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Exploring loan growth determinants of indian banks listed in the nifty bank index

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Abstract: *The banking sector plays a pivotal role in the economic development of a country by facilitating intermediate financial and providing essential services such as loans to individuals and businesses. Loan growth is a critical indicator of a bank's health and ability to support economic activities. Understanding the factors that influence loan growth is essential for policymakers, regulators, and financial institutions as they strive to foster a stable and robust banking environment. This study investigates the factors that influenced Indian banks' credit expansion during the post-global Financial Crisis period. This study investigates the determinants of loan growth in Indian banks listed on the Nifty Bank index during 2013-2023, encompassing the post-global Financial Crisis and the COVID-19 pandemic. Using a panel regression analysis with three model specifications, we examine the impact of bank-specific factors, particularly non-performing assets (NPAs), on loan growth. The robust random panel regression results reveal that NPAs, and Asset Quality Review (AQR) dummy variables significantly negatively impact loan growth rates at the 5% significance level. Additionally, while the COVID-19 pandemic showed a positive but statistically insignificant effect on loan growth, the primary factors constraining credit expansion were elevated NPAs and the RBI's asset quality review exercise. These findings have important implications for banking regulation and risk management in emerging markets.*

Keywords : Loan growth, NPAs, Nifty bank, Asset quality, Covid-19, post-global financial crisis.

INTRODUCTION

The banking sector is fundamental to India's economic development, serving as the cornerstone of monetary stability and growth. Banks facilitate financial intermediation, encourage savings, and provide essential services to individuals, businesses, and government organizations. Their role in directing resources toward profitable investments drives infrastructure development, industrial growth, and entrepreneurial activities.

Credit growth, a key economic indicator, reflects banks' capacity to increase lending to consumers and businesses. When credit expansion slows, as observed during the COVID-19 pandemic and the 2008 global financial crisis, it can exacerbate economic challenges and delay recovery. Conversely, accelerated credit growth can stimulate economic advancement by enhancing liquidity, affecting interest rates, and influencing overall economic activity.

Public Sector Banks (PSBs) have historically dominated India's credit market, playing a crucial role during economic crises. However, challenges such as non-performing assets, declining asset returns, and operational inefficiencies have raised concerns about their long-term effectiveness.

REVIEW OF LITERATURE

During periods of economic downturn, assessing the financial health and performance of banks requires a deeper understanding of the drivers of loan growth. Recent studies have provided valuable insights into the factors that influence loan growth in the banking sector. Sidhu et al. (2023) analyze the liquidity coverage ratio (LCR) and its influence on the efficiency of Indian banks from 2010 to 2019. They examined how internal variables such as ownership structure, technological advancements, and transparency in disclosure interacted with the LCR. Their findings, based on panel data regression, revealed a positive association between LCR and technical efficiency under constant returns to scale, whereas a nonlinear relationship emerged under different return to scale scenarios. Saurabh et al. (2023) explored the factors affecting credit growth on both supply and demand sides during the global financial crisis (GFC) and pre-pandemic period (2007–2021). Using disequilibrium models, they found that demand-side variables such as reduced investment demand and global supply bottlenecks significantly contributed to the credit slowdown during these periods. Farajnezhad (2023) examined 216 commercial bank loans in China during the pre-COVID era (2009–2018). The

study utilized panel data regression and identified statistically significant negative effects of capital ratio, GDP, inflation, and ROA on loan amounts. In the Middle East and North Africa (MENA) region, a study by Alnabulsi et al. (2022) investigated the factors influencing non-performing loans (NPLs) in 74 banks across 11 countries in the Middle East and North Africa (MENA) region between 2005 and 2020. Their analysis, employing the two-stage system generalized method of moments estimator, showed that macroeconomic determinants and institutional quality significantly impact NPL levels. However, they observe no significant influence of the COVID-19 pandemic on these loans. Yuan et al. (2022) analyzed the profitability of 40 private banks from 2010 to 2021 using an ordinary least squares (OLS) regression. This study identified a positive relationship between profitability and variables such as the debt-to-asset ratio (DAR), bank size (BS), and return on assets (ROA). Conversely, a negative relationship is found between profitability and metrics such as the loan-to-deposit ratio (LDR) and deposit-to-asset ratio (DTAR). Hossain and Rahman (2021) explored the role of capital adequacy and loan growth in South Asian banks during periods of economic crises. Their findings emphasize the importance of higher capital adequacy ratios (CAR) in stabilizing loan growth during such crises. Trung (2021) utilized the System Generalized Method of Moments (Sys-GMM) regression to study the performance of 13 listed banks between 2010 and 2019. This study demonstrated that changes in ROE and ROA influenced profitability, while banks with lower reliance on deposits exhibited greater profitability. Romdhane and Kenzari (2020) investigated the volatility of NPLs during the COVID-19 pandemic in 18 Tunisian banks (2008 to 2018). Using panel VAR and the GMM system, they find that ownership structure and ROA negatively impact NPLs, while capital levels have a positive effect. Colak and Oztekin (2020) compare the lending practices of public and private banks during the pandemic, highlighting variations in their approaches. Similarly, Atahau and Cronje (2020) explored how bank ownership dynamics affected loan growth before and after the GFC. Kaur and Singh (2019) examined the interplay between loan growth and liquidity risk management in Indian banks. Their study concluded that banks with robust liquidity practices achieved stable loan growth even under volatile economic conditions. Additionally, they highlight the importance of liquidity strategies during the pandemic to sustain lending and support economic recovery. Finally, Bayar (2019) assessed the factors affecting NPLs in emerging markets (2000–2013) using a system GMM dynamic panel data estimator. The study showed that financial crises, unemployment, public debt, and credit growth positively influence NPLs, whereas economic growth, inflation, institutional development, ROA, and regulatory capital have a negative impact. This body of research provides a comprehensive understanding of loan growth determinants, offering key insights into how macroeconomic and bank-specific factors interact across different economies and periods.

RESEARCH GAP

This study addresses several critical gaps in the existing literature:

1. Limited longitudinal analyses spanning over a decade in the Indian banking context
2. Insufficient comparative analysis between public and private sector banks listed in Nifty Bank index
3. Few studies employing robust estimation techniques inpanel data regression
4. Limited research on the combined impact of the Asset Quality Review and COVID-19 pandemic

OBJECTIVES

Objective 1: To examine a bank specific determinant that influences loan growth rates among banks listed in Bank nifty.

Objective 2: To study the level of non-performing assets (NPAs) effect on loan growth

Objective 3: To examine the effect of Reserve Bank of India's 2015 Asset Quality Review (AQR) have on the trends in loan growth.

Objective 4: To study the COVID-19 pandemic and its associated lockdowns influenced loan growth in India.

ALTERNATIVE HYPOTHESIS

H1: Loan growth rates differ significantly between banks with varying levels of NPAs, with banks possessing better asset quality and witnessing relatively higher credit off-take.

H2: The AQR (Asset Quality Review) led to a substantial decline in loan growth as banks scaled back on fresh lending amid elevated provisioning requirements for NPAs.

H3: The COVID-19 pandemic and lockdowns caused a sharp contraction in loan growth across all banks due to plummeting credit demand and risk aversion among some lenders.

H4: There are discernible differences in the loan growth patterns of public and private sector banks over the study period.

METHODOLOGY

Data from the statistical tables pertaining to banks in India were used to obtain bank-specific information from annual report of respective banks. The macroeconomic variable of the GDP growth rate was obtained from the World Bank database. A balanced panel dataset was created for analysis using data from six banks, three privates i.e. HDFC bank, Axis Bank, ICICI bank and three public sector banks i.e. SBI bank, PNB and Bank of Baroda listed on the Nifty Bank based on market capitalization for a period of 11 years (2013-2023).

A static panel regression was employed to determine the determinants of Indian banks' loan growth. A panel unit test is conducted on all bank-specific variables to ensure that no variables containing unit roots are included in the panel regression. To capture the impact of Covid-19, Asset Quality Review, and ownership type on the loan growth rate, dummy variables for covid-19, AQR (Asset Quality Review), and ownership type were included in the panel regression. The macroeconomic variable of the GDP Growth rate is used to control the macroeconomic determinants of loan growth.

RESULT ANALYSIS and DISCUSSION

PANEL UNIT ROOT TEST

In panel data analysis, the Levin-Lin-Chu and Harris-Tzavalis tests are frequently used to find out if a unit root exists. These tests, in particular the Harris-Tzavalis (1999)

and Levin-Lin-Chu (2002) tests, were created to examine the premise that every panel in the dataset displays a unit root. The Levin-Lin-Chu test posits that the growth rate of time periods is greater than that of panels, leading to an asymptotically close ratio of panels to time periods. This test takes panel-specific means into account but does not account for a temporal trend. Due to its asymptotic requirements, this test might not be the best option for datasets with a high number of panels and a small number of time periods. In such cases, the Harris-Tzavalis test is more appropriate. This test assumes an infinite number of panels, whereas the number of time periods remains constant, making it more suitable for datasets with a fixed number of time periods and an increasing number of panels. The results are shown in the following table.

Table - 1

Variables	Panel Unit Root Test	Adjusted statistic (t*)	P value
Loan Growth	Levin-Lin-Chu	-1.9021	0.0286
NPA	Levin-Lin-Chu	-1.2425	0.1070
ROA	Levin-Lin-Chu	-1.5357	0.0623
CAR	Levin-Lin-Chu	0.4938	0.6893
Liquid Asset	Levin-Lin-Chu	-1.0548	0.1458

As indicated in Table 1, let's examine the panel unit root test findings at a 5% significance level

Interpretation:

Loan Growth: The p-value for Loan Growth is 0.0286, which is less than the 5% significance level. This result indicates that we can reject the null hypothesis of a unit root for Loan Growth. In other words, Loan Growth is likely stationary.

NPA, ROA, CAR, liquid assets: The p-values for these variables (0.1070, 0.0623, 0.6893, and 0.1458, respectively) were greater than the 5% significance level. Therefore, we failed to reject the null hypothesis of a unit root for these variables. This suggests that these variables are likely non-stationary or have a unit root.

Table: 2

Variables	Panel Unit Root Test	Adjusted statistic (t*)	P value
Loan Growth	Harris-Tzavalis	-0.0986	0.0000
NPA	Harris-Tzavalis	0.5817	0.0521
ROA	Harris-Tzavalis	0.6031	0.0780
CAR	Harris-Tzavalis	0.7409	0.4649
Liquid Asset	Harris-Tzavalis	-0.1457	0.0000

As indicated in Table 2, let's examine the panel unit root test findings at a 5% significance level.

Interpretation:

Loan growth and liquid assets

The p-values for these variables (0.0000 for both) were below the 5% significance level. This result indicates that we can reject the null hypothesis of a unit root for loan growth and liquid assets. In other words, Loan Growth and Liquid Asset are likely stationary.

NPA, ROA, & CAR

The p-values for these variables (0.0521, 0.0780, and 0.4649, respectively) are greater than the 5% significance level. Therefore, we failed to reject the null hypothesis of a unit root for these variables. This suggests that these variables are likely to be nonstationary or have a unit root.

Panel Regression Results: The panel unit test of various bank-specific variables, including loan growth, non-performing assets (NPAs), capital adequacy ratio (CAR), return on assets (ROA), and liquid assets, reveals that CAR and ROA exhibit unit roots at a 5% level of significance. To avoid complications arising from the use of variables with unit roots, these two variables were excluded from regression analysis. Static panel regression is used to investigate the factors influencing bank loan growth, and heteroscedasticity is controlled for using a robust random effects model. Dummy variables are used to capture the impact of the COVID-19 pandemic, Asset Quality Reviews, and ownership types on loan growth rates.

Table 3: Linear Panel regression

Loan Growth Rate			
VARIABLES	Random Effects -1	Random Effects-2	Random Effects -3
NPA	-0.979**	-0.989**	-0.984*
	(0.441)	(0.420)	(0.576)
Liquid Asset			-0.148
			(0.808)
gdpgrowthrate		-0.477	-0.457*
		(0.499)	(0.271)
crisis covid	4.878	2.402	2.667
	(4.916)	(2.471)	(2.959)
AQR (Asset Quality Review)	-1.078**	-0.894***	-0.834
	(0.437)	(0.276)	(2.265)
ownership	2.871	2.845	2.968
	(2.129)	(2.067)	(3.008)
Constant	14.99***	18.08***	18.47***
	(2.521)	(0.847)	(4.145)
Wald Chi2 Test	101.92	162.36	18.57
Prob > chi2	0.000	0.000	0.005
Observations	66	66	66
Number of ids	6	6	6

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3 lists the specifications of the three models used in this study. The first focuses on estimating the impact of NPAs by using only bank specific and dummy variables. The second model includes a subset of bank specific and dummy variables, focusing on the impact of NPAs. The third

model incorporates all stationary bank specific, dummy, and macroeconomic variables, including the GDP growth rate. The random effects panel regression analysis revealed several important relationships with loan growth rates across the three models. At the 1% significance level, the constant terms in all models and the Asset Quality Review in Model 2 demonstrate highly reliable relationships. The negative coefficient of AQR (-0.894***) strongly suggests that the implementation of asset quality reviews significantly reduces loan growth. At the 5% significance level, NPA show consistent negative relationships in Models 1 and 2 (-0.979** and -0.989**, respectively), along with AQR in Model 1 (-1.078**), indicating that higher NPAs and asset quality reviews moderately, but reliably, decrease loan growth. At the 10% significance level, Model 3 shows weaker but still noteworthy relationships with NPA (-0.984*) and the GDP growth rate (-0.457*), suggesting that these factors have a milder negative impact on loan growth.

Several variables, including the COVID crisis dummy, ownership structure, and liquid assets, show no significant relationship with loan growth at any conventional significance level. However, the overall model validity is strongly supported by the Wald Chi2 Test results (101.92, 162.36, and 18.57) with probability values less than 0.01 across all models. The analysis, based on 66 observations across six banks, consistently demonstrates that the NPA and AQR are the most reliable determinants of loan growth, with the NPA showing consistency across all models and significance levels. This suggests that banks' loan growth is most strongly influenced by their asset quality and regulatory reviews, while other factors, including macroeconomic conditions, such as GDP growth, have less consistent or weaker effects.

The negative relationships between both NPA and AQR and loan growth align with economic intuition, as higher non-performing assets and stricter asset quality reviews typically lead banks to adopt more conservative lending practices. This is particularly evident in the consistent significance of NPA across all the models, albeit with varying levels of statistical confidence. The findings provide valuable insights into the determinants of bank lending behavior and the impact of regulatory measures on loan growth.

The robust random effects panel regression results across all model specifications indicate that loan growth rates are negatively affected by non-performing assets (NPAs) and Asset Quality Review dummy variables, with statistically significant results at the 5% (p-value) level of significance. The other bank-specific and macroeconomic variables do not exhibit statistically significant effects. The impact of the COVID-19 pandemic was positive, but not statistically significant in either model. The regression results suggest that loan growth during the study period was negatively influenced by rising levels of non-performing assets and the Asset Quality Review exercise conducted by the Reserve Bank of India (RBI).

FINDINGS

This study analysis reveals several significant insights into the determinants of loan growth in Indian banks listed on the Nifty Bank index. The most pronounced finding is the substantial negative correlation between NPAs and loan growth, with coefficient values consistently ranging from -0.979 to -0.989 at the 5% significance level across all model specifications, regardless of bank ownership type. The Asset Quality Review implemented by the Reserve Bank of India also emerged as a crucial factor, showing a strong negative impact (coefficient: -0.894) at the 1% significance level, leading banks to adopt more stringent lending practices. Notably, our study found that the COVID-19 pandemic had a positive, albeit statistically insignificant, effect on loan growth (coefficient values 2.402–4.878), potentially due to government intervention and regulatory support measures. While bank ownership structure showed positive coefficients (2.845 to 2.968), it lacked statistical significance in influencing loan growth patterns, suggesting similar responses to regulatory changes across public and private sector banks. Additionally, macroeconomic factors, particularly GDP growth, demonstrated only a weak negative correlation with loan growth, indicating that bank specific factors played a more dominant role in determining lending behaviour than broader economic conditions.

CONCLUSION

The research emphasizes how key factors were influencing the credit expansion of banks included in the Nifty bank index following the global financial crisis and during the COVID-19 pandemic. The results of this study demonstrate how asset quality evaluations and non-performing assets have a major detrimental effect on the loan growth of banks included in the Nifty Bank Index between 2013 and 2023. The study did not find the statistically significant effects of other banks' specific determinants and macroeconomic variables on credit growth. The robust Random Effect panel regression analysis shows that NPAs and AQR remained the predominant determinants affecting credit growth. This brings the critical role of effective management to reduce the NPAs so that banks can perform at their best. However, during the COVID-19 period, the results show a positive effect on loan growth and its impact was not statistically significant. Briefly, the study concludes that RBI should formulate strategies that are aimed at improving the quality of assets and managing NPAs so that it helps the overall financial stability within the banking industries.

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