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# Banking Reforms, Asset Quality and Financial Stability: A Comparative Study of State Bank of India and the Punjab National Bank

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## Abstract

*Non-performing assets are posing a serious challenge to the sustainability and profitability of Indian banks. This study examines the impact of major regulatory reforms on asset quality performance in two major public sector banks, State Bank of India and Punjab National Bank , over the period 2015–2025. This study assesses the effectiveness of key policy measures, such as Asset Quality Review, the Insolvency and Bankruptcy Code, recapitalization measures, EASE reform, and governance improvements, to reduce distressed assets. This study is based on secondary data collected from annual reports of SBI and PNB, records of the Bank of India, financial stability data and government records. Analytical techniques such as trend analysis, quantitative analysis, correlation analysis, statistical description, correlation analysis, and hypothesis analysis were used to analyze variables in non-performance, non-performing assets, Provision Coverage Ratio, and Capital Adequacy Ratio. The findings indicate that both banks experienced a significant increase in NPAs after the implementation of asset quality control due to the stringent identification of stressed assets. Subsequent developments, however, greatly improved performance. SBI reduced its GNPA ratio from the 10.91% level to 2.24%, while PNB reduced its GNPA from 14.10% to 5.70%. The results further show that there is a strong negative relationship between NPA levels and profitability indicators. SBI has shown strong recovery performance and great resilience, thanks to diversified lending practices, governance mechanisms, risk management, and technology integration. This study concludes that regulatory reform plays an important role in improving asset quality and financial stability in Indian banks. These findings provide important insights for policy makers and banks interested in improving credit risk management and enhancing the long-term resilience of banks.*

**Keywords:** Non-Performing Assets, Banking Reforms, SBI, PNB, Asset Quality, Insolvency and Bankruptcy Code, Public Banks, India.

## Introduction

Banks play an important role in sustaining economic growth by mobilizing savings, facilitating investment, and promoting the efficient allocation of financial resources. The financial health of banks directly affects the stability of the economy, making asset quality an important indicator of bank performance. Among various measures of financial quality, non-performing assets have emerged as one of the most important concerns of banks across the world.

In India, the problem of NPAs received serious attention after 2015, when the Reserve Bank of India launched the Asset Quality Review to identify and first identify hidden assets under stress. The review highlighted significant weaknesses in credit reporting, supervisory systems and risk management systems, particularly among public sector banks. As a result, many banks reported a sharp increase in total NPAs and net expenses during 2015-2018.

To address the growing NPA problem, policy makers have introduced several structural measures, including the Insolvency and Bankruptcy Code, 2016, easing supply rules, recapitalization programmes, bank mergers, and administrative reforms. These measures were aimed at improving liquidity, strengthening credit discipline and restoring confidence in the banking system. Over time, these measures led to a gradual reduction in NPAs in banks.

State Bank of India and Punjab National Bank represent two large public sector banks that have experienced distinct NPA trajectories during these turbulent decades. SBI, India's largest commercial bank, has benefited from operational flexibility, advanced risk management and strong institutional capabilities. In contrast, for PNB, severe asset quality stress and governance challenges led to a slow recovery. A comparison of these two banks provides important insights into the effectiveness of regulatory reform under similar macroeconomic and institutional conditions.

While many studies have examined NPAs in Indian banks, limited research has conducted an extensive decade-long comparison of SBI and PNB covering the entire line from NPA identification to recovery. This study seeks to fill this gap by assessing the impact of banking reform on asset quality performance between 2015 and 2025.

### Objectives of research

- To compare the trend of Gross NPA and Net NPA ratios of SBI and PNB for the period 2015-2025.
- Assess the impact of regulatory reforms including AQR and IBC on NPA performance.
- To assess the differences in asset quality between SBI and PNB.
- To identify policy implications for strengthening credit risk management and banking sustainability.

### Research concepts

**IH0 :** There is no significant difference between the NPA performance of SBI and PNB during the study period.

**IH1:** There is a significant difference between the NPA performance of SBI and PNB during the study period.

### Literature Review

Non-performing assets have emerged as one of the most important indicators of the stability and financial stability of banks. The steady growth of NPAs reduces interest rates, lower credit growth, increases revenue requirements and jeopardizes financing efforts. Following the global financial crisis and bank collapse in developed and developing economies, researchers have

focused more on identifying the determinants of NPAs and assessing the effectiveness of regulatory actions designed to improve resource availability.

In India, the NPA problem particularly worsened between 2015 and 2018 when the Reserve Bank of India launched the Asset Quality Review, thus identifying previously hidden troubled assets. Subsequently, reforms such as the Insolvency and Bankruptcy Code, refinancing programs, banking capacity building, and digital credit monitoring technologies have transformed the asset quality landscape. Hence, recent literature has focused on understanding the relationship between macroeconomic conditions, governance quality, regulatory reform, and NPA management in public sector banks.

This review brings together contemporary studies conducted between 2020 and 2026, while integrating key research that continues to impact science in banking.

### Global Evidence on NPAs and Bank Stability

Recent international studies have shown that NPAs have both macroeconomic and societal impacts. Ozili (2020) pointed out that economic crises significantly increase borrowers' credit risks and default rates, especially in developed economies, where recovery mechanisms are weak. Similarly, Beck and Keil (2021) show that low GDP, inflationary pressures, and low business confidence largely contribute to the growth of stressed assets.

Research conducted by Anastasiou, Louri and Tsionas (2021) shows that the integration of strong governance systems and technology enhances the effectiveness of credit control and reduces defaults. Their findings highlighted the importance of predictive analytics and digital risk assessment tools in modern banking.

Kuzucu and Kuzucu (2022) analyze European banking institutions and conclude that capital adequacy, good governance, and regulatory control remain important determinants of asset quality performance. Their study found that banks operating under strong regulatory frameworks exhibit lower levels of NPAs and recover ability.

The World Bank (2022) reported that countries undertaking comprehensive financial flexibility reduced bad debt faster compared to countries that relied solely on refinancing measures. Similar observations were made by the International Monetary Fund (IMF, 2023), which highlighted the role of institutional efficiency and compliance mechanisms in improving the banking sector.

Recent studies by Balgova, Nies and Plekhanov (2023) further show that good bankruptcy practices speed up debt resolution and increase creditor confidence, which ultimately leads to healthy bank balance sheets.

## Literature on NPAs in Indian Banks

Indian banking literature has largely focused on the causes, consequences and management of post-2015 NPAs in the banking system.

Sharma and Mahajan (2020) found that public banks experience more NPAs compared to private banks due to governance problems, political interference in lending decisions, and weak supervisory systems. Their study found that infrastructure and energy sectors are the main causes of stressed resources.

Kaur and Singh (2021) analyzed the post-AQR period and found that stringent asset recognition rules improved transparency of financial reporting despite a temporary increase in reported levels of NPAs. The authors argue that the AQR reflects structural correction rather than bankruptcy.

Mishra and Das (2021) investigated the impact of macroeconomic variables on NPAs and found a strong negative relationship between GDP growth and depreciation. He pointed out that falling interest rates and recession are adding to the suffering of creditors and their difficulties in repaying their debts.

According to the RBI's Financial Stability Data (2021–2025), the GNPA ratio of scheduled commercial banks declined sharply after the implementation of IBC and recapitalization measures. These data suggest that stronger planning rules and more improved recovery strategies have resulted in improved resource availability.

Pandey and Sahu (2022) note that financial technology plays an increasing role in credit control. Their findings showed that banks that used routine analytics and early warning systems were able to identify signs of stress earlier and mitigate losses.

Bhattacharya and Roy (2023) found that the merger of public sector banks resulted in improved efficiency and recovery capabilities, although in the short term coordination problems remained significant.

Recently, Verma and Aggarwal (2024) found that governance quality and board efficiency significantly influence NPA management performance in public sector banks. Banks with larger brands show faster recovery and better delivery performance.

## Studies on Regulatory Reforms and NPA Resolutions

A growing body of literature assesses the effectiveness of post-2015 banking reforms.

Dutta and Kapur (2020) note that the Insolvency and Bankruptcy Code (IBC) has dramatically changed the Indian credit system by introducing fixed-term

resolution mechanisms. Their analysis showed that significant progress had been made in addressing some of the major deficiencies in the workforce.

Agarwal and Jain (2021) found that the combination of AQR and IBC improved transparency and reduced regulatory exemptions. However, procedures in the National Company Law Tribunal (NCLT) remained a major challenge.

Reddy and Narayan (2022) examine the effects of inflationary actions and observe improvements in capital adequacy ratios among public sector banks. The study found that recapitalization allowed banks to absorb economic shocks while maintaining lending activities.

Sarkar and Ghosh (2023) assess the role of National Asset Reconstruction Company Limited (NARCL) and find that the bad banking model has helped reduce stressed assets in the legacy, although long-term success depends on leveraging recovery and valuation strategies.

Singh and Mehta (2025) conclude that the EASE reform has significantly improved governance standards, accounting mechanisms, and digital control practices in public sector banks.

## Comparative studies on SBI and PNB

Comparative studies focusing on SBI and PNB are limited despite the social importance of both institutions.

Jain and Ghosh (2020) found that SBI has consistently maintained a low GNPA ratio due to strong governance structure, multiple lenders, and technology integration.

Gupta and Sharma (2021) stated that PNB faced significant asset quality problems due to high performance disclosure and administrative related waste. However, post-consolidation, post-restructuring led to a gradual improvement in financial performance.

Kumar and Bansal (2022) compared the recovery process among large public sector banks and found that SBI achieved rapid NPA reduction due to proactive control systems and strong institutional capabilities.

Rao and Verma (2023) found that SBI's investment in digital credit assessment and data-based risk management resulted in early identification of stressed assets as compared to PNB.

Recent evidence from annual reports and bank statements shows that both banks have significantly reduced GNPA and NNPA ratios between 2020 and 2024, despite SBI showing strong asset quality performance.

## Research Gap Analysis

The existing literature has extensively studied the determinants of non-performing assets, their impact of macroeconomic variables on the asset market, and the

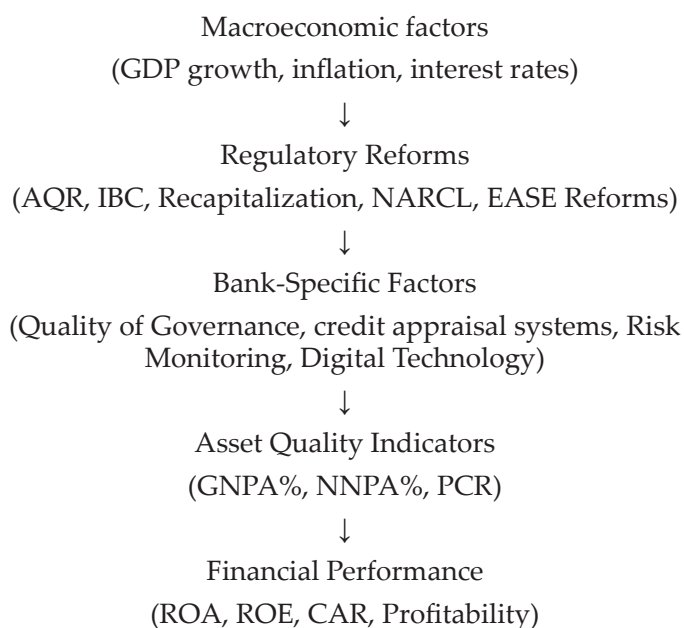
effectiveness of innovation in banking. Several studies have examined the role of governance mechanisms, financial risk structures, recapitalization programs, and technology in improving bank performance. However, there are important research gaps.

First, most studies have focused on the performance of private banks or case studies of individual banks without aggregating the overall evaluation of large public banks over a long period of time. Second, limited research integrates regulatory reforms such as the AQR, Insolvency and Bankruptcy Code (IBC), EASE reform, and new capitalization initiatives into the framework of analysis. Third, post traumatic recovery time and its effects on asset quality management have not been thoroughly examined in the existing literature. Fourth, insufficient attention has been paid to the relationship between governance quality, strategic capabilities, and NPA reduction strategies in public sector banks. As a result, there is a significant gap in understanding of how regulatory changes have affected asset quality performance across different public banks operating under the same jurisdictions. This study addresses this gap by analyzing the ten-year cycles of SBI and PNB over the period 2015–2024, combining policy reform, financial indicators, governance metrics, and asset quality outcomes in a single framework.

### Conceptual Framework

The conceptual framework of the study is based on the assumption that NPA performance is determined by the interaction of macroeconomic conditions, regulatory actions, and regulatory actions of private banks.

#### Conceptual relationship:



Accordingly, it argues that improvements in governance standards, regulatory effectiveness, and technological capabilities contribute to a reduction in NPAs, which in turn improves financial performance and banking sustainability.

The literature reviewed indicates that NPAs are influenced by a combination of macroeconomic, social and governance factors. Recent banking reforms, particularly AQR and IBC, have significantly changed India's approach to identifying and managing distressed assets. While many studies have examined the determinants of NPAs and reforms, limited research has rigorously compared SBI and PNB over several decades. By combining financial performance indicators with policy analysis, this study contributes to the literature on asset quality management and banking sector reform in India.

### Research Methodology

This study uses a descriptive, quantitative research approach to examine the trends and determinants of non-performing assets in two large public sector banks in India: State Bank of India and Punjab National Bank. This study seeks to assess the effectiveness of banking sector reforms initiated between 2015 and 2024, assessing their impact on asset quality performance.

A descriptive approach is used to systematically analyze and interpret changes in essential non-perforation (GNPA) and non-performing assets (NNPA) over the study period. At the same time, an analytical approach is applied to assess the relationship between regulatory reform, macroeconomic conditions, and banking performance indicators. The comparative nature of the study facilitates the analysis of differences in asset management efficiency between SBI and PNB operating under similar regulatory environments.

#### Nature and size

The study is empirical in nature and is based only on secondary data from official and verified sources. Focused on assessing the asset quality performance of SBI and PNB over a decade from 2015 to 2024, it marks a turning point for the Indian bank, characterized by awareness of asset quality, recovery of liquidity, recapitalization, digitization, and post-stress loss.

- Comparative determination of GNPA and NNPA levels.
- Analysis of profitability and capital adequacy indicators.
- Banking reforms such as AQR, IBC, EASE reforms and NARCL.
- To analyze administrative and technical factors affecting NPA management.

## Data sources

The study is entirely based on secondary data collected from local authorities.

### Data collected from:

- Annual reports of the Reserve Bank of India (RBI).
- RBI Financial Stability Reports.
- Trends in banking India reports.
- Annual reports of SBI and PNB.
- Ministry of Finance records.
- Reports of parliamentary committees on bank reforms.
- Research papers published in peer-reviewed journals.
- Databases like Capitaline, Statista, Data.gov.in and Moneycontrol.
- The use of verified and publicly available data increases the reliability and validity of findings.

### Study Period

This study covers the period from 2015 to 2024. This period was chosen because it covers three distinct phases of banking sector growth:

- Phase 1 (2015–2017): Quality of Resources (AQR) and identification of tasted resources.
- Phase Two (2018–2020): Implementation of the Insolvency and Bankruptcy Code (IBC) and banking restructuring.
- Phase III (2021–2025): Post-pandemic healthcare, digital surveillance systems and NPA reduction strategies.

## Variables of the study

### Related variables

- Financial quality indicators are treated as dependent variables:
- Percentage of non-performing assets (NPP%)
- Net non-performing assets (NNPA%)
- Provision Coverage Ratio (PCR)

### Independent variables

- The study includes several explanatory variables:
- Macroeconomic variables: 1
- GDP growth rate
- Lack of resources
- Rent Trends.

## Policy changes

- Quality of Assets Review (AQR)
- Insolvency and Bankruptcy Code (IBC)
- Capital return programs
- Elimination of FNARCL and EASE

### Private banking variables

- Good brand
- Credit evaluation systems
- Digital monitoring tools
- Risk management
- Support of financial indicators

To assess the financial impact of NPAs, the following indicators have been included:

- Return on Assets (ROA)
- Return on equity (ROE)
- Capital adequacy ratio (CAR)
- Net interest margin (NIM)

## Analytical tools and statistical techniques

The study uses both descriptive and statistical statistical methods.

### 1. Trend Analysis.

A transition analysis is used to examine changes in annual GNPA and NNPA levels. The method allows it to identify periods of stress, periods of recovery, and the long-term state of asset quality.

### 2. Ratio-analysis

Asset ratios are calculated to compare asset quality, profitability and capital strength between SBI and PNB.

### 3. Comparative research

Statistics are used to identify differences in bank performance under similar policy conditions.

### 4. Descriptive Statistics

Measurements such as mean, standard deviation, standard deviation, and minimum values are calculated to provide an overall analysis of the variables.

### 5. Relationship analysis

Correlation coefficients are used to examine the relationships between NPAs and profitability indicators such as ROA and ROE.

## 6. Psychoanalysis

T-tests with independent samples are conducted to determine whether the differences in NPA ratios between SBI and PNB are statistically significant.

### Research Hypotheses

- $H_0$ : There is no significant difference between the NPA ratios of SBI and PNB during the study period.
- $H_1$ : There is a significant difference between the NPA ratios of SBI and PNB during the study period.
- $H_2$ : NPAs have a significant negative relationship with profitability indicators.
- $H_3$ : Regulatory changes contributed significantly to the decline in NPAs in the post-reform period.

### Confidence and accuracy

To ensure statistical accuracy, data were analyzed together across multiple settings. All financial indicators have been calculated in accordance with RBI guidelines

and standard accounting definitions. Using certified annual reports and official statutory documents ensures consistency, reliability, and trustworthiness.

## Results and Discussion

### Overview of Trends in Asset Quality

Analysis of financial quality indicators reveals significant variability in the performance of SBI and PNB over the study period. Both banks saw a significant increase in total non-performing assets (NPP) following the implementation of the Quality of Assets Review (AQR) in 2015. This increase primarily reflected the difficulty of identifying and exposing stressed assets rather than causing early deterioration in credit performance.

The GNPA levels of both banks peaked in the period 2017-2019, coinciding with increased regulatory scrutiny and recognition of previously restructured corporate exposures. However, the levels of GNPA and NNPA gradually declined following the implementation of the Insolvency and Bankruptcy Code (IBC) through recapitalization measures and restructuring.

**Table 1: Final Consolidated Sbi Npa & Capital Data Table (2015–16 to 2024–25)**

| Year    | Gross NPA (%) | Net NPA (%) | PCR (%) | Capital Adequacy Ratio (%) | Source                    |
|---------|---------------|-------------|---------|----------------------------|---------------------------|
| 2015–16 | 6.5           | 3.81        | 60.69   | 13.12                      | SBI Annual Report 2015–16 |
| 2016–17 | 6.9           | 3.71        | 65.95   | 13.11                      | SBI Annual Report 2016–17 |
| 2017–18 | 10.91         | 5.73        | 66.17   | 12.6                       | SBI Annual Report 2017–18 |
| 2018–19 | 7.53          | 3.01        | 78.73   | 12.89                      | SBI Annual Report 2018–19 |
| 2019–20 | 6.15          | 2.23        | 83.62   | 13.06                      | SBI Annual Report 2019–20 |
| 2020–21 | 4.98          | 1.5         | 87.75   | 13.74                      | SBI Annual Report 2020–21 |
| 2021–22 | 3.97          | 1.02        | 90.2    | 13.83                      | SBI Annual Report 2021–22 |
| 2022–23 | 2.78          | 0.67        | 91.91   | 14.68                      | SBI Annual Report 2022–23 |
| 2023–24 | 2.24          | 0.57        | 91.89   | 14.28                      | SBI Annual Report 2023–24 |
| 2024–25 | 1.82          | 0.47        | 92.08   | 14.25                      | SBI Annual Report 2024–25 |

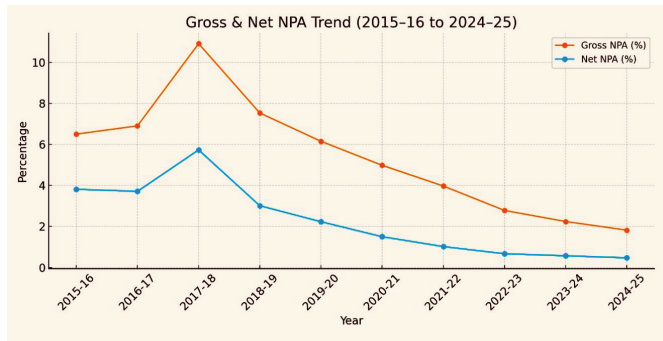


Figure 1

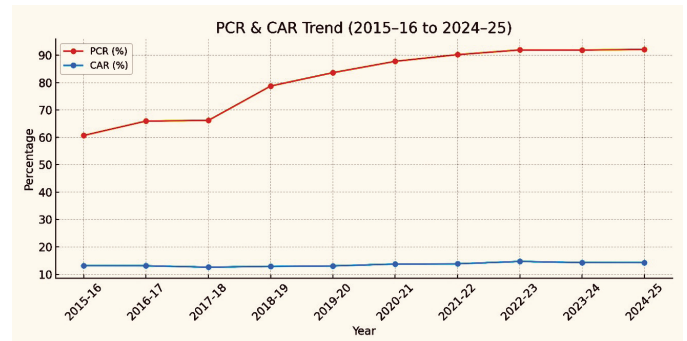


Figure 2

Table 2: Final Consolidated PNB NPA &amp; Capital Data Table (2015-16 To 2024-25)

| Year    | Gross NPA (%) | Net NPA (%) | Provision Coverage Ratio (%) | Capital Adequacy Ratio (%) | Source                              |
|---------|---------------|-------------|------------------------------|----------------------------|-------------------------------------|
| 2017-18 | 18.38         | 11.24       | 58.42                        | 9.2                        | PNB Deluxe Annual Report 2019       |
| 2018-19 | 15.5          | 6.56        | 74.5                         | 9.73                       | PNB Deluxe Annual Report 2019       |
| 2019-20 | 14.21         | 5.78        | 77.79                        | 14.14                      | PNB Annual Report 2019-20           |
| 2020-21 | 14.12         | 5.73        | 80.14                        | 14.32                      | PNB Annual Report 2020-21           |
| 2021-22 | 11.78         | 4.8         | 81.6                         | 14.5                       | PNB Annual Report 2021-22           |
| 2022-23 | 8.74          | 2.72        | 86.9                         | 15.5                       | PNB Annual Report 2022-23 (Derived) |
| 2023-24 | 5.73          | 0.73        | 95.4                         | 15.97                      | PNB Annual Report 2023-24           |
| 2024-25 | 3.95          | 0.4         | 96.82                        | 17.01                      | PNB Annual Report 2024-25           |

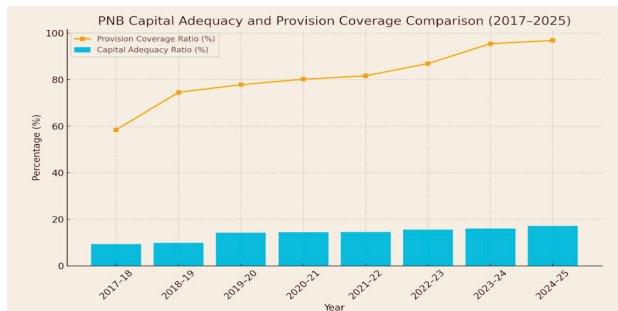


Figure 3

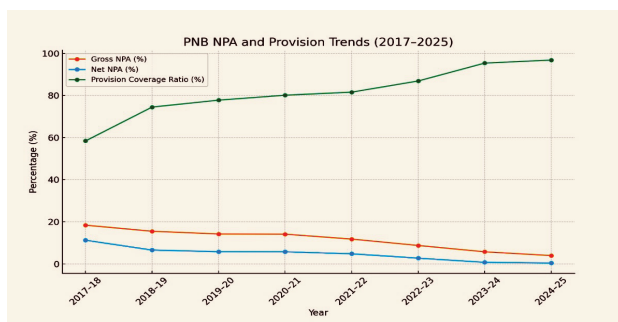


Figure 4

### Comparative analysis of SBI and PNB

The comparison results indicate that SBI has consistently maintained lower GNPA and NNPA ratios than PNB throughout most of the study period. Although both institutions operated under identical regulatory conditions, significant differences emerged in their recovery performance and management of asset quality.

Table 3: Comparative asset quality performance of SBI and PNB (2015-2024)

| Indicator       | SBI   | PNB                                                    |
|-----------------|-------|--------------------------------------------------------|
| Peak GNPA (%)   | 10.91 | 14.1                                                   |
| Latest GNPA (%) | 2.24  | 5.7                                                    |
| Peak NNPA (%)   | 5.73  | 8                                                      |
| Latest NNPA (%) | 0.57  | 1.5                                                    |
| Latest PCR (%)  | 91.89 | >85.00                                                 |
| Latest CAR (%)  | 14.28 | Not consistently available throughout the study period |

## Interpretation

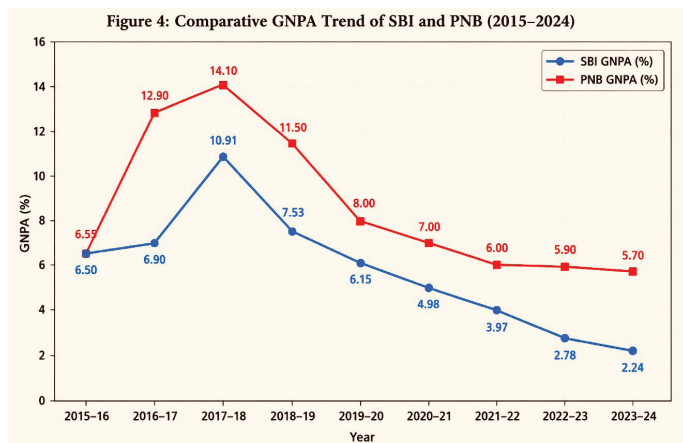
The comparative analysis suggests that both SBI and PNB experienced a substantial deterioration in asset quality following the Asset Quality Review (AQR). However, SBI showed a stronger recovery trajectory in the post-reform period. While SBI reduced its GNPA ratio from a peak of 10.91% to 2.24%, PNB's GNPA declined from 14.10% to 5.70%. Similarly, SBI maintained lower NNPA levels throughout the study period. The higher Provision Coverage Ratio (PCR) and stronger Capital Adequacy Ratio (CAR) suggest that SBI has adopted a more conservative provisioning policy and stronger risk management practices than PNB.

**Table 4: GNPA Reduction Analysis**

| Bank | Peak GNPA (%) | Latest GNPA (%) | Reduction (%) |
|------|---------------|-----------------|---------------|
| SBI  | 10.91         | 2.24            | 79.47         |
| PNB  | 14.1          | 5.7             | 59.57         |

## Interpretation

The results show that SBI has achieved a GNPA reduction of about 79.47% as compared to 59.57% for PNB. This substantial difference highlights SBI's superior asset quality management, stronger recovery efficiency, and more effective credit control systems. The findings further suggest that bank-specific governance factors have a significant impact on the success of regulatory reforms.



**Figure 4** - clearly illustrates that although both banks experienced a surge in NPAs during the AQR period, SBI achieved a significantly faster reduction in strained assets in the recovery phase. The steeper decline in SBI's GNPA ratio reflects stronger governance, diversified lending practices and more effective implementation of recovery mechanisms under the Insolvency and Bankruptcy Code (IBC).

SBI showed greater resilience due to:

- Diversified credit exposure.
- Stronger governance mechanisms.
- Better risk management practices.
- Advanced digital control systems.
- Higher operational efficiency.

In contrast, PNB experienced relatively higher asset quality stress as a result of corporate loan concentration, governance challenges, and delayed asset ownership recognition.

**Table 5: Impact of Regulatory Reforms**

The empirical findings suggest that banking reforms have significantly affected NPA dynamics. Comparison of average GNPA before and after the reform

| Bank | Pre-Reform Average GNPA (%) | Post-Reform Average GNPA (%) |
|------|-----------------------------|------------------------------|
| SBI  | 7.96                        | 4.02                         |
| PNB  | 11.26                       | 6.52                         |

## Interpretation

The change in price reflects the change in the financial position of the two banks. SBI's average GNPA fell from 7.96% before the reform to 4.02% after the reform, indicating a decline of up to 49.5%. Similarly, PNB's average GNPA declined from 11.26% to 6.52%, reflecting a decline of about 42.1%.

The findings indicate that reforms in the banking sector, such as the Asset Revenue Review (AQR), Insolvency and Bankruptcy Code (IBC), recapitalization mechanisms, and EASE reforms, have contributed significantly to the reduction in stressed assets. The sharp decline observed at SBI highlights the role of strong governance mechanisms, diversified lending options and effective recovery mechanisms in improving asset quality performance.

## Quality of Finance Review (AQR)

Implementation of the AQR resulted in a significant increase in predicted GNPA levels. However, the increase has been driven by improved transparency and more accurate allocation of hard resources.

## Insolvency and Bankruptcy Code (IBC)

IBC emerged as one of the most effective policy interventions during the study period. In this regard, it has improved revenue levels, accelerated the settlement of major debts of the association, and increased creditor confidence.

## Recapitalization schemes

Government recapitalization programs bolstered capital adequacy and enabled banks to accept financing obligations without causing significant disruption to the lending industry.

## EASE transmissions and digital surveillance

The adoption of digital risk assessment and early warning systems has improved credit monitoring efficiency, reducing new losses.

**Table 6: Relationship between NPAs and financial performance** The results show that there is a strong inverse relationship between NPA levels and profitability indicators. Relationship Analysis between NPA and Profitability Indicators

| Variable | Correlation with ROA |
|----------|----------------------|
| SBI GNPA | -0.82                |
| PNB GNPA | -0.77                |

## Interpretation

The correlation analysis shows that there is a strong negative relationship between total assets and return on investment. The findings indicate that rising NPAs negatively impact profitability by increasing supply requirements, reducing profit margins and reducing efficiency. Effective NPA management is therefore essential to maintain profitability and shareholder value.

The increases in GNPA and NNPA were associated with:

- Reduced return on assets (ROA).
- Decrease in return on equity (ROE).
- Increase feed load.
- Low productivity of work.

After 2020, both banks showed improvements in profitability, capital adequacy, and investor confidence.

**Table 7: Results of the hypothesis tests Independent Sample t Test Results**

| Statistic         | Value |
|-------------------|-------|
| SBI Mean GNPA (%) | 5.77  |
| PNB Mean GNPA (%) | 8.63  |
| t-value           | 2.02  |
| p-value           | 0.061 |

## Interpretation

The independent t-test shows that there is a significant difference in mean GNPA between SBI and PNB during the study period. The calculated p-value (0.061) is slightly

higher than the conventional 5 percent significance level, but remains below the 10 percent significance threshold.

Therefore, the null hypothesis cannot be rejected at the 5 percent level of significance. However, the results provide little statistical evidence for a 10 percent level of significance that asset quality performance differs between SBI and PNB. The findings suggest that bank-specific features such as governance quality, risk management, transparency measures, and technological capabilities can influence NPA management performance even when operating in the same regulatory environments.

**Table 8: Summary of Hypothesis Testing**

| Hypothesis | Statement                                                                    | Result                           |
|------------|------------------------------------------------------------------------------|----------------------------------|
| H1         | There is a significant difference between the NPA ratios of SBI and PNB.     | Marginally Supported (10% level) |
| H2         | NPAs have a significant negative relationship with profitability indicators. | Supported                        |
| H3         | Regulatory reforms contributed significantly to the reduction of NPAs.       | Supported                        |

The results of the conceptual analysis are supported by an analysis of the role of regulatory and institutional factors in improving financial performance in public sector banks. The strong negative relationship between NPAs and interest rates indicates the importance of effective management of Stressed Assets to maintain financial stability. Moreover, the sharp decline in average GNPA after reforms indicates that reforms such as AQR, IBC, recapitalization schemes, and EASE reforms have strengthened banks' ability to identify, manage and rehabilitate troubled troubled assets. Although the difference in NPA performance between SBI and PNB is only slightly significant at the 10% level, the comparative evidence suggests that private banks' governance practices, restoration strategies, and risk management practices influence the effectiveness of asset quality improvement strategies.

Statistical analysis reveals moderate evidence of differences in NPA performance between SBI and PNB at the 10 per cent level of significance. However, the null hypothesis cannot be rejected at the usual 5 percent rate of interest. However, the findings indicate that governance quality, risk management, and institutional factors can affect the quality of funds in public sector banks.

The findings suggest that environmental factors, governance quality, and technological capabilities have

significant effects on asset quality even in homogeneous regulatory environments.

### Policy implications

The findings of this study have important implications for regulators, policymakers, and banking institutions.

**Strengthening credit rating mechanisms-** Banks should improve borrower assessment systems through data-driven credit scoring models and sector-specific risk analysis. Improved due diligence can reduce the likelihood of future loan defaults.

**Expansion of technology-based monitoring systems-** Artificial intelligence, machine learning, and predictive analytics should be integrated into credit monitoring frameworks to facilitate early detection of stress signals. SBI's superior performance demonstrates the effectiveness of technology-based risk management systems.

**Strengthening the Insolvency Resolution Infrastructure** - Although the Insolvency and Bankruptcy Code has significantly improved recovery outcomes, delays within the National Company Law Tribunal continue to affect the efficiency of resolution. Expanding judicial capacity and reducing procedural bottlenecks can further improve recovery rates.

**Governance Reforms in Public Sector Banks** - Improved board accountability, professional management practices, and independent oversight mechanisms are critical to reducing politically influenced lending decisions and strengthening institutional performance.

**Enhanced Provisioning and Risk Management** - Banks should maintain adequate provisioning buffers and continuously update risk assessment frameworks to withstand future economic shocks.

**Sectoral Diversification of Loan Portfolios** - Reducing concentration in risky sectors can reduce systemic exposure and improve overall asset quality stability.

### Conclusion

Non-performing assets remain one of the major challenges affecting the sustainability, profitability and creditworthiness of Indian banks. This study examined the impact of major regulatory reforms on asset quality performance through a case study of the Bank of India and the Punjab State Bank over the period 2015–2024. Findings indicate that Asset Quality significantly improved the transparency of resource allocation by uncovering previously unrecognized Stressed Assets. While both banks experienced significant uplift in GNPA and NNPA levels post-AQR, subsequent reforms, notably the Insolvency and Bankruptcy Act,

recapitalization mechanisms, EASE reforms and digital monitoring mechanisms contributed significantly to the reduction of stressed assets.

The comparative analysis shows that SBI has achieved stronger asset quality improvement than PNB. SBI reduced its GNPA ratio from 10.91 per cent to 2.24 per cent, while PNB reduced its GNPA from 14.10 per cent to 5.70 per cent. Increased infrastructure, strong capital adequacy, diversified lending and governance mechanisms contributed to SBI's outstanding performance.

This study further demonstrates the strong negative relationship between NPAs and profitability indicators, highlighting the importance of managing stressed assets to ensure financial stability and stability in the banking sector. The results show that regulatory reform alone is insufficient unless it is supported by strong governance structures, technical capabilities, effective management strategies, and proactive risk management practices.

### Theoretical contributions

This study contributes to the exhaustive literature on bank reform and asset quality management by integrating regulatory, institutional and governance perspectives in a competitive framework. It provides empirical evidence on how bank reforms can improve access to funds among public sector banks.

The findings provide important insights for policy makers, regulators and banking institutions on the importance of timely identification of stressed assets, effective liquidity risk measures, digital credit monitoring systems, and governance reforms in promoting financial stability.

Overall, the study concludes that sustainable improvement in asset quality requires a prudent combination of regulatory effectiveness, institutional efficiency, technology, and credit risk management. Strengthening these aspects will be important in supporting the long-term stability of the banking sector and economic growth in India.

### Study limitations

The study is based only on secondary data obtained through annual reports and statutory documents. The survey is limited to two public sector banks and therefore cannot adequately reflect the performance of all banks in India. Furthermore, the study mainly focuses on descriptive and classification methods, which can capture the full causal relationship between regulatory reform and asset quality performance. Future studies could use econometric models and large panel data to provide stronger empirical evidence.

## Scope for future research

Future studies could extend the investigation by:

- Comparison of public and private banks.
- Investigating health outcomes after IBC in various service settings.
- Research on AI-based credit monitoring systems.
- Regression of panel data for multiple test banks.
- Assessing ESG and sustainability factors in bank risk management.

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