

## Post-Merger Performance Evaluation: A Case of Indian Public Sector Banks

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### Abstract

General Subject class: Mergers & Amalgamations

Sub Selection class: Mergers in Public Sector Banks

Banks play a crucial role in a country's economic and social progress. With the central government aiming to transition India into a developed economy by 2047, it has strategically consolidated public sector banks from 29 to 12, over time, to strengthen their financial and managerial capabilities. This study examines the effectiveness of the large-scale amalgamations that occurred in 2020, where 10 public sector banks merged into 4 entities. Besides presenting the secular growth, post-merger, in business and related parameters, the evaluation employs paired t-tests on data from 8 half-yearly financial statements, before and after the mergers, focusing on variables relevant to bank performance. Despite facing challenges such as the Covid-19 lockdown immediately post-merger, the acquiring banks have shown resilience and improved performance over time. The author suggests conducting similar longitudinal studies periodically to gauge the long-term sustainability of these mergers.

**Keywords:** mergers, public sector, banks, economy, amalgamation

### Introduction

Banks serve as the foundation of a nation's economy, acting as crucial intermediaries by directing depositors' savings towards both consumption and productive sectors via lending. Given their typically high leverage, a robust banking system becomes imperative for ensuring economic stability and advancement within a country. Consequently, banks are subjected to more rigorous monitoring and regulatory oversight compared to other entities, owing to their pivotal role in the financial landscape.

Following India's independence, the banking sector was fragmented, comprising small private banks serving specific clienteles. In efforts to broaden accessibility and bolster banks' roles in societal and economic progress, the central government undertook two waves of bank nationalization in 1969 and 1980. The primary aim was to ensure banking services were available to all citizens and to amplify their impact on the country's development journey.

During the 1990s, as liberalization gained momentum, there was a surge in the establishment of private sector banks. Distinguished by their extensive utilization of technology and tech-driven products and services, these banks introduced greater convenience for customers and

expanded the horizons of banking accessibility. The heightened competition posed by these modern private banks prompted a necessity for transformative reforms within the public sector banks to adapt to the evolving landscape.

The advent of globalization and liberalization propelled the Indian economy onto a trajectory of high growth. Consequently, there arose a pressing demand for the development of large-scale banks in India capable of effectively supporting the burgeoning economy. During this period, the Narasimhan Committee issued reports in 1991 and 1998, outlining recommendations aimed at consolidating public sector banks into fewer institutions with international presence and establishing large banks to meet domestic demands. The rationale behind this initiative was the belief that increased operational efficiencies resulting from economies of scale and larger balance sheet sizes would empower the merged entities to extend higher levels of financing to targeted sectors and companies, thus enhancing their ability to compete on a global scale.

The central government has articulated a vision to propel India into a developed economy by 2047, with interim milestones including achieving a GDP of USD 5 trillion by 2024-25 and USD 10 trillion by 2030. As one of the world's fastest-growing economies, India is poised to ascend to the rank of the third-largest economy by 2030. Realizing these ambitious goals necessitates a robust transformation of size of the banking industry including financial and managerial competencies across the public sector banks.

Accordingly, the central government reduced the number of public sector banks from 29 to 12, by merging some of them. A brief of the mergers affected over the years and the current list of 12 public sector banks is given in the annexures.

The impact of these decisions of the central government have not been studied systematically. The current paper delves into a medium-term comparative performance of the four mergers announced by the government on August 30, 2019 and which came into effect from April 1, 2020.

The prevailing environment at the time of these mergers was critical and hence this context needs to be understood before proceeding with our analysis and discussion.

- It's crucial to note that the country entered into a lockdown starting from March 22, 2020, due to the Covid-19 pandemic, which effectively brought the entire economy to a standstill. As a result, there was a significant decline in the economic activity during the first quarter of 2020-21 with GDP decline 24.43%. Consequently, the public sector banks also embarked into additional activities necessitated by government for minimising the social impact of this crises, including taking care of its own constrained manpower. No wonder the economic performance parameters of the banks were severely impacted during the initial period of the merger.

- During the amalgamation process, the primary focus of management was to ensure the seamless integration of technology, human resources, and operations. This is an initial phase where the merger process takes precedence over business development, and retaining existing business becomes a significant challenge for the merged entities. In the current context, this challenge has been compounded by the Covid-19 pandemic. This is another aspect which impacted, business figures for the initial period, post-merger, exhibit a decline or, at the very least, limited growth for each of the banks involved.

- The government's strategic decision to proceed with the announced amalgamations despite the country being in lockdown underscores the complete trust of both the government and regulators in the managerial capabilities and prowess of public sector banks. This reflects

the confidence in the strength of the banking sector and its ability to effectively manage mergers even in situations of extreme distress.

Thus, the current study which focuses on performance of the four acquiring banks created as a consequence of the mergers viz Punjab National Bank, Canara Bank, Union Bank of India and Indian Bank is very exciting. The choice of this sample is based on the common merger date of April 1, 2020, which ensures uniformity for comparing the pre- and post-merger periods. Additionally, the period of consistent data available for the study is considered sufficient to facilitate a meaningful analysis and discussion on the post-merger performance relative to the pre-merger status.

### **Objectives**

1. To assess the comparative financial performance of the four merged banking groups before and after amalgamation.
2. To identify the key variables for determining bank performance, before and after merger.

### **Literature Review**

The inclusion of various studies on financial, profitability, and efficiency-related impacts in banking and non-banking mergers adds depth to the analysis.<sup>1</sup>

In their 2014 study on bank mergers in Pakistan, Irfanshakoort et al. examined a sample of 7 banks and concluded that the impact of mergers becomes more evident in the long term. However, it's worth noting that their data only covered two years pre-merger and two years post-merger, which may have limitations in capturing the full extent of the merger's effects over an extended period.

In their 2013 discussion on the cost efficiency of banks, Kaur and Kaur utilized non-parametric tests and found that mergers have a positive impact on cost efficiency. This improvement is attributed to the ability of merged entities to spread their costs over a wider base. Additionally, their study highlighted Return on Assets (RoA) as a useful proxy variable for understanding bank profitability.

Verma, Kalyan, and Ekka's study conducted in 2023 focused on bank mergers in India between 2014 and 2019. Their findings suggested that mergers had a positive impact on market and financial performance. However, they observed that mergers did not have a significant impact on profitability and operational efficiencies.

Kumar and Bansal's 2008 study examined liquidity, operating efficiency, and overall returns accruing to shareholders from mergers. Their findings indicated that mergers confer benefits to the acquiring entity in the long run. These benefits include improved cash flows, diversification, and cost efficiencies.

In Joshua's 2011 study on the mergers of three banks in Nigeria, he analyzed indicators such as gross earnings, profit after tax, and net assets of the selected banks. His findings suggested that the financial efficiency of these banks had improved post-merger compared to the pre-merger period.

In their 2014 study, Jayaraman et al. examined the comparative efficiency of six banks in India that underwent mergers between 2006 and 2008. They analyzed data spanning three years before and after the mergers. Additionally, they compared the efficiency parameters of

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<sup>1</sup> A tabular format is provided in the annexure of the paper, outlining the studies undertaken and the variables studied, as a comprehensive overview for readers to understand the breadth of research in this area.

these merged banks with non-merged banks of similar size. Their findings were inconclusive regarding the impact of mergers, as they observed minimal differences in profitability and cost parameters. However, they noted that efficiency levels exhibited a decline immediately after the merger, with a gradual recovery to pre-merger levels occurring after approximately three years.

Aggarwal and Garg's 2022 study delved into the accounting impact of 68 non-banking acquiring firms, analyzing data over a period of five years before and after the mergers. Their findings indicated that profitability and liquidity of acquiring firms demonstrated positive improvements, albeit only in the long run (over 5 years). However, they observed that the mergers had minimal impact on the solvency of these firms.

Sharma and Rai's 2014 study utilized Economic Value Added (EVA) as a measurement variable to evaluate the financial performance of 15 banking mergers that took place in India between 2000 and 2009. Their findings indicated that EVA showed improvement over the long run, although some cases exhibited deterioration in the short run.

Singh and Das conducted an analysis in 2018 focusing on eight bank mergers in India that occurred between 2010-11 and 2015-16. They examined variables such as Current Ratio, Working Capital Turnover Ratio, Asset Turnover Ratio, Net Profit Margin, and Return on Capital Employed. The results of their study were mixed, with some merged banks demonstrating improvements in the long run, while others experienced either a decline or no significant impact due to the mergers.

Varghese and Thaha's 2017 analysis focused on the specific case of the merger of ING Bank into Kotak Mahindra Bank in 2015. They assessed the impact across 15 parameters and found that while post-merger performance experienced a short-term decline, in the long term, the merger would likely yield positive benefits for Kotak Mahindra Bank.

In Kemal's 2011 discussion, the focus was on the financial performance of the Royal Bank of Scotland (RBS) in Pakistan following a merger. The analysis spanned the four-year financial statements from 2006 to 2009 and covered twenty variables. The findings revealed that post-merger, RBS experienced a deterioration across all parameters, including profitability, liquidity, efficiency, and asset management.

Goyal and Joshi's 2011 study examined 17 bank mergers that occurred post-liberalization in India. Their focus was on factors such as the number of branches, geographical reach, and benefits accruing to the acquiring bank. They observed that large private banks in India strategically utilized mergers as a means of inorganic growth to expand their geographical presence, particularly into rural and other areas. However, they noted that employee resistance from smaller merging banks needed to be addressed through specific HR initiatives. Roopesh and Sandhya's 2021 study examined the impact of recent mergers among public sector banks, particularly focusing on the consolidation of 10 banks into four entities announced in 2019, effective from April 1, 2020. However, due to the timing of their study, conducted immediately after the merger, there was a lack of sufficient post-merger performance data for the merged banks. Moreover, the onset of the Covid-19 pandemic and related lockdown further complicated the economic and logistical environment, potentially masking the true impact of the mergers on the banks' post-merger performance. Therefore, any data analysis based on this insufficient post-merger data, combined with the immediate challenges posed by the pandemic, may not accurately reflect the true impact of the mergers.

The studies reveal that mergers create short term adverse impact on the financial performance of the entities. However, after a period of three to five years post-merger, the financial benefits and operational efficiencies arising out of the consolidation exercise become evident.

### **Operational Definitions**

The Oxford English Dictionary defines:

Merger – “The combination or amalgamation of a commercial company, institution, etc., with another, or the consolidation of two or ...”

Acquisition – buying “another company or part of a company.”

Amalgamation – “a consolidation of two or more corporations”

Certainly, the distinctions between mergers, amalgamations, and acquisitions are legally significant, but they are often used interchangeably in common language, media reports, and discussions about corporate transactions. In the government's notification, the legal process of consolidating public sector banks is referred to as amalgamation. However, it's important to note that the objective of the paper is to assess the impact of these consolidations rather than delve into the legal intricacies of the process.

Hence, in this paper, the words merger, amalgamation and acquisition have been used interchangeably.

### **Research Gaps**

The literature review highlights a lack of consistency and uniformity among researchers regarding the variables studied in assessing the financial performance of bank mergers. While many studies focus on variables commonly used for assessing corporate balance sheets, some include factors like the number of bank branches or staff members, which would necessarily show increase post-merger and may not significantly impact efficiency parameters.

This study aims to analyze specific variables like Credit Cost Ratio and Provision Coverage Ratio to gain a better understanding of the impact of the amalgamations carried out in 2020. The selection of these variables is based on the importance given by analysts and investors, while assessing the performance of banks. It is the author's understanding that some of these variables have not been previously utilized in research papers analyzing the financial success of mergers and acquisitions in the banking industry.

It's noted that previous studies on bank mergers (Irfanshakoore et al, 2014; Varghese & Thaha, 2017; Verma et al, 2023; Jayaraman et al, 2014; Sharma & Rai, 2012; Goyal & Joshi, 2011; Joshua, 2011) have examined various mergers involving different banks, with only one study (Roopesh & Sandhya, 2021) considering the specific four acquiring banks in 2020, which are the subject of analysis in this paper. However, this study had limited data for analysis due to its short duration immediately after the mergers.

Given that nearly four years have elapsed since the amalgamation, this study benefits from a larger dataset for a more comprehensive analysis. By utilizing half-yearly balance sheet data covering 8 half-yearly financial years before and after the merger, the study can conduct more robust statistical analysis and provide more nuanced interpretations. This extended timeframe allows for a deeper understanding of the long-term impact of the merger on the financial performance of the banks involved.

### Methodology: Choice of Acquiring and Merging Banks

The Government of India announced the amalgamations of following banks on 30 August 2019, which was made effective from the beginning of financial year 2020-2021 on 01 April, 2020:

Table 1: List of Banks Amalgamated wef 01 April, 2020

Sl	Name of Pre-Merged Bank	Name of Amalgamated Bank
1	Punjab National Bank	Punjab National Bank (PNB)
2	Oriental Bank of Commerce	
3	United Bank of India	
4	Canara Bank	Canara Bank
5	Syndicate Bank	
6	Union Bank of India	Union Bank of India
7	Andhra Bank	
8	Corporation Bank	
9	Indian Bank	Indian Bank
10	Allahabad Bank	

The choice of acquiring and merging banks and the formation of four merged entity from 10 individual banks for these amalgamations in 2020 was guided by two key suitability considerations:

1. **Commonality of Technology Platform:** The merging banks were selected based on their utilization of a shared technology platform for their core banking solutions. This commonality aimed to streamline the integration process and enhance compatibility between the merging entities.
2. **Geographical Spread of Branches:** Another factor taken into account was the geographic distribution of bank branches, aiming to create a merged entity with an extensive pan-India presence. This strategic approach was perceived to improve the compatibility between merging banks and enhance the likelihood of success and sustainability of the mergers.

It is inferred that the post-merger performance of each group serves as a reflection on the criteria used for their selection and formation. In other words, the effectiveness of the merger process and the success of the merged entities can be evaluated based on how well they align with the considerations of technology platform commonality and geographical branch spread.

### Choice of Data and Variables

The financial reports and analyst presentations from the websites of the respective banks were downloaded for the study. In India, the financial year spans from April 1st to March 31st of the following year. As the mergers of the identified four banks took effect from April 1st, 2020, it implies that the pre-merged organization published its solo financial report as of March 31st, 2020, while the merged entity began operating from April 1st, 2020.

While no formal financial report of the merged entity as of April 1st, 2020 has been published, the study was able to obtain figures by examining financial reports and analyst presentations of subsequent periods, such as September 2020 onwards, where comparative figures from April 1st, 2020, have been made available. This approach provides a basis for assessing the financial performance of the merged entity following the amalgamation.

Taking data at half-yearly intervals, specifically at the end of March and September, allows for a comparative study between the pre-merger and post-merger operations of the banks. By

utilizing the latest available figures up to September 2023, which include quarterly performance data of the merged bank, the study can offer a comprehensive analysis of the bank's performance over time. This approach enables the identification of trends, patterns, and changes in key financial metrics before and after the merger, providing valuable insights into the impact of the merger on the bank's operations and performance.

With data obtained for the post-merged entity spanning eight half-years from April 1st, 2020, to September 30th, 2023, and data for the pre-merged entity covering the previous eight half-years, from September 30th, 2016, to March 31st, 2020, the study conducts a thorough comparative analysis of the bank's performance before and after the merger. This comprehensive dataset allows for a detailed examination of trends, changes, and impacts resulting from the merger over a relatively extended period.

Table 2: List of Variables used for evaluation, with details and implication

Variable	Unit of Measure	Brief	Formula	Remarks	Variable used in other cited/ related studies
Global Business	INR Million*		Global Deposits + Global Advances	Higher value is better	Nil
Deposits	INR Million*	Indicates the raw material available to banks for giving advances	Aggregate of deposits of all customers with the bank	Higher value is better	Nil
Advances	INR Million*	Income generating source for banks	Aggregate of advances to all customers with the bank	Higher value is better	Nil
CASA	INR Million*	Indicates low-cost deposits of the bank, as compared to Term deposits	Aggregate of Current Account + Savings Account balances	Higher CASA indicates lower Cost of Funds, hence better profitability for banks	Nil
Business per Employee	INR Million*		Global Business/ Number of Employees	Higher figure indicates better staff productivity	(Varghese & Thaha, 2017)
Capital to Risk Weighted Assets Ratio (CRAR)	Percentage	Capital to Risk weighted Assets Ratio	Risk Adjusted Assets / Capital	Higher value is better - Banks endeavour to maintain above 13% preferably	(Varghese & Thaha, 2017)  (Verma, Kalyan, & Ekka, 2023)

				around 15%	
Gross NPA ratio	Percentage	Percentage of advances that are not generating income for the bank	Gross Non-Performing Assets/Advances	Lower value is better -Banks endeavour to maintain below 2% preferably below 1%	Nil
Net NPA ratio	Percentage	Net Percentage of advances that are not generating income for the bank after making provisions for bad debts	Gross Non-Performing Assets/Advances	Lower value is better - Banks endeavour to maintain below 1% preferably tending towards zero	(Verma, Kalyan, & Ekka, 2023)
Provision Coverage Ratio (PCR)	Percentage	Provisions kept towards bad debts	Provisions/ Gross Non-Performing Assets	Higher figure indicates a stronger bank	Nil
Credit Cost Ratio	Percentage	Signifies the degree of dent on profitability of the bank, during the period	Provision for NPA during the period/ Gross advances at beginning or period	Lower figure indicates better quality advances, hence a stronger bank	Nil
Net Profit Margin (NPM)	INR Million*	Profit after accounting for all operating and tax expenses		Higher value is better	(Irfanshako, Nawaz, ZulgarnainAsab, & Khan, 2014)  (Kemal, 2011)  (Roopesh & Sandhya, 2021)
Operating Profit Margin (OPM)	INR Million*	Gross profit from operations of the bank		Higher value is better	(Kemal, 2011)  (Roopesh & Sandhya, 2021)
Net Interest Income (NII)	INR Million*		Interest earned from advances less interest paid on deposits	Higher value is better	Nil
Global Net Interest	Percentage	Returns earned from the	Net Interest income/	Higher value is better -	Nil

Margin (NIM)		earning assets of the bank	earning assets	Banks endeavour to maintain around 3%	
Return on Assets (RoA)	Percentage	Post tax earnings from advances	Net profit/total assets	Higher value is better - Banks endeavour to maintain around 1%	(Aggarwal & Garg, 2022) Plus 6 others
Return on Equity (RoE)	Percentage	Return available to shareholders	Net profit/Equity	Higher value is better - Banks try to maintain between 13% to 20%	(Aggarwal & Garg, 2022) Plus 4 others

Source: Compilation by the Author

\* The author has converted the financial figures from Crores and Lacs, as given in the Financial Statements, to trillions, billions and millions for uniformity and ease of understanding at international forums, as a practical approach. This standardizes the presentation of financial data, making it more accessible and comprehensible for a wider audience. It also facilitates easier comparison with financial statements from other regions and industries, enhancing the clarity and transparency of the analysis.

\*\* The author has computed figures where they were not directly available in the financial reports or analyst presentations as a proactive step to ensure that the dataset is comprehensive and meaningful for comparison. By filling in these gaps, the study provides a more complete picture of the banks' financial performance and facilitate a thorough analysis of the impact of the merger.

The variables like Global Business, Deposits, Advances, and CASA (Current Account Savings Account) of the merged entities have been considered as part of descriptive statistics, as these metrics are expected to show growth compared to the pre-merged entity due to the consolidation of resources and expanded operations.

Additionally, preparing post-merger charts for the Credit Cost Ratio, even in the absence of pre-merger data, allows for the depiction of improvements in asset quality following the merger. While comparative analysis would be ideal, showcasing the post-merger trend can still provide valuable insights into the effectiveness of the merger in enhancing the bank's asset quality and overall performance.

Other variables that are comparative in nature, with pre-merger and post-merger data available, such as Business per employee, CRAR (Capital to Risk-Weighted Assets Ratio), Gross NPA (Non-Performing Assets) ratio, Net NPA ratio, Provision Coverage ratio, Net Profit Margin, Operating Profit Margin, Net Interest Income, Global NIM (Net Interest Margin), Return on Assets, and Return on Equity have been considered for performing the Paired t test (before and after merger).

These variables provide insights into the relative performance, productivity, profitability, and asset quality of the bank, regardless of their size. By conducting a Paired t test, the study assesses whether there are statistically significant differences in these key metrics, before and after the merger. This statistical analysis adds rigor to the evaluation process and provides a

scientific basis to determine the impact of the merger on the bank's overall financial health and performance.

The t test statistic used is:

Mean of differences in observations/ standard error of the estimate

Where standard error of estimate = standard deviation of differences/ square root of number of variables.

The tabulated value of t statistic has been seen at alpha level of 0.05 with 7 degrees of freedom (n-1) for comparing with the calculated value of t and testing of hypothesis.

To perform the Paired t test, the test hypothesis has been formulated as follows:

Null Hypothesis (H0): There is no significant change in the selected variables before and after the merger.

Since the test is a two-tailed test, it accounts for the possibility that the difference in variables brought about by the merger could have either positive or negative impacts. Therefore, the alternative hypothesis (H1) encompasses both possibilities, indicating that there is a significant difference in the mean values of the selected variables before and after the merger, regardless of the direction of the change. This approach ensures that the test is sensitive to changes in both directions and provides a comprehensive assessment of the impact of the merger on the variables under consideration.

### **Data Analysis and Discussion**

The Data analysis has been presented in two segments:

- 1) Creating tabular representations and corresponding charts for variables that are not comparative in nature or for which pre-merger data was not available or could not be computed. This allows for a clear visualization of the post-merger performance and trends in these specific variables, enabling stakeholders to gain insights into the impact of the merger on various aspects of the bank's operations and financial health.
- 2) Presenting the results of the paired t-test, conducted as part of testing the hypothesis, to enable the stakeholders to understand whether the observed changes in the selected variables are statistically significant, and draw informed conclusions about the effectiveness of the merger and its likely implications for the bank's operations and future prospects.

Segment 1: Tabular representations with corresponding charts:

- a) Comparative Analysis of Business with Economy and Industry Growth is shown in the charts below: The growth rate of merged entities for March 2021 has not been shown in the charts, which is the first completed financial year post-merger, as it is not comparable due to artificial spike caused by the amalgamations.

Chart 1:

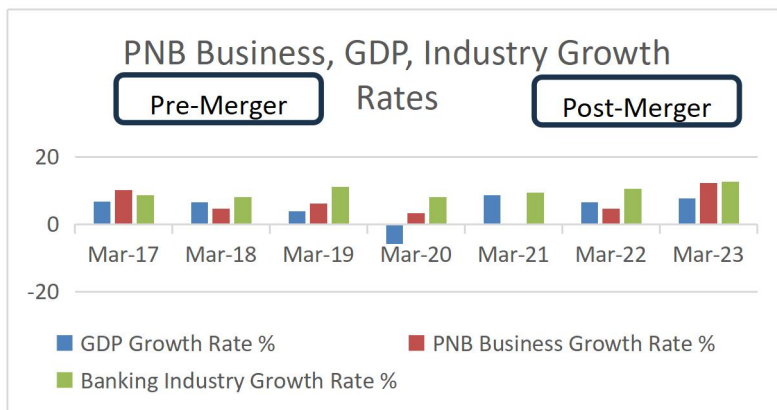


Chart 2:

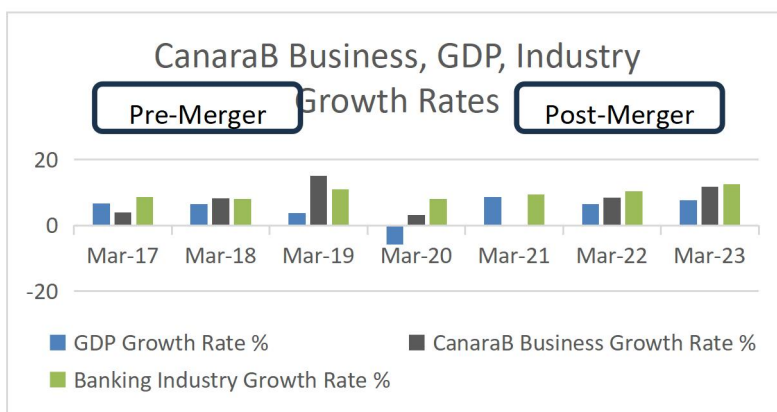


CHART 3:

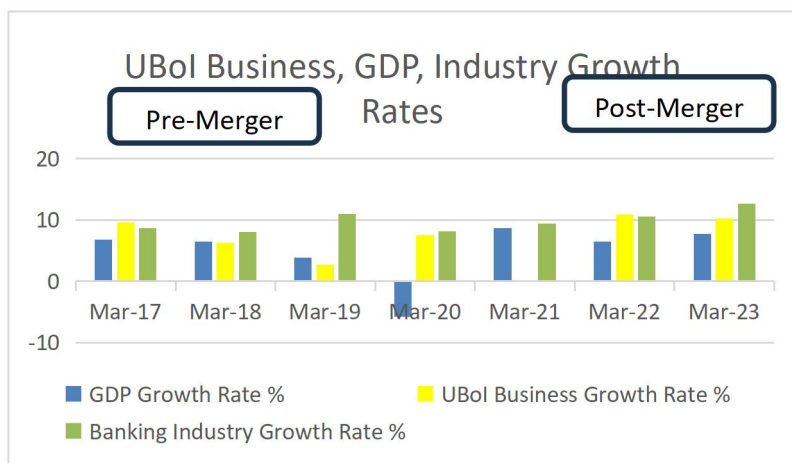
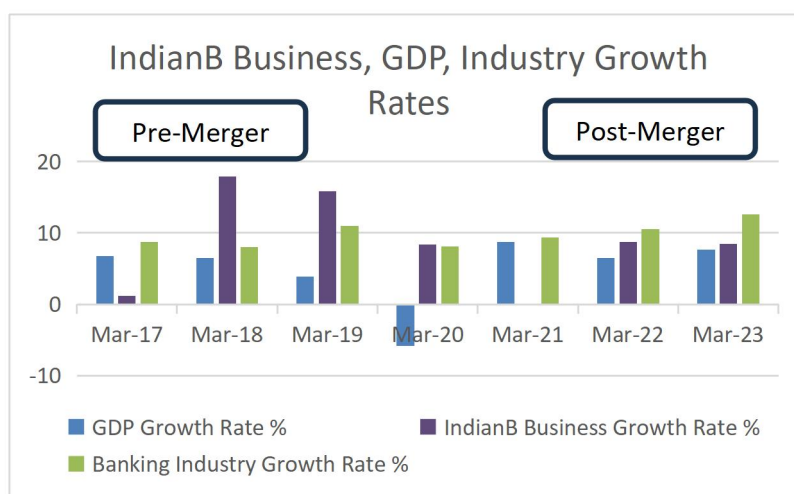


Chart 4:



The comparative analysis of the four amalgamating banks reveals:

- During the pre-merger phase there is mixed performance relative to the GDP growth and the banking industry growth of each of the stand-alone banks.
- During the post-merger phase, we observe that the amalgamated banks have started showing growth rate higher than the economy for the financial year ending March 2023. However, they are still lagging behind the banking industry growth rates. It can be construed that full financial benefits accruing due to mergers are still work-in-progress.

b) The business growth (deposits + advances) for the four merged banks is given in the table below:

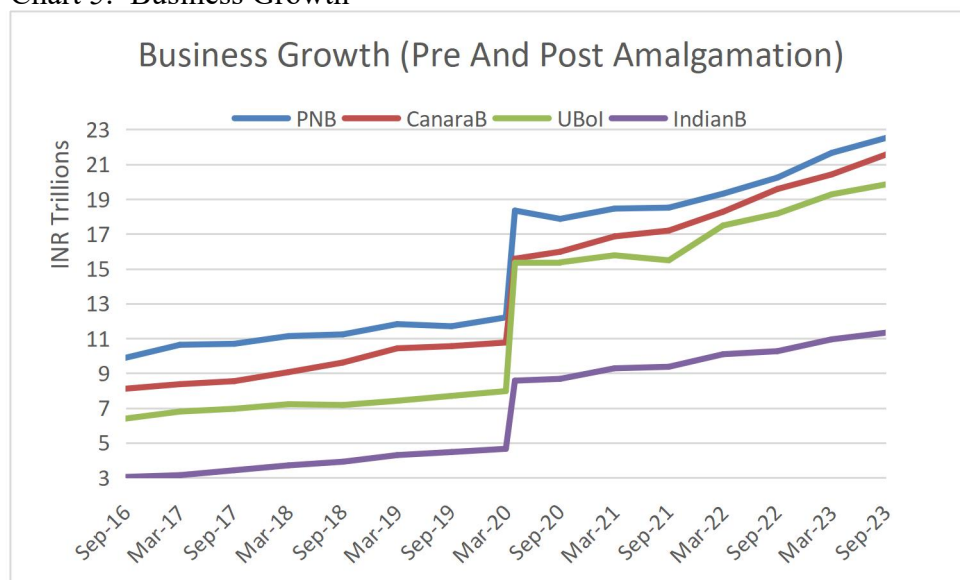
Table 3: Business Figures (Amount INR millions)

	PNB	Canara Bank	Union Bank of India	Indian Bank
September 2016	9890900	8114510	6398220	3044250
March 2017	10634550	8372840	6800750	3146540
September 2017	10691950	8546950	6959780	3428750
March 2018	11135230	9064750	7223620	3710200
September 2018	11232440	9614550	7176550	3918450
March 2019	11822240	10432490	7418470	4299720
September 2019	11698670	10556530	7699360	4474200
March 2020	12207750	10765740	7975890	4661160
April 2020	18342900	15578390	15347490	8574990
September 2020	17866710	15977470	15371600	8678520
March 2021	18457390	16860300	15774890	9283880
September 2021	18510970	17193490	15486050	9372020
March 2022	19313220	18275560	17488000	10092430
September 2022	20237130	19581110	18169550	10268010
March 2023	21658440	20420010	19276210	10947520
September 2023	22516310	21561810	19848420	11330910

Source: Compiled by the Author from Half-Yearly financial statements of respective Banks, available on their websites

The above data is represented in the chart below:

Chart 5: Business Growth



Source: Table 3 ibid

We observe that during the initial period, post-merger, there was either slight decline (PNB) or the growth was stagnant (UBoI and IndianB). However, post September 2021, all banks are showing growth rates higher than the pre-merger stage, in their overall business figures.

c) The Global Deposits growth for the four merged banks is given in the table below:

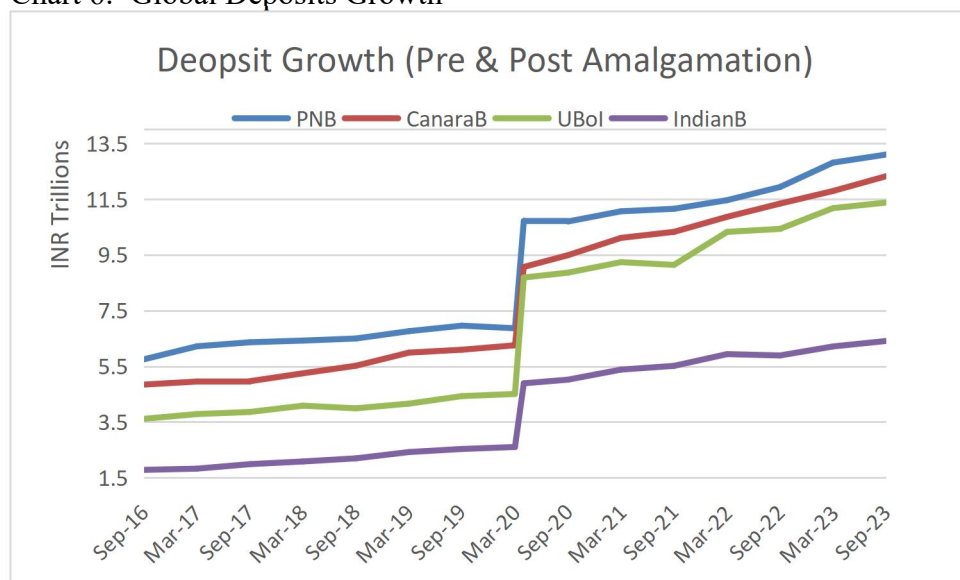
Table 4: Global Deposits (Amount INR millions)

	PNB	Canara Bank	Union Bank of India	Indian Bank
September 2016	5748840	4843210	3614540	1781590
March 2017	6217040	4952750	3783910	1825090
September 2017	6362080	4964400	3860250	1986690
March 2018	6422260	5247720	4085020	2082940
September 2018	6497260	5519260	3990920	2195230
March 2018	6760300	5990330	4159150	2420760
September 2019	6957820	6094360	4428790	2531720
March 2020	6864930	6253510	4506680	2602260
April 2020	10715690	9066210	8686320	4888350
September 2020	10697470	9487670	8860980	5019560
March 2021	11063320	10108750	9238050	5380710
September 2021	11153730	10325360	9140220	5514720
March 2022	11462180	10864090	10323920	5936180
September 2022	11935010	11339640	10432650	5888600
March 2023	12811630	11792190	11177160	6211660
September 2023	13099100	12322150	11376280	6408030

Source: Compiled by the Author from Half-Yearly financial statements of respective Banks, available on their websites

The above data is represented in the chart below:

Chart 6: Global Deposits Growth



Source: Table 4 ibid

We observe that the post-amalgamation rate of growth is higher than the pre-amalgamation stage rate, for each of the amalgamating bank.

d) The Global Advances growth for the four merged banks is given in the table below:

Table 5: Global Advances

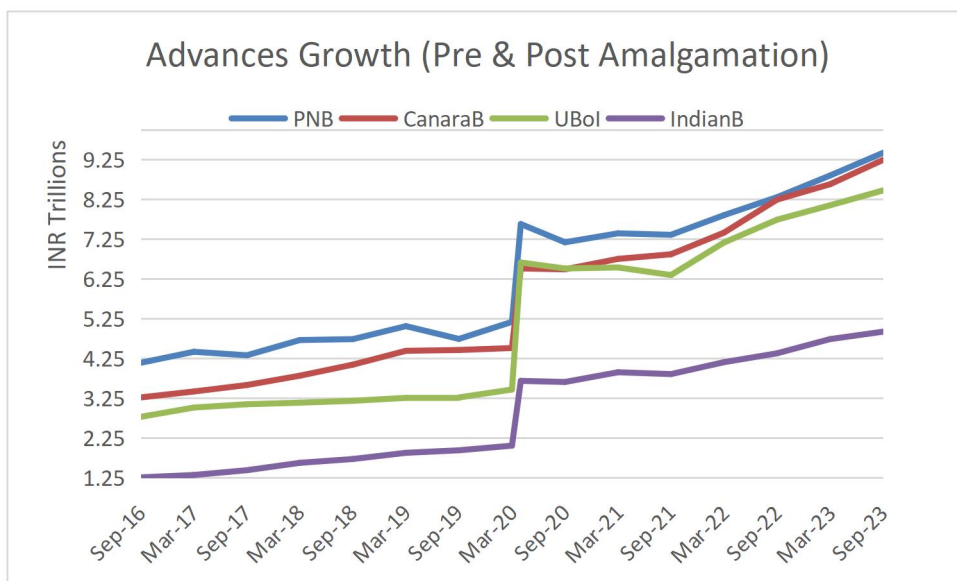
(Amount INR millions)

	PNB	Canara Bank	Union Bank of India	Indian Bank
September 2016	4142060	3271290	2783680	1262660
March 2017	4417510	3420090	3016840	1321450
September 2017	4329870	3582550	3099530	1442060
March 2018	4712970	3817030	3138600	1627260
September 2018	4735180	4095290	3185630	1723220
March 2019	5061940	4442160	3259320	1878960
September 2019	4740850	4462170	3270570	1942480
March 2020	5169290	4512230	3469210	2058900
April 2020	7627210	6512180	6661170	3686640
September 2020	7169240	6489800	6510620	3658960
March 2021	7394070	6751550	6536840	3903170
September 2021	7357240	6868130	6345830	3857300
March 2022	7851040	7411470	7164080	4156250
September 2022	8302120	8241470	7736900	4379410
March 2023	8846810	8627820	8099050	4735860
September 2023	9417210	9239660	8472140	4922880

Source: Compiled by the Author from Half-Yearly financial statements of respective Banks, available on their websites

The above data is represented in the chart below:

Chart 7: Global Advances Growth



Source: Table 5 ibid

We observe that after a slight dip immediately after the merger, the growth rate is higher, post-amalgamation as compared to the pre-amalgamation stage.

e) CASA growth: The balances in Current Accounts and Savings Accounts (CASA) denote low-cost funds for banks. Their size, stability and growth affect the profitability of the banks. The performance in CASA deposits of the four banks, post-merger is given in the table below:

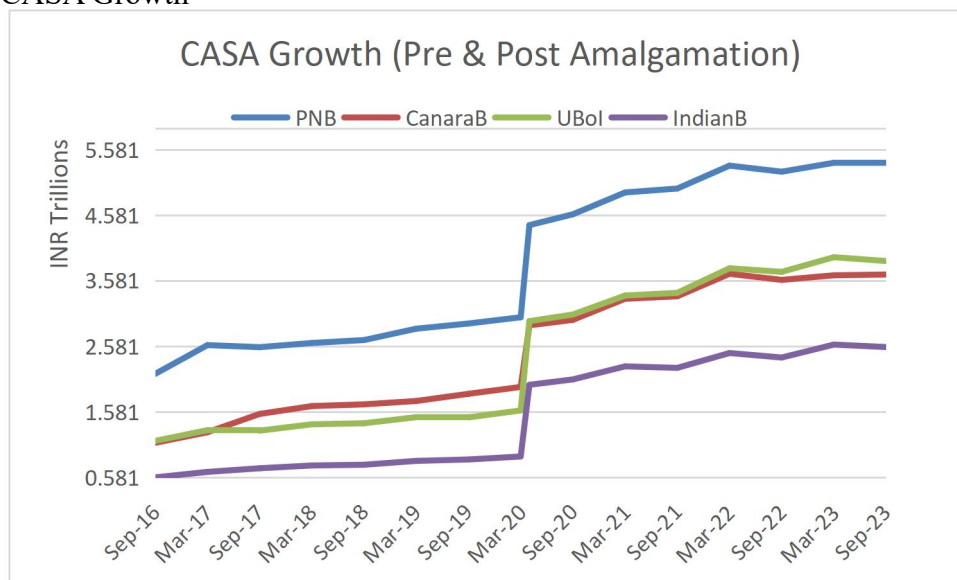
Table 6: CASA Balances (Amount INR million)

	PNB	Canara Bank	Union Bank of India	Indian Bank
September 2016	4142060	3271290	2783680	1262660
March 2017	4417510	3420090	3016840	1321450
September 2018	4329870	3582550	3099530	1442060
March 2018	4712970	3817030	3138600	1627260
September 2019	4735180	4095290	3185630	1723220
March 2019	5061940	4442160	3259320	1878960
September 2019	4740850	4462170	3270570	1942480
March 2020	5169290	4512230	3469210	2058900
April 2020	4429710	2901720	2965980	1994880
September 2020	4594770	2985290	3066650	2077060
March 2021	4927820	3306560	3355920	2275950
September 2021	4987570	3344630	3396920	2253090
March 2022	5336540	3687320	3771930	2479260
September 2022	5244480	3594600	3716970	2410780
March 2023	5380150	3664720	3940550	2608090
September 2023	5382760	3676140	3882290	2570270

Source: Compiled by the Author from Half-Yearly financial statements of respective Banks, available on their websites

The above data is represented in the chart below:

Chart 8: CASA Growth



Source: Table 6 ibid

We observe a slight performance decline immediately after the merger. However, subsequently the growth has picked up, with the secular growth rate post-amalgamation being higher than the pre-amalgamation stage.

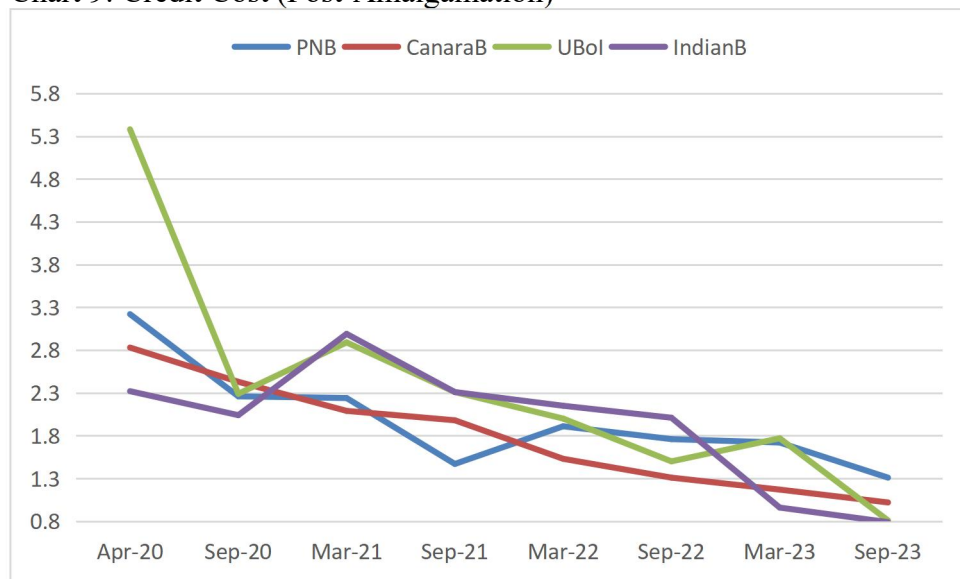
₹——Credit Cost is an important forward-looking ratio that is sought by investors to gauge the future asset quality of a bank. A lower ratio indicates that less provision is required for bad loans, denoting higher profitability for the bank. Ideally this ratio should be used for pre- and post-merger comparison for assessing the change in asset quality brought about by the merger, if any. However, in the absence of pre-merger data, we have tabulated (table 8) and shown the line graph (Chart 5) post-merger to understand the overall changes in asset quality inspite of covid impact on the economy:

Table 7: Credit Cost Post-Amalgamation (Figures in Percentage)

	PNB	Canara Bank	Union Bank of India	Indian Bank
April 2020	3.22	2.83	5.38	2.32
September 2020	2.26	2.43	2.29	2.04
March 2021	2.24	2.09	2.89	2.99
September 2021	1.47	1.98	2.31	2.31
March 2022	1.91	1.53	2.00	2.15
September 2022	1.76	1.31	1.50	2.01
March 2023	1.72	1.17	1.77	0.96
September 2023	1.31	1.02	0.81	0.79

Source: Compiled by the Author from Half-Yearly financial statements of respective Banks, available on their websites

Chart 9: Credit Cost (Post-Amalgamation)



Source: Table 7 ibid

The credit cost ratio shows consistent decline, signifying improvement in asset quality of all the four acquiring banks, inspite of covid impact on the economy thus signifying resilience of the mergers.

Segment 2: Testing of Hypothesis: Paired t-test was conducted on each of the variables, based on eight half-yearly published data pre- and post-merger for the acquiring banks with:

- H0: there is no difference/ impact due to the merger on the efficiencies, profitability, asset quality of banks against
- H1: there is significant difference/ impact due to the merger

a) Punjab National Bank

Table 8: Evaluation of post-merger performance of PNB

Variable	t calculated	Significant (S) or Not Significant (NS)	Null Hypothesis Accepted or Rejected	Implication (post-merger)
Business per Employee	17.50	S	Rejected	There is substantive improvement in business per employee
CRAR	4.50	S	Rejected	There is substantive improvement in Capital Adequacy
Gross NPA Ratio	-2.77	S	Rejected	There is substantive reduction in Gross NPA percentage
Net NPA Ratio	-10.19	S	Rejected	There is substantive reduction in Net NPA percentage

PCR	8.52	S	Rejected	There is substantive improvement in Provision Coverage ratio
Net Profit Margin	2.22	NS	Accepted	Net Profitability is yet to show significant improvement
Operating Profit Margin	2.89	S	Rejected	There is substantive improvement in operating profitability
Net Interest Income	11.30	S	Rejected	There is substantive improvement
Global NIM	3.20	S	Rejected	There is substantive improvement
Return on Assets	2.59	S	Rejected	There is substantive improvement
Return on Equity	2.04	NS	Accepted	Return on Equity is yet to show substantial improvement

The test results imply that PNB has emerged stronger, post-merger, in each of the parameters except two. However, even in these two variables, we have observed from the data that the trend is secular upward.

b) Canara Bank

Table 9: Evaluation of post-merger performance of Canara Bank

Variable	t calculated	Significant (S) or Not Significant (NS)	Null Hypothesis Accepted or Rejected	Implication (post-merger)
Business per Employee	13.50	S	Rejected	There is substantive improvement in business per employee
CRAR	3.50	S	Rejected	There is substantive improvement in Capital Adequacy
Gross NPA Ratio	-5.95	S	Rejected	There is substantive reduction in Gross NPA percentage
Net NPA Ratio	-15.08	S	Rejected	There is substantive reduction in Net NPA percentage
PCR	12.40	S	Rejected	There is substantive improvement in Provision Coverage ratio
Net Profit Margin	3.31	S	Rejected	There is substantive improvement in net profitability
Operating Profit Margin	5.52	S	Rejected	There is substantive improvement in operating profitability
Net Interest	9.88	S	Rejected	There is substantive

Income				improvement
Global NIM	4.69	S	Rejected	There is substantive improvement
Return on Assets	2.47	S	Rejected	There is substantive improvement
Return on Equity	2.61	S	Rejected	There is substantive improvement

The test results imply that Canara Bank has emerged much stronger in every parameter, post-merger.

c) Union Bank of India

Table 10: Evaluation of post-merger performance of Union Bank of India

Variable	t calculated	Significant (S) or Not Significant (NS)	Null Hypothesis Accepted or Rejected	Implication (post-merger)
Business per Employee	6.03	S	Rejected	There is substantive improvement in business per employee
CRAR	4.55	S	Rejected	There is substantive improvement in Capital Adequacy
Gross NPA Ratio	-1.51	NS	Accepted	Gross NPA percentage is yet to show improvement
Net NPA Ratio	-6.89	S	Rejected	There is substantive reduction in Net NPA percentage
PCR	21.11	S	Rejected	There is substantive improvement in Provision Coverage ratio
Net Profit Margin	4.76	S	Rejected	There is substantive improvement in net profitability
Operating Profit Margin	9.68	S	Rejected	There is substantive improvement in operating profitability
Net Interest Income	12.04	S	Rejected	There is substantive improvement
Global NIM	5.40	S	Rejected	There is substantive improvement
Return on Assets	4.22	S	Rejected	There is substantive improvement
Return on Equity	4.05	S	Rejected	There is substantive improvement

The test results show that, post-merger, Union Bank of India is performing at higher levels than pre-merger. However, the bank has to focus in reducing its Gross NPA percentage.

d) Indian Bank

Table 11: Evaluation of post-merger performance of Indian Bank

Variable	t calculated	Significant (S) or Not Significant (NS)	Null Hypothesis Accepted or Rejected	Implication (post-merger)
Business per Employee	8.57	S	Rejected	There is substantive improvement in business per employee
CRAR	3.27	S	Rejected	There is substantive improvement in Capital Adequacy
Gross NPA Ratio	1.71	NS	Accepted	Gross NPA percentage is yet to show improvement
Net NPA Ratio	-4.09	S	Rejected	There is substantive reduction in Net NPA percentage
PCR	18.13	S	Rejected	There is substantive improvement in Provision Coverage ratio
Net Profit Margin	4.96	S	Rejected	There is substantive improvement in net profitability
Operating Profit Margin	10.28	S	Rejected	There is substantive improvement in operating profitability
Net Interest Income	11.11	S	Rejected	There is substantive improvement
Global NIM	1.09	NS	Accepted	The NIM is yet to show improvement
Return on Assets	2.90	S	Rejected	There is substantive improvement
Return on Equity	3.73	S	Rejected	There is substantive improvement

The test results show that, post-merger, Indian Bank is performing at higher levels than pre-merger. However, the bank has to focus on:

- reducing its Gross NPA percentage and
- the margins while pricing its products, in order to show improvement in its NIM.

Conclusion

The post-Global Financial Crisis period in 2008 posed significant challenges for the Indian banking sector, particularly for public sector banks (PSBs). The strategic initiative of amalgamation of public sector banks, reflects the government's commitment towards strengthening the banking sector and positioning PSBs as pillars of India's economic growth and stability in the years ahead.

Mergers and acquisitions are inherently disruptive processes that require significant management focus and careful handling to navigate the initial transition phase effectively. The integration of operations, systems, cultures, and personnel across merged entities is complex and time-consuming, often requiring meticulous planning and execution. In the current context, the sudden onset of Covid-19 pandemic and the subsequent lockdown measures imposed to contain its spread, have created further unprecedented disruptions across industries, including the banking sector.

This paper has undertaken a comprehensive analysis of the quantitative performance of the four merged banks, considering nearly four years have elapsed since the amalgamation came into effect. By conducting a comparative analysis of critical variables, the paper aims to verify the impact on the performance of the banks post-merger compared to pre-merger. The selection of key variables crucial for assessing the strength, performance, productivity, profitability, and asset quality of banks worldwide, provides valuable insights into the effectiveness of the merger in enhancing various aspects of the banks' operations and financial health.

While certain areas may still require further focus for improvement, the overall performance displaying a positive secular trend is indicative of the merger's success in driving positive outcomes. This suggests that the strategies implemented post-merger have been effective in addressing challenges and capitalizing on opportunities to strengthen the individual banks' position in the market.

### **Limitation of the Study**

The study has certain inherent limitations. A brief of the same is as under:

1. **Data Sources and Calculation:** The study relies on secondary data from published financial statements and analyst presentations and certain data points for pre-merged banks were not available, necessitating calculated values for comparison. This data dependency may affect the transparency and consistency in computational interpretations.
2. **Time Frame for Assessment:** The three-and-a-half-year period may be too short to confidently assess the success or failure of the bank mergers. It is suggested that long-term assessments at periodic intervals can provide more comprehensive insights into the continued impact and sustainability of the amalgamations over time.
3. **Interdependence of Economy and Banking:** Acknowledging the interdependence between the country's economy and the banking sector is crucial. Banks often serve as a barometer of economic health, and fluctuations in economic cycles can influence bank performance. Separating the effects of the amalgamation process from broader economic trends may be challenging and warrants further investigation.
4. **Changing Business Cycles:** Understanding how changing business cycles over time may impact the support and strength that merged banks provide compared to pre-merger smaller-sized banks is an important consideration. A separate study focusing on this aspect could provide valuable insights into the long-term implications of bank mergers on business performance and economic resilience.

Overall, the limitations and suggestions highlight the complexity and multifaceted nature of bank mergers and their impact on the banking sector and broader economy. Conducting further studies at regular intervals may contribute to a deeper understanding of the implications of bank mergers and their role in shaping the financial landscape.

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Annexure 1  
 Details of Variables and Subject(s) Studied by Authors  
 revealed in Literature Review

Variable studied	Paper by	Period of study	Subject(s)
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			studied
Advances to Deposits ratio	Irfanshakoort et al, 2014	2004-2012	Seven banks in Pakistan
Advances to Total Assets ratio	Varghese & Thaha, 2017	2013-2016	Kotak Mahindra Bank
Advances to Loan Assets ratio	Varghese & Thaha, 2017	2013-2016	Kotak Mahindra Bank
Assets Turnover ratio	Irfanshakoort et al, 2014	2004-2012	Seven banks in Pakistan
Business per Employee	Varghese & Thaha, 2017	2013-2016	Kotak Mahindra Bank
Cash Deposit ratio	Kemal, 2011	2006-2009	Royal Bank of Scotland, Pakistan
	Verma et al, 2023	2014-2022	17 banks in India
Cash to Assets ratio	Irfanshakoort et al, 2014	2004-2012	Seven banks in Pakistan
Capital Adequacy ratio	Varghese & Thaha, 2017	2013-2016	Kotak Mahindra Bank
	Verma et al, 2023	2014-2022	17 banks in India
CASA ratio	Roopesh & Sandhya, 2021	2017-2019	Six PSBs
Cost of Deposits	Jayaraman et al, 2014	2006-2008	6 banks in India
Cost to Income ratio	Varghese & Thaha, 2017	2013-2016	Kotak Mahindra Bank
Current Ratio	Aggarwal & Garg, 2022	2007-2012	68 firms in India
	Kemal, 2011	2006-2009	Royal Bank of Scotland, Pakistan
	Roopesh & Sandhya, 2021	2017-2019	Six PSBs
	Varghese & Thaha, 2017	2013-2016	Kotak Mahindra Bank
Customer Deposits ratio	Varghese & Thaha, 2017	2013-2016	Kotak Mahindra Bank
Debt Equity ratio	Aggarwal & Garg, 2022	2007-2012	68 firms in India
	Irfanshakoort et al, 2014	2004-2012	Seven banks in Pakistan
	Kemal, 2011	2006-2009	Royal Bank of Scotland, Pakistan
	Roopesh & Sandhya, 2021	2017-2019	Six PSBs
	Varghese & Thaha, 2017	2013-2016	Kotak Mahindra Bank
Deposits to	Irfanshakoort et al, 2014	2004-2012	Seven banks in

Total Assets ratio			Pakistan
Dividend per Share ratio	Roopesh & Sandhya, 2021	2017-2019	Six PSBs
Earnings per Employee	Varghese & Thaha, 2017	2013-2016	Kotak Mahindra Bank
Earnings per Share ratio	Irfanshakoore et al, 2014	2004-2012	Seven banks in Pakistan
	Roopesh & Sandhya, 2021	2017-2019	Six PSBs
Earning Yield ratio	Roopesh & Sandhya, 2021	2017-2019	Six PSBs
Economic Value Added (EVA)	Sharma & Rai, 2012	2000 - 2009	15 banks in India
	Verma et al, 2023	2014-2022	17 banks in India
Geographical penetration in market	Goyal & Joshi, 2011	1998-2010	17 banks in India
Gross Earnings	Joshua, 2011	2002-2008	3 banks in Nigeria
Gross Profit Margin	Kemal, 2011	2006-2009	Royal Bank of Scotland, Pakistan
	Irfanshakoore et al, 2014	2004-2012	Seven banks in Pakistan
Interest Coverage ratio	Aggarwal & Garg, 2022	2007-2012	68 firms in India
	Irfanshakoore et al, 2014	2004-2012	Seven banks in Pakistan
	Kemal, 2011	2006-2009	Royal Bank of Scotland, Pakistan
Interest Income to Total Assets	Roopesh & Sandhya, 2021	2017-2019	Six PSBs
Net Assets	Joshua, 2011	2002-2008	3 banks in Nigeria
Net Interest Margin ratio	Roopesh & Sandhya, 2021	2017-2019	Six PSBs
	Varghese & Thaha, 2017	2013-2016	Kotak Mahindra Bank
Net NPA ratio	Verma et al, 2023	2014-2022	17 banks in India
Net Profit Margin	Irfanshakoore et al, 2014	2004-2012	Seven banks in Pakistan
	Kemal, 2011	2006-2009	Royal Bank of Scotland, Pakistan
	Roopesh & Sandhya, 2021	2017-2019	Six PSBs
Number of Bank	Goyal & Joshi, 2011	1998-2010	17 banks in

branches			India
	Jayaraman et al, 2014	2006-2008	6 banks in India
Operating Cost to Total Assets ratio	Jayaraman et al, 2014	2006-2008	6 banks in India
Operating Profit Margin	Kemal, 2011	2006-2009	Royal Bank of Scotland, Pakistan
	Roopesh & Sandhya, 2021	2017-2019	Six PSBs
Operating Profit to Total Assets ratio	Verma et al, 2023	2014-2022	17 banks in India
Pre Tax Profit Margin	Kemal, 2011	2006-2009	Royal Bank of Scotland, Pakistan
Profit After Tax	Joshua, 2011	2002-2008	3 banks in Nigeria
Proprietary ratio	Kemal, 2011	2006-2009	Royal Bank of Scotland, Pakistan
	Varghese & Thaha, 2017	2013-2016	Kotak Mahindra Bank
Quick Asset Ratio	Aggarwal & Garg, 2022	2007-2012	68 firms in India
	Kemal, 2011	2006-2009	Royal Bank of Scotland, Pakistan
	Roopesh & Sandhya, 2021	2017-2019	Six PSBs
	Varghese & Thaha, 2017	2013-2016	Kotak Mahindra Bank
Return on Advances	Jayaraman et al, 2014	2006-2008	6 banks in India
	Verma et al, 2023	2014-2022	17 banks in India
Return on Asset ratio	Aggarwal & Garg, 2022	2007-2012	68 firms in India
	Irfanshakoore et al, 2014	2004-2012	Seven banks in Pakistan
	Jayaraman et al, 2014	2006-2008	6 banks in India
	Kemal, 2011	2006-2009	Royal Bank of Scotland, Pakistan
	Roopesh & Sandhya, 2021	2017-2019	Six PSBs
	Verma et al, 2023	2014-2022	17 banks in India
	Varghese & Thaha, 2017	2013-2016	Kotak Mahindra Bank
Return on Capital Employed	Aggarwal & Garg, 2022	2007-2012	68 firms in India
	Kemal, 2011	2006-2009	Royal Bank of Scotland,

			Pakistan
	Roopesh & Sandhya, 2021	2017-2019	Six PSBs
Return on Equity ratio	Aggarwal & Garg, 2022	2007-2012	68 firms in India
	Irfanshakoor et al, 2014	2004-2012	Seven banks in Pakistan
	Roopesh & Sandhya, 2021	2017-2019	Six PSBs
	Kemal, 2011	2006-2009	Royal Bank of Scotland, Pakistan
	Verma et al, 2023	2014-2022	17 banks in India
	Varghese & Thaha, 2017	2013-2016	Kotak Mahindra Bank
Return on Investment	Irfanshakoor et al, 2014	2004-2012	Seven banks in Pakistan
Total Investments to Total Assets	Varghese & Thaha, 2017	2013-2016	Kotak Mahindra Bank
Weighted Average Cost of Capital (WACC)	Verma et al, 2023	2014-2022	17 banks in India

Annexure 2

Mergers amongst Public Sector Banks between 1993 to 2020

	Bank	Merged with	Year of merger
1	New Bank of India	Punjab National Bank	1993
	Oriental Bank of Commerce		2020
	United Bank of India		2020
2	Allahabad Bank	Indian Bank	2020
3	Syndicate Bank	Canara Bank	2020
4	Corporation Bank	Union Bank of India	2020
	Andhra Bank		2020
5	Vijaya Bank	Bank of Baroda	2019
	Dena Bank		2019
6	State Bank of Saurashtra	State Bank of India	2008
	State Bank of Indore		2010
	State Bank of Mysore		2017
	State Bank of Hyderabad		2017
	State Bank of Travancore		2017
	State Bank of Patiala		2017
	State Bank of Bikaner & Jaipur		2017
Bhartiya Mahila Bank	2017		
7	Nil	Punjab & Sind Bank	NA
8	Nil	UCO Bank	NA
9	Nil	Bank of Maharashtra	NA
10	Nil	Bank of India	NA

11	Nil	Indian Overseas Bank	NA
12	nil	Central Bank of India	NA

Source: Compiled by the Author

Annexure 3

Current List of 12 Public Sector Banks (in alphabetical order):

1.	Bank of Baroda	7.	Indian Overseas Bank
2.	Bank of India	8.	Punjab National Bank
3.	Bank of Maharashtra	9.	Punjab & Sind Bank
4.	Canara Bank	10.	State Bank of India
5.	Central Bank of India	11.	UCO Bank
6.	Indian Bank	12.	Union Bank of India

Source: Compiled by the author