



UNCOVERING THE FACTORS BEHIND THE SURGE IN NON-PERFORMING ASSETS IN INDIA'S BANKING INDUSTRY: A CRITICAL ANALYSIS

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ABSTRACT

Non-Performing Assets (NPAs) pose a critical challenge to India's banking sector, impacting financial stability and economic growth. This study assesses NPAs in 29 banks from 2011 to 2023, examining their rise and causes. It uses geometric means and Panel Data Regression to analyze NPAs, revealing that public banks peaked at 14.6% in 2017–18, while private banks peaked at 5.5% in 2019–20, showing a sharp increase from 2015–16. The research highlights an inverse association between credit risk and bank size, capitalization, profitability, GDP, and inflation.

KEYWORDS :**1. INTRODUCTION**

The New Economic Policy of 1991 brought about liberalization and globalization that opened up the economy, leading to a surge in banking activities (Naili & Lahrichi, 2022). The relaxation of regulations and the entry of private and foreign banks spurred competition and innovation in the sector. As a result, banking services became more accessible and efficient, contributing to the flourishing of the banking industry in India (Louzis et al., 2012). Nevertheless, a number of risks affect this industry, undermining not just its economic stability but also the stability of the country at large. This is notably apparent in the significant levels of Non-Performing Assets (NPAs) in the banking industry, which diminish banks' earnings and indicate the onset of a crisis (Naili & Lahrichi, 2022). The buildup of NPAs interrupts the seamless provision of credit, hindering its expansion and weakening the financial stability of banks (Gaur et al., 2021). A credit facility that has an outstanding installment that is beyond due for a predetermined amount of time, generally 90 days, is regarded as NPAs (Gupta & Mahakud, 2020). In India, as in many other emerging nations, banks are major players in the financial markets, with capital markets generally emerging later. India has subsequently gained more prominence in the world economy (Mukherjee et al., 2018). Therefore, an analysis of the NPAs in Indian banking sector holds prominence.

2. Review of Literature

Larger banks generally have diversified portfolios and stronger risk-management systems, which can reduce NPAs and improve resilience during economic crises (Mani et al., 2023). However, some studies report a positive relationship between bank size and NPAs, suggesting that larger banks may undertake riskier lending (Kandpal, 2020; Gupta & Mahakud, 2020; Louzis et al., 2012). Strong bank capitalization, measured through CAR, enhances the ability to absorb losses and manage credit risks, generally reducing NPAs, although higher capitalization may also encourage greater risk-taking (Swami et al., 2019; Naili & Lahrichi, 2022; Ozili, 2019; Indriastuti et al., 2022). Bank performance, measured through ROC, is generally associated with lower NPAs due to better capital utilization, risk management, and asset quality, although some studies report a positive relationship, indicating possible risk-taking or earnings manipulation (Naili & Lahrichi, 2022; Das & Uppal, 2021; Serrano, 2021). Economic growth generally reduces NPAs by improving business activity, employment, borrower repayment capacity, and credit quality, whereas economic slowdowns tend to increase defaults (Louzis et al., 2012; Jabbouri & Naili, 2019; Muthami, 2016). Inflation may increase NPAs by raising costs, reducing purchasing power, and creating cash-flow pressures for borrowers, although its effect remains debated (Gupta & Mahakud, 2020; Naili & Lahrichi, 2022; Gulati et al., 2019). Similarly, higher unemployment weakens borrowers' repayment capacity and increases loan defaults, suggesting a positive relationship between unemployment and NPAs (Naili & Lahrichi, 2022; Louzis et al., 2012).

3. Research Methodology

The study includes 29 banks, 12 public-sector and 17 private-sector, operating from 2011 to 2023, based solely on secondary sources as per Naili and Lahrichi (2022). The variables are annual, with the geometric

mean used to assess NPA growth rates and panel data analysis to determine the impact of independent variables on credit risks per Agarwala & Agarwala (2019). Data sources include the RBI Report, CMIE ProwessIQ Database, and banks' annual reports, with analysis conducted using SPSS.

3.1 Model Specification:

- Panel Data Regression model has been used to investigate the impact of Bank size (BS), Capital adequacy ratio (CAR), Return on Equity (ROE), GDP growth (GDP), Inflation (INF), and Unemployment (UEM) on the level of NPAs.
- The fixed effects model (FE) and the random effects model (RE) are the two primary methodologies used in this investigation.

Model for Random Error Model (REM)

$$NPL_{it} = \alpha_i + \beta_1 BS + \beta_2 CAR + \beta_3 ROE + \beta_4 GDP + \beta_5 INF + \beta_6 UEM + \varepsilon_{it} + \mu_{it} \dots (1)$$

I and t are the cross-section dimension and time indicator, respectively, α_i , μ_{it} and ε_{it} denote the unknown intercept for each bank, the unobservable bank-specific effects, and the error term respectively.

Model for Fixed Error Model (FEM)

$$NPL_{it} = \alpha_i + \beta_1 BS + \beta_2 CAR + \beta_3 ROE + \beta_4 GDP + \beta_5 INF + \beta_6 UEM + \varepsilon_{it} \dots (2)$$

- I and t represent cross-section dimension and time indicator, respectively,
- α_i and ε_{it} denote the unknown intercept for each bank and the error term respectively.

3.2 Variable Specification

Determinants	Proxy	Abbreviation	Expected signs	Sample of the literature
Dependent Variable				
Credit Risk	The ratio of Gross Non-performing Loans (NPL) over the Total Gross Advances	NPA		Louzis et al., 2012
Independent Variables				
Bank Size	Bank's total assets (Natural logarithm)	BS	+/-	Naili & Lahrichi, 2022
Bank Capitalization	Ratio of Total Capital to Total Risk-weighted Assets; Capital Adequacy ratio	CAR	+/-	Naili & Lahrichi, 2022
Bank Performance	Ratio of Net Income to Total Equity; Return on Equity	ROE	+/-	Das & Uppal, 2021
GDP Growth	Annual change in real GDP	GDP	+	Louzis et al., 2012
Inflation	Annual Inflation rate	INF	+/-	Naili & Lahrichi, 2022
Unemployment	Annual Unemployment rate	UEM	+	Naili & Lahrichi, 2022

Authors' computation

4. RESULT AND DISCUSSION

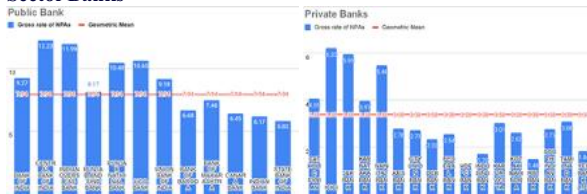
Table 1: Yearly growth rate in Gross NPA (As Percentage of Gross Advances) in Public-owned and Private-owned Banks.

Year	Public Sector Banks	Private Sector Banks
2021-22	7.3	3.8
2020-21	9.1	4.8
2019-20	10.3	5.5
2018-19	11.6	5.3
2017-18	14.6	4.7
2016-17	11.7	4.1
2015-16	9.3	2.8
2014-15	5	2.1
2013-14	4.4	1.8
2012-13	3.6	1.8
Geometric Mean (%)	7.94	3.38

Authors' Computation

Table 1 compares the Gross NPAs (as a percentage of gross advances) of Public-owned and Private-owned banks from 2012-13 to 2021-22, showing an increase over time, especially after 2015-16, attributed to the RBI's "asset quality review" in 2015 (Aggarwal and Aggarwal, 2019). Public Sector banks peaked at 14.6% in 2017-18, while Private Sector banks peaked at 5.5% in 2019-20. The growth of NPAs is lower in Private Sector banks, indicating better loan screening and risk management practices, suggesting a more effective NPA management process in the private sector.

Table 2: Performance Assessment of Individual Public and Private Sector Banks



Authors' computation

Table 2 compares individual banks' NPA growth rates to their sector averages. Most Public sector banks show higher NPA growth rates than their sector's average, with Central Bank of India having the highest at 12.23% and State Bank of India the lowest. Conversely, in Private Sector Banks, most banks have lower growth rates than the sector's average, with ICICI Bank at the highest (6.20%) and HDFC at the lowest (1.12%).

Table 3: Variance Inflation Factors (VIF)

Variable	VIF
CAR	1.20
INF	2.40
GDP	2.30
Bank Size	1.13
ROE	1.31
UEM	1.19

Authors' Computation

Table 3 uses the Variable Inflation Factor (VIF) to check multicollinearity, showing no significant issues, supported by the correlation matrix and prior analyses, indicating the dataset's variables are independent enough for the regression model.

Table 4: Correlation Matrix

	Credit Risk	CAR	INF	GDP	Bank Size	ROE	Unemployment
Credit Risk	1.00						
CAR	-0.35	1.00					
INF	-0.40	0.15	1.00				
GDP	-0.47	0.04	-0.69	1.00			
Bank Size	-0.27	-0.14	-0.20	0.30	1.00		
ROE	-0.80	0.28	0.36	-0.37	-0.13	1.00	
UEM	0.05	-0.00	0.35	-0.12	-0.04	0.009	1.00

Table 4 illustrates the correlation coefficient matrix, indicating no significant multicollinearity among the explanatory variables.

Table 5: Fixed Effect Model and Random Effect Model

Variable	REM	FEM
C	-0.993250	19.65577*
CAR	-0.126048**	-0.027038
INF	-0.016215*	-0.092522
GDP	-0.484993*	0.846914*
Bank Size	-0.284482***	-1.984051*
ROE	-0.222568*	-0.183291*
Unemployment	0.109732	0.005889

Authors' Computation

(*), (**), (***) denotes 1%, 5% and 10 % level of significance respectively.

Table 6 Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	6	1.0000

Authors' Computation

Table 5 displays the REM and FEM, while Table 6 presents the Hausman Test results to determine the best model. With a p-value exceeding 0.05, the REM is deemed suitable. The REM shows an inverse association between credit risks and the capital adequacy ratio, inflation, GDP, bank size, and ROE.

Our findings indicate a negative association at a 10% level between bank size and credit risk, aligning with previous studies suggesting that larger banks with refined risk management systems handle defaulters properly, leading to fewer non-performing assets. However, the "TOO BIG TO FAIL" concept holds true as larger banks often take on greater lending risks due to their perceived prominence and expectation of government support during crises.

The capital adequacy ratio and credit risk have a negative relationship at a 5% level of significance. The most likely explanation for the inverse relationship between a bank's credit risk and CAR Banks with adequate capital are more inclined to make well-considered loans to preserve 'the capital set aside'.

The national inflation rate shares a significant inverse relationship at the 1% level with bank's credit risk showing that higher inflation rates decrease the real value of household income, making it harder for debtors to repay loans and affecting the quality of bank loans.

Our results also indicate a significant negative association at the 1% level between a bank's credit risk and GDP, consistent with prior studies. GDP growth, a traditional measure of the business cycle, impacts debt service and non-performing loans, with robust economic conditions improving credit quality and economic downturns decreasing it.

CONCLUSION

In conclusion, both public and private sector banks saw a significant rise in NPAs, peaking at 14.6% in 2017–18 and 5.5% in 2019–20, respectively, possibly due to the RBI's asset quality review. Private-sector banks may manage NPAs better, supported by Aggarwal and Aggarwal (2019). Bank size negatively relates to credit risk, indicating larger banks handle defaulters better. Capitalization inversely associates with default risk, suggesting financially stronger institutions make wiser credit decisions. Return on Equity (ROE) inversely relates to credit risk, showing financially healthier banks have lower NPAs. Economic factors like inflation and GDP growth also affect credit risk. The findings emphasize effective risk management and economic conditions in maintaining credit quality.

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