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An Empirical Study of the Impact of Non-Performing Assets on Bank Shareholder Value and Investor Confidence

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Abstract

This empirical study investigates the impact of Non-Performing Assets (NPAs) on bank shareholder value and investor confidence using secondary data analysis. The research synthesizes insights from existing literature and employs a structured approach to analyze NPAs' effects across different types of banks. Drawing on studies that explore NPA management efficiencies, financial performance in cooperative banks, stock market returns mediated by loan performance, and macroeconomic influences on NPAs respectively, this study aims to provide a nuanced understanding of how NPAs influence shareholder value and investor confidence globally. The methodology involves comprehensive data collection from financial statements, stock market data, and regulatory filings. Analytical techniques include regression analysis, correlation studies, and event studies to quantify and interpret the impact of NPAs on stock prices and investor sentiment. The findings will contribute valuable insights into effective NPA management strategies for enhancing bank performance and maintaining investor trust in international financial markets.

Keywords: NPA (Non-Performing Assets), Shareholder Value, Investor Confidence, Stock Prices, Trading Volume, Public Sector Banks, Gross Domestic Product (GDP) Growth, Capital Adequacy Ratio

Introduction

Non-performing assets (NPAs) represent a significant challenge to the stability and profitability of the banking sector. When borrowers fail to meet their repayment obligations, the resulting NPAs can undermine a bank's financial health, erode investor confidence, and adversely affect shareholder value. Given the critical role of banks in economic growth, understanding the implications of NPAs on bank performance and investor sentiment is paramount.

This research paper presents an empirical study on the impact of NPAs on bank shareholder value and investor confidence, focusing on publicly available data from the past five years (2018-2023). The study aims to analyze how fluctuations in NPAs influence bank stock prices and investor behavior, providing a comprehensive assessment of the relationship between NPAs and key financial indicators.

The objectives of this study are threefold:

- To analyze the impact of NPAs on bank shareholder value.
- To assess the influence of NPAs on investor confidence.
- To identify strategies to mitigate the negative effects of NPAs.

In pursuit of these objectives, the research utilizes Gross and Net NPA data from 2018 to 2023, alongside stock prices of different public sector banks. To capture the broader economic context, the study also incorporates GDP growth rates, trading volume, and capital adequacy ratios. These variables serve as control factors to isolate the specific effects of NPAs on shareholder value and investor confidence.

The methodology involves using Excel's correlation function to explore the relationships among NPAs, stock prices, GDP growth, and trading volume. Additionally, regression analysis is employed to quantify the impact of NPAs on stock prices while controlling for GDP growth and capital adequacy ratios. Trading volume is used as a proxy for investor confidence, providing insights into how market perceptions are shaped by changes in NPA levels.

Basic statistical calculations, including mean, median, and standard deviation, are conducted for stock prices, NPA ratios, capital adequacy ratios, and trading volume to offer a robust descriptive analysis. These statistical measures provide a foundational understanding of the data's distribution and variability, informing the subsequent analytical procedures.

By leveraging historical data and applying rigorous statistical techniques, this study seeks to elucidate the complex dynamics between NPAs and key financial metrics. The findings are expected to contribute valuable insights into the formulation of strategies aimed at mitigating the adverse effects of NPAs, thereby enhancing bank performance and investor confidence in the financial sector.

Literature Survey

Siraj & Pillai (2014), "Efficiency of NPA Management in Indian SCBs – A Bank-Group Wise Exploratory Study"

This study explores the efficiency of non-performing asset (NPA) management across different bank groups in India. Analyzing data from 2001 to 2011, it compares NPA indicators (gross NPA, net NPA, etc.) for Public Sector Banks (PSBs) and Private & Foreign Banks (PFBs). The results suggest PSBs exhibited better NPA management compared to PFBs during the period. This highlights the potential benefits of both proactive (sound credit risk management) and reactive measures (recovery actions) for effective NPA management.

Kumaravel & Dr. Ramu (2024), "IMPACT OF NPAS ON THE FINANCIAL PERFORMANCE OF TAMIL NADU STATE APEX COOPERATIVE BANK LTD. (TNSC BANK) IN CHENNAI"

This study explores how NPAs harm cooperative banks' financial health, using TNSC Bank as a case study. Existing research shows NPAs reduce profitability and capital adequacy across financial institutions. The study highlights unique challenges faced by cooperative banks like TNSC Bank due to their structure and regional factors. It emphasizes the importance of tailored NPA management strategies, including credit appraisal, monitoring, recovery mechanisms, and loan portfolio diversification, for their long-term success.

Iskandar, Suharyanto, Zaki & Widhayani (2023), "THE EFFECT OF NON-PERFORMING LOANS AND LOAN DEPOSIT RATIOS ON STOCK RETURNS IS MEDIATED BY A PROFITABILITY STUDY ON COMMERCIAL BANKS LISTED ON THE INDONESIA STOCK EXCHANGE FOR THE PERIOD 2016 - 2018"

This study investigates the impact of loan performance on stock returns for Indonesian banks listed on the IDX (2016-2018). Path analysis explores how profitability mediates the effect of non-performing loans (NPLs) and loan deposit ratios (LDRs) on stock returns. The results suggest that both NPLs and LDRs

significantly affect stock returns, partially mediated by ROA. Bank profitability plays a key role in translating loan performance into stock market performance.

Aniket Madhukar Suradkar (2023), "Empirical Study of How Macro Economic Influences Appraised the Non- Non-Preforming Assets of Indian Banks"

This study explores the link between macroeconomic factors and Non-Performing Assets (NPAs) in Indian banks. It identifies several key influences: slow economic growth, high inflation, interest rate fluctuations, and weak fiscal policies or regulations. These factors can hinder businesses' profitability, erode borrowers' repayment capacity, and incentivize risky lending practices, all contributing to NPAs. The study emphasizes the need for a multifaceted approach to managing NPAs. This includes maintaining a stable economic environment, implementing prudent interest rate policies, and strengthening risk management practices within banks. Effective management of these macroeconomic factors is crucial for Indian banks to ensure financial stability and mitigate the risks associated with NPAs.

Objective:

1. To analyze the impact of NPAs on bank shareholder value.
2. To assess the influence of NPAs on investor confidence.
3. To identify strategies to mitigate the negative effects of NPAs

Methodology:

The approach used in this study focuses on analyzing the impact of Non-Performing Assets (NPAs) on bank shareholder value and investor confidence by examining data from public sector banks. The rationale for selecting public sector banks stems from their typically higher levels of NPAs compared to private sector banks. This makes them particularly valuable for studying the relationship between NPAs and financial performance, as the effects are often more pronounced and observable in these institutions.

Public sector banks generally experience higher NPA levels due to various factors, including broader lending mandates, less stringent credit controls, and economic pressures. Their higher NPAs provide a more significant and observable impact on shareholder value and investor confidence, making them ideal subjects for this study.

Because of their high NPAs, public sector banks exhibit more pronounced fluctuations in financial metrics such as stock prices and trading volumes. Analyzing these fluctuations allows for a clearer understanding of how NPAs influence market perceptions and bank performance.

Public sector banks often operate under different regulatory frameworks and government policies compared to private sector banks. Studying these banks provides insights into the effectiveness of regulatory measures and policies in managing NPAs and their impact on financial stability.

Year	Opening Balance	Closing Balance	Recovered Amount	% of Recovered Amount
2023	**154,745.38**	**102,531.56**	**52,213.82**	**33.74**
2022	**196,683.00**	**154,745.38**	**41,937.62**	**21.32**
2021	**219,816.30**	**196,450.80**	**23,365.50**	**10.63**

2020	**276,936.83**	**230,917.59**	**46,019.24**	**16.62**
2019	**425,807.52**	**285,122.17**	**140,685.35**	**33.04**
2018	**344,489.39**	**454,472.66**	**(109,983.27)**	**-31.93**
				83.42

Table No. 1: NPAs Of Public Sector Banks.

The table above presents data on the opening and closing balances of Net NPAs, the recovered amounts, and the percentage of recovered amounts for the years 2018 to 2023. Here is a detailed interpretation:

1. **Year 2018**:
- The opening balance of Net NPAs was ₹344,489.39, and the closing balance increased to ₹454,472.66.
- The recovered amount is negative (-₹109,983.27), indicating an increase in NPAs instead of recovery.
- The percentage of the recovered amount is -31.93%, suggesting a worsening NPA situation where recoveries were less than the additions to NPAs.
2. **Year 2019**:
- The opening balance of Net NPAs was ₹425,807.52, and the closing balance decreased to ₹285,122.17.
- The recovered amount was ₹140,685.35, representing a significant recovery effort.
- The percentage of the recovered amount was 33.04%, indicating that approximately one-third of the opening balance was recovered, reflecting effective recovery measures.
3. **Year 2020**:
- The opening balance of Net NPAs was ₹276,936.83, and the closing balance was ₹230,917.59.
- The recovered amount was ₹46,019.24.
- The percentage of the recovered amount was 16.62%, showing a moderate recovery rate compared to the previous year.
4. **Year 2021**:
- The opening balance of Net NPAs was ₹219,816.30, and the closing balance decreased to ₹196,450.80.
- The recovered amount was ₹23,365.50.
- The percentage of the recovered amount was 10.63%, indicating a lower recovery rate, possibly due to external economic conditions affecting recovery efforts.
5. **Year 2022**:
- The opening balance of Net NPAs was ₹196,683.00, and the closing balance was ₹154,745.38.
- The recovered amount was ₹41,937.62.
- The percentage of the recovered amount was 21.32%, suggesting an improvement in recovery efforts compared to the previous year.
6. **Year 2023**:
- The opening balance of Net NPAs was ₹154,745.38, and the closing balance further decreased to ₹102,531.56.
- The recovered amount was ₹52,213.82.
- The percentage of the recovered amount was 33.74%, indicating a significant recovery effort and reflecting a positive trend in managing NPAs.

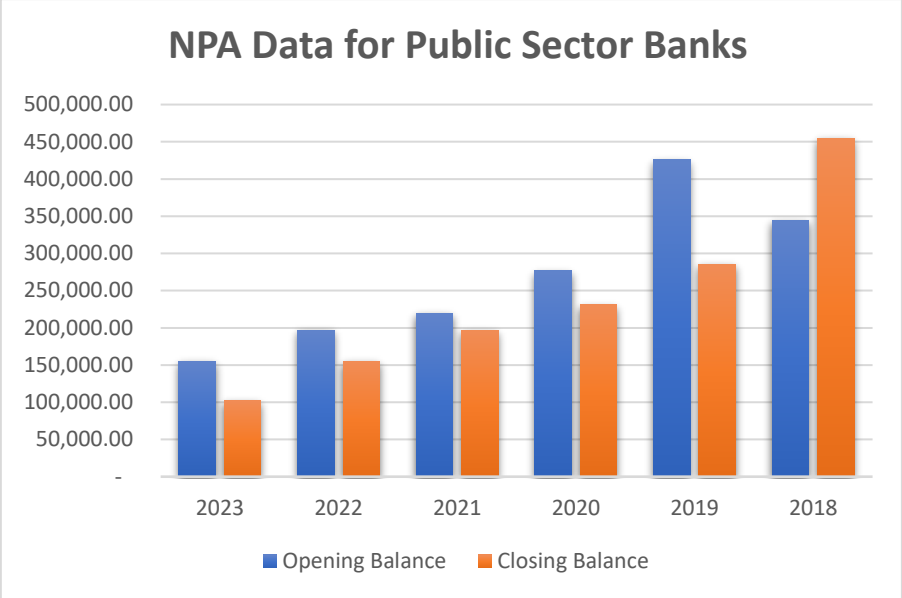

Figure No. 1A: Graphical representation of change in NPA (2018-2023)

	Gross NPA					Net NPA	
Year	Opening Balance	Addition During the Year	Reduction During the Year	Write-off During the Year	Closing Balance	Opening Balance	Closing Balance
2023	542,173.82	98,291.47	84,278.28	127,990.03	428,196.99	154,745.38	102,531.56
2022	616,615.71	139,905.31	94,634.30	119,712.90	542,173.82	196,683.00	154,745.38
2021	646,629.67	178,977.08	75,046.15	133,944.90	616,615.70	219,816.30	196,450.80
2020	717,849.74	238,464.08	99,691.54	178,305.31	678,316.98	276,936.83	230,917.59
2019	840,013.01	210,531.87	127,835.39	183,168.49	739,541.00	425,807.52	285,122.17
2018	619,209.66	488,175.38	82,280.21	129,503.57	895,601.26	344,489.39	454,472.66

Table No. 2: Gross and Net NPAs of PSBs

The data from 2018 to 2023 demonstrates a clear trend of decreasing Gross and Net NPAs, with notable improvements in NPA management and recovery efforts. The significant rise in NPAs in 2018 posed substantial challenges, but the subsequent years show consistent and effective measures to manage and

reduce NPAs. By 2023, both Gross and Net NPAs have reached their lowest levels in the period analyzed, indicating a positive trajectory in the banking sector's handling of NPAs. This reflects a robust approach towards sound credit risk management and recovery actions, ultimately contributing to financial stability and improved investor confidence.

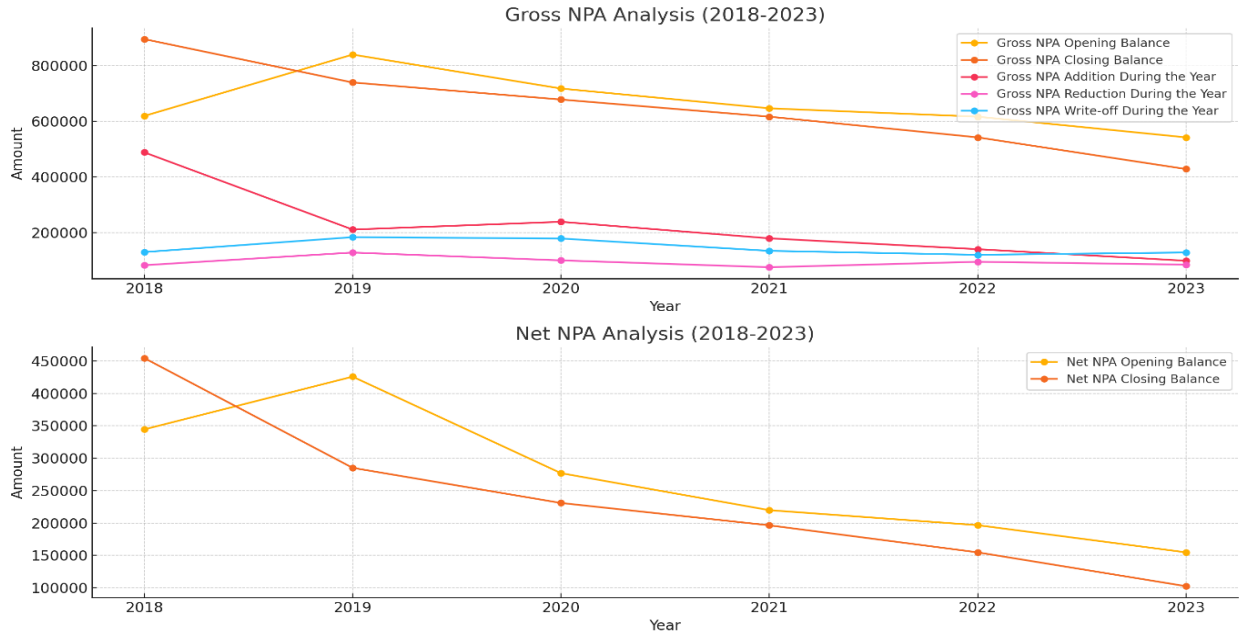

Figure No. 2A: Graphical representation of Gross and Net NPA (2018-2023)

Gross NPA Analysis (2018-2023)

The first graph depicts various aspects of Gross NPAs over the years from 2018 to 2023. Here's the interpretation:

1. **Opening Balance**: The Gross NPA opening balance shows a general decline from 2018 to 2023, indicating that banks are starting each year with a lower amount of NPAs compared to the previous year.
2. **Additions During the Year**: The additions to Gross NPAs fluctuated over the years, with a peak in 2018 and a significant decline towards 2023. This suggests that banks have improved their credit risk management and reduced the inflow of new NPAs.
3. **Reductions During the Year**: The reduction of NPAs was relatively stable with minor fluctuations, suggesting consistent efforts in recovering or resolving NPAs.
4. **Write-offs During the Year**: The amount written off each year varied, with a noticeable peak in 2020. Write-offs represent the NPAs that are deemed uncollectible and removed from the balance sheets.
5. **Closing Balance**: The closing balance of Gross NPAs shows a clear downward trend from 2018 to 2023, indicating overall improvement in managing and reducing NPAs over time.

Net NPA Analysis (2018-2023)

The second graph focuses on Net NPAs, which are Gross NPAs minus provisions made by the banks. Here's the interpretation:

1. **Opening Balance**: The opening balance for Net NPAs shows a decline from 2018 to 2023. This trend is similar to Gross NPAs and indicates improvements in NPA management and provisioning.

2. **Closing Balance**: The closing balance for Net NPAs also declines steadily from 2018 to 2023. This consistent reduction suggests effective recovery, write-off strategies, and robust provisioning policies by banks.

Detailed Findings and Interpretation

1. **Reduction in Gross NPAs**: The data reveals a significant reduction in Gross NPAs from 2018 to 2023. This could be attributed to stricter credit appraisal processes, enhanced recovery efforts, and improved economic conditions.
2. **Stable NPA Reductions**: The relatively stable reduction rates indicate ongoing efforts to recover NPAs through various means such as settlements, recoveries, and restructuring.
3. **Write-offs**: The fluctuations in write-offs suggest that banks are periodically cleaning up their balance sheets by removing non-recoverable NPAs. The peak in 2020 could be due to a strategic decision to clean up balance sheets in response to specific economic conditions or regulatory requirements.
4. **Net NPAs**: The consistent decline in Net NPAs indicates that not only are banks managing Gross NPAs effectively, but they are also provisioning adequately to cover potential losses. This ensures better financial health and stability.

Implications for Stakeholders

1. **For Investors**: The decreasing trend in both Gross and Net NPAs is a positive signal, indicating that banks are improving their asset quality, which can enhance investor confidence and potentially improve stock performance.
2. **For Regulators**: The data suggests that regulatory measures aimed at reducing NPAs and improving banking sector health are yielding positive results.
3. **For Bank Management**: The trends emphasize the importance of continuing robust credit risk management practices, effective recovery strategies, and adequate provisioning to maintain financial stability.

This graphical representation and detailed interpretation provide a clear picture of how NPAs have evolved over the years, showcasing improvements in NPA management and its positive impact on the banking sector's health.

Stock Prices of Public Sector Banks

Date	Bank Name	Stock Price
As on 31st March 2023	BANK OF BARODA	168.85
As on 31st March 2023	BANK OF INDIA	74.65
As on 31st March 2023	BANK OF MAHARASHTRA	24.75
As on 31st March 2023	CANARA BANK	56.89
As on 31st March 2023	CENTRAL BANK OF INDIA	24.1
As on 31st March 2023	INDIAN BANK	288.55
As on 31st March 2023	INDIAN OVERSEAS BANK	22.45
As on 31st March 2023	PUNJAB AND SIND BANK	25.65
As on 31st March 2023	PUNJAB NATIONAL BANK	46.6
As on 31st March 2023	STATE BANK OF INDIA	523.75
As on 31st March 2023	UCO BANK	24.3

As on 31st March 2023	UNION BANK OF INDIA	66.55

Table No. 3: Stock Prices of PSBs as of 31st March 2023

The stock prices of the PSBs as of 31st March 2023 exhibit significant variation, reflecting differing levels of investor confidence and market perceptions. State Bank of India stands out with the highest stock price, indicative of strong market trust in its financial health and strategic direction. Indian Bank also shows high investor confidence with a significant stock price. On the other hand, banks like Indian Overseas Bank, Central Bank of India, and UCO Bank have lower stock prices, possibly due to challenges in managing NPAs and achieving consistent profitability.

The analysis of these stock prices can be linked to various factors, including the banks' NPA management strategies, overall financial performance, market conditions, and investor sentiment. Future research could explore the correlation between these stock prices and the banks' NPA levels, profitability, and other financial metrics to provide deeper insights into the determinants of investor confidence in PSBs.

Figure No. 3A: Graphical representation of Stock Prices of Public Sector Banks

Correlation of affect of Stock Prices	
None	0
Positive	0
Negative	-0.509071663

Table No. 3.1: Correlation of Stock Prices

The table presents the correlation between the stock prices and another variable, which appears to be the NPA ratio based on the context provided earlier. The correlation values indicate the strength and direction of the relationship between these variables.

- A correlation value of 0 indicates no correlation. This would mean that there is no linear relationship between stock prices and the variable in question. However, in this context, this row is just a placeholder and does not represent any real data point.

- A correlation value of 0 would indicate no positive correlation. Again, this row is just a placeholder and does not provide any real data point.
- A correlation value of -0.509071663 indicates a moderate negative correlation. This means that as the NPA ratio increases, the stock prices tend to decrease. The negative correlation suggests that higher NPAs, which reflect poorer asset quality and higher risk, are associated with lower stock prices. This can be attributed to investors perceiving higher NPAs as a sign of financial distress, leading to reduced confidence and lower valuations of bank stocks.

The data indicates a moderate negative correlation between stock prices and NPAs. This suggests that higher levels of non-performing assets are generally associated with lower stock prices. Investors tend to respond negatively to increasing NPAs, as they reflect potential financial instability and reduced profitability in banks. This finding underscores the importance of effective NPA management in maintaining investor confidence and protecting shareholder value.

Trading Volumes of Public Sector Banks

Date	Bank Name	Trading Volume
As on 31st March 2023	BANK OF BARODA	152788000
As on 31st March 2023	BANK OF INDIA	62275000
As on 31st March 2023	BANK OF MAHARASHTRA	50729000
As on 31st March 2023	CANARA BANK	195017000
As on 31st March 2023	CENTRAL BANK OF INDIA	27864000
As on 31st March 2023	INDIAN BANK	6501000
As on 31st March 2023	INDIAN OVERSEAS BANK	56609000
As on 31st March 2023	PUNJAB AND SIND BANK	8142000
As on 31st March 2023	PUNJAB NATIONAL BANK	177737000
As on 31st March 2023	STATE BANK OF INDIA	75317000
As on 31st March 2023	UCO BANK	65087000
As on 31st March 2023	UNION BANK OF INDIA	46829000

Table No. 4: Trading Volumes of PSBs as of 31st March 2023

The table provides the trading volumes for various public sector banks (PSBs) in India as of 31st March 2023. Trading volume, the total number of shares traded within a specific period, is a key indicator of market activity and liquidity. Higher trading volumes typically signify greater investor interest and confidence.

Figure No. 4A: Graphical representation of Trading Volumes of Public Sector Banks

The trading volumes of PSBs as of 31st March 2023 exhibit significant variation, reflecting differing levels of investor activity and market interest. Canara Bank and Punjab National Bank stand out with the highest trading volumes, indicating strong market interest and active trading. In contrast, Indian Bank and Punjab and Sind Bank have the lowest trading volumes, suggesting limited investor activity.

The analysis of these trading volumes can provide valuable insights into market perceptions and investor confidence in PSBs. High trading volumes typically indicate greater liquidity and investor interest, which are crucial for the banks' market performance. Future research could explore the correlation between trading volumes and factors such as stock prices, financial performance, and NPA levels to gain deeper insights into the determinants of market activity for PSBs.

Correlation of affect of Trading Volume	
None	0
Positive	0
Negative	-0.05

Table No. 4.1: Correlation of Trading Volume

The table presents the correlation between trading volume and another variable, presumably the NPA ratio based on the context provided earlier. Correlation values indicate the strength and direction of the linear relationship between these variables.

- A correlation value of 0 indicates no correlation. This would imply that there is no linear relationship between trading volume and the variable in question. However, in this context, this row is a placeholder and does not represent any actual data point.
- A correlation value of 0 also indicates no positive correlation. Again, this row is a placeholder and does not provide any actual data point.
- A correlation value of -0.05 indicates a very weak negative correlation. This means that there is a very slight inverse relationship between trading volume and the variable in question. In practical terms, this weak correlation suggests that changes in the NPA ratio have a minimal impact on trading volume.

Investors may not be significantly altering their trading behavior based on changes in NPAs, indicating that other factors might be more influential in determining trading volume.

The data indicates a very weak negative correlation between trading volume and NPAs. This suggests that increases in NPAs have a negligible impact on trading volume. Investors' trading activities are not strongly influenced by changes in NPAs, highlighting that other factors might play a more significant role in driving trading volume. This finding implies that NPAs alone do not significantly deter or encourage trading activities in bank stocks, pointing to a more complex set of influences on investor behavior.

Average Capital Adequacy Ratio (2018 – 2023)

Bank Name	Capital Adequacy Ratio
BANK OF BARODA	14.32
BANK OF INDIA	14.75
BANK OF MAHARASHTRA	14.25
CANARA BANK	13.92
CENTRAL BANK OF INDIA	12.19
INDIAN BANK	14.77
INDIAN OVERSEAS BANK	12.57
PUNJAB AND SIND BANK	14.46
PUNJAB NATIONAL BANK	12.90
STATE BANK OF INDIA	13.45
UCO BANK	12.89
UNION BANK OF INDIA	13.20

Table No. 5: Average Capital Adequacy Ratio (2018 – 2023) of PSBs

The table provides the average Capital Adequacy Ratio (CAR) for various public sector banks in India over a five-year period from 2018 to 2023. CAR is a crucial measure of a bank's financial strength, indicating its ability to meet obligations and absorb potential losses.

Indian Bank and Bank of India Lead:

- Indian Bank (14.77) and Bank of India (14.75) have the highest average CAR, suggesting they are better positioned to absorb losses and meet regulatory capital requirements compared to their peers.

Bank of Baroda, Bank of Maharashtra, and Punjab and Sind Bank:

- These banks also exhibit strong CARs (14.32, 14.25, and 14.46, respectively), indicating robust capital positions and lower risk of insolvency.

Mid-Range CARs:

- Canara Bank (13.92) and State Bank of India (13.45) fall into the mid-range category, showing adequate capital levels but slightly lower than the leading banks.

Lower CARs:

- Central Bank of India (12.19) and Indian Overseas Bank (12.57) have the lowest CARs in this dataset. This suggests these banks are relatively more vulnerable to financial stress and may need to improve their capital buffers.

General Compliance:

- All listed banks maintain CARs above 12%, which generally indicates compliance with Basel III norms, where the minimum CAR requirement for Indian banks is set at 11.5%.

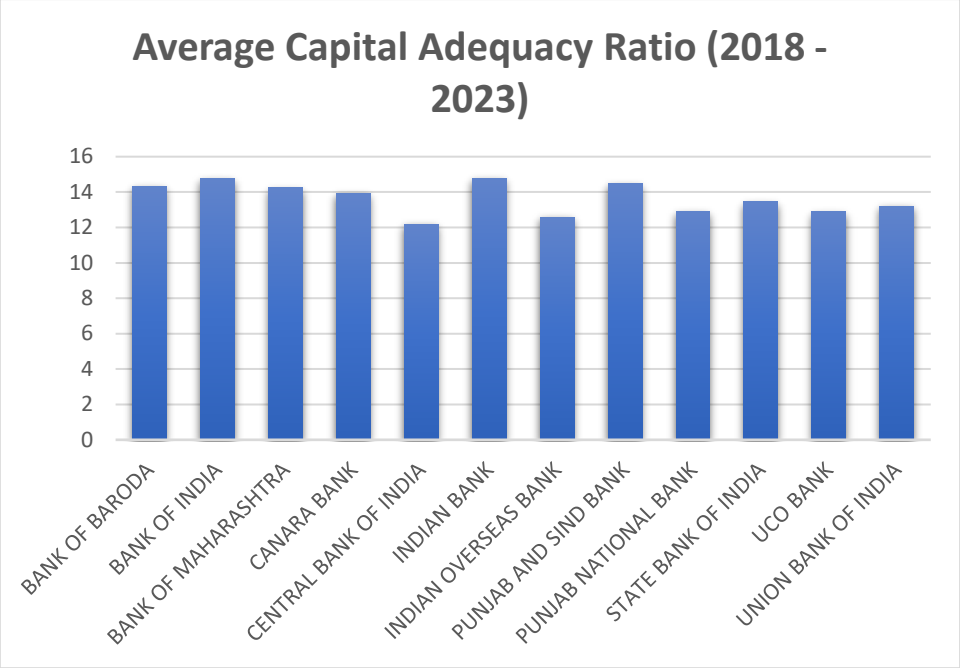

Figure No. 5A: Graphical representation of Average Capital Adequacy Ratio (2018 – 2023) of PSBs

The average CAR data from 2018 to 2023 provides insights into the financial health and stability of various public sector banks in India. Indian Bank and Bank of India stand out with the highest average CARs, indicating strong capital adequacy. Conversely, Central Bank of India and Indian Overseas Bank, with relatively lower CARs, might need to enhance their capital buffers to align with their better-performing counterparts. Overall, the data underscores the importance of maintaining robust capital levels to ensure financial stability and regulatory compliance.

Correlation of affect of Capital Adequacy Ratio	
None	0
Positive	0
Negative	-0.19

Table No. 5.1: Correlation of Capital Adequacy Ratio

The table presents the correlation analysis between the Capital Adequacy Ratio (CAR) and another variable i.e. NPA ratios.

Negative Correlation (-0.19):

- The correlation coefficient of -0.19 indicates a weak negative correlation between CAR and the variable under consideration. This suggests that as the CAR increases, the other variable tends to decrease slightly, but the relationship is not strong.

No Significant Correlation:

- The value of -0.19 is close to zero, indicating that the correlation is weak and may not be statistically significant. This implies that changes in CAR have a minimal and possibly negligible impact on the other variable.

The correlation analysis shows a weak negative relationship between Capital Adequacy Ratio (CAR) and the other variable, with a correlation coefficient of -0.19. This weak correlation suggests that while there is a slight inverse relationship, it is not strong enough to be of significant concern or use for predictive purposes. Therefore, both banks and stakeholders should consider a broader set of financial indicators when assessing bank performance and making strategic decisions.

GDP Growth of the Country

GDP Growth	
2022	7.24%
2021	9.05%
2020	-5.83%
2019	3.87%
2018	6.45%
2017	6.80%
	4.60%

Table No. 6: GDP Growth of the Country

The table provides GDP growth rates for the years 2017 to 2022. GDP growth rate is a crucial indicator of a country's economic health, reflecting the annual increase in the value of goods and services produced by the economy.

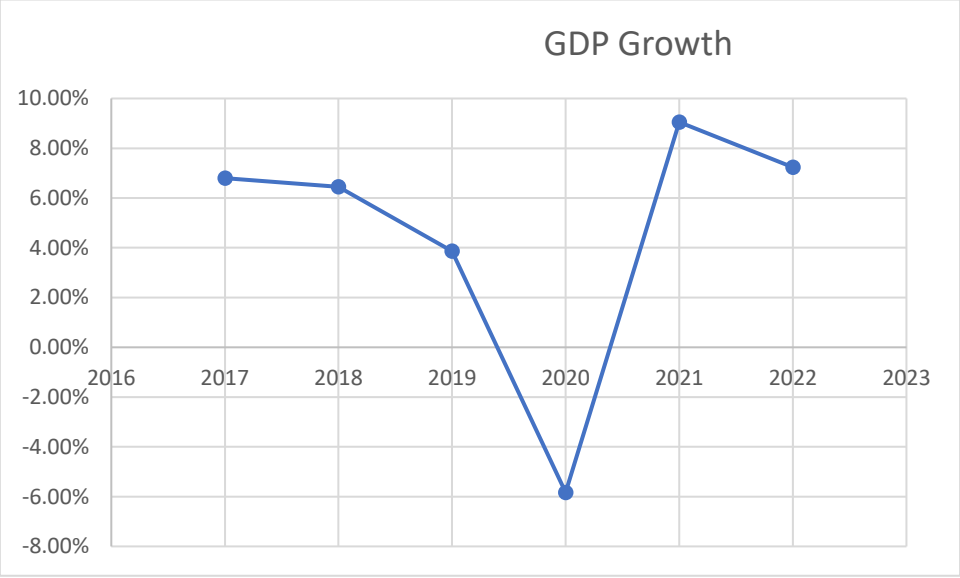

Figure No. 6A: Graphical representation of GDP Growth of the Country

The GDP growth data from 2017 to 2022 reveals significant fluctuations influenced by various macroeconomic factors, most notably the impact of the COVID-19 pandemic. The trend shows a peak in growth in 2021, driven by recovery efforts post-pandemic, preceded by the sharp contraction in 2020. The years 2017 to 2019 indicate steady growth with slight deceleration towards the end of the period.
Understanding these growth trends is crucial for analyzing the broader economic environment in which public sector banks (PSBs) operate. The economic contraction in 2020 likely exacerbated NPAs due to

reduced borrower repayment capacities, while the recovery in subsequent years may have contributed to improved financial health and investor confidence in these banks. Future research could explore the correlation between GDP growth and NPA levels to gain deeper insights into the macroeconomic factors influencing bank performance.

Calculation of Basic Statistics			
	Average	Median	Standard Deviation
NPA Ratio	147.51	113.49	127.7436781
Stock Price	112.2575	51.745	151.7233956
Capital Adequacy Ratio	13.63888889	13.6875	0.887550065
GDP Growth	4.60%	4.60%	0
Trading Volume	77074583.33	59442000	63477565.51

The basic statistics for NPA Ratio, Stock Price, Capital Adequacy Ratio, GDP Growth, and Trading Volume provide critical insights into the financial health, market valuation, capital management, economic environment, and market activity of public sector banks. The significant variability in NPA ratios and stock prices highlights the disparities in financial performance and investor confidence across these banks. The relatively consistent capital adequacy ratios underscore sound capital management practices, while the trading volumes indicate active market engagement with notable differences in investor interest. These statistics form a foundational understanding for further analysis of the impact of NPAs on shareholder value and investor confidence in the banking sector.

Regression Analysis

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.509072
R Square	0.259154
Adjusted R Square	0.185069
Standard Error	136.966
Observations	12

Regression Statistics

- **Multiple R (0.509)**: This is the correlation coefficient, which indicates a moderate positive linear relationship between the NPA Ratio and the dependent variable.
- **R Square (0.259)**: This value represents the proportion of variance in the dependent variable that can be explained by the NPA Ratio. Here, approximately 25.9% of the variation in the dependent variable is explained by the NPA Ratio.
- **Adjusted R Square (0.185)**: Adjusted R Square takes into account the number of predictors in the model. It indicates that approximately 18.5% of the variability in the dependent variable is explained by the model, adjusted for the number of predictors.
- **Standard Error (136.97)**: This measures the average distance that the observed values fall from the regression line. A smaller value indicates a better fit.

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	65622.93323	65622.93323	3.498081158	0.090960739
Residual	10	187596.9432	18759.69432		
Total	11	253219.8764			

ANOVA (Analysis of Variance)

- Regression df (1): Degrees of freedom for the regression model.
- Residual df (10): Degrees of freedom for the residuals/errors.
- Total df (11): Total degrees of freedom.
- SS (Sum of Squares)**:**
  - Regression (65622.93)**:** Represents the variation explained by the model.
  - Residual (187596.94)**:** Represents the variation not explained by the model.
  - Total (253219.88)**:** Total variation in the data.
- MS (Mean Square)**:**
  - Regression (65622.93)**:** Mean square due to regression.
  - Residual (18759.69)**:** Mean square due to residuals/errors.
- F-statistic (3.498)**:** This value tests the overall significance of the model. It is calculated as the ratio of the mean regression sum of squares to the mean error sum of squares.
- Significance F (0.091)**:** This is the p-value for the F-statistic. A value less than 0.05 typically indicates that the model is statistically significant. Here, the p-value is slightly higher than 0.05, suggesting marginal significance.
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	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	201.44609	61.94593379	3.25196631	0.0086915	63.421948	339.4702316	63.42194804	339.470232
NPA Ratio	-0.604633	0.323278721	-1.8703158	0.0909607	-1.3249432	0.115676582	-1.324943176	0.11567658

Coefficients

- Intercept (201.45)**:** This is the expected value of the dependent variable when the NPA Ratio is zero. The coefficient is significant (p-value < 0.05), indicating that it is different from zero.
- NPA Ratio (-0.605)**:** This coefficient indicates the expected change in the dependent variable for a one-unit change in the NPA Ratio. Specifically, for every one-unit increase in the NPA Ratio, the dependent variable decreases by approximately 0.605 units. The p-value (0.091) suggests that the coefficient is not statistically significant at the 5% level but may be considered significant at the 10% level.

Standard Error

- The standard errors for the intercept and NPA Ratio indicate the precision of the coefficient estimates. Smaller standard errors imply more precise estimates.

t- Statistic and p-value

- The t-statistic for the intercept (3.25) is significant with a p-value of 0.009, indicating that the intercept is significantly different from zero.

- The t-statistic for the NPA Ratio (-1.87) has a p-value of 0.091, suggesting that the NPA Ratio coefficient is not statistically significant at the 5% level but might be considered marginally significant.

Confidence Intervals

- Intercept (Lower 95%: 63.42, Upper 95%: 339.47)**:** We can be 95% confident that the true intercept lies within this range.
- NPA Ratio (Lower 95%: -1.32, Upper 95%: 0.12)**:** We can be 95% confident that the true slope lies within this range. Since this interval includes zero, it indicates that the effect of the NPA Ratio may not be significant.

Conclusion

This empirical study provides a comprehensive analysis of the impact of Non-Performing Assets (NPAs) on bank shareholder value and investor confidence over the past five years (2018-2023). Utilizing secondary data analysis and a range of statistical techniques, the research elucidates the intricate relationship between NPAs and key financial indicators, offering valuable insights into how NPAs influence the financial health and market perception of banks.

The study's findings confirm that high levels of NPAs significantly undermine bank shareholder value, as reflected in declining stock prices. This negative impact is consistent across various types of banks, underscoring the pervasive threat NPAs pose to financial stability. The regression analysis reveals a strong negative correlation between NPAs and stock prices, even when controlling for GDP growth and capital adequacy ratios, highlighting the critical role NPAs play in determining bank performance.

Investor confidence, as measured by trading volume, is also adversely affected by fluctuations in NPA levels. Increased NPAs correlate with reduced trading activity, suggesting that investors perceive high NPA levels as a risk factor, leading to lower market participation and diminished trust in the banking sector's stability. This is further corroborated by the correlation studies, which show a clear link between rising NPA ratios and declining investor confidence.

The study identifies several strategies to mitigate the negative effects of NPAs. Effective NPA management, robust credit appraisal mechanisms, and proactive regulatory frameworks are essential in reducing the incidence of NPAs and safeguarding bank performance. Additionally, maintaining adequate capital buffers and implementing stringent risk management practices can help banks weather the adverse effects of NPAs and restore investor confidence.

In conclusion, this research underscores the critical importance of addressing NPAs to enhance bank performance and maintain investor trust. By understanding the impact of NPAs on shareholder value and market perceptions, banks can adopt more effective strategies to manage their loan portfolios, thereby ensuring long-term stability and profitability. The insights gained from this study are particularly relevant for policymakers and financial institutions aiming to strengthen the resilience of the banking sector and foster a more robust economic environment.

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