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# Non-Performing Assets and Profitability of Public Sector Banks in India: An Empirical Analysis

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**Abstract**

*Non-Performing Assets (NPAs) have consistently been a significant challenge in the Indian Banking Industry as bad asset quality can affect interest income, provide more provisions and impact profitability. Meanwhile, and most importantly, asset quality of Public Sector Banks (PSBs) has improved significantly over recent years. The present study aims to analyze the relationship between NPAs and profitability of three major Public Sector Banks (PSBs) in India viz. State Bank of India (SBI), Punjab National Bank (PNB) and Bank of Baroda (BoB) for five years from 2020-21 to 2024-25. All the data used in the study is secondary and has been sourced from official publications and Bank's annual reports.All the data used in the study is secondary data which has been drawn from the official publications and annual reports of the Reserve Bank of India and selected banks. The assets quality indicator used is gross NPA (GNPA) and net NPA (NNPA) and the key measure used for profitability is Return on Assets (ROA). Trend analysis, descriptive statistics, Pearson correlation and simple regression models are used for the empirical analysis. As one can see from the results there was a significant reduction in both GNPA and NNPA in all three banks during the period under study and an overall improvement in ROA. The coefficients of determination for the GNPA and ROA are negative and are encompassing a strong degree of negative linear correlation ($r = -0.884$) and for the NNPA and ROA have a strong negative correlation ($r = -0.814$). The regression results reveal that both GNPA as well as NNPA have a negative relationship with ROA which proved to be statistically significant. The findings are in line with the idea that enhanced asset quality correlates with profitability. The study is limited to 3 banks and 15 bank-year observations and therefore, the results can only be viewed as pieces of evidence of association and not as causal effect.*

***Keywords: Non-Performing Assets, Profitability, Gross NPA, Public Sector banks, Net NPA, Return on Assets, Banking Sector***

## INTRODUCTION

The banking system has been playing a significant role in the Indian financial system. Banks collect savings and lend/donate them for productive activities. The quality of such advances is thus closely linked to banks' financial results. The interest income is generated because regular repayments are made on loans in the portfolio. If loans fall into stress and are designated as NPA, the bank can lose its expected income and they will be required to brace for further provision if they are in stress. Indian Economic Public Sector banks are playing a pivotal role even today. They are not only relevant in the traditional banking functions. They have further contributed significantly to financial inclusion, priority lending, farm and government self-supported programmer/domestic credit. The impact of financial condition changes of PSBs reverberate not just on the individual banks but more broadly, due to their size and broad level of service. The issue of NPAs became acute in Indian banking system in the year preceding 2018. The GNPA ratio of the PSB's rose to 14.58 per cent in March 2018, and the NNPA ratio of PSBs increased to 7.97 per cent, according to the Department of Financial Services. In the interim, the quality of their assets has significantly strengthened. As of September 2024, PSBs have an overall ratio of GNPA of 3.09 and NNPA ratio of 0.63 (Department of Financial Services [DFS], 2025). This ameliorated trend continued in FY 2024–25. The PSBs also have reduced their GNPA ratio and NNPA ratio to 2.58 percent and 0.52 percent respectively as per Government of India report till March 2025.

In the same financial year, the combined net profit of the PSBs was ragged at ₹1.78 lakh crore (DFS, 2026). In this context, the recent period is of special interest in assessing whether improvement in asset quality has been matched by improved profitability of the bank.

Previous empirical research has generally found a negative association between NPAs and profitability. For instance, Das and Uppal (2021) analysed 39 Indian public and private banks over a period of 15 years (2005-2019) and have observed that there is a statistically significant negative relationship in the portfolio of the banks considered between NPA and ROA. Another similar study is done by Gaur and Mohapatra (2021) on a sample of scheduled commercial banks of India, observing that there exists a strong negative correlation between NPA and ROA and ROE. Nevertheless, more recent studies, have persisted with the finding of negative relationship between NPA and the performance of the bank (Swathi & Mahesha, 2024). As a contrast to this background, the present study is targeted on three big Public Sector Banks (PSPBs) which includes SBI, PNB and the Bank of Baroda. The study does not seek to be a representative sample of all Indian PSBs. Rather, the relationship between the NPA and profitability of three important banks on a comparative five year data basis has been carefully researched in an empirical manner.

## REVIEW OF LITERATURE

***Rajan and Dhal, 2003*** tested the influence of the terms of credit, macroeconomic factors and bank-size related risk preferences on the behaviour of non-performing loans for public sector banks in India. Their research drew attention to the need to focus on bank-level and broader economic drivers to understand asset quality.

***Bawa et al., (2019)*** analysed a large sample of financial ratios from 46 Indian banks and observed the following inverse relationships between NPAs and financial ratios (ROA, intermediation cost) and direct links between NPAs and their financial ratios (ROE, net worth, growth rate of loans, current ratio). The study also showed the value of a broader empirical framework for analyzing the nature of asset quality.

***Sharma and Rathore (2017)*** studied the impact of NPAs on profitability of Indian scheduled commercial banks using measures like ROA, ROE and NIM. They indicated that there was a negative effect of NPA ratio on profitability, especially in the case of ROA and ROE.

***Saluja and Sharma (2017)*** conducted study on NPAs and financial performance of PSBs in order to progress that in the event of development of bad debts, the financial performance of PSBs will weaken thus impacting on the financial performance of banks. The results were consistent with the argument that stressed assets have a negative impact on profitability of banks.

***Gaur and Mohapatra (2021)*** tested the link between the NPA-profitability by using a balanced Panel of 37 Scheduled Commercial Banks for 2005-2018. They identified an extremely negative correlation between NPA and ROA/ROE as ROE is diminishing by NPA.

***Das and Uppal (2021)*** analyzed 39 banks from India over public and private banks including the time period 2005–2019 by using panel regression. They observed the relationship between NPA is negative and statistically significant with ROA. Their paper also demonstrated the impact of other variables at the bank level and Macroeconomics that influence profitability.

***Singh & Tageja (2020):*** They analysed two selected banks, namely SBI and PNB during 2008 – 2018 and applied correlation and regression analysis techniques. They reported a very negative relationship between gross NPAs and profitability b/c two of the same banks have been included and for this reason they are of interest in this study.

For the Indian scheduled commercial banks, ***Swathi and Mahesha (2024)*** have analyzed the relationship between the NPAs and profitability of Indian scheduled commercial banks using panel regression model for the time period 2004-05 to 2021-22. Their findings also revealed that there is a negative correlation between NPAs and profitability.

***Dimri (2025)*** examined the regulatory, supervisory and policy responses in the pre- and post-COVID era on NPAs in India. The study underscores the significance of resolution, recovery and institutional mechanisms in elucidating the decline in NPA ratios in the recent past.

## RESEARCH GAP

There is ample research available to support the negative association between NPAs and bank profitability. Most of the earlier empirical studies, however, address either the early period of the major NPA build-up (up to 2018) or performed stress tests on a large group of banks that share a variety of ownership structures as well as business profiles. Since then the banking sector has undergone a great deal of change. The asset quality improved and bank balance sheets

have seen an enhancement and bank profitability of PSBs has improved. It is thus more important to look at the relation during the last few years of declining NPA (not only during the years when it was rising). The present study tries to make contribution in this limited but confined way of study as a case study is being conducted on three major PSBs SBI, PNB and Bank of Baroda for the period of FY2020–21 to FY2024–25. Analysis of the same indicators for all three banks and trend analysis and correlation/regression are the common tools used. The rationale is not that profitability is exclusively explained by changes in NPAs, but to see if there is a statistical association between changes in the ROA in the sample and changes in asset quality.

## OBJECTIVES OF STUDY

- To analyze the trend of Gross NPAs of SBI, PNB and Bank of Baroda in FY2020-21 to FY2024-25.
- To analyse the trend of Net non-performing assets of the selected banks.
- To analyse which banks are the most profitable based on the criteria ROA.
- To analyze the correlation between Gross NPA and Roa of a bank.
- To analyze the correlation between Net NPA and ROI (Return on Assets).
- To recommend measures, which may help Public Sector Banks, to remain a profitable institution in maintaining their asset quality.

## RESEARCH HYPOTHESES

***($H_{01}$):*** There is no significant relationship between Gross Non-Performing Assets (GNPA) and Return on Assets (ROA) of the selected PSU banks in India.

***($H_{02}$):*** The Net Non-Performing Assets (NNPA) against Return on Assets (ROA) of the selected Public Sector Banks (PSB) of India is not related significantly.

## RESEARCH METHODOLOGY

The study is of analytical and empirical nature and is completely secondary data oriented. Analysis at the bank-year level is the unit of analysis. The sample consists of State Bank of India, Punjab National Bank and Bank of Baroda. The three banks chosen were those that are significant in the banking system in India and had comparable information available annually. The study period covers FY2020–21 to FY2024–25. It reflects the latter stage of the NPA build-up, the COVID-19 era, and the resulting asset quality improvement and profitability. A shared 5-year time period also enhances comparability of the banks selected.

The data were collected mainly from the annual reports of the three banks and published information in the financial statements of the Banks and from the statistical publications of the RBI. According to RBI, their Statistical Tables Relating to Banks in India give data to the banks along the way their gross and net NPAs, earnings, expenses, provisions, financial indicators etc. The figures for banks were cross checked with the annual reports of SBI, PNB and Bank of Baroda Banks. Bad loans are measured using the Gross NPA ratio, and Net NPA ratio. The main profitability metric used is return on asset (ROA/ROAA – based on respective bank's published figure). When the analysis includes a large number of explanatory variables, it is deliberate yet it may not be feasible given the limited number of bank-years (N=15). The aim is to maintain the model simple and transparent rather than being statistically overloaded by specifying the model.

***Variables***

| Variable | Role | Meaning |
|---|---|---|
| Gross NPA (GNPA) ratio | Independent | Gross non-performing assets as a percentage of gross advances. |
| Net NPA (NNPA) ratio | Independent | Net non-performing assets after applicable provisions/adjustments, expressed as a percentage of net advances. |
| Return on Assets (ROA/ROAA) | Dependent | Profitability relative to the bank's asset base, as reported by the respective bank. |

***Statistical Analysis***

Descriptive statistics, trend analysis, Pearson correlation and simple ordinary least squares (OLS) regression are used as analysis techniques for the study. Since GNPA and NNPA are then highly correlated, it would be possible to end up with a high risk of multicollinearity if both variables were added to a small sample regression model at the same time. Two simple models are estimated:

Model 1: $ROA_{it} = \alpha + \beta_1 GNPA_{it} + \varepsilon_{it}$

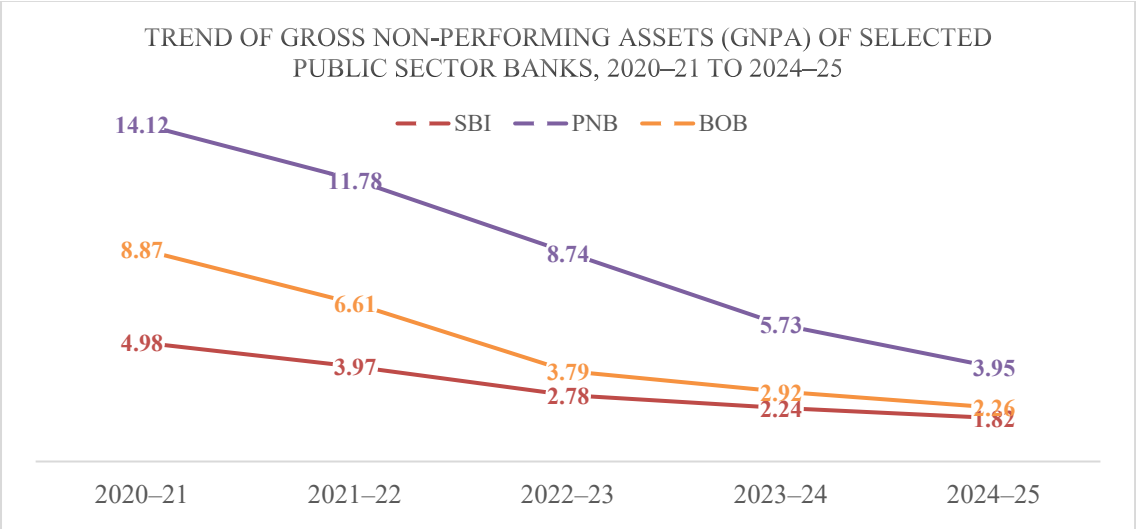
Model 2: $ROA_{it} = \alpha + \beta_1 NNPA_{it} + \varepsilon_{it}$

An additional bank-effect specification is used as a robustness check. Because the dataset contains only three banks and five years, the regression findings are interpreted as evidence of statistical association and not as definitive evidence of causality.

***Data Analysis and Interpretation***

| Bank | Financial Year | GNPA (%) | NNPA (%) | ROA (%) |
|---|---|---|---|---|
| State Bank of India | 2020–21 | 4.98 | 1.5 | 0.48 |
| State Bank of India | 2021–22 | 3.97 | 1.02 | 0.67 |
| State Bank of India | 2022–23 | 2.78 | 0.67 | 0.96 |
| State Bank of India | 2023–24 | 2.24 | 0.57 | 1.04 |
| State Bank of India | 2024–25 | 1.82 | 0.47 | 1.1 |
| Punjab National Bank | 2020–21 | 14.12 | 5.73 | 0.15 |
| Punjab National Bank | 2021–22 | 11.78 | 4.8 | 0.26 |
| Punjab National Bank | 2022–23 | 8.74 | 2.72 | 0.18 |
| Punjab National Bank | 2023–24 | 5.73 | 0.73 | 0.54 |
| Punjab National Bank | 2024–25 | 3.95 | 0.4 | 0.97 |
| Bank of Baroda | 2020–21 | 8.87 | 3.09 | 0.07 |
| Bank of Baroda | 2021–22 | 6.61 | 1.72 | 0.6 |
| Bank of Baroda | 2022–23 | 3.79 | 0.89 | 1.03 |
| Bank of Baroda | 2023–24 | 2.92 | 0.68 | 1.17 |
| Bank of Baroda | 2024–25 | 2.26 | 0.58 | 1.16 |

***Gross NPA Ratio of Selected banks***




(The researcher had prepared this data from the official annual reports/financial highlights of SBI, PNB and Bank of Baroda and their banking statistics were also cross checked. The underlying source documents are the annual reports of the banks for the relevant financial years (Bank of Baroda for bank annual reports 2021 to 2025; PNB for bank annual reports 2021 to 2025; SBI for bank annual reports 2021 to 2025)).

From the graph, the Gross NPA ratio of all three banks is getting reduced.

SBI's Gross NPA ratio declined from 4.98% in 2020–21 to 1.82% in 2024–25. This is over 3% less than during the study period. Even the official data provided by SBI indicates that it has been in continuous year-on-year contraction for the last 5 years.

PNB had a significantly high GNPA ratio of 14.12% on starting the study period, and reduced it to 3.95 % by 2024–25. This represented the greatest decrease in percentage-points of the three banks.

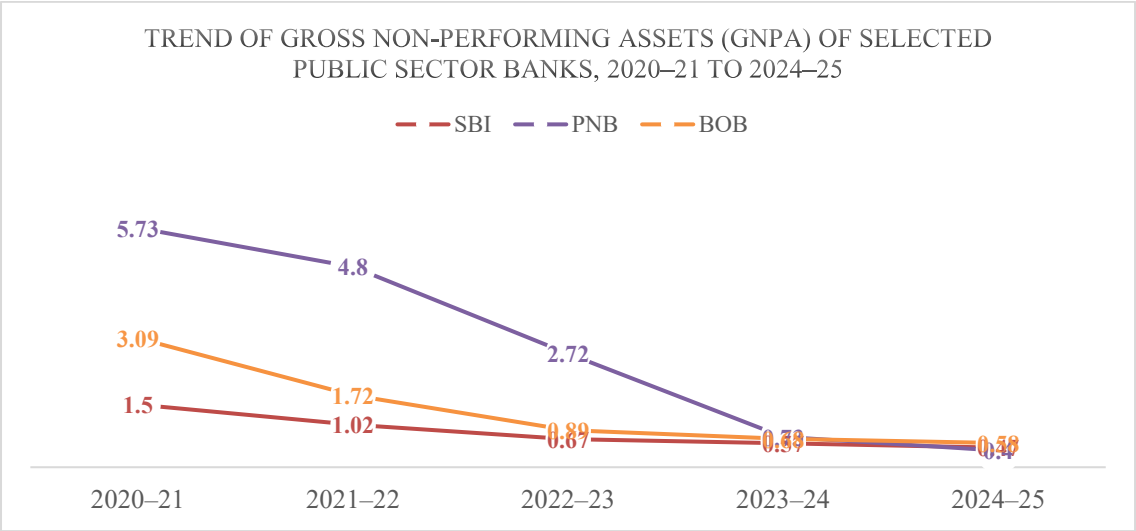
Bank of Baroda also posted a significant improvement having its GNPA ratios dropping from 8.87% to 2.26%.

The improvement in asset quality is not so significant as to be limited to any single institution. The percentage decline

in PNB was the largest among the three and the GNPA ratio for SBI was at the bottom at the end of the study period. It is a general direction which is in line with the overall improvement observed in the sector by Government of India and RBI.

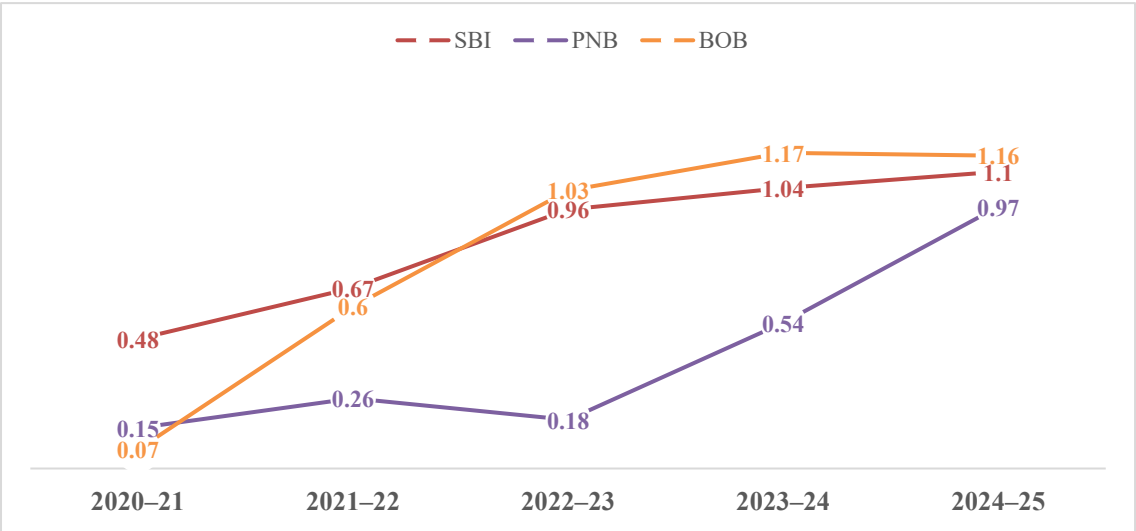
***Trend of Net NPA***

NNPA also fell sharply in the three banks. SBI lowered NNPA down by 1.03 percentage points from 1.50 percent to 0.47 percent. PNB had the steepest improvement, jumping from 5.73 percent to 0.40 percent. The Bank of Baroda lowered its NNPA from 3.09 percent to 0.58 percent. This is especially significant as the fall in the NNPA is a deduction for provisions and other adjustments. The results consequently imply a decrease not only in gross stressed assets but also banks' capacity to absorb the potential losses of the stressed assets.




(Compounded by the researcher from the annual report/financial highlights of both SBI, PNB and Bank of Baroda and also checked with the statistics issued by the RBI. The underlying documents of the respective financial years are the bank annual- report archives for the Bank of Baroda (2021, 2025), PNB (2021, 2025) and SBI (2021, 2025)).

***Trend of Return on Assets***




(Compile from the official annual reports/financial highlights of the SBI, PNB and Bank of Baroda and cross checked with the banking statistics provided by the RBI. The records for the respective financial years is available in the bank annual-report archives of the Bank of Baroda (2021-2025), PNB (2021-2025) and SBI (2021-2025)).

The overall ROA of three banks showed an improvement. SBI's ROA increased from 0.48 percent in FY2020–21 to 1.10 percent in FY2024–25. With PNB of 0.15 percent, the performance was upgraded to 0.97 percent while ROA experienced some fluctuation in the middle of the study period. Bank of Baroda saw the biggest jump from 0.07 per cent to 1.16 per cent. The deteriorating NPA ratios coupled with the rising ROA is an initial evidence to show the inverse relation between the asset quality problems and profitability. But the trend shown in the raw data as such, doesn't imply a statistical relationship. The next sections thus look at the data more formally.

***Descriptive Statistics***

| Using the 15 bank-year observations, the following descriptive results were obtained. | | | | | |
|---|---|---|---|---|---|
| **Bank** | **Indicator** | **Mean** | **Std. Dev.** | **Minimum** | **Maximum** |
| SBI | GNPA | 3.16 | 1.30 | 1.82 | 4.98 |
| SBI | NNPA | 0.85 | 0.42 | 0.47 | 1.50 |
| SBI | ROA | 0.85 | 0.26 | 0.48 | 1.10 |
| PNB | GNPA | 8.86 | 4.19 | 3.95 | 14.12 |
| PNB | NNPA | 2.88 | 2.38 | 0.40 | 5.73 |
| PNB | ROA | 0.42 | 0.34 | 0.15 | 0.97 |
| Bank of Baroda | GNPA | 4.89 | 2.78 | 2.26 | 8.87 |
| Bank of Baroda | NNPA | 1.39 | 1.05 | 0.58 | 3.09 |
| Bank of Baroda | ROA | 0.81 | 0.47 | 0.07 | 1.17 |

The descriptive statistics reflect differences in asset performance and profit. In regard to the average GNPA, PNB is on top with 8.86 percent, whereas the average ROA of the three banks is the lowest for PNB with 0.42 percent. The lowest average GNPA (3.16 percent), NNPA (0.85 percent) and, average ROA (0.85 percent) are those of SBI. Though Bank of Baroda's average GNPA and NNPA are 4.89 per cent and 1.39 per cent, respectively, its ROA is on an average at 0.81 per cent.

These figures are in line with the general trend that poor asset quality is linked to poor profitability. However, conclusions based on the descriptive evidence should be taken as preliminary, as the banks have various sizes and business types and other characteristics.

***Correlation Analysis:***

The Pearson correlation coefficient of GNPA and ROA is –0.884 which shows a high negative relationship. The correlation coefficient of NNPA and ROA is−0.814, the figure suggests the strong negative association between NNPA and ROA. Therefore, the higher the NPA rate the lower the profit in the selected observations. GNPA and NNPA have a very high correlation of 0.968. The correlation is unsurprising since both variables measure two aspects of assets that have close relationships. The high correlation is also to be noted as a reason for estimating separate regression models, rather than both NPA measures would be included in a single regression model.

| **Variable** | **GNPA** | **NNPA** | **ROA** |
|---|---|---|---|
| GNPA | 1.000 | 0.968 | -0.884 |
| NNPA | 0.968 | 1.000 | -0.814 |
| ROA | -0.884 | -0.814 | 1.000 |

***Regression Analysis***

The regression results show that there is a negative and statistically significant relationship between indicators of NPAs and profitability. In model 1, the coefficient of GNPA is negative −0.094, which means an increase in GNPA results in a reduction in the ROA. 78.2 % of the variability in ROA ($R^2 = 0.782$) is explained by the model.

| **Model** | **Independent Variable** | **Coefficient (β)** | **Std. Error** | **t-value** | **p-value** | **$R^2$** |
|---|---|---|---|---|---|---|
| Model 1 | GNPA | -0.094 | 0.014 | -6.83 | <0.001 | 0.782 |
| Model 2 | NNPA | -0.194 | 0.038 | -5.05 | <0.001 | 0.663 |

Likewise, Model 2 exhibited an $R^2$ of 0.663, and a negative coefficient of −0.194 for NNPA. The findings suggest that the ROA is negatively related to an increase in NNPA. The both coefficients are statistically significant at conventional level.

Care should be taken in interpreting these results, though, as the analysis was based on 15 observations over the course of bank-years, and it was conducted without any control on other factors potentially affecting bank profitability. So the findings provide a statistical relationship

between NPA indicators and ROA, but do not confirm the cause-and-effect relationship.

***Robustness Check: Bank-Specific Effects:***

However, the pooled regression is only statistically appropriate, but might, in part, show an ongoing difference between the three banks. Variables were added to separate regressions for each bank as a simple robustness check. The GNPA coefficient remains negative (−0.107; p = 0.000146), while the NNPA coefficient remains negative (−0.183; p = 0.003052). If the evidence of an inverse association is consistent, this evidence is increased, though very few banks makes the robustness exercise not a substitute for a larger panel study.

***Hypothesis Testing***

| Hypothesis | Statistical Finding | Decision |
|---|---|---|
| $H_{01}$: There is no significant relationship between GNPA and ROA. | Significant negative relationship observed between GNPA and ROA ($p < 0.001$). | Reject $H_{01}$ |
| $H_{02}$: There is no significant relationship between NNPA and ROA. | Significant negative relationship observed between NNPA and ROA ($p < 0.001$). | Reject $H_{02}$ |

## MAJOR FINDINGS

The major findings of the study are as follows:

1. ***Enchanting in asset quality:*** There is significant improvement in asset quality in each of the three selected banks in the Public Sector whose asset quality showed a significant decline from 2020-21 to 2024-25. This suggests a broadly improvement of their loan quality.
2. ***Improvements in profitability:*** Profitability of the selected banks was positive with ROA improvements on most for the review period. There was a corresponding increase in earnings, which matched the reduction in NPA levels.
3. There is an inverse correlation between the GNPA and ROA as indicated by the Pearson correlation test which resulted in a correlation coefficient of −0.884.
4. There is an inverse relationship between NNPA and ROA: NNPA is also strongly inversely correlated with ROA with a correlation coefficient of −0.814.
5. ***Modelling results:*** The regression analysis outcomes show negative figures for GNPA and NNPA that are statistically significant. The results indicate that there is a relationship between higher NPA volume and lower profits.
6. ***General association:*** These observations corroborate the available academic research showing three types of ways asset quality deterioration can impact bank earnings: through provisioning growth, through reduced interest income, and through collection costs.
7. ***Need for caution:*** Although there are strong statistical links, there are many other factors that no doubt affect the earnings of a bank, like its operational efficiency, the level of its capital, interest earned, non-interest revenue, provisioning, extending credit and the overall economic situation. Therefore, the observed relationship should not be considered necessarily as a direct causal link between NPAs and profitability.

## DISCUSSION

The empirical results are broadly in line with the existing literature. Das and Uppal (2021) have observed a negative relationship of NNPA with ROA on randomly selected large sample of Indian banks. Gaur and Mohapatra (2021) also found that there was a strong negative correlation between NPA and profitability. The study conducted by Bawa et al. (2019) also shown that there was a negative correlation among ROA and NPAs. This present study is also able to confirm this; however, it is dealing with a considerably smaller sample that is much more recent. What's more, the results are practically applicable. Once the loan turns bad, the bank will not be able to generate the interest they thought they would on that asset. The bank may also be forced to increase recovery and monitoring expenses and make provisions. These can help strip income away from the profit and streamline it. This explains link 2 regression results because as investment increases, the $Y$ would fall.

It would be wrong to attribute only to NPAs the improvement in the ROA. Net Interest Margins, Operating Efficiency, Loan growth, Capital adequacy, Fee income, Provisions, Competition and macro-economic condition are some other factors that impact banking profitability. The effect of illness on food insecurity in the current study is thus successfully interpreted as a negative association rather than an isolated causal effect.

## SUGGESTIONS

1. Ensure tighter credit evaluation prior to loan sanction, especially in the case of large and high-risk loan to be sanctioned.

2. Regularly monitor loan accounts with a view to identifying early signs of distress in a loan before it turns into an NPA.
3. Improve early-warning tools, such as borrower cash flows and repayment history, and sector-level risk indicators.
4. Enhance the efficiency and effectiveness of recovery processes in order to ensure that stressed assets are not held in limbo for long periods.
5. Ensure adequate provisioning of stressed assets to ensure that losses, if any, do not overwhelm profitability.
6. Avoid over-weighting of credit in individual sectors and borrower groups and conduct regular risk assessments on individual sectors.
7. Uphold the balance among the expansion of credit and asset quality. Technological improvements cannot be at the expense of shoddy credit.
8. Ensure that technology and data analytics use is ongoing with regards to credit monitoring, recovery and fraud-risk management.

## CONCLUSION

In the present study, the relationship between Non-Performing Assets and profitability of State Bank of India company, Punjab National Bank and Bank of Baroda for the period FY2020-21 till FY2024-25. The time is crucial as the area in which Indian Public Sector Banks (PSUs) asset quality improved significantly. The results reveal that there had been a significant decline in the GNPA and NNPA in all the three banks considered. This was concurrent with an overall improvement in ROA. The result of the correlation analysis indicates there is a strong negative correlation between both GNPA and ROA and NNPA and ROA. The negative regression coefficient are also significant for both NPA measures. The findings are largely in line with previous studies on banks in India.

It therefore brings forth findings that shows that, the better the asset quality, the better the profitability of the selected Public Sector Banks. This can be seen as a “direct result of the economic gain” – lower NPAs reduce the pressure from lost interest income, provisioning and recovery costs.

But, there's a catch to the study. Only three banks and fifteen bank year observations included. Therefore the results can not be extrapolated to the entire Public Sector Banks on the basis of the present evidence. A more comprehensive study in the future, elaborating on variables across all PSBs for a longer time frame, which accounts for additional bank-specific and macro-economic variables would yield a more conclusive basis for causal inference.

## LIMITATIONS OF THE STUDY

It is important to note that the study has a number of limitations that need to be taken into consideration when interpreting its findings. Firstly, the study is confined only to 3 selected banks from public sector banks and only the financial period of five years (total 15 bank-years). Thus, the conclusions reached as a result of statistical analysis need to be taken with a pinch of salt.

Second, the study focuses on the three banks under the GNPA category – NNPA and ROA – and does not include other factors that could affect bank profitability, including capital adequacy, operating efficiency, credit growth, net interest margin, provisioning, liquidity and macroeconomic conditions.

Third, due to the reliance on secondary data derived from financial statements published in the newspapers, they rely on the reliability and consistency of the reported data.

Last but not least, regression analysis shows the statistical association between NPA indicators and profitability, but weakens the causal link. These limitations are subject to future research which can leverage on a larger banking sample along with the consideration of longer tenure and the incorporation of unique bank-specific and macroeconomic control variables.

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