A Study on Determinants of NPAs of Indian Banks

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Abstract
The paperaims to study the effect of selected financial ratios drawn from literature that represent determinants of non-performing loans (NPAs)under operational capability, business development capacity, liquidity, capital adequacy, profitability, and solvency of banks on NPAs for a panel of 76 commercial banks in India, using annual data for the period 2010–2021. To examine the association, this study, primarily, conducted the OLS model, fixed effect estimates, and random effect estimates and, eventually, applied GMM technique. The empirical findings confirmed the previous findings, indicating past NNPA contributes to an additional level of NNPA in the current period.Further, there is a significant negative relationship between ROA and the NNPA ratio whereas there is a significant positive relationship between capital adequacy ratio and the dependent variable. To reduce the aggregate NPAs in India, thecountry's government should identify the financial sector's vulnerabilities and, thereby, emphasize boosting the economic growth, ensuring a moderate level of money supply along with inflation rate. The findings are useful for formulating macro-prudential along with fiscal policies to avoid the subsequent NPAs shock in India.
Keywords: NPAs, scheduled commercial banks

Date of Submission: 08-12-2023   Date of Acceptance: 22-12-2023

I. Introduction

Background

Banks play critical role in the economic and financial development of country. It is difficult to build a strong economic and financial superstructure of country without building a strong banking system. An efficient and profitable banking system provides the required funding and helps in maintaining continuous flow of credit in different sectors of the economy to meet the development related requirements. Given the fact that India is a developing economy where the funding and credit requirements of firms and individuals are increasing day by day, the role of banks are very critical in the development process and a healthy banking system is viewed as pre-condition to sustain long spells of high economic growth rates. A unique feature of the Indian banking system is that while most of borrowers are private sector firms, the lending banks are public sector institutions (see Acharya, 2020). In absence of a sound regulatory mechanism and suitable incentive to manage credit disbursal process and proper monitoring of the projects after giving loans, the cases of bank frauds have increased considerably. This has led to considerable decline in the profitability of banks in India. The continuously rising non-performing assets and subsequent increased requirement of provisioning has further created stress on the banks. Hence, a clear understanding of factors that determine the non-performing assets is very important to develop a sound performance monitoring of banks in India.

Non-performing loans are generally recognised as per the following criteria:
1. Payments of interest and principal are past due by 90 days or more
2. At least 90 days of interest payments have been capitalized, refinanced or delayed by agreement
3. Payments are less than 90 days overdue, but there are other good reasons to doubt that payments will be made in full.

The Financial Stability Report published by RBI in 2021 stated that the gross non-performing asset (GNPA) ratio of SCBs may increase from 7.48 per cent in March 2021 to 9.80 per cent by March 2022 under the baseline scenario; and to 11.22 per cent under a severe stress scenario, although SCBs have sufficient capital, both at the aggregate and individual level, even under stress. This persistent increase in non-performing assets (NPAs) ultimately undermines the profitability of the concerned banks. Although a marginal increase in the capital to risk-weighted assets ratio (CRAR) of the entire banking sector has been positive and hovers well above the required minimum as recommended by the Basel III framework, various challenges lie ahead if the situation remains unchecked.

Against this background, the present study will focus on the determinants of bank performance by investigating the factors that determine the profitability and non-performing assets of banks in India.
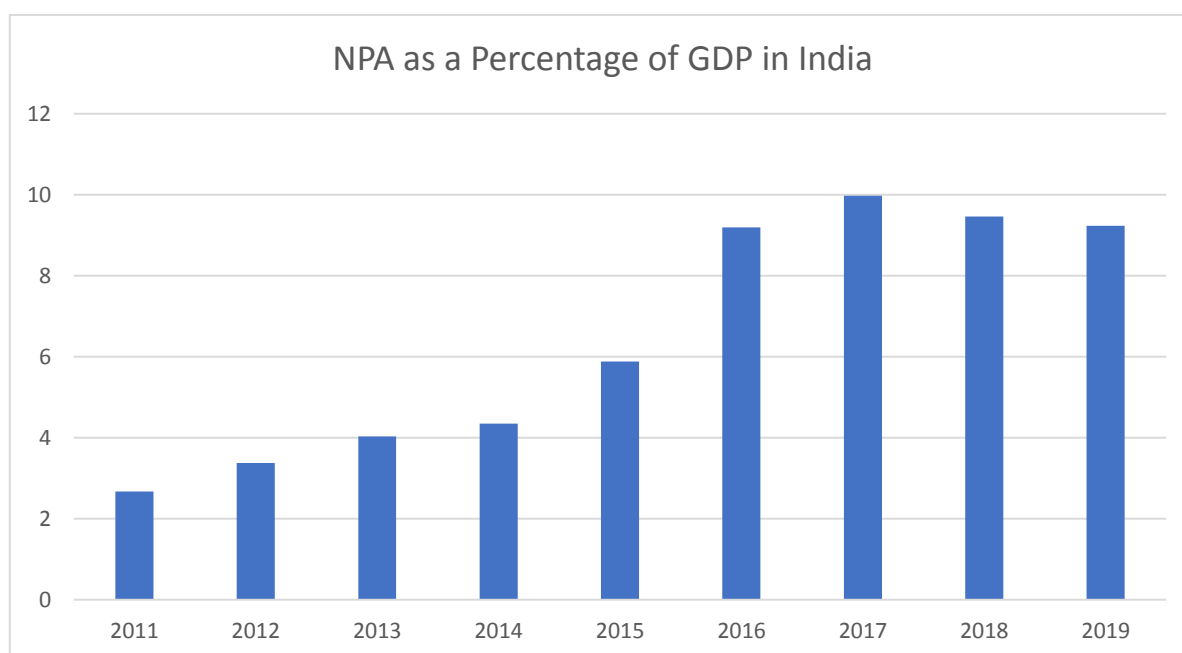

Figure 1: Level of NPAs as a percentage of GDP in India. Source: Data is taken from the official website of World Bank

Year	Bank	As on March 31 (in crores)			
		Gross NPAs		Net NPAs	
		As on March 31 (previousyear)	As on March 31 (current year)	As on March 31 (previous year)	As on March 31 (current year)
2020	PUBLIC SECTOR BANKS	7,17,849.76	6,78,317.00	2,76,936.83	2,30,917.59
	PRIVATE SECTOR BANKS	1,83,603.66	2,09,568.14	67,308.89	55,745.87
	FOREIGN BANKS	12,242.26	10,208.32	2,051.44	2,084.03
2010	PUBLIC SECTOR BANKS	44,957.38	59,927.26	21,155.41	29,643.42
	PRIVATE SECTOR BANKS	16,889.85	17,639.97	7,412.031	6,505.985
	FOREIGN BANKS	6,437.096	71,33.593	2,996.723	2,977.218

Figure 2: NPAs among Bank groups.
Source: Statistical Tables Relating to Banks in India: 2019-20

Rationale of the study
The rationale of the present study can be summarised in the following points:
1. In the recent past many public and private sector firms have disclosed a large amount of non-performing assets even though the Indian economy was growing at a relatively faster rate during the same time.
2. The rise in NPA levels have raised concerns about the stability of Indian financial system in general and banking system in particular. This requires a detailed empirical analysis to identify the underlying causes.
3. In order to develop a sound early warning system or NPA prediction system, it is pertinent to identify the factors that lead to an increase in NPAs.

Hence, in this study, we attempt to undertake a detailed analysis of the determinants of NPAs in Indian banking sector by using the most recent and large data. The remaining structure of the study is as follows. Empirical pieces of literature on selected determinants of non-performing assets arereviewed in the literature review section. Methodology section incorporates data sources and study variables, illustrates the econometric framework, and discusses analytical techniques. The results section depicts the results and analyzes the research findings while the conclusion section concludes the study.

II.   Review of literature

Previous studies have focused on studying determinants such as bank efficiency, business development capacity, bank profitability, bank solvency, bank capital and and its effect on NPAs. Most academicians such as Berger and DeYoung, 1997; Drake and Hall, 2003; Podpiera and Weill, 2008; Li et al., 2007 and Breuer, 2006 suggested that bank efficiency represented the ability of the bank management to align bank processes to ensure smooth credit generation using manpower and technology resources according to the banks' vision coupled with the ability to deliver the credit generation process effectively and efficiently. Efficiency in the bank process was indicated through various cost income, loan to deposit ratio, loan to expense ratios and so on. These academicians found empirical evidence that a negative relationship existed between efficiency (or operational capability) and NPAs (see Barr and Siems (1997), Martin (1977), Hanweck (1977), Pantalone and Platt (1987), Karim, Chan and Hassan (2010), Kwan (2006)).

Subsequently, academicians started exploring how loan growth affected NPAs. These authors found that banks with a high loan growth rate had higher NPAs. Loan growth represented a bank's business development capacity. These studies suggested that banks that followed an aggressive loan growth often overlooked the credit risk undertaken while lending. Hence high loan growth resulted into higher NPAs (see Salas and Saurina (2002), Sinkey and Greenawalt (1991), Clair (1992), Hess et al. (2009), Borie et al. 2001),Keeton (1999)).

Thereafter, academicians found that a high level of NPAs not only affected by bank efficiency and loan growth but also by the bank capital. Banks with higher bank capital were less inclined to undertake more credit risk. This meant that a bank with a huge amount of capital had a high loss absorption capacity. Academicians found that a higher capital ratio of a bank meant lower NPAs (see Das and Ghosh (2006) , Mester (1996), Rajaraman, Bhaumik and Bhatia (1999), Khemraj and Pasha (2009) and Greenidge and Grosvenor (2010)).

Another pool of academicians found mixed response while establishing the relation between bank solvency and NPAs. Academicians suggested that a financially healthy bank would have their assets worth more than the liabilities. But when the liabilities surpass the assets the bank resorts to its capital for loss absorption. But if depositors start withdrawing their deposits the bank's solvency is affected (see Stern and Feldman (2004), Boyd and Gertler (1994) and Ennis and Malek (2005)). Increased bank capital leverage would mean that the bank would have to bear more expenses in the form of interest on debt. A high NPA already means a higher NPA provisions. On one hand, this would increase the expenses borne by a bank in the form of interest on debt and higher provision on NPAs and on the other hand interest earned is reduced owing to NPAs. High NPAs would reduce the bank profits (see Rajaraman, Bhaumik and Bhatia (1999), Louiz et al. (2012) and Mester (1996)). Academicians in the area of NPA have considered the individual impact of operational capability, solvency and profitability on NPAs. However, they have not considered the possibility of exploring the impact of these together on NPAs. We extend the literature in the area of NPAs by creating a comprehensive framework where we explore the impact of operational capability, liquidity, business development capacity, solvency, capital adequacy and profitability on NPAs using a sample of 46 Indian banks.

1. **Liquidity** is represented through cash to deposit ratio. When the NPA level increases, the cash level is likely to decrease as the borrower is unable to repay loan interest and principal. This will likely create a temporary shortage of cash and the bank will have to approach alternate sources to improve liquidity. This ratio will have a negative relationship with NPA. As NPAs reduce the liquidity improves. The second parameter that affects NPAs is Operational capability (OC). Operational capability refers to the ability of the bank to efficiently manage its resources.

2. **Operational capability** has a negative or a positive relation with NPAs. It is briefly explained below how these ratios affect NPAs.

•First we explain how the credit deposit ratio affects NPAs. Credit is extended out of bank deposits. When an asset stops generating income in the form of principal payments, the principal that is extended from deposits is not recovered. This reduces the deposit base by the amount unrecovered. So the ratio of credit to deposits will reduce. This ratio represents the banks ability to make optimal use of available resources and convert deposit into loans. Hence, when high NPAs reduce the deposit base and affect the credit generation capacity. (See: S. Fries and A. Taci, 2005)

• Second, expense to revenue ratio is used as an indicator how the bank spends to earn interest on loan assets. Interest on loan assets ceases to be generated when NPAs are registered. However, the expenses increase in terms of interest paid on deposits and provision on loan losses. Hence, this ratio decreases when NPAs increase. Expenses and NPAs tend to have a negative relation. (See Halkos and Salamouris, 2004). The intermediation cost to total assets ratio (also referred to as an intermediation cost ratio) represents the loan monitoring capability of the bank agents (See Diamond, 1984). This ratio is calculated using the total operating expenses to total assets .

• Third, when a bank has a higher proportion of secured assets the bank has a safety net to fall back on in case an asset becomes an NPA. In case a loan asset becomes an NPA, the bank has the option to recover the amount

through liquidation of the security pledged. This reduces the possibility of a bank to lose the entire amount in case of a secured asset. (Berger and Udell 1990, 1995; Jimenez et al., 2006) This implies that when a higher portion of loan assets are secured, the banks have a lesser risk to lose the entire amount in case of loan default. Hence, NPA and secured assets should be negatively related.

• Fourth, a banks' operational capability using the Non-interest income ratio was to serve as indicator of banks diversification. In case a bank was well-diversified the bank protected itself from the downside of loan assets going bad. There was a negative relation between non-interest income and NPAs. (See. Salas and Saurina, 2002; Hu et al., 2004 and Rajan and Dahl, 2003)

• Fifth, net interest income to total assets. Net Interest income is the interest income earned on loan assets minus the interest expense paid on deposits. This represents the income a bank earns from its core bank lending business. When a loan asset becomes an NPA, the interest earned reduces, whereas, the bank has to still pay interest on deposits. The net interest income earned in case of NPA reduces. Hence, NPA and net interest income have a negative relation. Similarly, interest income and total assets also have the same negative relation with NPAs.

• Sixth, under operational capability Filip (2014) and Nkusu (2011) explored the relation between NPA and NPA lags.These authors suggested that past NPAs are indicative of future NPAs, hence they serve as an important indicator of NPAs.

3. **Capital adequacy** is a tool to control excessive risk taking by banks to prevent them from being insolvent through capitalization. When there is a large portion of owned capital in the total bank capital structure, the managers of the bank have more incentive to follow the owners objectives. This curbs the risk undertaking behavior of the managers to a certain extent. Hence, when owned capital is high the NPA level will be lower. There exists a negative relation between them. (See Altunbas, Evans, & Molyneux, 2001) When NPAs are high, there is a higher loan loss provision to be maintained, hence the portion of Tier 2 capital is increased, the banks capital requirements increase when the NPAs are high. There exists a positive relation between the two.

4. **Solvency-**when the loan assets stop generating income, the bank assets start witnessing a decrease in their value. Gradually, if the loan assets discontinue to generate income, the value of liabilities surpasses assets. First, the bank resorts to bank capital for this loan loss absorption, thereafter to fulfill the capital requirements, banks have approach the market to raise capital. Banks raise debt or equity to meet the capital requirements. Hence, their solvency ratios are adversely affected when NPAs are high.

5. **Profitability-**Returns on assets ratio is the net income (profits) generated by the bank on its" total assets (including fixed assets). Fixed assets of Indian banks form less than one per cent of the total bank assets15. The higher the portion of income generating assets16 among total bank assets, the higher would be the likelihood of the bank to earn interest income. Income generating assets of a bank form more than 90 per cent of banks" total assets. When NPAs increase interest earned reduces, hence ROA declines. NPAs and ROA have a negative relation.

Dependent Variable

Gross and Net non-performing assets since both of them are measures of a banks bad loans. Gross non-performing asset is the amount that is outstanding in the books irrespective of interest recorded and debited. Net non-performing asset is Gross non-performing asset reduced by interest debited to borrow account and not recorded or recovered as income. The technical definition of Net NPA according to Reserve Bank of India is Gross NPA less (Balance in Interest suspense account + DICGC/ECGC claims received and held pending adjustment + part payment received and kept in suspense account + Total provisions held). The dependent variable considered in this study is NNPA defined as Net NPA to Net advances. The reason behind selecting NNPA is that it does not include the provisions for loan losses. The Indian banks have been under reporting the loan loss provisions using the restructured asset window. NNPA is the actual default on loans after all the adjustments (See Berger and DeYoung, 1997; Rajaraman, Bhaumik and Bhatia, 1999; and Rajaraman and Vasishtha, 2002). Hence, in the Indian context NNPA would be an apt measure for the dependent variable.

Research Gap

First, the present study bridges a gap in Indian banks' literature with respect to non-performing assets by using different econometric techniques for analysis of data, which give more sound results. Second, the paper investigates the NPAs across scheduled private, public and foreign commercial banks in India whereas, prior studies focused on a limited number of banks.

Finally, the severity of the NPA issue needs attention. There is a scarcity of studies concerning the significance of the NPA–profitability relationship for the Indian banking sector. Studies have either considered only public-sector banks (Bodla & Verma, 2006) or have studied banks groupwise (Seenaiah K, Rath, B. N., & Samantaraya, A., 2015). Studies taking up all scheduled commercial banks (SCBs) in their sample have analysed only internal bank-specific factors (Haque & Shahid, 2016). A declining credit quality (which may be

measured as the non-performing asset ratio) continuously drains an institution of its profits, restricts its cash flows by necessitating the creation of higher provisions against NPAs. This, in turn, adversely impacts equity growth, mobilisation of funds, banking system credibility, productivity and expansion. In particular, the rising volume and growth of NPAs relative to the growth in credit have serious implications and thus have been a matter of serious concern for both banks and the economy. Therefore, it is imperative for analysts, institutions and regulatory authorities to identify factors which may cause a deterioration in credit (or asset) quality and understand the underlying reasons behind them. In the Indian context, however, few panel studies exist at a relatively disaggregate level in comparison to other countries (Dua & Kapur, 2017).

Objective of the study
  i. To examine the determinants of Non-Performing Assets (NPA) in India.
 ii. To focus on the trend of NPAs in the Indian banking system.
iii. To make suggestions in order to curb the rising NPAs in India.

III.   Research design
Data and sample
Sample Description
        The study is based on a sample of Indian Commercial Banks over a period ranging from 2010–2021(refer Table III in Appendix).Data for empirical analysis is obtained from various publications of the Reserve Bank of India (Basic Statistical Returns of Scheduled Commercial Banks in India, the annual reports on Trend and Progress of Banking in India and Statistical tables relating to banks in India) and the published annual audited accounts of individual banks. Table II in Appendix enlists the definition of variables undertaken along. Further, to maintain the brevity and focus, the current study considers the commercial banks whereas regional rural banks and urban rural cooperative banks are excluded. This is mainly for the reason that governing and working structure and scale and scope of operation of regional and cooperative banks are different and hence they require a separate analysis.

IV.   Relevance of the Study
        The findings of this study will have considerable implications for bankers, policymakers, regulator, analysts and academicians. In the Indian context, there are not many studies that investigate commercial banks' profitability. In this regard, only a few studies were found.
        Understanding the far-reaching impact of NPAs on banking profits and its relationship with key indicators is of crucial importance for the policymakers to assess the financial soundness and resilience of the system and banking institutions as well because management mechanism can be planned and designed accordingly to deal with the issue of such bad loans.

V.   Methodology
        The data consists of 76 banks in India over a span of 12 years from 2010-21. OLS regression gives inconsistent estimates when applied to panel data, hence the study employed fixed and random effects regression for analysis purpose. Initially, the stationarity of all the variables considered was tested using the Levin, Lin and Chu unit root test which assumes a unit root in the series.
        The data was analysed first using a fixed and random effects model. However, to check the suitability of the model, Hausman test was applied.
Random effects regression, also called as the error components model or the variance components model, is used in the analysis of panel data when there are no fixed effects. The model assumes that the individual specific effects are uncorrelated with the explanatory variables.
The representation of the random effects model is given below:
$$Y_{it} = C + \beta X_{it} + (\eta_i + \varepsilon_{it})$$
Where,
Y_{it} is the Net NPA to Net Advances ratio for the i-th bank and t-th year where i=1,.....76 and t=1,.....12
X_{it} is the set of independent variables for the i-th bank and t-th year
η_i is the random effect of the i-th bank
ε_{it} is the within entity term for the i-th bank and t-th year
The random effect term in the model measures the difference between the average financial ratios of i-th bank and the average financial ratios of the whole bank dataset.
Fixed effects regression, on the other hand, allows to control for omitted variables in the panel data when these omitted variables vary across different cross sections (banks) but do not change over time. In other words fixed effects controls for unobserved heterogeneity across banks.

The study runs fixed panel regression model on the various independent variables which are explained in the previous section. The representation of the model is given below:

$$Y_{it} = C + \beta X_{it} + \eta_i + \varepsilon_{it}$$

Where,

Y_{it} is the Net NPA to Net Advances ratio for the i-th bank and t-th year where i=1,.....76 and t=1,.....12

X_{it} is the set of independent variables for the i-th bank and t-th year

η_i is the fixed effect of the i-th bank

ε_{it} is the error term for the i-th bank and t-th year

Under the fixed effects model, the heterogeneity of the i-th bank is controlled and it is assumed that the heterogeneity remains constant over time and is arbitrarily correlated with independent variables of that bank.

While the above mentioned approach is rather intuitive and simple; it may give rise to "dynamic panel bias". This usually occurs due to the possible endogeneity between lagged variable and the fixed effects error term, e_{it}. This problem can be addressed by applying a Generalized Method of Moments(GMM) method, proposed by Arellano and Bover (1995). The study takes the first period lag of the independent variables as instrumental variables.

VI. Results and Discussions

As a part of initial examination, each variable is tested for unit roots using the Levin, Lin and Chu test for stationarity that assume individual unit root processes. Non stationarity implies that a series has a time variant mean and variance and due to this correct reasoning for relationships between non-stationary series is not possible. Therefore, stationarity is an important trait of the data. The following table presents the panel unit root results where the null hypothesis of non-stationarity is tested against the alternate of stationarity. Out of a total of variables, OC3 and OC17 were found to have a unit root, and the first difference of these variables were considered in the further analysis.

Variable	Test Statistic	Probability	Variable	Test Statistic	Probability
NNPA	-6.51691	0.0000	OC13	-20.7859	0.0000
LIQ1	-12982.6	0.0000	OC14	-12.5241	0.0000
OC1	-229.870	0.0000	OC15	-12.7871	0.0000
OC2	-2.94493	0.0016	OC16	-11.8629	0.0000
OC3	-1.47615	0.0700	OC17	1.31250	0.9053
OC4	-65.0194	0.0000	OC18	-6.38676	0.0000
OC5	-1758.35	0.0000	OC22	-25.0170	0.0000
OC6	-13.3235	0.0000	P1	-8.54146	0.0000
OC7	-3.06917	0.0011	P2	-31.3652	0.0000
NIM	-11.0929	0.0000	S	-4.32795	0.0000
OC9	-7.80965	0.0000	BDC	-9.89699	0.0000
OC10	-6.76665	0.0000	CA1	-22.1265	0.0000
OC11	-9.76542	0.0000	CA2	-8.27411	0.0000
OC12	-6.09119	0.0000	CA3	-5.48409	0.0000

Fixed and Random Effects Model results:

Initially a regression was run with all the independent variables with 76 banks. Insignificant variables based on p-value of 5 per cent were eliminated. If an insignificant variable was retained in the model, the significant variables could suffer from loss in the variance in the estimator (See Woolridge, 2015). Hence, an insignificant variable with the highest p-value was eliminated first. Thereafter, elimination of the subsequent insignificant variables was undertaken to arrive at a parsimonious model.

The results of the hausman test suggested that that the fixed effects model should be employed. The results are presented in the table below:

Hausman test statistic: 260.879811***

Variable	Fixed Effects Model		Random Effects Model	
	Coefficient	Std. Error	Coefficient	Std. Error
C	9.313572***	1.344211	5.333790***	1.228926
OC2	0.072912***	0.004019	0.054359***	0.003573
OC7	-0.393495***	0.144559	0.109198	0.123472
NIM	-0.391090	0.215642	-0.414967**	0.201434
OC14	-2.356300***	0.357878	-2.267389***	0.316324
OC15	0.099687***	0.016334	0.103385***	0.014454
P1	-0.817489***	0.123837	-0.917699***	0.119602
BDC	-5.343374***	0.671556	-5.542636***	0.650087
CA1	0.041532***	0.010518	0.050332***	0.010001

CA3	12.60015***	4.066208	18.26010***	2.542547
R squared	0.801649		0.581862	

The results suggest that an increase in investment deposit ratio enhances the NNPA ratio while the ratio of deposit to total liabilities has an inverse relation with NNPA. As the deposits increase in terms of liabilities, the money lending capacity of bank enhances thus reducing the NNPA. Further, an increase in ROA and the business development capacity ratio reduces the NNPA ratio whereas capital adequacy ratio has a positive relation with the dependent variable. The overall R square of the model also indicates that the fixed effects model is preferable over the random effects model.

Further, the results of GMM are presented below:

Variable	Coefficient	Std. Error
C	8.894599***	3.389717
NNPA(-1)	0.561499***	0.093085
OC2	-0.011224*	0.005811
OC7	0.479743***	0.096553
NIM	-0.505160***	0.178916
BDC	-9.266001***	2.808472
CA3	11.43281***	2.321526

On comparing the results of fixed effects model with those of GMM, it was found that the variable NIM which was previously insignificant is now significant in the analysis. Also, to accommodate for the dynamic panel, an additional variable as the first lag of the dependent variable is also considered in the model which is significant in the model suggesting that the past NNPA contributes to an additional level of NNPA in the current period. Additionally, the signs of the coefficients of OC2 and OC7 have reversed in the GMM estimation.

VII.   Summary & Conclusion

The study evaluated the effect of financial ratios on bank NPAs using a comprehensive framework of 27 variables. The paper examines the determinants of non-performing assets (NPA) of Indian scheduled commercial banks during a period 2010 to 2021 and added to the non-performing assets literature. Unlike previous studies, our study used a comprehensive list of as many as 27 financial indicators. These indicators presented a holistic view of the banks operational capability, profitability, solvency, business development capacity, capital adequacy and liquidity. Earlier studies focused on one aspect of the bank. However, we tried to capture the business performance not only at the functional level but also at the corporate level. The functional level of a bank was captured through the operational, liquidity and solvency indicators whereas the banks business growth strategy (in terms of asset growth) at the corporate level was captured using business development capacity as a proxy. We used the GMM (2SLS) method using the cross section weights that had an r-square of _____. This method dealt with the endogeneity issue displayed due to the dynamic nature of the bank data under study.

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Appendix

Table I. Review of Literature

S. No.	Author	IV	DV	Sample	Period	Country	Methodology	Findings	Journal
	(Dua & Kapur, 2017)	output growth, inflation rate, interest rate, exchange rate, profit, size indicator	NPA	five Indian bank groups	1997-2014	India	Panel Cointegration Technique	the credit quality of Indian bank groups is found to be inversely and significantly related to the economy's growth rate, inflation rate, exchange rate and profits of banks and positively and significantly related to the interest rate. Shock analysis also reveals that a downturn in the economy through certain adverse scenarios has a significant adverse impact on the credit quality.	The Journal of Applied Economic Research

Table II. Variables with their Description

S.No.	Variables	Classification	Definition/ Explanation
	Dependent Variables		
	NNPA		Net NPA to Net Advances
	Independent Variables		
1	LIQ1	Liquidity	Cash - Deposit Ratio
2	OC1	Operational capability	Credit - Deposit Ratio
3	OC2	Operational capability	Investment - Deposit Ratio
4	OC3	Operational capability	Ratio of deposits to total liabilities
5	OC4	Operational capability	Ratio of demand & savings bank deposits to total deposits
6	OC5	Operational capability	Ratio of secured advances to total advances
7	OC6	Operational capability	Ratio of investments in non-approved securities to total investments
8	OC7	Operational capability	Ratio of interest income to total assets
9	NIM	Operational capability	Ratio of net interest income to total assets
10	OC9	Operational capability	Ratio of non-interest income to total assets
11	OC10	Operational capability	Ratio of intermediation cost to total assets
12	OC11	Operational capability	Ratio of wage bills to intermediation cost
13	OC12	Operational capability	Ratio of wage bills to total expense
14	OC13	Operational capability	Ratio of wage bills to total income
15	OC14	Operational capability	Ratio of burden to total assets
16	OC15	Operational capability	Ratio of burden to interest income
17	OC16	Operational capability	Ratio of operating profits to total assets
18	OC17	Operational capability	Business per employee (in Rupees Lakh)
19	OC18	Operational capability	Profit per employee (in Rupees Lakh)
20	OC20	Operational capability	LagNPA
21	CA1	Capital Adequacy	Capital adequacy ratio - Tier I
22	CA2	Capital Adequacy	Capital adequacy ratio - Tier II
23	CA3	Capital Adequacy	owned Capital /Total Assets

24	P1	Profitability	Return on assets
25	P2	Profitability	LagROA
26	S	Solvency	Total liability /Total capital
27	BDC	Business Development Capacity	Total Assets this year/Total Assets in the last year

Table III. List of Scheduled Commercial Banks

List of Scheduled Public Sector Bank	List of Scheduled Private Sector Banks	List of Scheduled Foreign Banks in India
STATE BANK OF INDIA	IDBI BANK LIMITED	AB BANK LIMITED
ALLAHABAD BANK	AXIS BANK LIMITED	ABU DHABI COMMERCIAL BANK PJSC
ANDHRA BANK	CITY UNION BANK LIMITED	AMERICAN EXPRESS BANKING CORP.
BANK OF BARODA	CSB BANK LIMITED	BANK OF AMERICA , NATIONAL ASSOCIATION
BANK OF INDIA	DCB BANK LIMITED	BANK OF BAHRAIN & KUWAIT B.S.C.
BANK OF MAHARASHTRA	FEDERAL BANK LTD	BANK OF CEYLON
CANARA BANK	HDFC BANK LTD.	BANK OF NOVA SCOTIA
CENTRAL BANK OF INDIA	ICICI BANK LIMITED	BARCLAYS BANK PLC
CORPORATION BANK	INDUSIND BANK LTD	BNP PARIBAS
DENA BANK	JAMMU & KASHMIR BANK LTD	CITIBANK N.A.
INDIAN BANK	KARNATAKA BANK LTD	COOPERATIEVE RABOBANK U.A.
INDIAN OVERSEAS BANK	KARUR VYSYA BANK LTD	CREDIT AGRICOLE CORPORATE AND INVESTMENT BANK
ORIENTAL BANK OF COMMERCE	KOTAK MAHINDRA BANK LTD.	CREDIT SUISSE AG
PUNJAB AND SIND BANK	LAKSHMI VILAS BANK LTD	CTBC BANK CO., LTD.
PUNJAB NATIONAL BANK	NAINITAL BANK LTD	DBS BANK INDIA LTD.
SYNDICATE BANK	RBL BANK LIMITED	DEUTSCHE BANK AG
UCO BANK	SOUTH INDIAN BANK LTD	FIRSTRAND BANK LTD
UNION BANK OF INDIA	TAMILNAD MERCANTILE BANK LTD	HONGKONG AND SHANGHAI BANKING CORPN.LTD.
UNITED BANK OF INDIA	THE DHANALAKSHMI BANK LTD	INDUSTRIAL AND COMMERCIAL BANK OF CHINA
VIJAYA BANK	YES BANK LTD.	JPMORGAN CHASE BANK NATIONAL ASSOCIATION
		JSC VTB BANK
		KRUNG THAI BANK PUBLIC COMPANY LIMITED
		MASHREQ BANK PSC
		MIZUHO BANK LTD
		MUFG BANK LTD
		NATIONAL AUSTRALIA BANK
		NATWEST MARKETS PLC
		PT BANK MAYBANK INDONESIA TBK
		SBERBANK
		SBM BANK (INDIA) LTD.
		SHINHAN BANK
		SOCIETE GENERALE
		SONALI BANK
		STANDARD CHARTERED BANK
		UNITED OVERSEAS BANK LTD
		WOORI BANK