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NON-PERFORMING ASSETS (NPA) TRENDS IN PRE VS POST-MERGER SCENARIOS OF INDIAN BANKS MERGED IN APRIL 2020

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ABSTRACT

The merger of India's public sector banks (PSBs) in April 2020 marked a major step toward strengthening financial stability, enhancing operational efficiency, and improving credit governance within the banking sector. This study examines how Non-Performing Assets (NPAs) evolved in four leading PSBs—Punjab National Bank, Union Bank of India, Canara Bank, and Indian Bank—over a six-year period, encompassing three years before (FY2017–FY2019) and three years after (FY2021–FY2023) the merger. By employing Gross NPA (GNPA), Net NPA (NNPA), and Provision Coverage Ratio (PCR) as primary metrics, the study applies descriptive statistics, comparative trend analysis, and hypothesis testing to evaluate the mergers' effects on asset quality. The results reveal that while Gross NPAs experienced a moderate reduction, Net NPAs saw a significant decrease post-merger, indicating successful provisioning and recovery strategies. PCR showed considerable improvement across all banks, suggesting enhanced financial resilience and risk management. The study concludes that the mergers led to stronger balance sheets and improved asset quality, though the persistence of legacy stressed assets indicates that NPA resolution in India's PSBs remains a gradual, long-term process.

Keywords: Public Sector Banks, Non-Performing Assets, Bank Mergers, Gross and Net NPA, Provision Coverage Ratio, Asset Quality.

1. INTRODUCTION

The evolution of India's public sector banking landscape has been marked by a series of strategic reforms aimed at enhancing financial stability, operational efficiency, and global competitiveness. Within this dynamic environment, the concept of Non-Performing Assets (NPAs) holds significant importance, serving as a critical indicator of a bank's asset quality and the effectiveness of its lending and recovery mechanisms. High levels of NPAs can erode profitability, constrain credit growth, and pose systemic risks to the broader economy (Das, 2021; Mittal 2025). It was in this context that the Indian government undertook a major consolidation exercise in April 2020, merging ten public sector banks into four larger entities. The primary rationale behind this move was to create financially stronger, better-capitalized banks with larger balance sheets, which were expected to be more resilient to economic downturns, benefit from economies of scale, and ultimately improve the governance and credit culture of the banking sector. (Herwadkar, Gupta, & Chavan, 2023; Sengupta & Patil, 2022).

1.1 Operational Definitions

- **Non-Performing Asset (NPA):** A non-performing asset is a loan or advance for which interest and/or principal repayments have remained overdue for 90 days or more. (Shekhar & Shekhar, 2022)
- **Gross NPA (GNPA):** A Gross non-performing assets represent the total outstanding loans classified as nonperforming before any deductions for provisions. Higher ratio indicates higher risk and poor asset quality. (Khan, 2019)
- **Net NPA (NNPA):** Net NPA equals Gross NPA less provisions (and relevant write-offs); it represents the residual exposure of the bank to bad loans after accounting for provisioning. The NNPA ratio reports this net figure relative to net advances. (Khan, 2019)
- **Provision Coverage ratio (PCR):** The Provision Coverage Ratio (PCR) measures the proportion of a bank's NPAs that have been covered by provisions. A higher PCR indicates that a bank has set aside a sufficient amount of capital to cover potential loan losses. (RBI),(Khan, 2019).

1.2 Problem Statement

High level of Non-Performing Assets (NPAs), continues to be a major challenge for Indian banks reducing both profitability and overall financial stability.(Thippeswami & Bheemanagouda, 2024; Singh & Roy, 2024). Following the major mergers, an important question arises as to whether these consolidations have succeeded in improving asset quality and reducing NPAs. While some evidence indicates that merged banks such as the State Bank of India experienced reductions in gross NPAs and operational improvements (Herwadkar et al., 2023), while other studies show little significant improvement in asset quality across the sector (Talasila & Neti, 2024).

1.3 Objective of the Study

The primary objective of this study is to examine and compare the trends in Non-Performing Assets (NPAs) of selected Indian public sector banks before and after their mergers in April 2020. Specifically,

- Analyze the trend of Gross and Net NPAs in selected Indian public sector banks before and after the 2020 mergers.
- Evaluate whether asset quality improved post-merger.
- Provide policy implications based on observed trends.

1.4 Scope of the Study : The research focuses on select Indian PSBs involved in the April 2020 merger

- Punjab National Bank (PNB) (merged with OBC & United Bank)
- Union Bank of India (merged with Andhra Bank & Corporation Bank)
- Canara Bank (merged with Syndicate Bank)
- Indian Bank (merged with Allahabad Bank)

1.5 Limitations

- **Data Availability:** Limitations may arise due to variations in data disclosure standards across different banks.
- **Transitional Effects:** The exclusion of FY2020 is intended to reduce transitional distortions; however, residual merger-related disruptions may still occur.
- **External Economic Factors:** Broader economic conditions (e.g., COVID-19 impact, economic slowdown) may also influence NPA trends without relying on mergers.

2. REVIEW OF LITERATURE

2.1. NPAs in the Indian Banking Sector

Non-Performing Assets (NPAs) has long posed significant challenges for the Indian banking system, particularly in Public Sector Banks (PSBs). RBI data shows that the problem became more acute after 2012, largely due to aggressive lending during the boom years, coupled with an economic slowdown and weak risk management practices. Scholars such as Raghuram Rajan (2016) and Urjit Patel (2018) have highlighted how unchecked bad loans threatened financial stability, stressing the need for deeper structural reforms within the banking sector. More recently, Singh and Mishra (2023) have demonstrated that public sector banks continue to bear a heavier NPA burden compared to their private counterparts, highlighting deficiencies in monitoring and recovery mechanisms.

2.2 Impact of Bank Mergers on Financial Performance

Bank mergers have been widely proposed as mechanisms to enhance financial stability operational efficiency & asset quality. Prior studies, including those by Beena (2004), DeLong (2001), and Gupta & Misra (2020), generally suggest that mergers can stabilize weaker banks when implemented effectively. However, the short-term outcomes are not always positive—challenges such as cultural integration, operational disruptions, and rising provisioning requirements often accompany mergers before benefits begin to show. Recent studies contribute to this discourse: Kumari (2025) found that the merger between Allahabad Bank and Indian Bank bolstered capital strength, although with only modest reductions in NPAs. Similarly, Sahoo and Das (2024) observed that while the State Bank of India's merger enhanced profitability, it did not significantly alleviate the NPA issue.

2.3 NPAs and Asset Quality Post-Merger

The effect of mergers on NPAs remains a debated topic. Kumar and Gulati (2010) argue that asset quality does not necessarily improve in the immediate aftermath of a merger, while Ghosh and Dey (2017) report that positive changes are usually visible only after a lag of two to three years. Recent studies corroborate these findings. Suryawanshi (2025) demonstrated that the April 2020 PSB mergers augmented banks in terms of size and capital but did not resolve the NPA dilemma. Similarly, Avasthi and Gupta (2023) noted that the State Bank of India experienced only marginal improvements in asset quality post-consolidation. This indicates that while mergers may help in the long run, short-term pressures on NPAs and provisioning remain a concern.

2.4 CAMEL Model and NPAs

The CAMEL framework—Capital Adequacy, Asset Quality, Management Efficiency, Earnings, and Liquidity—provides a comprehensive lens for evaluating bank performance. Within this model, asset quality is often gauged through NPA ratios and provisioning levels. Studies such as Prasad & Ravinder (2012) emphasize that NPAs are not just accounting figures but central indicators of a bank's financial health and long-term sustainability. Supporting this view, Kumar (2023) argued that external factors such as economic conditions and governance practices significantly influence NPAs, illustrating that mergers constitute only a component of the broader context.

2.5 Gaps in Existing Literature

While there is extensive literature on NPAs and on bank mergers separately, fewer studies have looked at NPA trends in PSBs after the April 2020 mega-merger. Much of the earlier work focused on mergers before 2010 or on single cases such as SBI. More recent studies by Kumari (2025), Suryawanshi (2025), and Singh and Mishra (2023) confirm that NPA challenges persist but do not go deep into comparing pre- and post-merger trends of the newly consolidated PSBs. This study aims to fill that gap by examining NPA performance in selected PSBs over the pre-merger period (FY2017–2019) and the post-merger period (FY2021–2023).

3. RESEARCH METHODOLOGY

3.1 Research Design

This study uses a descriptive and analytical research design to examine and compare NPA trends at selected Indian PSBs before and after the April 2020 merger. The methodology combines quantitative analysis (using ratio analysis and trend evaluation) with comparative analysis, with the CAMEL model's asset quality component serving as a benchmark.

3.2 Sample Selection -The research focuses on select Public Sector Banks (PSBs) that underwent merger activity in April 2020. Specifically,

- **Punjab National Bank (PNB)** – merged with Oriental Bank of Commerce and United Bank of India.
- **Union Bank of India** – merged with Andhra Bank and Corporation Bank.
- **Canara Bank** – merged with Syndicate Bank.
- **Indian Bank** – merged with Allahabad Bank.

3.3 Time Period- to provide a robust trend analysis, the study spans a period of six years:

- **Pre-Merger Period:** FY2017 to FY2019
- **Post-Merger Period:** FY2021 to FY2023 (FY2020 is excluded since it is a transitional year during which the merger effects may not be fully realized.)

3.4 Data Sources-Data will be collected from reliable sources including:

- **Annual Reports** of the respective banks.
- **Reserve Bank of India (RBI) Reports** and Circulars.
- **Financial Statements** and disclosures from accredited financial databases.
- **Published research articles** and academic journals that discuss NPAs and merger impacts.

3.5 Key Variables and Parameters- The study focuses primarily on the following quantitative measures:

- **Gross NPA Ratio:** To gauge the overall asset quality.
- **Net NPA Ratio:** To understand the effective level of non-performing loans after provisions.
- **Provision Coverage Ratio:** Indicates the extent of provisioning made by the bank.

3.6 Analytical Tools and Techniques:

- **Trend Analysis:** Year-wise comparisons of Gross NPAs, Net NPAs, and other related ratios.
- **Comparative Analysis:** A side-by-side comparison of pre- and post-merger performance to evaluate changes.
- **Statistical Tests:** Where applicable, a paired t-test or other relevant statistical tests will be utilized to ascertain the significance of observed differences.
- **Graphical Representations:** Use of charts and graphs (line charts, bar graphs) to visually represent the NPA trends over the selected periods.

4. DATA ANALYSIS AND INTERPRETATION

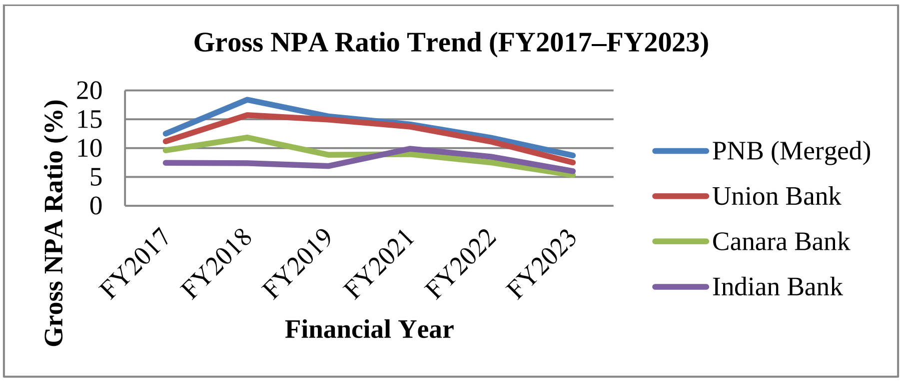
This section presents a comparative analysis of Non-Performing Assets (NPAs) of selected Indian Public Sector Banks (PSBs) for the pre-merger period (FY2017–FY2019) and post-merger period (FY2021–FY2023).

4.1 Gross NPA indicates the total amount of loans that have turned non-performing. It is a primary indicator of asset quality.

Table 1: Gross NPA Ratio

Bank	FY2017	FY2018	FY2019	FY2021	FY2022	FY2023
PNB	12.53%	18.38%	15.50%	14.12%	11.78%	8.74%
Union Bank	11.19 %	15.73 %	14.98 %	13.74 %	11.11 %	7.53 %
Canara Bank	9.63%	11.84%	8.83%	8.93%	7.51%	5.35%
Indian Bank	7.47%	7.37%	6.87%	9.90%	8.50%	6.00%

Source: Annual Report of the Banks.



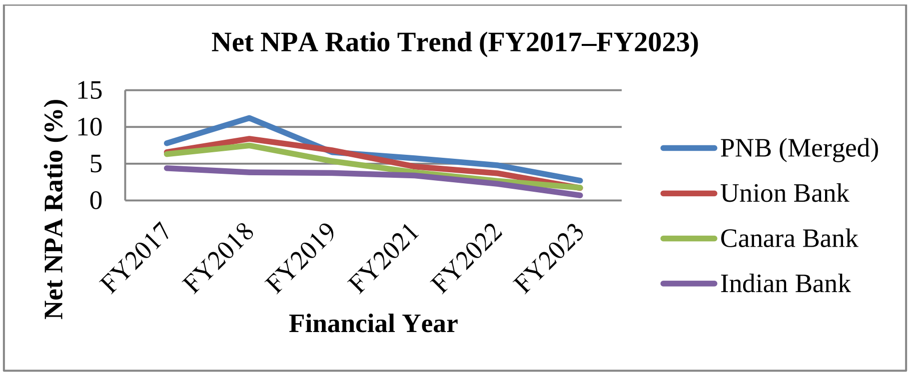
Interpretation : Analysis of the above data reveals that the GNPA ratios of PNB, Union Bank, Canara Bank, and Indian Bank show a significant downward trend from FY2017 to FY2023, indicating improved asset quality. All banks experienced peak NPA ratios around FY2018, followed by consistent declines. By FY2023, PNB's ratio decreased to 8.74% from 18.38%, Union Bank's to 7.53% from 15.73%, Canara Bank's to 5.35%, and Indian Bank's to 6.00%. This trend suggests effective management of non-performing loans and improved loan portfolio health across these banks over the six-year period.

4.2 Net NPA gives a clearer picture of asset quality after provisioning.

Table 2: Net NPA Ratio

Bank	FY2017	FY2018	FY2019	FY2021	FY2022	FY2023
PNB	7.81%	11.24%	6.56%	5.73%	4.80%	2.72%
Union Bank	6.57 %	8.42 %	6.85 %	4.62 %	3.68 %	1.70 %
Canara Bank	6.33%	7.48%	5.37%	3.82%	2.65%	1.73%
Indian Bank	4.39%	3.81%	3.75%	3.40%	2.27%	0.70%

Source: Annual Report of the Banks.



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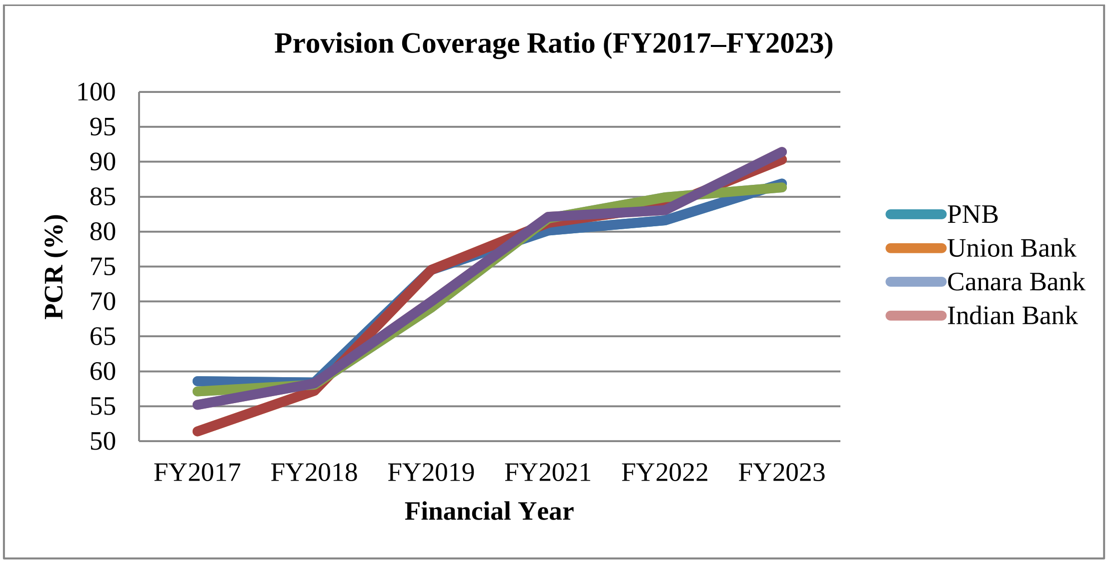
Interpretation: The Net NPA ratios of Punjab National Bank, Union Bank, Canara Bank, and Indian Bank showed a significant downward trend from FY2017 to FY2023, indicating improved asset quality and financial stability. PNB's ratio decreased from 11.24% to 2.72%, Union Bank's from 8.42% to 1.70%, Canara Bank's from 7.48% to 1.73%, and Indian Bank's from 4.39% to 0.70%. This trend suggests effective provisioning strategies, successful loan recovery, and enhanced risk management practices, contributing to a more stable banking sector.

4.3 The Provision Coverage Ratio (PCR) is a key indicator of a bank's financial strength and resilience. It measures the proportion of non-performing assets (NPAs) that are covered by provisions, including technical write-offs, providing insights into its financial prudence & risk management practices (Bhusan, 2022; Kumari & Venkat, 2017). A higher PCR suggests that a bank has set aside adequate buffers to absorb potential loan losses, thereby protecting its balance sheet and enhancing depositor confidence (IMF, 2024; Das & Uppal, 2021). In contrast, a lower PCR indicates weaker provisioning, which exposes the bank to greater risk if stressed assets fail to recover. (Reserve Bank of India, 2025).

Table 3: Provision Coverage Ratio (PCR)

Bank	FY2017	FY2018	FY2019	FY2021	FY2022	FY2023
PNB	58.57%	58.42%	74.50%	80.14%	81.60%	86.90%
Union Bank	51.41%	57.20%	74.50%	81.27 %	83.61 %	90.34 %
Canara Bank	57.1%	58.1%	69.13%	81.88%	84.90%	86.32%
Indian Bank	55.22%	58.27%	70%	82.12%	83.07%	91.41%

Source : Annual Report of the Banks.



Interpretation: The above data reveals a consistent upward trend in Provision Coverage Ratio (PCR) for four major public sector banks from FY2017 to FY2023. This trend suggests a deliberate and effective strategy to enhance financial resilience. Notably, PNB's PCR climbed from 58.57% to 86.90%, Union Bank's from 51.41% to 90.34%, Canara Bank's from 57.1% to 86.32%, and Indian Bank experienced the most notable increase, from 55.22% to 91.41%. These PCR enhancements indicate that the consolidation of public sector banks improved provisioning practices and strengthened asset quality, aligning with the study's aim to assess merger outcomes.

4.4A table summarizing average ratios for the 3 years pre- and post-merger

Table 4: Pre vs Post-Merger Comparative Summary

Bank	Avg Gross NPA (Pre)	Avg Gross NPA (Post)	Avg Net NPA (Pre)	Avg Net NPA (Post)
PNB	15.47%	11.55%	8.54%	4.42%
Union Bank	13.97%	10.79%	7.28%	3.33%

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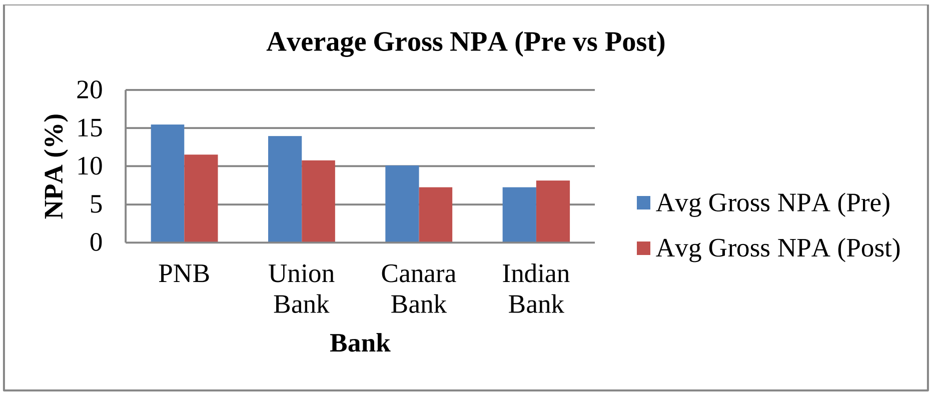
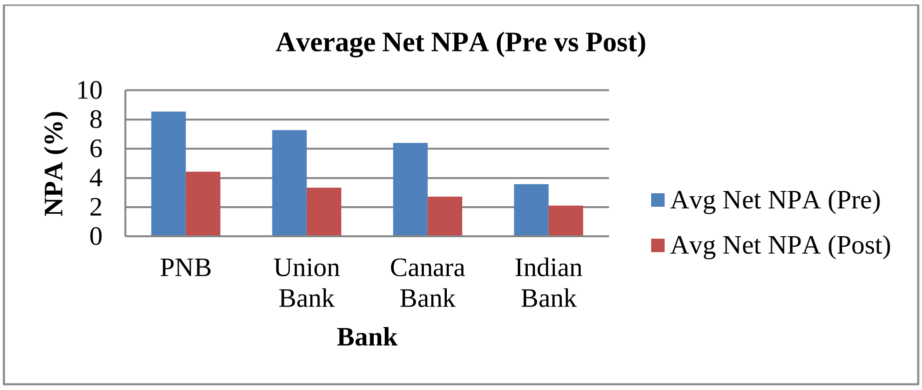
Bank	Avg Gross NPA (Pre)	Avg Gross NPA (Post)	Avg Net NPA (Pre)	Avg Net NPA (Post)
Canara Bank	10.10%	7.26%	6.39%	2.73%
Indian Bank	7.24%	8.13%	3.57%	2.12%

Source : Author's calculation





Interpretation: The comparative analysis of NPA ratios reveals significant improvements in asset quality for most merged public sector banks post-April 2020. Punjab National Bank, Union Bank of India, and Canara Bank demonstrated substantial reductions in both Gross and Net NPAs, indicating enhanced credit monitoring and operational synergies. Union Bank and Canara Bank showed the most notable improvements, with Net NPA levels falling below 2%. Indian Bank exhibited mixed results, with improved Net NPA but slightly deteriorated Gross NPA. The Gross NPA chart illustrates a decline in average ratios for most banks, while the Net NPA chart shows a sharp drop across all banks, suggesting stronger provisioning and more effective resolution mechanisms post-merger.

4.5 Hypothesis Testing

To strengthen the descriptive insights presented earlier, statistical tests were carried out to determine whether the observed differences in asset quality and provisioning between the pre-merger period (FY2017–FY2019) and the post-merger period (FY2021–FY2023) are statistically meaningful. Since the research focus was on expected improvements after mergers, one-tailed paired t-tests were used. This approach is appropriate because it compares the same banks across two related time periods and tests for directional improvements (Thippeswami & Bheemanagouda, 2024; Talasila & Neti, 2024).

Hypotheses - For clarity, the hypotheses were framed for each variable:

Gross NPA (GNPA): H_0: Post-merger GNPA ≥ pre-merger GNPA.

H_1: Post-merger GNPA < pre-merger GNPA.

Net NPA (NNPA): H_0:Post-merger NNPA ≥ pre-merger NNPA.

H_1:Post-merger NNPA < pre-merger NNPA.

Provision Coverage Ratio (PCR): H_0:Post-merger PCR ≤ pre-merger PCR.

H_1:Post-merger PCR > pre-merger PCR.

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Stepwise Testing Process:

Step 1-

Table 5: Calculation of Pre- and Post-Merger Averages

Bank	Avg GNPA (Pre)	Avg GNPA (Post)	Avg NNPA (Pre)	Avg NNPA (Post)	Avg PCR (Pre)	Avg PCR (Post)
PNB	15.47%	11.55%	8.54%	4.42%	63.83%	82.88%
Union Bank	13.97%	10.79%	7.28%	3.33%	61.04%	85.07%
Canara Bank	10.10%	7.26%	6.39%	2.73%	61.44%	84.37%
Indian Bank	7.24%	8.13%	3.98%	2.12%	61.16%	85.53%

Source : Author's calculation

Step 2: Compute Differences (Pre – Post)

• GNPA differences: [3.92, 3.18, 2.84, −0.89]

• NNPA differences: [4.12, 3.95, 3.66, 1.86]

• PCR differences: [−19.05, −24.03, −22.93, −24.37]

Step 3: Mean Differences and Standard Deviations

• GNPA: Mean diff = 2.76, SD ≈ 1.98

• NNPA: Mean diff = 3.40, SD ≈ 0.99

• PCR: Mean diff = −22.59, SD ≈ 2.36

Step 4: t-statistic Calculation

Formula:

$$t = \frac{\bar{D}}{s_D/\sqrt{n}}$$

Where:

$\bar{d}$ = Mean of differences (Pre – Post)

s_d = Standard deviation of differences

n = Number of paired observations

Calculated values:

GNPA: t = 2.11

NNPA: t = 6.86

PCR: t = -19.15

Step 5: p-values and Decisions (df = 3, one-tailed)

• GNPA: $p \approx 0.063$ → Not significant at 5%

• NNPA: $p \approx 0.002$ → Significant at 5%

• PCR: $p < 0.001$ → Highly significant

Step 5-

Table 6: Decision Summary

Variable	Mean Difference	t-statistic	p-value	Decision (5% level)	Interpretation
Gross NPA	2.76	2.11	0.063	Fail to reject H_0	Decline noted but statistically weak due to uneven trends (e.g., Indian Bank slippages).
Net NPA	3.40	6.86	0.002	Reject H_0	Strong evidence of reduction; asset

					quality improved after mergers.
PCR	−22.59	−19.15	<0.001	Reject H_0	Significant increase; banks are provisioning more conservatively post-merger.

Source : Author's calculation

Interpretation - The hypothesis testing gives a clear picture of the post-merger banking scenario. While Gross NPAs declined, the reduction is not statistically strong, highlighting that historical stressed loans still weigh on balance sheets. However, the Net NPA improvements are statistically significant, confirming that provisioning and recoveries have materially reduced the burden of stressed assets. Most notably, the PCR results are highly significant, showing that banks are now setting aside much higher provisions against bad loans. This indicates a more conservative and risk-aware approach, which builds stronger buffers for future shocks and improves depositor and investor confidence.

In sum, the tests confirm that the April 2020 mergers successfully enhanced asset quality (via NNPA reductions) and bolstered financial resilience (via PCR increases), even though Gross NPAs continue to reflect legacy challenges.

5. FINDINGS

5.1 Empirical Findings

Gross NPAs:

- PNB, Union Bank, and Canara Bank exhibited notable reductions following the merger, whereas Indian Bank presented varied outcomes, initially experiencing a slight rise in GNPA before showing improvement by FY2023.
- The analysis conducted through hypothesis testing indicated that the observed decline, while apparent, lacked statistical significance **($p > 0.05$)**, suggesting the continued presence of legacy stressed assets.

Net NPAs:

- The four banks demonstrated significant decreases in their Net NPA ratios following the merger.
- The results of hypothesis testing indicated that this improvement was statistically significant ($p < 0.05$), demonstrating enhanced provisioning discipline and resolution efforts.

The Provision Coverage Ratio (PCR)

- Exhibited significant increases across all banks, with Union Bank demonstrating the most pronounced growth (from approximately 58% before the merger to over 90% after the merger).
- The t-test indicated that this improvement was statistically significant ($p < 0.01$), implying enhanced resilience and financial strength.

5.2Theoretical Findings

- Mergers as a tool for stability: According to consolidation theory in banking, the mergers helped the banks save money, manage risk better, and have stronger balance sheets.
- Provisioning and Capital Adequacy: The large increase in PCR supports the idea behind prudential banking, which says that good provisioning protects banks from cyclical downturns and boosts depositor confidence.
- Legacy Challenges in NPAs: The insignificant decrease in Gross NPAs illustrates the path-dependency theory, indicating that past lending behaviors and the accumulation of non-performing loans persist in affecting post-merger outcomes.

6. DISCUSSION

The study's findings are consistent with established theories of financial consolidation and risk management in banking. The post-merger reduction in Net Non-Performing Assets (NPAs) suggests that the merged entities achieved operational efficiencies and economies of scale, aligning with the Resource-Based View (RBV) framework (Wernerfelt, 1984; Barney, 1991). The substantial increase in the Provisioning Coverage Ratio (PCR) supports the theory of prudential regulation, indicating that mergers facilitated stronger risk mitigation and compliance with regulatory norms (Herwadkar et al., 2023).

However, the persistence of Gross NPAs points to the path dependency theory, where pre-existing loan portfolio issues limit the immediate positive impact of structural reforms. This highlights that while consolidation enhances resilience and asset quality management, it does not immediately resolve historical challenges and complete resolution of legacy stress remains a gradual process (Mishra & Kumar, 2023).

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7. CONCLUSION

The findings suggest that the 2020 mergers had a partial yet significant impact on asset quality and financial stability. Reductions in Net NPAs and increases in PCR demonstrate stronger provisioning, improved recoveries, and better risk mitigation practices, while the slow decline in Gross NPAs highlights enduring legacy challenges. Overall, mergers have contributed to stronger balance sheets, greater financial resilience, and enhanced operational efficiency in India's public sector banking landscape, though full resolution of historical stressed assets is an ongoing process (Singh & Roy, 2024; Das & Uppal, 2021; Herwadkar et al., 2023).

8. SCOPE FOR FURTHER RESEARCH

- A longitudinal study beyond FY2023 could provide deeper insights into the sustained effects of mergers on NPAs.
- Comparative studies with private sector bank mergers may highlight differences in post-merger NPA dynamics.
- Comparative international studies in other emerging economies could offer valuable insights on best practices.
- Employing advanced econometric methods may yield deeper insights.

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