Analysing The Impact of Basel Norms on Non-Performing Assets: A Study of Selected Indian Banks

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ABSTRACT

Purpose: *This research focuses on providing a comprehensive review of the concepts of NPA and the Basel norms established by the Basel Committee on Banking Supervision (BCBS). To analyse the trends of NPAs, a detailed examination of data from a selected group of Indian banks is conducted within a span from 1997-2021. The data includes information on the quantum of NPAs along with the recovery patterns. Furthermore, the paper investigates the correlation between GNPA and compliance with Basel norms. The research also considers the effectiveness of the regulatory framework in addressing NPAs and potential solutions. This study uses prominent techniques namely one-way ANOVA, Compound Annual Growth Rate (CAGR) along with various graphical measures for comparative and analytical purposes.The trends on public sector banks are quite fluctuating due to various government policies and recovery mechanisms, write-off of debts and recapitalisation help the banks to lower their GNPA. However, there is a positive impact of the reforms implemented by the government along with Basel norms 3. As the study relies on reliable sources and statistical tools. While valuable for policymakers and investors, it acknowledges limitations like time constraints and secondary data reliance. Despite these, it contributes to NPA management understanding, suggesting risk mitigation strategies for the banking sector and concluding with industry implications and future research recommendations To confirm the originality of this study, to the best of the authors' knowledge, this is the first study to examine the impact of Basel Norms on NPAs of Selected Indian Banks*

Keywords: *Basel Norms, NPAs, Indian Banks*

Introduction

The Indian banking system is vital to a country's economic growth. However, in recent years, Non-Performing Assets (NPAs) have emerged as a significant concern for banks and the policymakers of the Indian financial system. This research paper aims to compare the trends of NPAs in Indian banks and to examine their relationship with the basel norms. At times there are certain reforms in the banking system signifying the methods of better financial systems. Different changes in the Basel norms so far have not shown any considerable advancement in the entire system of banking. The government has taken considerable steps towards improving the financial system and this should be continued shortly by taking care of the standard of creditors so that a better standard of banks is maintained in the country.

The financial system is the backbone of an economy and one of them is banks. In the Indian banking system, it plays a dominant role in saving or investment, providing loans or financing credits to entrepreneurs or individuals or the government. Non-performing assets are a critical issue as far as the banking system is concerned. In this study, we have analyzing the level of NPAs in selected Indian banks from 1997 till 2022 to understand the trends of Gross Non-Performing Assets (GNPAs) in Indian banks and their relationship with Basel Norms. We took this period in order to give a more comprehensive view after the introduction of Basel norms 3, which were implemented in 2013.

1.1 Background of the Study

Loans or advances from banks or other financial institutions are called non-performing assets (NPA) when the borrower has been late on their payments for at least 90 days (about 3 months), so the loan or interest no longer generates money for the lender. NPAs are a significant issue for the Indian banking industry since they can cause financial instability and have an impact on the national economy.

Reserve Bank of India defines Non-Performing Assets in India as any advance or loan that is overdue for more than 90 days (about 3 months). “An asset becomes non-performing when it ceases to generate income for the bank,” said RBI in a circular from 2007. Non-Performing Assets impact the bank's operations and the nation's inflation and multiplier effect on economic expansion.Additionally, certain countries' NPAs have a global impact, like the collapse of Western countries’ banks like Signature Banks and Silicon Valley Bank. “This has caused a sell-off of banking stocks, and in India, it has led to a decline in the National Stock Exchange's market capitalisation on March 17, 2023, indicating that investors are reducing their positions due to the US banking crisis. The banking indices are facing selling pressure, which could lead to the depreciation of the Indian rupee and a tighter monetary policy by the Reserve Bank of India (RBI). The flight of money due to fear may lead to a reduction in capital inflow, which may have negative effects on the Indian economy.” (Mukhopadhyay S. , 2023)

Since the early 90s, the focus has shifted towards improving the quality of assets and better risk management. In 1991, Narasimham Committee Recommendation on Income Recognition, Asset Classification Provisions. The banking system is not a new concept, an organized banking system in India was established in 1770, the Bank of Hindustan and the first indigenous Indian Bank was the Punjab National Bank which was established in 1895. India had 97 private banks that were "scheduled" at the dawn of independence in 1947, 557 "non-scheduled" (small) private banks that were set up as joint stock companies, and 395 cooperative banks.

According to RBI data, there are currently 12 public sector banks, 21 Private sector banks, 12 small finance banks, and 5 Foreign banks. Also, there are 51 scheduled urban cooperative banks. The idea of a ‘small finance bank,’ ‘payment bank,’ and ‘bad banks’ are new age banks suddenly proliferated into the national and international financial market. (Rao, 2021)

Table1.1 Gross Non-Performing Assets (GNPAs) in crores

year	Public sector banks	Private sector banks	Foreign banks	Small finance banks
2020-21	616616	200141	15044	5971
2015-16	539956	56186	15805	-
2010-11	74664	14500	5069	-
2005-06	41358	4051	1928	-
2000-01	54672	1617	3106	-
1996-97	43577	217	1181	-

Source: RBI Annual report 2021-22

1.1 Asset Classification

Banks should classify their assets into the following broad groups, viz.

Table 1.2 Classification of Assets

Categories of NPAs	**Criteria**
Standard Assets	These assets are not considered as NPAs
Substandard Assets	An asset that remains as NPAs for less than or equal to twelve months.
Doubtful Assets	An asset that remained in the above category for twelve months.
Loss Assets	Asset where loss has been identified by the bank or the RBI, yet there may be some value remaining in it. Therefore, the loan has not been completely written off.

Source: RBI Annual report 2021-22

“The lending of banks has remained around 50-53% of the GDP since March 2009 (with 2020-21 being an exception due to covid-19), and deposits have remained between 67-70%. For decades, banks used to lend majorly to industry, but that has been changing. As of end-march 2013, bank lending to industry peaked at 22.4% of the GDP. It has since fallen, and as of september 2022, stood at 12.5%. In absolute terms, the bank lending to the industry has grown by just 4% per year during the period”. (Kaul, 2023)According to the RBI, the proportion of the top 100 major borrowers in the total loan portfolio of Scheduled Commercial Banks (SCBs) continued to increase, reaching 17.4% by september 2022. This suggests that large corporate entities have been engaging in new borrowing activities. However, it is noteworthy that the asset quality of these top 100 borrowers also displayed improvement. Their share in the Gross Non-Performing Assets (GNPA) of SCBs decreased from 6.8% in March 2022 to 5.4% in September 2022. (Jaiswar, 2022)

In the previous five years, banks have been able to lower their nonperforming assets (NPAs) or defaulted loans by Rs 10,09,510 crore ($123.86 billion), according to statistics provided by the Reserve Bank of India (RBI). The loan written in the last 10 years is Rs 13,22,309 crores and the recovery made from written-off accounts in the last 5 years is ₹1,32,036 crores. This significant write-off would have reduced 61% of India's projected gross fiscal deficit of Rs. 16.61 lakh crore for 2022–2023. When a bank writes off a loan, the debt is removed from the asset book of the bank. (Mathew, 2022)**Basel norms**-Basel Norms are the set of rules and regulations set up on an international basis set up by the Basel Committee regarding banking supervision. These norms focus on the concerned risk factors to the banks as well as the financial system. The committee expanded in 2009 and further expanded in 2014 with 45 members from 28 districts. The norms are divided as Basel-1,2 and 3.

Table 1.3 Classification of Basel Norms

Basel-1	Basel-2	Basel-3
Introduced in 1988	Introduced in 2004	Guidelines released in 2010
Takes into consideration the	Based on three credentials	Revolves around 4 concepts

'credit risks' on an overall basis	called 'Pillars' i. Capital Adequacy Requirement ii. Supervision Review iii. Market Discipline	i. Capital ii. Liquidity iii. Funding iv. Leverage
India adopted the norms in 1999		Introduced in 2013

Source- Computed by author using RBI website

To sum up the concept of Basel Norms, it concentrates based on banking risks related to various concepts the of financial system.Basel III capital regulations were introduced in India in a phased manner starting from April 1, 2013, with full implementation scheduled to be achieved by March 31, 2019. (Vishwanathan, 2015).Since 2005–2006, the Reserve Bank of India's policy has been centred on financial inclusion. Along with several Government of India initiatives, the RBI sanctioned the establishment of Small Finance Banks (SFB) in the year 2015. A small finance bank, with RBI approval, focuses on essential banking services like accepting deposits and providing loans to underserved groups. Additionally, it can offer non-risk financial services, such as distributing mutual funds and insurance products, ensuring compliance with sector-specific regulations. (Rao, 2021)Small Finance Bank - "These banks shall primarily undertake basic banking activities of acceptance of deposits and lending to unserved and underserved sections including small business units, small and marginal farmers, micro and small industries and unorganised sector entities." (RBI, Draft Guidelines for 'on tap' Licensing of Small Finance Banks in the Private Sector, 2019). SFBs were set up in 2016 to meet the financial needs of the marginalised sections of society. They are differentiated or niche banks with minimum net worth of `200 crore, lower than other SCBs.Urban cooperative banks-These banks were located urban or in semi-urban areas. Till 1996 they were allowed to lend money only for non-agricultural purposes. But today this is not the case. Initially, these banks were centred around communities, localities, and workplace groups.

The Evergreen topic in the Indian banking system is non-performing assets. From the research, we can analyse the trends from 1997 till 2021, and how the banking system is performing in terms of non-performing assets.

2. Statement of the Problem

NPA in Indian banks before and after the implementation of Basel norms 3, i.e., in 2013, and how it is reflected in the performance of these banks (public sector banks, private sector banks, foreign banks, small finance banks, and cooperative banks) as few studies have been conducted regarding this.

3. Objectives of the Study

(i) To study the trends of Gross Non-Performing Assets of different Indian banks like public sector banks, Private sector banks, foreign banks, small finance banks and Urban cooperative banks.

(ii) To compare the performance of different Indian banks in terms of Gross Non-Performing Assets after new economic reforms.

(iii) To analyze the impact of Basel norms 3 on the Gross Non-Performing Assets.

4 Research Methodology

In this paper, we will analyse the Non-Performing Assets (NPAs) across diverse banks – public (SBI, Bank of Baroda), private (HDFC, ICICI), foreign (Citibank), and small finance (AU). Utilizing secondary data from RBI, newspapers, journals, and annual reports of RBI and Indiastst, our approach involves a comparative study, employing one-way ANOVA for averages and variations, and graphically exploring the relationship between Gross NPA and Basel norms.

5 Limitations of The Study

Non-performing assets are such a vast concept that it still needs more research. Some of the limitations are data availability, like this data is solely dependent on secondary data. Many times, banks do not disclose their complete information, so there might be variations, then it may affect the quality of the data. Even though the detailed data is available, but the quality and consistency can be challenged.

6. Review of Literature

(Dahiya & Bhatia, 2016) have examined the NPA of public sector banks in India an intersectoral comparison. They studied the trends and positions of NPA of public sector banks in priority and non-priority sectors and identified and studied the reasons for occurrences of NPA also the government's initiative for the recovery of NPAs suggested a few measures for efficient management of NPAs.(Mohan & Ray, 2017) have analysed the NPAs trends in diverse types of commercial banks including RRBs and payment banks linked with capital adequacy ratio interest rates etc. he mentioned the causes for high Npas but somewhere why recently NPA declined was not mentioned properly.(Das & Dey, 2018) analysed the positive correlation between corporate debt restructuring and as mentioned, the relationship between the GDP and GNA is not covered. Also, NPA is more in the priority sector as compared to the non-priority sector from public sector banks as cmpared to private sector Banks.

(Archarya & Rajan, 2020) studied that in India, banking challenges have intensified due to the "grand bargain" between public sector banks and the government. Addressing bad loans can involve non-classification. Management improvement could retain director independence. Diversifying services akin to UPI is suggested. Recommendations include online stress platforms and revamped sales incentives.

(Manisha & Hans, 2017) make comparison of Basel 1, Basel 2 and Basel 3, analysing using regression method on capital adequacy ratio. In this study, the higher the capital adequacy ratio, Indian banks have, the higher risks and less investment. Capital adequacy. The ratio has a positive impact on profitability and relative returns on advances and a negative effect on relative returns on investment.(Rajender, 2009) delves into NPAs management in public sector banks, employing statistical tools like ANOVA and correlation analysis. It reveals a negative correlation between asset quality and bank profitability and solvency, highlighting the importance of effective NPA management strategies.(Rathore, Malpani, & Sharma, 2016) examines the NPA status of Indian commercial banks, highlighting the burden of stressed assets on profitability, liability management, and investor confidence. Recovery channels like Lok Adalat and scrutinization acts offer avenues for resolution. Findings reveal a negative correlation between Total Advances, Net profits, and NPA Bank, indicating systemic challenges.

(Agrawal & Ms. Preeti, 2022) analysed the trends of NPA in selected public and private sector banks of India. They found that NPA has a direct and significant impact on a bank's profitability. NPAs are more prominent public sector banks. Public sector banks should make provision for credit evaluation and monitoring systems.(Rajeev & Mahesh, 2010) focuses on different facets involved in the overview of NPAs in India. The public sector is used to carry out credit-related social activities like sector-wise NPAs. In the priority sector as compared to the non-priority sector, they also suggested that the self-help group model can be applied to help the weaker sector to access loan and ensure repayment.

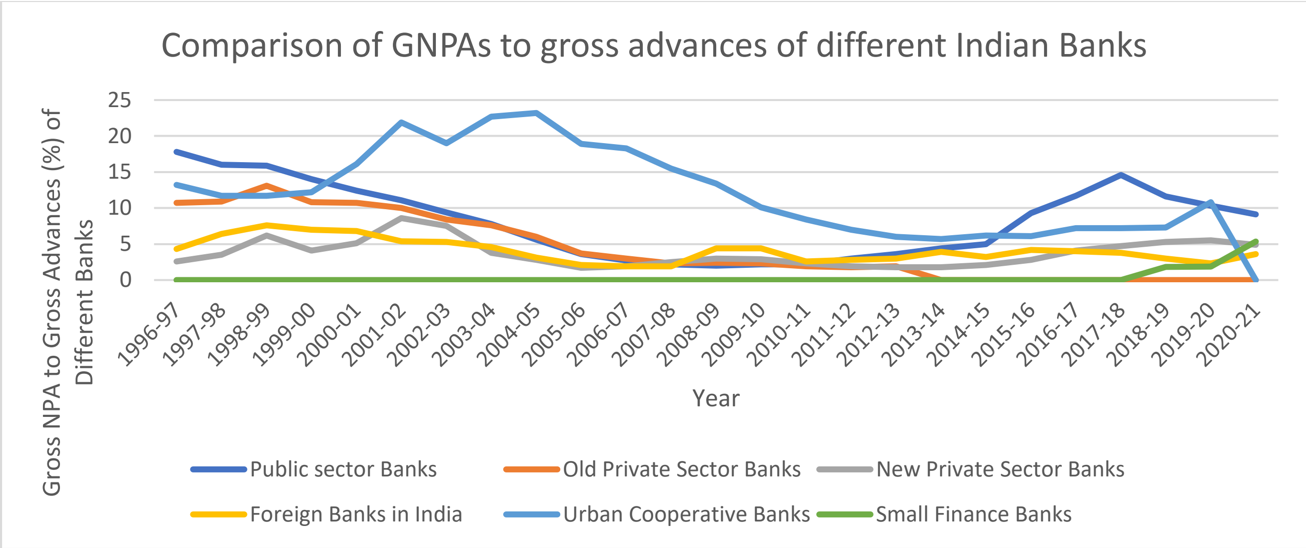
(Saluja & Lal, 2010) have analysed the NPA growth has strong effect on bad loans as lending rates increase, NPA increases and slowdown in industrial credit growth due to accumulation of NPAs which led the decline in industrial sector from 2009 till 2017. He proposed that for recapitalisation of affected banks to solve the current level of accumulation. (BABU, 2012) emphasizes the crucial role of Urban Cooperative Banks (UCBs) in serving the urban poor and the unorganized sector. It identifies governance issues and a lack of professional management as performance factors. Evaluation methods like ratio analysis and DEA are discussed, concluding that a multidimensional approach, coupled with enhanced risk management and capital base, is essential for overall UCB performance improvement.(Kanchan & Choudhary, 2023) in their article explores the assessment of the CAMEL model (Capital Adequacy Model) for evaluating a bank's performance comprehensively. It discusses the model's strengths and weaknesses, considering various financial health indicators. The evaluation extends to the sustainability and growth of small financial banks. The author suggests future studies incorporate more advanced models capturing the dynamic nature of bank performance.

(Saluja & Lal, 2010) explores NPAs in public, foreign, and private sector banks, noting higher NPAs in priority sector lending compared to the priority sector. Public sector banks show improvement due to policies like the Sarfaesi Act. Utilizing percentage and average methods, the research recommends establishing more quotas to expedite remedies and address the NPA issue.(Vibhute, Jewargi, & Haralayya, 2021) highlighted the negative correlation between efficiency and NPAs in India's banking system. It traces the system's evolution from pre-independence to liberalization, noting factors like infrastructure, management issues, and fraud contributing to past failures. Nationalization in 1969 and reforms in 1991 reshaped the sector, with NPAs divided between priority and non-priority sectors in public banks, though without detailed explanation for higher NPAs in the latter.

7. Trends of Gaps Of Different Indian Banks

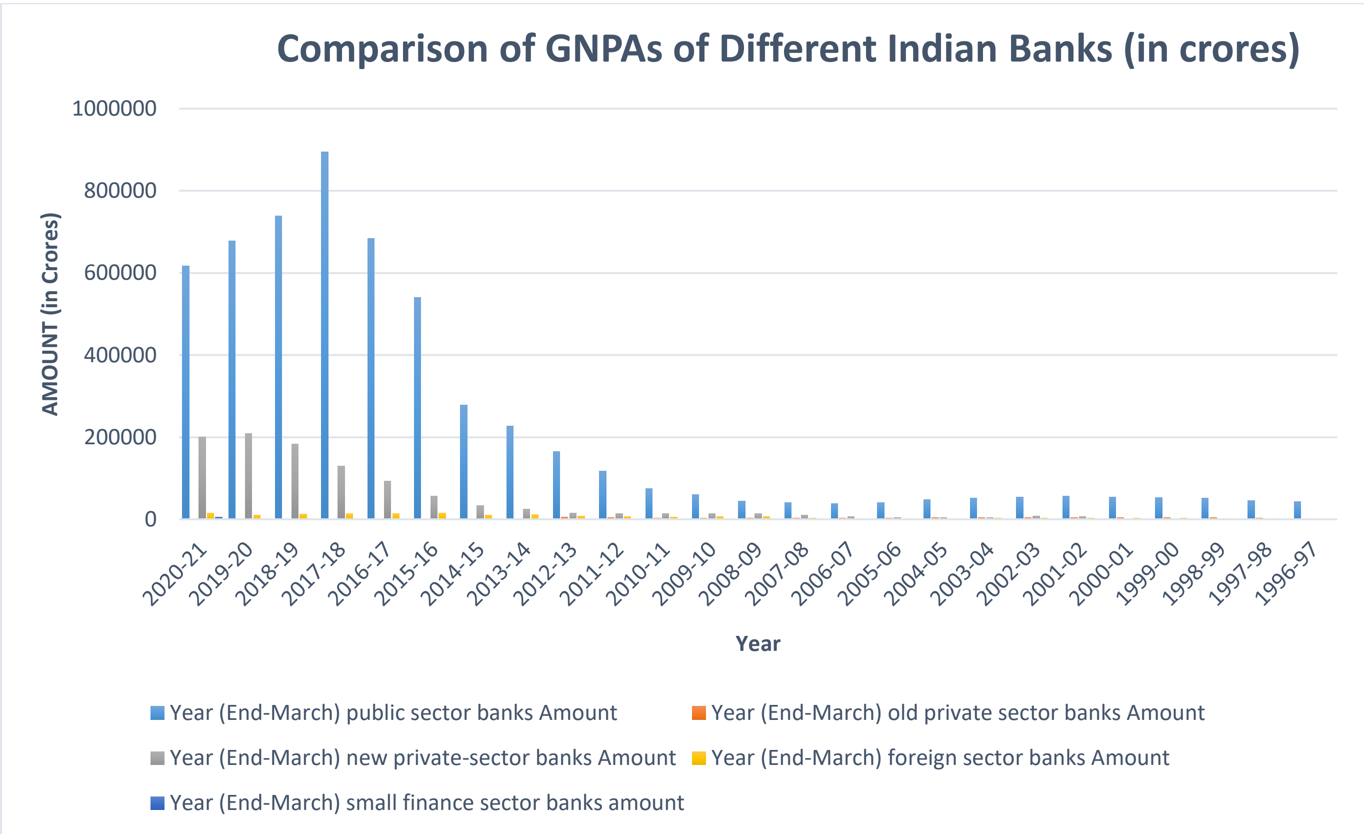
To study the comparison of various Indian banks, including public, old private, new private, foreign, new finance, and cooperative banks, spanning 1997-2021, pre and post banking reform (Basel norms 3).

Figure 7.1 Comparison of GNPAs to gross advances of different Indian Banks



Source- Computed by author using RBI data

Figure 7.2 Comparison of GNPAs of different Indian banks (in crores)



Source- Computed by author using RBI data

7.1 GNPAs in Public Sector Banks

From the above graph we can analyse the The Gross Non-Performing Assets (GNPA) of Public Sector Banks in India demonstrated a declining trend from 1996-97 (17.8%) to 2009-10 (2.2%), followed by an increase till 2017-18. Subsequently, it declined again to 9.1% in 2020-21. Factors contributing to the initial decrease included cautious lending practices, improved credit appraisal, and efficient risk management. The period of robust GDP growth in the early 2000s and regulatory measures by the Reserve Bank of India (RBI) further aided

in reducing NPAs.
However, from 2012 onwards, there was a rising trend in Gross NPAs due to increased regulatory pressure on transparency. Since the peak in 2017-18, the GNPA ratio of Public Sector Banks has consistently decreased. This decline can be attributed to reduced slippages and a decrease in outstanding GNPAs, driven by recoveries, improvements, and write-offs. In 2021-2022, the decline in NPAs for Public Sector Banks was primarily due to written-off loans. Contrastingly, private sector banks saw an increase in asset quality, mainly attributed to loan upgrades. These trends highlight the complex interplay of regulatory actions, economic factors, and recovery mechanisms in shaping the trajectory of NPAs in India's banking sector. (India, 2022)

7.2 GNPAs in Urban Cooperative Banks

From 1999 to 2005, urban cooperative banks saw a rise in Gross Non-Performing Assets (GNPA) to gross advances, reaching 18.9%. Subsequently, a declining trend ensued until 2016 (6.1%), followed by an increase to 10.8% in 2020. The surge in GNPA was primarily attributed to intensified competition, eroded public confidence post-frauds like the Gujarat and Andhra Pradesh share market swindle in 2001, insufficient capital, unclear loan policies, NPAs accumulation, dual control challenges, and liberal overdraft account withdrawals (BABU, 2012). In 2019, after a major urban cooperative bank failure, RBI took supervisory actions. Legislative amendments to the Banking Regulation Act of 1949 followed in 2020 to safeguard depositors' interests (REPORT ON TREND AND PROGRESS OF BANKING IN INDIA, 2020-21).
Urban cooperative banks exhibited a declining trend from 2005-2008 and 2013-2015. RBI reports a decrease in agricultural lending share from 64% (1992-1993) to 11.3% (2019-20), with yearly fluctuations. "During 2020-21, 25 per cent of UCBs' total funded loans and 32 per cent of their NPAs originated from large borrowal accounts as against 51 per cent of loans and 66 per cent of NPAs, respectively, for SCBs". (REPORT ON TREND AND PROGRESS OF BANKING IN INDIA, 2020-21)
"Although the CRAR of the UCB sector remains lower than SCBs, the sector is poised to meet the revised regulatory requirements of higher CRAR for Tier II to Tier IV banks" (India, 2022)

7.3 GNPAs in Small Finance Banks

It is a new type of banks its data is available from 2019 and it is in increasing trend reasons associated can be poor credit assessment, inadequate risk management practices.

7.4 GNPAs in Old Private Sector Banks

The GNPA of old private sector banks initially remained low until 1999 but began increasing thereafter, reaching 13.1%. This rise can be attributed to weak risk management practices, inadequate appraisal systems, stringent loan approval processes, and inefficient recovery mechanisms.

7.5 GNPAs in New Private Sector Banks

There is an increasing trend initially in these banks till 1999 (6.2%) – 2002 (8.6) then a declining trend till 2003(7.5%) again overall trend was declining from 2004 (3.8%) till 2016 (2.8%) but raise in 2016 (2.8%) to 2020 (5.5%).

7.6 GNPAs in Foreign Banks

Gross Non-Performing Assets (GNPA) initially rose from 1996-97 (4.3%) to 2000 (7.0%), declined till 2008, increased from 2008-09 (4.4%) to 2016 (4.2%), then declined again from 2017 (4.0%) to 2020 (2.3%). Reasons for the 2012-2017 rise include increased restructured advances, heightened exposure to priority sectors, and rising interest rates for small and medium-sized businesses.
Due to the slow pace of economic expansion and the Supreme Court's

decision to prohibit the iron, ore and coal mining industry, major infrastructure projects were put on hold, which made it harder for large borrowers to make timely loan repayments. As a result, NPAs in India rose sharply following the crisis years. (Goswami, 2022)

Figure 3 Reasons for rise in NPAs

Source- Computed by author (NPA's in India, 2022)

8. Performance Analysis of Different Indian Banks in Terms of Non-Performing Assets After New Economic Reforms.

We are going to do a comprehensive study by taking the banks of each sector like SBI and Bank of Baroda from the public sector, HDFC and ICICI Bank from the private sector, Citibank from the foreign sector, AU Small Finance Bank from the small finance bank sector, and the urban cooperative banks. For this, we are using ANOVA one-way statistical tool.

Table 8.1 Gross Non-Performing Assets in Amount (Rupees crores)

Year (End-March)					
	public sector banks	old private sector banks	new private-sector banks	foreign sector banks	small finance sector banks
	Amount	Amount	Amount	Amount	amount
End Value(year 2021)	616616	5210	200141	15044	5971
Beginning Value(Year 1997)	43577	2325	217	1181	1087
Number of years	25	17	25	25	3
CAGR	0.111809	0.048607	0.313999	0.107145	0.764436

Source: computed by author using RBI data
Note- i. Gross NPAs of Urban Cooperatives in terms of absolute amounts are not available prior to 2016. For comparison Urban Cooperatives is not taken.
* Data for small finance banks was accessible form the financial year 2018-19.)

*Data for 2013-14 onwards pertains to all Private Sector Banks (Secetary, 2023)

From the above table (8.1) we have calculated the compound annual growth rate of GNPAs of diverse types of Indian banks. Annual compound annual growth rate of the GNPAs of Public sector bank, is 0.11(%) from 1996-97 to 2021-21. Annual compound annual growth rate of the GNPAs of Old Private sector bank, is 0.04 (%) from 1996-97 to 2012-13. Annual compound annual growth rate of the GNPAs of New Private sector bank, is 0.31 (%) from 1996-97 to 2021-21. And of small finance sector banks, its compound annual growth rate of GNPAs is 0.76% from 2018-19 to 2020-21. Therefore, from the above analysis, we can see that old private-sector banks has the least compound annual growth rate of GNPAs which is 0.04%. Whereas we can see that small finance banks have the maximum CAGR of GNPAs i.e., 0.76%. Excluding this because this is a new type of bank so apart from this then, New private sector banks have the highest CAGR of GNPAs which is 0.31%.

Table 8.2 CAGR of GNPAs before the introduction of Basel norms 3

Year (End-March)				
	public sector banks	old private sector banks	new private-sector banks	foreign sector banks
	Amount	Amount	Amount	Amount
End value(Year 2013)	165006	5210	15800	7977
Beginning value(Year 1997)	43577	2325	217	1181
Number of years	17	17	17	17
CAGR	0.081469	0.048607	0.286889	0.118921

Source- Computed by author using RBI data

From Table 8.2 we can analyse that the CAGR of GNPAs of public sector banks is 0.08% from 1996-97 to 2012-13, CAGR of GNPAs of old private sector banks is 0.04% from 1996-97 to 2012-13, the CAGR of GNPAs of new private sector banks is 0.28% from 1996-97 to 2012-13 and CAGR of GNPAs of foreign sector banks is 0.11% from 1996-97 to 2012-13.Old Private sector bank's CAGR of GNPAs is minimum i.e.,0.04% from 1996-97 to 2012-13 and CAGR of GNPAs is maximum in new private sector banks i.e., 0.28% from 1996-97 to 2012-13. Reasons can be lower GNPAs ratios existed before the financial crisis because of the unique financial reforms implemented by the Narasimham committee in 1991, efficient borrower screening and monitoring, increased provisioning and write-offs, and adoption of better credit risk management practises. (Goswami, 2022)

Table 8.3 CAGR of GNPAs after introduction of Basel norms 3

Year (End-March)				
	public sector banks	new private-sector banks	foreign sector banks	small finance sector banks
	Amount	Amount	Amount	Amount
End value(Year 2021)	616616	200141	15044	5971
Beginning value(Year 2014)	227264	24542	11565	1087
Number of years	8	8	8	3
CAGR	0.132884	0.299955	0.033421	0.764436

Source- Computed by author using RBI data
Note- i. "Data for 2013-14 onwards pertains to all Private Sector Banks". (Secetary, 2023)

From the above table we can analyse that CAGR of GNPAs of public sector bank is 0.13% from 2013-14 to 2021-21, CAGR of GNPAs of new private sector bank is 0.29% from 2013-14 to 2021-21, CAGR of GNPAs of foreign banks is 0.03% from 2013-14 to 2021-21 and CAGR of GNPAs of small finance banks is 0.76% from 2018-19 to 2020-21.

CAGR of small finance bank is maximum i.e., 0.76% apart from this as this is a new formed bank CAGR of GNPAs of New Private sector bank is maximum and minimum is of foreign sector banks (0.03%).

Following Basel norms 3, Indian banks experienced a high CAGR, driven by increased exposure to stressed industries like power and airlines during the economic boom. However, economic downturns and lower provisioning coverage ratios contributed to large NPAs in later years. Additionally, an asset quality review by the Reserve Bank post-global financial crisis led to a rise in NPAs ratio, clarifying Indian banks' balance sheets. (Goswami, 2022)

We will be using one -way ANOVA method to assess the variability in the Gross Non-Performing Assets (NPAs) to Gross Advances Ratio (%) across various types of banks. This method will help us understand how the different types of banks contribute to explaining the variations in the Gross NPAs to Gross Advances Ratio (%).

Using the one-way ANOVA method (using Table 3.5)

Ho (null hypothesis)- There is no difference in mean NPAs of various banks
i.e., SBI=Bank of Baroda=ICICI=HDFC=AU Small Finance Banks=Citibank=urban cooperative banks.

H1(Alternative hypothesis)- they are not the same there are some significant differences.

Table 8.4 Anova Analysis

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
SBI	27	209.23	7.749259	20.21497
BANK OF BARODA	27	224.93	8.330741	28.20955
ICICI	26	128.84	4.955385	6.05189
HDFC	26	40.74	1.566923	0.579854
AU SMALL FINANCE BANKS	5	11.96	2.392	1.09967
CITIBANK N.A	27	57.69	2.136667	2.0923
URBAN CORPORATIVE BANKS	25	312.8	12.512	31.5286

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	2296.434	6	382.739	26.65128	1.04E-21	2.157143
Within Groups	2240.316	156	14.361			

Total	4536.75	162

Source: computed by author using RBI data

In above Table 8.4 we have taken Gross NPA's to gross advances in percentage of different banks from the year 1996 till 2022. we have used the One-Way ANOVA analysis for the same. The average of SBI's Gross NPAs to Gross Advances Ratio (%) is 7.74 and variance of Gross NPAs to Gross Advances Ratio (%) is 20.25. The average of Gross NPAs to Gross Advances Ratio (%) of Bank of Baroda is 8.3. And its variance of Gross NPAs to Gross Advances Ratio (%) is 28.20 which is highest among the scheduled commercial banks. The average of Gross NPAs to Gross Advances Ratio (%) of ICICI Bank is 4.9 and variance of Gross NPAs to Gross Advances Ratio (%) is 6.05. The average of Gross NPAs to Gross Advances Ratio (%) of HDFC Bank is 1.56 and its Variance of Gross NPAs to Gross Advances Ratio (%) is 0.57. It has one of the lowest averages of Gross NPAs to Gross Advances Ratio (%) that is 1.5 as compared to other banks that have considered. The average of Gross NPAs to Gross Advances Ratio (%) of AU small finance bank is 2.3 where is its variance of Gross NPAs to Gross Advances Ratio (%) is 1.0. It is a newly formed bank in 2018. Citibank N.A this is a foreign sector bank. Its average of Gross NPAs to Gross Advances Ratio (%) is 2.1 and its variance of Gross NPAs to Gross Advances Ratio (%) is 2.09. From the table we can analyse that. In urban cooperative banks, it is average of Gross NPAs to Gross Advances Ratio (%) is 12.5 and its variance of Gross NPAs to Gross Advances Ratio (%) is 31.5

In a comparison of the groups, we can, see the variance of Gross NPAs to Gross Advances Ratio (%) of Bank of Baroda is the highest that is 28.2 in scheduled commercial banks whereas the overall variance of Gross NPAs to Gross Advances Ratio (%) is higher in urban cooperative banks that is 31.5, whereas HDFC Bank has the lowest variance of Gross NPAs to Gross Advances Ratio (%) which is 0.57.

The p-value associated with the F-ratio is extremely small (1.04E-21), which indicates compelling evidence against the null hypothesis. This suggests that there are significant differences in the means of the banks.

The calculated F-ratio (26.65128) is much larger than the critical F-value (2.157143) at the 0.05 significance level. Therefore, we reject the null hypothesis and conclude that there are significant differences in the means of the banks.

9. To Assess Whether the Introduction of Basel Norms 3 Helped in Bringing Down the Non-Performing Assets or Not.

The minimum prescribed CAR for banks is

i. Basel 1- 8%
ii. Basel 2- 8%
iii. Basel 3- 12.5%

The figure depicts a continuous rise in gross NPAs for a small finance bank, despite consistent growth in gross advances from 2018 to 2022. A notable spike in 2021, likely due to the pandemic, is observed. The ratio of gross NPA to gross advances shows an upward trend in 2020-2021, followed by a subsequent decrease. Small finance banks, following Basel II norms, began emerging in 2016, with available data starting from 2018.

Post-Basel norms 3 implementation, gross NPAs assets to gross advances in percentage and gross non-performing assets in amounts initially increased, but a decline occurred after 2017. Despite an increase in GNPA in amounts, gross non-performing assets to gross advances in percentage was maintained, emphasizing the role of government and bank policies, CAR norms, and recovery mechanisms, such as write-offs and 4R's, in lowering GNPA. Improvement in GNPA is notable, especially post-Basel Norms 3.

The rising NPA levels during 2018 can be new slippages across sectors, according to the bank, could be related to

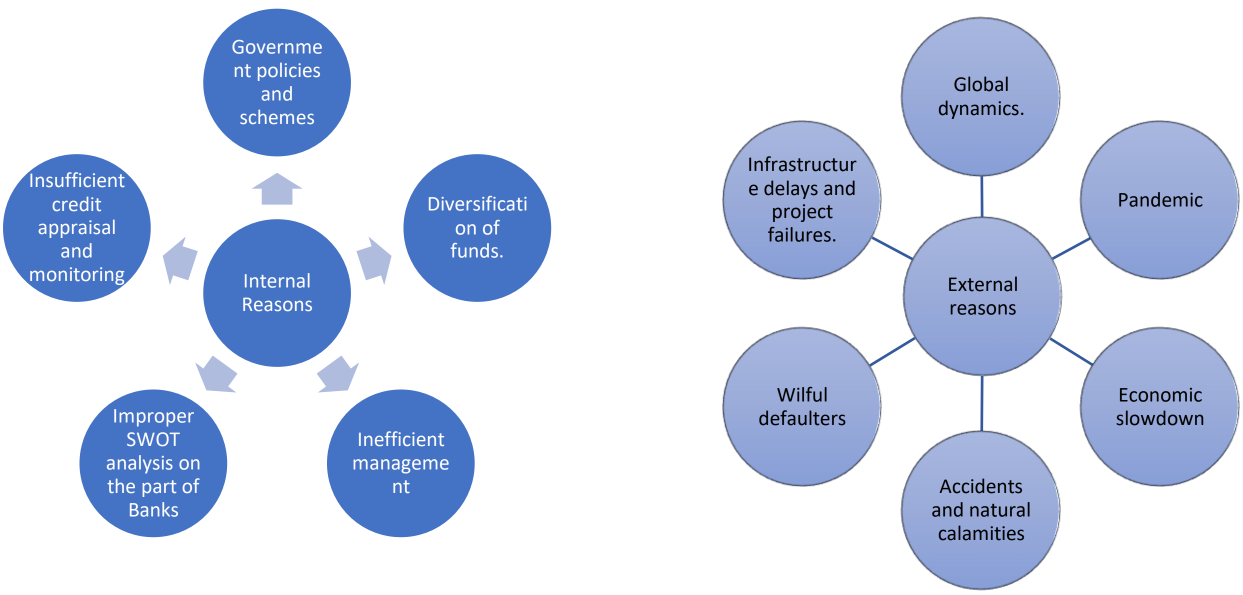
i) a weak global economic recovery and negative spillovers from international financial markets;
ii) a weak domestic recovery and declining exports; and
iii) a delay in the realisation of receivables because of weak demand, diminished market confidence, and stress in steel, power, and infrastructure projects.

Post-2017, gross NPAs in many banks declined, attributed to government policies like 4R's and relaxed lending norms. The increasing trend in NPAs across various banks is primarily linked to aggressive fund lending..

10. There Are Distinct Reasons for The Increase In NPAS.

There can be various impacts of NPAs on the growth of the economy as it discourages capital formation, reduces earning capacity of the banks also creates a twin balance sheet problem (Sikdar, 2020)

Figure 10.1 Reasons for Increase in NPAs



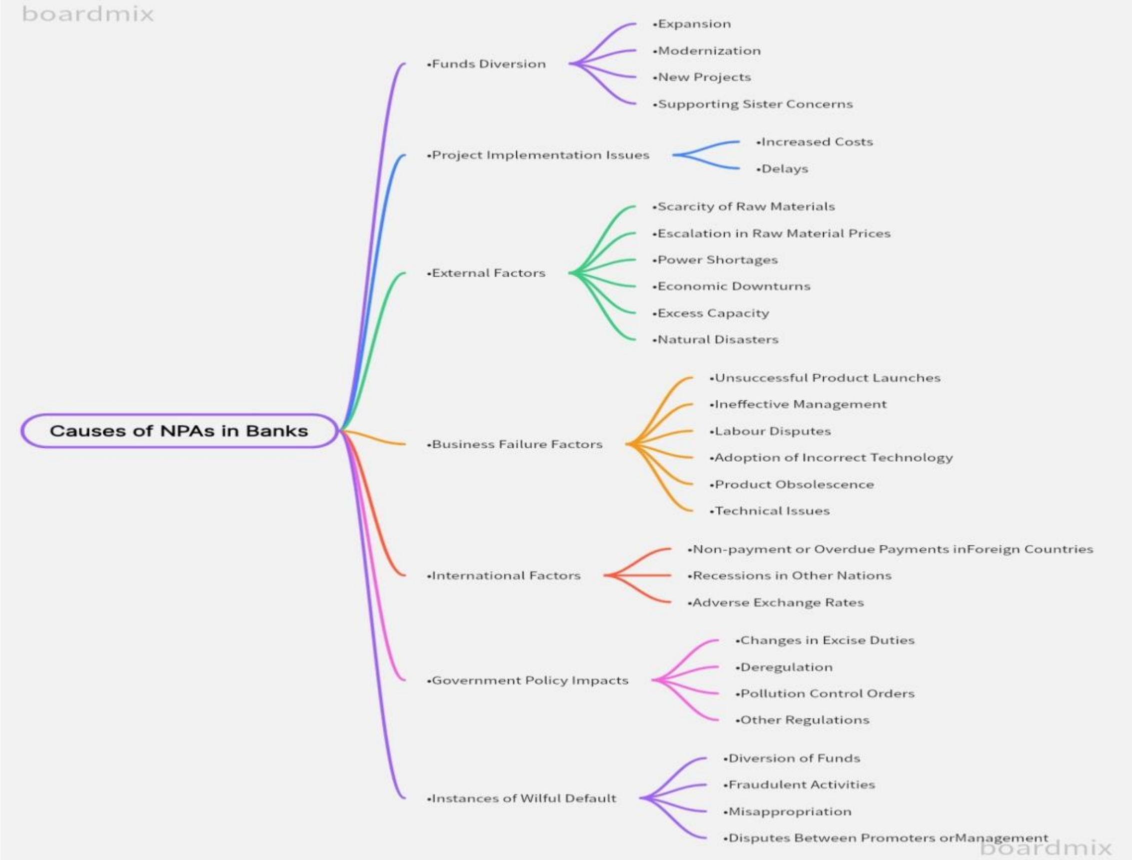
Source- Computed by author

The primary cause is the overestimation of economic growth, which forces the banking sector to competently provide loans during the peak of the business cycle. (Mukhopadhyay A. , 2018)

10.1 Factors Responsible for NPAs

The following factors confronting the borrowers are responsible for the incidence of NPAs in the banks: - (secretariat, 2014)

Figure 10.2 Factors Responsible for NPAs



Source- Computed by author from (secretariat, 2014)

The Narasimha Committee (1991) aimed to enhance operational freedom in commercial banking, proposing reduced pre-emption of resources and phasing out administered interest rates. In 1998, it advocated modernization, improved regulation, supervision, and reassessment of India's bank ownership structure. (Mohan & Ray, 2017)

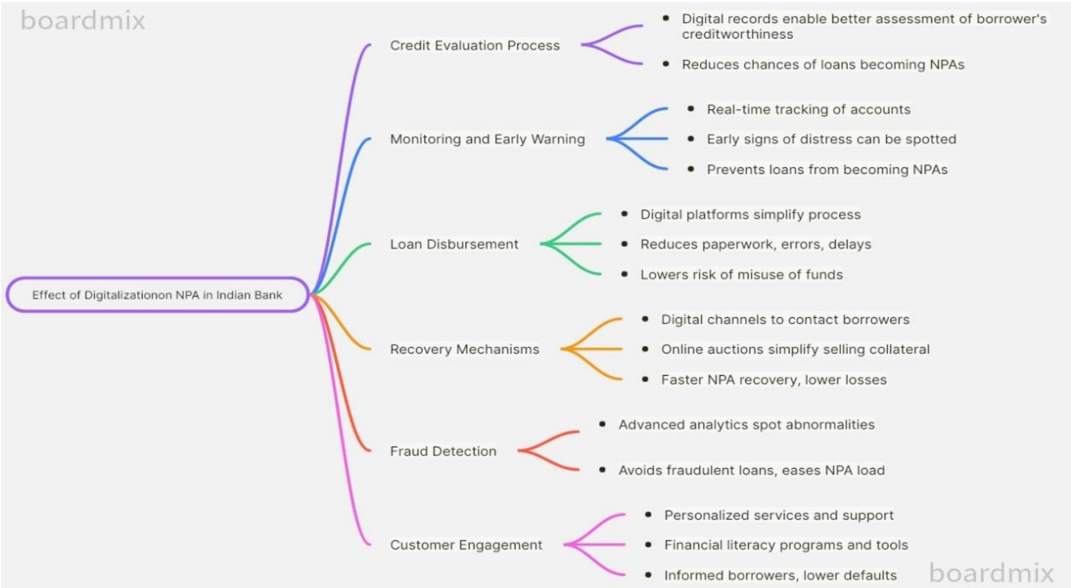
Figure 10.3 Impact of NPAs on Indian Banking Sectors

Source- Computed by author (NPA's in India, 2022) (Secretariat, 2022) (Khandelwal & Sharan, 2022)

Addressing the issue of NPAs is crucial for the Indian banking sector's stability and long-term growth. It requires effective credit assessment, risk management, loan recovery mechanisms, and regulatory oversight to minimize the impact of NPAs on banks and the overall economy.

Digitalization in India has notably influenced Non-Performing Assets (NPAs) by enabling better tracking of loan repayments and borrower behaviours.. Here are a few examples of how digitization has affected NPAs in India:

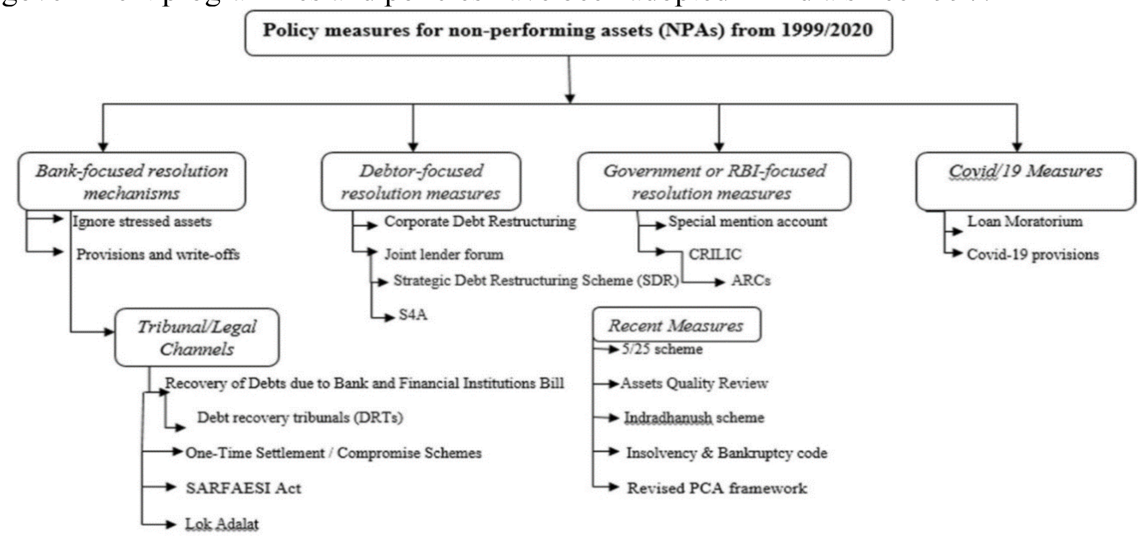
Figure 10.4 Effect of Digitalization on NPA in Indian Banks



Source-Computed by author

11. Steps Taken By The Government To Reduce NPA

To reduce non-performing assets (NPAs) in the banking industry, the following significant government programmes and policies have been adopted in India since 1997:

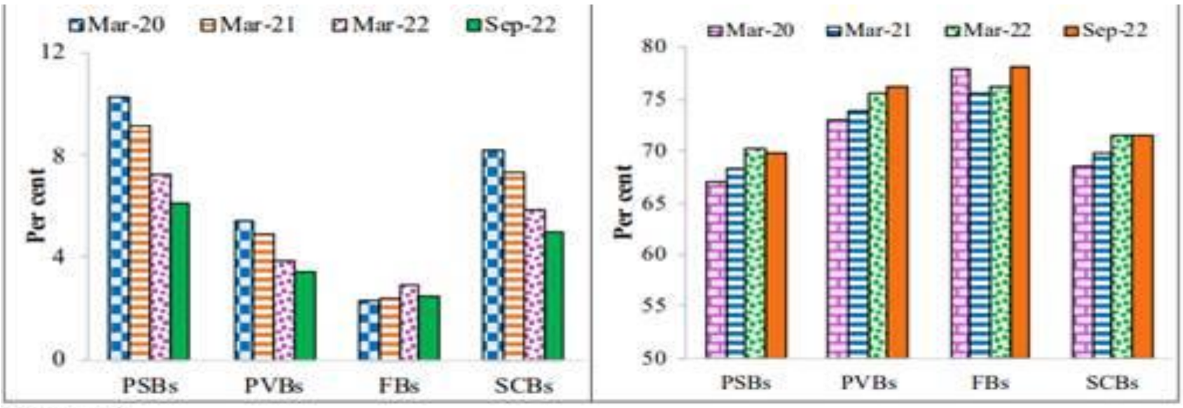


Source: (Goswami, 2022)

These initiatives and policies reflect the government's continuous efforts to address the issue of NPAs in the Indian banking sector and promote a healthier financial system.

The Economic Survey 2022-2023 highlights the positive outcomes resulting from the collaborative efforts of the RBI and the government. Through the implementation of regulated policies, including the strengthening of regulatory and supervisory frameworks and the adoption of the 4R's approach (Recognition, Resolution, Recapitalization, and Reforms), significant progress has been achieved. These measures have successfully bolstered the banking system's ability to absorb risks and have resulted in a more robust balance sheet with improved asset quantity and quality (finance, 2023)

Figure 11.2 GNPAs of Scheduled Commercial Banks



Source: RBI
Note: SCBs stand for Scheduled Commercial Banks, PSBs stand for Public Sector Banks, PVBs stand for Private Sector Banks, FBs stands for Foreign Banks

Source- (finance, 2023) (PIB)

The Gross Non-Performing Assets ratio (GNPA) of SCBs has decreased from 8.2 per cent in March 2020 to a seven-year low of 5.0 per cent in September 2022. "*Lower slippages and the reduction in outstanding GNPAs through recoveries, upgrades and write-offs led to this decrease,*" the Survey said. RBI projects GNPA ratio to decrease to 4.9% by March 2023. Provisioning Coverage Ratio (PCR) has risen steadily since March 2021, reaching 71.6% by September 2022, reflecting improving asset quality. (finance, 2023)

12. Findings

i. From the above analysis we find that from 1997 till 2022 the GNPAs have gradually declined in several types of Indian banks.
ii. The trends of GNPA to Gross Advances (%) and GNPA in amount are different in different Indian banks.
iii. The trends on public sector banks are quite fluctuating due to various government policies and recovery mechanisms, write-off of debts and recapitalisation help the banks to lower their GNPA.
iv. The trends in private sector banks are decreasing
v. The trends of cooperative banks are initially rising one of the reasons is dual control of the government and swindles.
vi. Trends of Small finance banks are increasing.
vii. The HDFC bank has the lowest average and variance of these banks whereas cooperative bank has the highest average
viii. Positive impact of the reforms implemented by the government along with Basel norms 3.
ix. In most of these banks after 2017 the gross non-performing assets in amount declined that is due to various government policies like

4R's recapitalization, write-offs and easy lending norms.

x. As per the PIB report, the Provisioning Coverage Ratio (PCR) has shown a consistent upward trend since March 2021, leading to a decline in Gross Non-Performing Assets (GNPAs). By September 2022, the PCR had risen to 71.6 per cent. The CAGR of GNPAs is higher after the implementation of Basel norms as compared to the prior implementation of Basel norms.

xi. Private sector banks and Foreign Banks have low levels of GNPAs to gross advances as compared to public sector banks.

xii. Various impacts of NPAs on the growth of the economy as it discourages capital formation, reduces earning capacity of the banks also creates a twin balance sheet problem.

xiii. Positive impacts of Digitalisation on Reducing NPAs.

xiv. RBI and the government's measures improved regulation, supervision, recognition, resolution, recapitalization, and reforms, resulting in a stronger banking system with healthier assets.

xv. The Provisioning Coverage Ratio (PCR) has been increasing steadily since March 2021 and reached 71.6 per cent in September 2022

xvi. Government policies played a significant role in strengthening the banking system and to deal with NPAs.

Therefore, the impact of Basel norms has helped us notice various changes in GNPAs. Heading further there are no such impacts of Basel norms on the GNPAs on an overall basis.

13. Way Forward

Management of non-performing assets is crucial for the health of a financial institution. Some of the solutions are.

i. Strengthening credit assessment in Risk management. Search state that will prevent the creation of new Npas.

ii. Death for equity swaps- Banks can consider converting their debt antiquity by being a shareholder in it.

iii. Negotiations between the banks and the borrowers should be flexible enough so that NPAs can be tackled properly.

iv. There should be an interconnection between the banks of the customers so that one bank can have the previous records of their customer's credits.

v. More often surveys like Asset Quality Review should be conducted.

vi. Use of Artificial Intelligence to strengthen the Banking system

vii. Special law should be made to avoid cronyism

viii. Competent employees should be appointed

14. Future Areas of Research

(i) Impact of COVID-19 pandemic. How did this have a significant impact on the global economy and the rise in non-performing assets? To understand the specific effects on different sectors in different countries.

(ii) How banking system should be most strengthened? In recent years, we have seen the collapse of one of the biggest banks in the developed country. Are Basel Norms effective enough or not?

(iii) Technological innovations to tackle non-performing assets.

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