may also contribute to better performance. This creates an important methodological requirement for future research: merger effects should ideally be separated from general banking-sector trends.

4. Methodology

In the present study, systematic literature review and evidence-synthesis approach is used, which is adopted to identify, classify and critically analyse empirical studies that involve financial stability and pre- and post-merger performance of Indian PSBs.

4.1 The review will focus on the following areas:

The focus of the review is on studies specifically on Indian PSBs and mergers of PSBs. Special focus is on:

1. SBI and its associate-bank merger
2. Bank of Baroda's merger with Vijaya Bank and Dena Bank
3. the 2020 PSB mega-mergers
4. empirical studies examining financial stability before and after merger; and
5. studies applying financial ratios, CAMEL/CAMELS, efficiency models and statistical techniques.

Also included are institutional sources like articles published in RBI publications and Government of India/Department of Financial Services documents as they offer authoritative information on the banking-sector conditions and the timeline of PSB amalgamations. RBI's Report on Trend and Progress of Banking in India will be useful to analyse the overall situation of capital adequacy, asset quality and profitability. (Reserve Bank of India)

4.2 Variables identified from the literature

The literature surveyed suggests that there are several aspects in which financial stability may be operationalized.

Dimension	Major indicators
Capital adequacy	CRAR, CET1, capital-to-risk weighted assets
Asset quality	GNPA, NNPA, provision coverage
Profitability	ROA, ROE, NIM
Management efficiency	Cost-to-income ratio, business per employee
Liquidity	Current/liquid assets, liquidity ratios
Operational efficiency	DEA, SFA, Malmquist productivity
Overall stability	CAMEL/CAMELS composite score

The selection of these indicators is consistent with recent Indian merger studies using CAMEL/CAMELS and financial-ratio frameworks (Asian Journal of Agricultural Extension).

4.3 Methods identified

The literature employs several quantitative techniques, including:

- Descriptive Statistics;
- Ratio Analysis;
- Paired-Sample T-Tests;
- Independent-Sample T-Tests;
- Regression Analysis;
- Difference-In-Differences;
- Data Envelopment Analysis;
- Stochastic Frontier Analysis;
- Malmquist Productivity Index;
- Principal Component Analysis; And
- Composite CAMEL/CAMELS Indices.

The diversity of methodologies explains part of the variation in reported results. A simple pre-post ratio comparison may produce a different conclusion from a CAMELS index or a Difference-in-Differences model.

4.4 Pre-and post-merger comparison

The choice of the comparison period is a main methodological problem mentioned in the literature. Some studies focus on a two-year pre- and post-merger period, while others focus on a three-year post-merger period or more extensive panels. Some merger related accounting adjustments and expenses may be exceptional during the transition year. For instance, Rangdal and Kamashetty (2026) dropped the year 2020 from the comparison because of the effect of transitioning to a merger (EPRA Journals).

It would then be sensible to compare several years before and after the merger for a future empirical study, and to perform robustness analysis to run other windows of comparison.

5. Research Gap

There are several gaps highlighted in the systematic review which give rationale for further research.

5.1 Lack of support for the process and the vision of the future

The most crucial missing link is that there is no clear ending. Some studies have found increased profitability, asset quality and capital adequacy, while other studies have found that public-sector acquirers experienced a decline in overall financial health (Taylor & Francis Online). So, whether PSB mergers are truly more helpful to financial stability remains unresolved.

5.2 Financial performance is often confused with financial stability.

Many studies currently available are dedicated to any of the ROA, ROE, NPA and other indicators. Financial stability is a multi-dimensional concept, however. A bank may make profit without gaining liquidity, asset quality and capital adequacy at the same time. However, a broad-based framework is needed to appraise financial stability and not just financial performance.

5.3 Short post-merger observation periods

Some research focuses on just one or two years following the merger. These times could reflect integration expenses, not the benefits. The 2020 mergers have been put in place in an exceptional economic context which also included the impact of the Covid-19 shock. Thus, a longer post merger time frame is required to see if initial deterioration was temporary or permanent.

5.4 The ability to perform comparative analysis among selected PSBs is rated as limited.

Existing research frequently examines all anchor banks together or focuses on a particular merger. A comprehensive bank-wise comparative study would be able to determine if there are differences in the merger impact based on the financial status, size and asset quality of the acquired banks.

5.5 The separation of merger effects from macro-economic effects is inadequate.

The asset quality of Indian banks, as a whole, improved beyond the scope of the merger programme following the crest of the NPA crisis. The data from the RBI shows significant strides in asset quality and capitalisation of the banking system. Thus, the gains observed in the merged PSBs may not necessarily be a consequence of synergies arising out of the merger process.

5.6 Equities and children's rights in research and practice

The literature that preceded this study is descriptive in nature and uses paired t-tests. These techniques are helpful but don't provide sufficient proof of causality. New research has started to utilise Difference-in-Differences, composite CAMELS indices and other advanced techniques (Taylor & Francis Online). A future study should therefore take into account the use of ratio analysis together with statistical significance tests and, if data allow, the use of control-group or panel-data techniques.

5.7 Not enough has been done to explore issues of integration and governance.

Measurable results can be recorded in a financial statement, but a financial statement may not fully articulates the reasons these mergers can be successful or unsuccessful. The ultimate financial impact can be affected by IT integration, human-resource integration, branch rationalisation, organisational culture, governance and risk-management integration. The qualitative dimensions need to be addressed more.

6. Findings

The following are the main findings of the systematic review.

- PSB mergers have been a key tool employed by the Indian government in the consolidation of the banking sector. The key phases are SBI's consolidation in 2017, Bank of Baroda's merger in 2019 and Bank of Baroda's 2020 four-way anchor-bank consolidation (Department of Financial Services).
- It is not certain from the literature that there is a universal positive relationship between mergers and financial stability. The earlier Indian studies yield mixed results and the recent studies are still reporting conflicting results. (Sage Journals)
- CAMEL/CAMELS is very appropriate to assess the financial stability of a merger, since it includes capital adequacy, asset quality, management efficiency, earnings and liquidity, and CAMELS adds market-risk sensitivity.
- One of the most significant factors impacting a post merger performance is asset quality. The transition phase in the post-merger phase may include increased provisioning and lower profitability, when an acquiring bank takes over stressed assets.
- Profitability is an area that seems to improve in several merged PSBs over time, but the improvement may not necessarily be due to merger synergies as the macroeconomic recovery and a general improvement in the banking sector may also have positive effects.
- Efficiency evidence is mixed: However, the recent evidence based on DEA suggests that private sector banks could gain more efficiency in mergers than PSBs, suggesting that ownership structure and the nature of merge could affect their outcomes (Wiley Online Library).

- The post-merger period must be sufficiently long. The short-term costs of integration may be observed within a very limited window, but not the long-term financial implications of consolidation.
- The most recent findings support, but do not take away, the research problem. A recent study, based on the CAMELS rating, has found that public-sector acquirers' financial condition has weakened since their mergers, while other recent studies have found profitability and asset quality have improved (Taylor & Francis Online).

7. Conclusion

The consolidation of Indian Public Sector Banks is one of the biggest structural reforms in the banking sector of the country. The policy was supposed to make banks stronger, make banks more efficient, strengthen capitalisation, deal with stressed assets, and strengthen the banking system's resilience. The systematic review shows, however, that size is not a determinant of financial stability. The literature is inconclusive on the effects of mergers on profitability, asset quality, capital adequacy, efficiency and overall health. Some studies show benefits, and other studies have found that the financial-health situation of public-sector acquirers has worsened during the first few years following their acquisition. The inconsistent results suggest that merger has context-dependency. Outcomes can be affected by the financial condition of the acquiring and target banks, asset quality, integration costs, governance, operational efficiencies, macroeconomic conditions, and by the length of the post-merger observation period. So, there was a solid academic and policy need to do an empirical study on “Financial Stability of Selected Public Sector Banks (PSBs): Pre and Post Merger in India”. A study of this type can be relevant to existing literature if it analyzes selected PSBs in a uniform manner using a set of financial-stability indicators, as well as compares the financial position of PSBs before and after the merger over a sufficient time horizon.

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