Journal DOI: 10.36713/epra1013 | SJIF Impact Factor (2025): 8.619 ISSN: 2347-4378
EPRA International Journal of Economics, Business and Management Studies (EBMS)
Volume: 12 | Issue: 5 | May 2025 -Peer-Reviewed Journal

VOLATILITY AND SIGNIFICANCE OF NPAS IN INDIAN BANKS: A PUBLIC AND PRIVATE SECTOR COMPARISON

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ABSTRACT

This research provides a comparative examination of Non-Performing Assets (NPAs) in both public and private sector banks in India, concentrating on the assessment of the volatility and statistical relevance of Gross NPA (GNPA) and Net NPA (NNPA) ratios. The volatility is quantified by analysing average NPA ratios over a specified timeframe, while a one-way ANOVA test is utilized to ascertain whether there exists a statistically significant disparity in asset quality between public and private banks. The study relies on secondary data obtained from published financial statements and regulatory databases.

The results reveal that public sector banks typically demonstrate higher and more fluctuating NPA ratios in comparison to private banks, indicating differences in credit risk management strategies and operational effectiveness. Furthermore, the statistical findings underscore the importance of ownership type in influencing NPA performance. These findings are crucial for regulators, policymakers, and stakeholders who seek to enhance financial stability and elevate the asset quality within the banking sector through more focused strategies and reforms.

KEY WORDS: *Gross NPA, Net NPA, Comparative, Anova and Average*

1.INTRODUCTION

Non-Performing Assets (NPAs) have consistently posed a significant challenge for the Indian banking industry, affecting profitability, liquidity, and overall financial stability. NPAs serve as an indicator of a bank's loan portfolio health and its capacity to manage credit risk. There are notable differences in the operational strategies, governance frameworks, and regulatory adherence between public and private sector banks in India, which may impact their asset quality and NPA management. This research aims to conduct a comparative analysis of NPAs in public versus private banks, driven by two main objectives.

Firstly, it assesses the fluctuations in GNPA and NNPA ratios in these banks by analysing average values over time. Secondly, it utilizes statistical methods—specifically, one-way ANOVA—to ascertain whether there is a significant disparity in the average GNPA and NNPA ratios between public and private banking institutions. The findings are intended to assist stakeholders in gaining a deeper understanding of sector-specific challenges and in developing strategies for enhancing asset quality and mitigating risks.

2.REVIEW OF LITERATURE

Aamod Josh and Avinash Aslekar (2022) studied on "Business Intelligence for Reducing NPA in Indian Banking Sector" The study suggests that Business Intelligence (BI) tools can help Indian banks reduce NPAs by predicting stressed loans through data-driven decision-making. BI models integrate data from various sources to assess loan proposals and minimize lending risks. Implementing BI enhances risk assessment, improves asset quality, and supports strategic lending decisions for long-term financial stability.

Geeta Mulabagula (2023) carried out a study "A Study on relationship between Return on Assets and Non-Performing Assets of Axis Bank and Union Bank" The study finds a strong negative correlation between NPAs and return on assets (ROA) for Axis Bank and Union Bank. Higher NPAs lead to lower profitability, impacting financial stability. Implementing relationship banking models and improving risk assessment can help reduce NPAs.

Devarakonda Ramu, Swathi and Chokkamreddy Prakash (2024) studied on "Assessing Non-Performing Assets and Their Impact on Bank Profitability: A Comparative Analysis of HDFC Bank and ICICI Bank" HDFC

Bank consistently maintained lower NPAs and better asset quality compared to ICICI Bank from 2019 to 2023. ICICI Bank had higher gross and net NPAs, affecting profitability and financial stability. Strengthening credit risk assessment and proactive recovery measures are essential to mitigate NPAs.

Mohd Akhlak Hussain (2024) studied on "Comparative Analysis of NPA Management Policies: A Case Study of SBI and HDFC Bank" HDFC Bank has a lower NPA ratio than SBI due to better risk assessment, customer engagement, and technological interventions. SBI struggles with regulatory compliance and governance challenges, impacting its NPA recovery. Strengthening risk monitoring, adopting AI-driven solutions, and enhancing customer-centric approaches can improve NPA management.

Mujibar Rahaman, and Debasish Sur (2025) studied on "Identifying Key Drivers of Non-Performing Assets in Indian Public Sector Banks" Higher NPAs in Indian public sector banks are influenced by poor credit orientation, operating inefficiency, and economic factors like inflation and real interest rates. Stronger rule of law and reduced corruption levels help lower NPAs. Effective management, regulatory improvements, and financial intermediation are key to controlling NPAs.

3.OBJECTIVE

1. To evaluate the volatility (using Average) of NPA ratios in public and private banks.
2. To determine if there is a significant difference between the average GNPA ratios and NNPA ratios of public and private banks using statistical tests (ANOVA).

4.DEFINITION OF NPA

A Non-Performing Asset (NPA) refers to a loan or advance for which the principal or interest payment has remained overdue for a period of 90 days or more. In simpler terms, when a borrower fails to make scheduled payments to the bank, the loan becomes a non-performing asset.

TYPES OF NPAs

NPAs can be classified into the following categories based on the duration and condition of the overdue account:

- **Sub-standard Assets**: Assets which have remained non-performing for a period less than or equal to 12 months.
- **Doubtful Assets:** Assets that have remained in the sub-standard category for more than 12 months.
- **Loss Assets**: Assets that are considered uncollectible by the bank or identified as a loss by the auditors or the RBI, but not yet written off.

5.GROSS NPA RATIO

Gross NPA Ratio is a financial metric used by banks to measure the percentage of gross non-performing assets (NPAs) to the total loans (advances) given by the bank. It shows how much of the bank's total loans have turned bad (not being repaid) and helps assess the asset quality of the bank. A higher ratio means more bad loans and higher risk.

GROSS NPA RATIO = Gross NPA / Total Advances *100

6.NET NPA RATIO

Net NPA Ratio measures the percentage of net non-performing assets to net advances (total loans minus provisions). It shows the actual bad loans after deducting provisions (money set aside to cover losses). It gives a clearer picture of the bank's true risk from unpaid loans. Lower ratio = better asset quality.

NET NPA RATIO = Net NPA / Net Advances *100

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7.DATA ANALYSIS AND INTERPRETATION

GROSS NPA OF SELECTED BANKS

BANKS / YEAR	PUBLIC SECTOR BANK					PRIVATE SECTOR BANK				
	SBI	PNB	BOB	CAN	UBI	HDFC	ICICI	KM	AXIS	IND
2014-15	3.60%	6.8%	3.8%	3.9%	5.1%	0.8%	3.93%	1.85%	1.5%	0.81%
2015-16	5.67%	12.9%	10.6%	9.7%	9.0%	0.8%	6.14%	2.36%	1.8%	0.88%
2016-17	5.49%	12.5%	11.1%	10.0%	11.8%	0.9%	9.08%	2.59%	5.7%	0.93%
2017-18	8.26%	18.4%	13.2%	12.4%	17.0%	1.1%	10.39%	2.22%	7.8%	1.18%
2018-19	5.93%	15.5%	10.3%	9.2%	16.3%	1.2%	7.89%	2.14%	6.0%	2.12%
2019-20	4.60%	14.2%	10.1%	8.6%	15.6%	1.1%	6.42%	2.25%	5.3%	2.49%
2020-21	3.43%	14.1%	9.4%	9.4%	15.2%	1.1%	5.57%	3.25%	4.1%	2.73%
2021-22	3.97%	11.8%	10.5%	10.5%	10.8%	1.0%	3.95%	2.34%	3.1%	2.31%
2022-23	2.78%	8.7%	10.3%	10.4%	10.6%	1.1%	3.06%	1.78%	2.2%	2.01%
2023-24	2.24%	5.7%	10.2%	10.3%	10.4%	1.2%	2.36%	1.39%	1.6%	1.95%
AVG	4.6%	12.1%	9.96%	9.5%	12.2%	1.0%	5.9%	2.2%	3.9%	1.7%

INTERPRETATION

The Gross NPA (GNPA) data shows that Public Sector Banks (PSBs) have consistently reported higher NPAs than Private Sector Banks. PNB and UBI had the highest average GNPA ratios at 12.1% and 12.2% respectively, while SBI had the lowest among PSBs at 4.6%. In contrast, Private Banks like HDFC (1.0%) and IndusInd (1.7%) maintained strong asset quality. Over the years, most banks have improved their GNPA ratios. For example, SBI reduced its GNPA from 8.26% in 2017-18 to 2.24% in 2023-24, and ICICI from 10.39% to 2.36% indicating better recovery efforts and credit discipline.

NET NPA OF SELECTED BANKS

BANKS / YEAR	PUBLIC SECTOR BANK					PRIVATE SECTOR BANK				
	SBI	PNB	BOB	CAN	UBI	HDFC	ICICI	KM	AXIS	IND
2014-15	2.43%	4.3%	1.9%	2.7%	2.8%	0.20%	1.67%	0.82%	0.5%	0.31%
2015-16	4.10%	8.7%	5.4%	6.7%	5.5%	0.24%	3.13%	0.87%	0.8%	0.37%
2016-17	4.81%	7.9%	5.0%	6.6%	6.9%	0.29%	5.64%	1.02%	2.8%	0.39%
2017-18	4.27%	11.3%	6.0%	7.9%	9.2%	0.33%	5.72%	0.77%	4.0%	0.52%
2018-19	2.35%	6.6%	3.6%	5.6%	7.5%	0.35%	2.46%	0.61%	2.4%	1.22%
2019-20	1.65%	5.9%	3.4%	4.5%	6.1%	0.31%	1.64%	0.54%	1.7%	0.93%
2020-21	1.02%	5.8%	3.3%	4.1%	5.2%	0.34%	1.30%	0.79%	1.2%	0.71%
2021-22	1.03%	2.4%	5.6%	5.2%	1.7%	0.28%	0.85%	0.50%	0.8%	0.65%
2022-23	0.68%	1.2%	7.5%	6.4%	3.9%	0.27%	0.54%	0.29%	0.4%	0.59%
2023-24	0.57%	0.3%	8.1%	7.1%	6.1%	0.33%	0.47%	0.28%	0.3%	0.58%
AVG	2.3%	5.4%	4.98%	5.7%	5.5%	0.3%	2.3%	0.6%	1.5%	0.6%

INTERPRETATION

The Net NPA (NNPA) data reveals that Public Sector Banks (PSBs) generally faced higher levels of stressed assets compared to Private Sector Banks. On average, Canara Bank (5.7%), UBI (5.5%), and PNB (5.4%) reported the highest NNPA ratios among PSBs, indicating persistent asset quality concerns, while SBI performed better with an average of 2.3%. In contrast, Private Banks like HDFC (0.3%) and IndusInd (0.6%) consistently maintained low NNPA ratios, reflecting stronger credit management and recovery processes. Notably, all banks showed improvement over the years — for instance, SBI reduced its NNPA from 4.81% in 2016-17 to just 0.57% in 2023-24, and ICICI from 5.72% to 0.47%.

ONE-WAY ANOVA

GNPA OF PUBLIC BANKS AND PRIVATE BANKS

Hypotheses:

Null Hypothesis (H_0): There is no significant difference in the mean GNPA between the groups. ($\mu_1 = \mu_2$)

Alternative Hypothesis (H_1): There is a significant difference in the mean GNPA between the groups. ($\mu_1 \neq \mu_2$)

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ANOVA					
GNPA					
	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	113.300	1	113.300	16.893	.003
Within Groups	53.656	8	6.707		
Total	166.955	9			

INTERPRETATION

The results of the one-way ANOVA for GNPA indicate that there is a statistically significant difference between the means of the two groups being compared. The analysis yielded an F-value of 16.893 with a corresponding p-value of 0.003. Since the p-value is less than the standard significance level of 0.05, we reject the null hypothesis, which states that the group means are equal. This suggests that the difference in GNPA between the two groups is unlikely to have occurred by chance and is statistically significant. Therefore, we can conclude that the group variable has a significant effect on the GNPA.

NNPA OF PUBLIC BANKS AND PRIVATE BANKS

Hypotheses

Null Hypothesis (H_0): There is no significant difference in the mean NNPA between the two groups. ($\mu1=\mu2$)

Alternative Hypothesis (H_1): There is a significant difference in the mean NNPA between the two groups. ($\mu1\neq\mu2$)

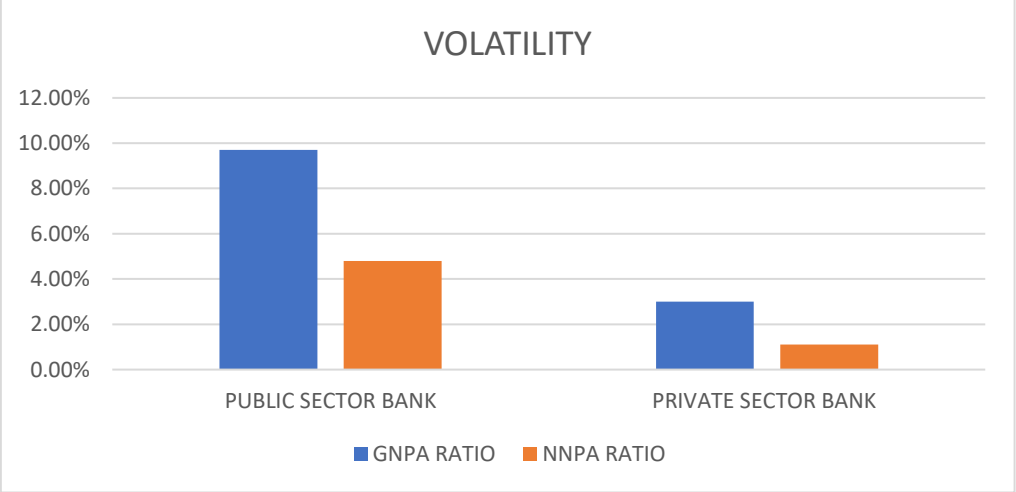
ANOVA					
NNPA					
	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	34.225	1	34.225	25.723	.001
Within Groups	10.644	8	1.331		
Total	44.869	9			

INTERPRETATION

The one-way ANOVA results for NNPA show that there is a statistically significant difference in the average NNPA between the two groups being compared. The F-value is 25.723 with a corresponding p-value of 0.001. Since the p-value is well below the common significance threshold of 0.05, we reject the null hypothesis, which assumes that the group means are equal. This indicates that the observed difference in NNPA between the groups is not due to random variation but is statistically significant. Hence, we conclude that the grouping factor has a significant impact on NNPA.

CALCULATION OF VOLATILITY OF GNPA RATIO AND NNPA RATIO USING AVERAGES

SECTOR	GNPA RATIO	NNPA RATIO
PUBLIC SECTOR BANK	9.7%	4.8%
PRIVATE SECTOR BANK	3.0%	1.1%



INTERPRETATION

The average GNPA and NNPA ratios indicate that public sector banks have significantly higher non-performing asset levels compared to private sector banks. The average GNPA for public banks stands at 9.7%, while for private banks it is much lower at 3.0%. Similarly, the average NNPA for public banks is 4.8%, compared to just 1.1% for private banks. This demonstrates that private sector banks maintained healthier and more stable asset quality compared to public sector banks during the period from 2014 to 2024.

8.FINDINGS

- The ANOVA test for GNPA showed a significant difference between groups ($F = 16.893$, $p = 0.003$).
- The ANOVA test for NNPA also showed a significant difference ($F = 25.723$, $p = 0.001$).
- The average GNPA ratio for public sector banks was 9.7%, compared to 3.0% for private sector banks.
- The average NNPA ratio for public sector banks was 4.8%, while private sector banks had 1.1%.
- Public banks had a 6.7 percentage point higher GNPA than private banks.
- Public banks had a 3.7 percentage point higher NNPA than private banks.
- Public sector banks showed higher NPA volatility and weaker asset quality than private sector banks.
- Private banks maintained lower and more stable GNPA and NNPA ratios, reflecting stronger credit risk management.

9.CONCLUSION

The study highlights a significant difference in the NPA ratios between public and private sector banks. Public sector banks consistently show higher levels of non-performing assets, indicating potential weaknesses in credit risk management, loan recovery, and monitoring processes.

On the other hand, private sector banks exhibit better asset quality with lower and more stable NPA ratios, suggesting more effective risk management practices. These findings emphasize the need for public sector banks to improve their credit monitoring and recovery systems to enhance financial stability and reduce non-performing assets.

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