

An Analysis of Non-Performing Assets of Selective Commercial Banks

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Abstract

Indian Banking Sector has been facing problem of growing Non-Performing Assets since last two decades which effects the profitability and liquidity of the banks, as well as economy in the whole. This study has been conducted to compare the performance of the Bank of Baroda, Canara Bank and Indian Bank with each other for the time period of 10 years i.e., from 2012-13 to 2021-22 and to establish the degree of association of financial performance of the given banks.

Balance sheet and Profit and Loss account of banks has been analysed for the data analysis using various ratios like Gross NPA and Net NPA and comparison among three has been performed apart from performing correlation analysis of Gross and Net NPA with the net profit. Compound Annual Growth Rate (CAGR) has also used to know the performance of investments along with the calculation of mean, standard deviation and coefficient of variance.

The study concludes that Bank of Baroda and Canara Bank has been facing high NPA but on the other hand Indian Bank shows a drastic downfall in the level of NPA. Further, it has found that NPA negatively affects the profitability of the BOB and Canara Bank and is highly correlated with the net profit of the banks.

Keywords: Non-Performing Assets, Correlation Analysis, Indian Banks

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1. INTRODUCTION

The occurrence of the non-performing assets (NPAs) affects the performance both financially and psychologically of the credit institutions which includes central banks, commercial and retail banks, credit unions, internet banks, investment banks, mortgage companies, brokerage firms and loan associations. Non-performing assets create bankers the following:

- Denies the income of interest payment that is acquired from the asset.
- Reduces profit by the way of provision.
- Recycling of funds being delayed or prevented.

Non-performing assets (NPAs) is a disarray that results in non-recovery or less recovery of the loan portfolio to the lender. NPAs causes low provision for unpaid debts which effects the profitability and liquidity. Some of the main reasons behind the rise in NPAs are defective sanctioning of the loans before lending to the customers, slow decision-making process in relation to the defaulters, improper monitoring with no modernization, amendments in the policy of the government. Therefore, NPAs are unavoidable burden in the banking industry. Thus, proper managing and controlling of NPAs may improve the success of the banks.

1.1 Asset Classification and Provisions

Banks are required to classify the loan assets (advances) into four categories:

- I. Standard Assets
- II. Sub-Standard Assets
- III. Doubtful Assets,
- IV. Loss Assets

STANDARD ASSETS: Standard assets are one which does not disclose any problem and does not carry more than normal risk associated with the business, that should not be considered NPA.

SUB-STANDARD ASSETS: These are assets that are classified as NPA for less than 12 months with effect from 31st March 2005. Such an asset would be well defined credit weaknesses that threaten debt liquidation and characterized by the distinct

possibility that the bank will have to bear the loss. Accordingly, 10% on outstanding has to be provided on sub-standard assets.

DOUBTFUL ASSETS: Doubtful assets are assets those are non-performing for more than 12 months. Bank have to provide 100 percent of the unsecured portion of outstanding advances after netting off the amount recovered regarding DICGC Scheme (Deposit Insurance and Credit Guarantee Corporation) and recoverable amount of guarantee cover under ECGC (Export Credit Guarantee Corporation) Schemes.

LOSS ASSETS: Loss Assets are those which are identified by the bank, auditor or inspector, that must be written in full or half. NPA is classified as loss asset if they are irrecoverable or is partially collectible and cannot be classified bankable asset. Companies will have to give 100 percent of these outstanding advances.

1.2 Reasons of NPA in Banks

A strong banking sector is vital for a prosperous economy. There is an adverse effect of the failure of the banking sector on other sectors. Indian banking system operating in closed economy is now facing open economy challenges. There is one of the major reasons for the non-performing assets in the sector of banking within which commercial banks requires specified 40% of their lending to be for priority sector.

The factors for NPAs are as follows:

I: Internal Factors

- **Inappropriate SWOT analysis:** The improper application of strength, weaknesses, opportunities and threat analysis is the cause for the increase in NPAs. So, while financing there should be examination of the viability, profitability and long-run appropriateness of the project.

Analysis: Even if one examines such events as initiatives by banks to undertake calculated hazards with the goal to make large profits also encourage the industry growth, the idea of progressing very huge amounts as unsecured loans to corporates, in

addition to without carrying out a proper SWOT analysis of the company, isn't subject to any logic. Therefore, omitting to do the SWOT analysis of a prospective borrower especially medium and large sized corporations is a practice that some corporations intentionally do in concert with the fraudulent bank employees so that they can effectively cheat banks.

- **Improper technology:** Due to inappropriate technology and management information system (MIS) in real time basis market driven decision cannot be taken. Hence, all the bank's branches should be upgraded with the present scenario.

Analysis: The fact that Indian banks are still working to overcome crucial technological deficiencies like poor software architecture and fractured software systems supporting MIS services in the same bank is absolutely shocking in the era in which financial institutions and banks are progressing to the BASEL III norms for risk management in banks. In the present situation, the fraud committed by the Neerav Modi and Geetanjali Jewels over loans granted by the Punjab National Bank (PNB) is atrocious example of poor MIS implementation by the banks in an era wherein all banks are moving towards embracing of BASEL III standard for risk management. The PNB fraud has revealed the banks' seriously faulty operational management which is accompanied by the by imperfectly implemented technologies as well as full of flaws that can be easily manipulated by astute and criminally fuelled businesses and individuals. This technological shortcoming which is unacceptable in the current information technology-driven era impacts Indian Public Sector Banks as well as private sector banks if not equally but still to a significant extent.

- **Managerial Insufficiency:** Selection of the borrower should be done very carefully by the banker and tangible assets should be taken as security to protect his interests.

Principle of diversification of risks should be followed by the banker which means that the banker should not be given advances to only a few large firms or to a few industries or a few cities concentrating onto them.

Analysis: Most banks have ignored to properly evaluate the quality of securities being provided by the prospective lenders, with a few noteworthy extreme cases like the HDFC Bank. This is made apparent by the evidence that banks have been reluctant to recuperate their unpaid debts from prominent defaulters like Kingfisher Airlines whose associated assets are not sufficient to satisfy the minimum standards for marketability. The losses at Bank of Baroda and PNB, which struck right away, are anticipated to cause similar issues.

- **Bad credit assessment system:** Banks grant loans to those who are not able to pay back it. This is because of poor credit appraisal which leads to an increase in NPAs of the banks.

Analysis: A highly regrettable example is the NPA that the PNB documented on its books in the amount of Rs. 12,600 crores as an outcome of inappropriate credit management embraced at their Brady Road, Mumbai Branch and also as a result of inadequate regulatory practices at the senior management practices. A concerted effort by the banks to conceal non-performing assets (NPAs) by erroneously restructuring them through different schemes and privileges provided by the regulator for the restructuring of weak assets, such as Corporate Debt Restructuring Scheme (CDR), Scheme for Sustainable Structuring of Stressed Assets (S4A) and Strategic Debt Restructuring Scheme (SDR), etc.

The status of the state-run IDBI Bank is brought out in an article by the RBI which was published in the Economic Times on March 30, 2018. With GNPA of Rs. 50,622 crores at the end of December 2017 and net reported losses of Rs. 1,542 in the same quarter, the IDBI is also susceptible to the

swift corrective action framework of the RBI.

- **Lack of regular monitoring:** Deformity in spot visits also lead to increased NPAs, due to non-regular visits of bank officials to customer points there is shortfall in recovery of interest and principal on loans.

Analysis: Despite in theory the procedure of approving corporate loan is extremely tight if followed exactly, the reality in the ground is unfortunately different. As in the case of the now- defunct Kingfisher Airlines falling behind in 2012 on a loan of Rs. 7500 billion raised by an association of 17 banks led by State Bank of India, or the Neerav Modi/ Geetanjali Jewels fraud costing PNB more than Rs. 12,900 billion, or the Rotomac defaulting on loans from Bank of Baroda of Rs. 3500 billion, it is obvious that the banks, primarily the public sector banks have been infringing to exercise adequate caution while evaluating large value loan application from medium sized and large corporations. The rising NPA levels, notably in the non-priority sector, demonstrate that this is indeed the case. Considering asserts of collaboration between fraudulent employees, corrupt bank officials' unregulated borrowing without screening became apparent.

- **Insufficient documentation:** The documents submitted by the borrowers should be thoroughly verified by the authorities.

Money borrowed for the particular purpose is not utilised for the same reason.

II. *External factors:*

- **Natural calamities:** It is the measurement factor which is driving the alarming rise in NPAs of Public sector banks. Indian farmers are dependent on rainfall for the crop, due to deformity of rainfall. Thus, farmers are unable to achieve production level and thus they are not able to repay the loan as a result the banks have to make a huge amount of provision to pay off those loans.

Analysis: As of financial year 2016-17, 23% of GNPA of public sector banks were from

priority sector such as housing, education, and agriculture since agriculture is highly susceptible to natural disasters and therefore offers uncertain returns. Nevertheless, during the last 3 years the non-priority sector NPA has risen to account for approximately 75% of all NPAs at public sector banks. Although, private commercial banks share a identical fate with NPAs the consequence of this factor's contribution to NPAs is lessened. Lending to the non-priority sector involves all lending to the retail sector, companies related to credit cards, corporate loans to micro, small, medium and large corporations.

- **Sickness of Industries:** Improper project operations, feeble management, lack of sufficient resources, lack of advanced technology, day-to-day changes in policies of government to generate industrial sickness hence the banks which grants those industries, by reducing their profits and liquidity, reduce their loans and end up with low recovery.

Analysis: It is highly concerning that corporate executives in India are able to coverup the poor state of their operations, visible false profitability and capital adequacy states, delude the banks, and keep implementing significant corporate loans, giving the lenders false hopes, that they are going to get handsome return on their investments. It is astonishing that the disease of industries continues to go uncovered despite the several overlays of monitoring systems that are already in place. The necessitates a detailed study of the effectiveness of the regulatory process itself.

- **Feeble recovery tribunal:** The government has several recovery tribunals which works for the loan's recovery and the advances because of their negligence and impotence in their work lead to non-recovery consequence for the banks reducing their liquidity and profitability.

Analysis: Of the amount directed to various forums like DRTs, Lok Adalat, and SARFAESI Act, the recovery of NPAs' debts has consistently decreased from 22% in the

year 2012-13 to 8% in the year 2021-22. The primary statistic in this case is the amount mentioned in 2021-22 was Rs. 2,86,000 crores. The GNPA's of all Indian Scheduled Commercial Banks as a whole totalled Rs. 7,14,900 crores. This indicates that by the conclusion of the fiscal year 2021-22 banks with NPAs had only sent 40% of their NPAs for resolution. This further points to the following scenarios:

1. Assets that should be classified as NPAs are not right away highlighted or are secretly reorganised as a result of corrupt procedure at different tiers within banks, with the goal to safeguard the market capitalization while minimising negative effects on quarterly revenue states.
 2. Bank infrastructure lack the capacity to deal with the amount of loans and credit tracking that is anticipated of them. Banks possess a strong incentive to improve the size of loan holdings, thereby they make overly big loans with minimal subsequent quality control.
 3. The multiple recovery methods incompetence to cope with the huge amount of NPAs crippling the bank's loan book.
- **Lack in the demand:** In India entrepreneurs couldn't anticipate the demand for their product and started production which eventually piles up their product. Thus, they are unable to repay the money borrowed to conduct these activities. Hence banks record the non-recoverable portion as NPA and provisions has to be made for the same.

Analysis: Vijay Malya started the Kingfisher Airlines in a very extravagant manner, marking the beginning of an entirely novel, thrilling era of luxurious flying in the chronical of Indian aviation. Despite having experience in business, he was reluctant to recognise the deficiencies and inappropriateness of luxury travel in Indian environment, where the bulk of air travellers also demand economy. Amongst other things, Kingfisher failed terribly due to of lack of demand. For other corporations dealing with

NPA issues, comparable comparisons can be made.

The NPAs problem in the sector of banking is the cogitation of corporate sector balance sheet's weaknesses. Big borrowers of the corporate sector are the problem for the banking sector and their capability of making the payments is continuously decreasing. For the problem of NPAs, banks are also responsible as they try to solve this problem of NPA by under the carpet of "ever greening" and "window dressing". Several steps have been taken by the RBI to make pressure on the banks to identify and cope up with the problem of bad loans. New norms have been set up by the RBI to primal identification of stressed assets, implementation of resolution plan's timeline, and for the failing to abide to the timeline's penalty has to be charge. Under the new set of rules of the RBI on the weekly basis banks have to report the defaulters in case of borrowers with the loan of 5 crore or more. Once the defaulter has occurred banks does have 180 days within which they have to come forward a plan of resolution and if it fails then within 15 days, they have to refer it to the non-performing asset account as per bankruptcy code and insolvency.

1.3 Effect of NPAs on the Performance of Banks:

Large percentage of NPAs have a detrimental effect on bank benefit in many ways:

- They result in less interest income so as to increase margin as a result of high NPA.
- They destroy current gains provisioning requirements.
- It tends to erosion of capital base in their competitiveness.
- The reserves and provisions that are created from profit act as safeguard for the loan losses.
- The rise in NPA tend to reduction in the profitability of the banks due to lack of credibility. This NPA badly effects the capital base of public sector banks. A continuous rise in NPA of any bank results in chronic situation and bank face severe crisis while trying to become stable again in previous situation.

2. REVIEW OF LITERATURE

Here, the study extensively reviews many literatures which are considered to be the base of the present study.

Amjath et al. (2022) points out the impact of liquidity risk on financial performance of licensed commercial banks in Sri Lanka including non-probability, convenience sampling technique. The finding reveals that there exists positive relationship between Loan to Deposit and Return on Assets. And negative relationship with Return on Equity and Net Interest Margin.

Belayneh (2022) clearly pointed out the relationship between non-performing loans and financial performance of commercial bank of Ethiopia. It has been found that there is higher return on assets which represents that the company is more efficient in using the resources along with the increase in the gross loan that is availed by the customer of the bank.

Jain et al. (2022) confines on the study of the sources and deployment funds along with the trend of non-performing assets of Punjab National bank (PNB). The study determines that there exists a negative relation between net profit and NPA of PNB because of the improper management along with the wrong choice of the customer.

Kumar et al. (2022) seeks to examine various efficiency levels including overall technical, pure technical and scale efficiency scores in case of Indian banking sector for the year 1997 to 2017. The finding reveals that regardless of becoming more efficient over the last few years losing its luster on the scale, all-inclusive technical efficiency scores because of rising non-performing assets.

Langrana (2022) focused in the trend of gross advances provided by the non-banking financial corporations towards various sectors like agriculture, industry, retail and relationship among themselves. The study has shown that almost there exists positive relationship with gross NPA towards the various sectors mentioned above in the objective.

Nurwulandari et al. (2022) has conducted a study on the effect of the financial health of commercial banks

of Indonesia on financial performance with corporate governance as an intervening variable. The finding reveals that net interest margin has a positive effect on the return on asset.

3. OBJECTIVES OF THE STUDY

The present study seeks to analyse the NPA's trend in relation to values, gross NPAs and net NPAs as a percentage of gross and net NPA advances along with its percentage of total assets respectively. The paper explores details about the reasons of the occurrence of NPAs, its effect on the banks, strategy for the recovery of NPAs in commercial banks. The study also analyses in detail about the trend of NPA and net profit for all the three banks i.e., BOB, Canara Bank and Indian Bank. The correlation analysis is conducted for the establishment of the relationship between NPA and profitability.

4. SAMPLING TECHNIQUE

Here simple random selection of the sample technique from various public sector banks of India has been used.

5. SELECTION OF SUBJECT

The idea of financial performance and asset quality is being approached by the public sector banks and therefore the information is easily available as secondary data which in turn resulted in the selection of this subject.

The chosen banks are open to discussions across the study's desired data and also to discussing issues, information and study related details.

6. STUDY PERIOD

The time period for the study is taken from 2012-13 to 2021-22. The data for the study is collected from the various reports published by the Reserve Bank of India (RBI) time to time and cross-checked with several reliable sources.

This research is a quantitative in nature. The study considers only public sector banks particularly Bank of Baroda, Canara Bank and Indian Bank. The selection of banks is completely based on the simple random selection of public sector banks.

7. METHODOLOGY

Here, the study computes the following ratios as under:

- Gross NPA ratio:

$$\text{GROSS NPA RATIO} = \frac{\text{TOTAL GROSS NPA}}{\text{TOTAL ADVANCES}} \dots\dots (1)$$

- Cumulative Annual Growth Rate (CAGR):

$$\text{CAGR} = \left[\frac{E_v}{B_v} \right]^{\frac{1}{n}} - 1 \dots\dots (2)$$

- Coefficient of Variance (CV):

$$\text{CV} = \frac{\sigma}{\mu} \dots\dots (3)$$

- Standard Deviation:

$$\sigma = \sqrt{\frac{\sum [x_i - \mu]^2}{N}} \dots\dots (4)$$

Based on these ratios the study is conducted and the study also considered the following multiple regression equation:

$$\Delta \text{LNP} = \alpha + \beta_1 \Delta \text{LGNPA} + \beta_2 \Delta \text{LNNPA} + \varepsilon \dots\dots (5)$$

Where, LNP denotes log value of Net Profit

LGNPA means Log value of GNPA

LNNPA means of log value of NNPA

Δ is the difference operator

α is the constant

ε is error term with 0 mean and constant standard deviation

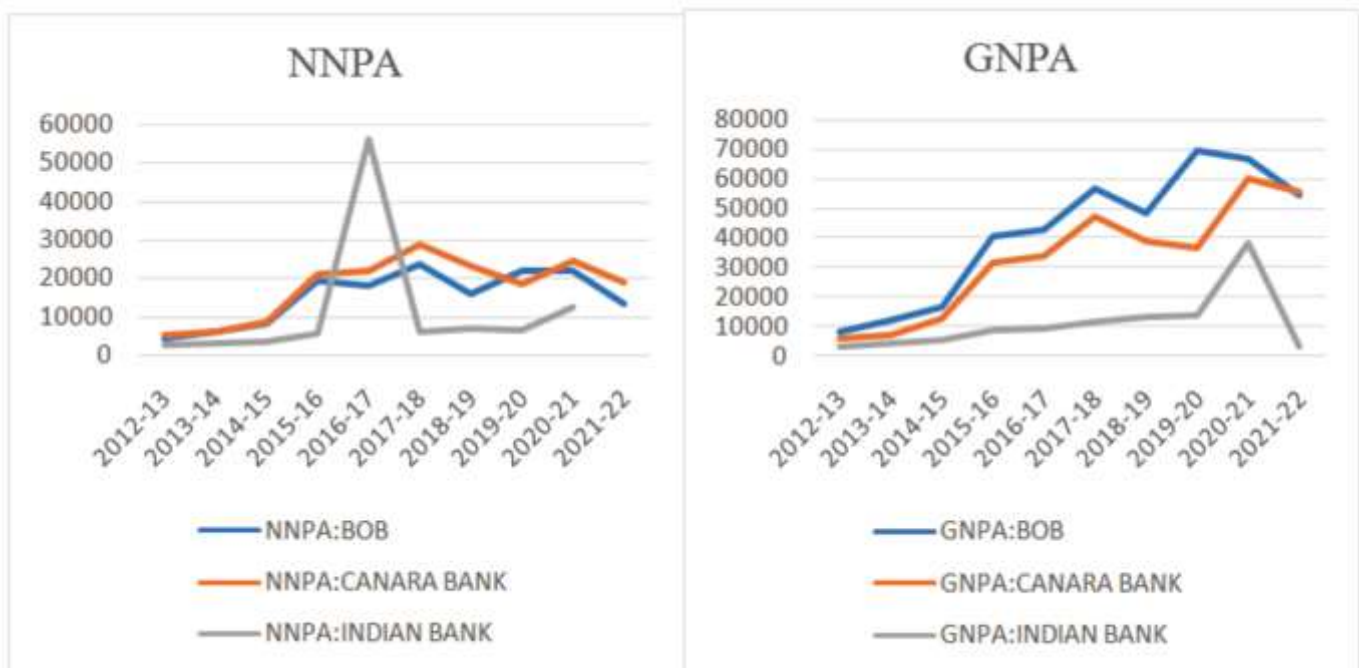
β_1 and β_2 are the coefficients to be estimated.

High level of NPAs in Public Sector banks can be attributed to the following possible factors:

1. There are various credit linked wellness programs done through public sector banks. It has a wide network in rural areas.
2. The problem of high gross NPA is also one of the reasons. Earlier, public sector banks of India had weak credit recovery because of weak credit provisions governing foreclosure and bankruptcy, sticky loans and lengthy legal procedures made to loan waivers, PSUs, and priority sector lending.
3. The poor system of giving grants to public sector banks also causes losses followed by bad debt politically motivated policy framework.

All banks try to reduce this NPA level and reducing pressure on their profitability. NPA are unavoidable burden on banking industry. Therefore, the success of the bank depends on the ways to manage and maintaining NPAs under tolerance level.

Figure 1: NNPA & GNPA Comparison



Analysis of NPAs of Related Banks

Table-1,2,3 along with Figure 1 shows the NPA of all the three banks have continuously increasing over the past 10 years. Average GNPA of Indian Bank is lowest at 6.4% with comparison to Bank of Baroda and Canara Bank which is at 6.97% and 7.4% that indicates that both Bank of Baroda and Canara Bank have faced high NPA during the period 2012-13 to 2021-22. Coefficient of Variance of BOB is similar to that of Canara Bank. The above graph shows that GNPA & NNPA of Canara Bank, Indian Bank and

BOB but here performance of the Canara Bank and BOB is quite similar during the period 2012-13 to 2021-22 hence there is not much difference in the performance of both of these banks. On the other hand, Indian Bank shows sharp downfall in the GNPA which is the positive sign regarding the profitability of the bank as a whole. This is due to better credit management and payoff of outstanding loans.

Table 1 : NPA Trends – Bank of Baroda, Canara Bank, Indian Bank

Bank of Baroda					
Years	Gross NPA	Net NPA	GNPA%	NNPA%	Net Profit
2012-13	7982.58	4192.02	2.40	1.28	4480.72
2013-14	11875.90	6034.76	2.94	1.52	4541.08
2014-15	16261.45	8069.49	3.72	1.89	3398.44
2015-16	40521.04	19406.46	9.99	5.06	-5395.54
2016-17	42718.70	18080.18	10.46	4.72	1383.14
2017-18	56480.39	23482.65	12.26	5.49	-2431.81
2018-19	48232.77	15609.50	9.61	3.33	433.52
2019-20	69381.43	21576.59	9.40	3.13	546.19
2020-21	66670.99	21799.88	8.87	3.09	828.96
2021-22	54059.39	13364.65	0.07	0.02	7272.28
CAGR	23.68%	13.75%	-32.48%	-37.00%	5.53%
Mean	41418.464	15161.618	6.972	2.953	1505.698
SD	21163.175	6620.832	4.013	1.696	3472.384
CV	51.09%	43.67%	57.56%	57.44%	230.61%
Source: Statistical Tables from Reserve Bank of India Website					

Table 2 : Canara Bank

Years	Gross NPA	Net NPA	GNPA%	NNPA%	Net Profit
2012-13	6260.16	5278.07	3.00	2.18	2872.10
2013-14	7570.21	5965.46	2.00	1.98	2438.19
2014-15	13039.96	8740.09	4.00	2.65	2702.62
2015-16	31637.83	20832.91	9.00	6.42	-2812.82
2016-17	34202.04	21648.98	10.00	6.33	1121.92
2017-18	47468.47	28542.40	12.00	7.48	-4222.24
2018-19	39224.12	22955.11	9.00	5.37	347.02
2019-20	37041.15	18250.95	8.00	4.22	-2235.72
2020-21	60288.00	24442.00	9.00	3.82	2557.58
2021-22	55652.00	18668.00	8.00	2.65	5678.41
CAGR	27.48%	15.07%	11.51%	2.19%	7.87%
Mean	33238.394	17532.397	7.4	4.31	844.706
SD	10124.524	7676.466	3.105	1.882	2920.017
CV	54.53%	43.78%	41.96%	43.67%	345.68%
Source: Statistical Tables from Reserve Bank of India Website					

Table 3 : Indian Bank

Years	Gross NPA	Net NPA	GNPA%	NNPA%	Net Profit
2012-13	3565.48	2384.30	3.00	2.26	1581.14
2013-14	4562.20	2763.65	4.00	2.26	1158.95
2014-15	5670.44	3146.95	4.00	2.50	1005.17
2015-16	8827.04	5419.40	7.00	4.20	711.38
2016-17	9865.14	56096.40	7.00	4.39	1405.68
2017-18	11990.14	5959.56	7.00	4.00	1258.99
2018-19	13353.45	6793.11	7.00	3.75	321.95
2019-20	14150.84	6184.24	7.00	3.13	753.36
2020-21	38455.35	12271.13	10.00	3.37	3004.68
2021-22	3521.40	884.90	8.00	2.27	3944.82
CAGR	-0.14%	-10.43%	11.51%	0.05%	10.69%
Mean	11396.148	10190.364	6.4	3.213	1514.612
SD	9776.167	15595.634	2.00	0.807	1060.236
CV	85.78%	153.04%	31.41%	25.12%	70%

Source: Statistical Tables from Reserve Bank of India Website

Correlation Analysis

Correlation Analysis has been performed between Net Profit and GNPA & Net Profit and NNPA of Bank of Baroda, Canara Bank and Indian Bank for the purpose of establishing weather NPA effects the bank's profitability shown in **Table 4,5,6**below:

Table 4 : Correlation Analysis of Bank of Baroda

Years	Net Profit	GNPA	NNPA
2012-13	4480.72	7982.58	4192.02
2013-14	4541.08	11875.90	6034.76
2014-15	3398.44	16261.45	8069.49
2015-16	-5395.54	40521.04	19406.46
2016-17	1383.14	42718.70	18080.18
2017-18	-2431.81	56480.39	23482.65
2018-19	433.52	48232.77	15609.50
2019-20	546.19	69381.43	21576.59
2020-21	828.96	66670.99	21799.88
2021-22	7272.28	54059.39	13364.65
Correlation		-0.365	-0.681

Source: Annual Reports of Bank of Baroda for respective years

From Table 4 we find that, Gross NPA and Net Profit represents weak correlations as shown by the correlation coefficient -0.365. Further negative relationship shows the adverse relationship. Thus, there exists an inverse relationship between Gross NPA and Net Profit and vice versa.

Net NPA and Net Profit represents strong or high correlations as shown by the correlation coefficient -0.681. Further negative relationship shows the adverse relationship. Thus, there exists an inverse relationship between Net NPA and Net Profit and vice versa.

Table 5 : Correlation Analysis of Canara Bank

Years	Net Profit	GNPA	NNPA
2012-13	2872.10	6260.16	5278.07
2013-14	2438.19	7570.21	5965.46
2014-15	2702.62	13039.96	8740.09
2015-16	-2812.82	31637.83	20832.91
2016-17	1121.92	34202.04	21648.98
2017-18	-4222.24	47468.47	28542.40
2018-19	347.02	39224.12	22955.11
2019-20	-2235.72	37041.15	18250.95
2020-21	2557.58	60288.00	24442.00
2021-22	5678.41	55652.00	18668.00
Correlation		-0.111	-0.508

Source: Annual Reports of Bank of Baroda for respective years

From Table 5 we find that, Gross NPA and Net Profit represents weak correlations as shown by the correlation coefficient -0.111. Further negative relationship shows the adverse relationship. Thus, there exists an inverse relationship between Gross NPA and Net Profit and vice versa.

Net NPA and Net Profit represents good or moderate correlations as shown by the correlation coefficient -0.508. Further negative relationship shows the adverse relationship. Thus, there exists an inverse relationship between Net NPA and Net Profit and vice versa.

Table 6 : Correlation Analysis of Indian Bank

Years	Net Profit	GNPA	NNPA
2012-13	1581.14	3565.48	2384.30
2013-14	1158.95	4562.20	2763.65
2014-15	1005.17	5670.44	3146.95
2015-16	711.38	8827.04	5419.40
2016-17	1405.68	9865.14	56096.40
2017-18	1258.99	11990.14	5959.56
2018-19	321.95	13353.45	6793.11
2019-20	753.36	14150.84	6184.24
2020-21	3004.68	38455.35	12271.13
2021-22	3944.82	3521.40	884.90
Correlation		0.228	-0.041

Source: Annual Reports of Bank of Baroda for respective years

From Table 6 we find that, Gross NPA and Net Profit represents weak correlations as shown by the correlation coefficient 0.228. Further positive relationship shows the same directional variables. Thus, there exists a positive relationship between Gross NPA and Net Profit and vice versa.

Net NPA and Net Profit represents good or moderate correlations as shown by the correlation coefficient -0.041. Further negative relationship shows the adverse relationship. Thus, there exists an inverse relationship between Net NPA and Net Profit and vice versa.

Table 7 : Descriptive Statistics of Canara Bank

Canara Bank										
Variable	OB	Mean	Median	Max.	Mini.	Std. Dev.	Skew.	Kurt.	Jb.	Prob.
GNPA	40	33238.30	35621.50	60288.0	6260.0	18355.42	-0.177838	1.816787	2.544163	0.280248
NNPA	40	17532.20	19750.00	28542.0	5278.0	7774.248	-0.472200	1.862437	3.643236	0.161764
NP	40	844.6000	1780.000	5678.00	-4222.0	2956.96	-0.287562	2.088128	1.937130	0.379627

From Table 7 we conclude that, The Net Profit is dependent variable and NNPA and GNPA are the independent variables. Mean value shows us the average value of the series. The average value of GNPA is 33238.30, NNPA is 17532.20 and for NP is 844.6000 Median provide us the middle value. So, in the entire series the middle value for the GNPA is 35621.50, NNPA is 19750.00, and for NP is 1780.000. Here, the maximum value gives the maximum value in the entire series and minimum value gives us the minimum or smallest value in the

data set. The deviation of GNPA from average value is 18355.42, for NNPA it is 7774.248 and for NP it is 2956.96 Skewness shows the degree of asymmetry of the series. Here the value of all three variables is negatively skewed. The value of kurtosis is less than 3 for all three variables so are classified as platykurtic curve. The probability of GNPA, NNPA and NP is more than the 0.05 level of significance hence by not rejecting the null hypothesis that distribution is normal, we conclude that distribution of these is not good.

Table 8 : Descriptive Statistics of Indian Bank

Indian Bank										
Variable	OB	Mean	Median	Max.	Mini.	Std. Dev.	Skew.	Kurt.	Jb.	Prob.
GNPA	40	11395.90	9346.000	38455.0	3521.00	9900.721	1.963424	5.989419	40.59459	0.0000
NNPA	40	10190.10	5689.000	56096.0	885.000	15794.27	2.489210	7.537373	75.62070	0.0000
NP	40	1514.400	1209.000	3945.00	322.000	1073.750	1.243019	3.378175	10.53900	0.005146

From Table 8 we conclude that, the Net Profit is dependent variable and NNPA and GNPA are the independent variables. Mean value shows us the average value of the series. The average value of GNPA is 11395.90, NNPA is 10190.10 and for NP is 1514.400. Median provide us the middle value. So, in the entire series the middle value for the GNPA is 9346.000, NNPA is 5689.000, and for NP is 1209.000. Here, the maximum value gives the maximum value in the entire series and minimum value gives us the minimum or smallest value in the

data set. The deviation of GNPA from average value is 9900.721, for NNPA it is 15794.27 and for NP it is 1073.750 Skewness shows the degree of asymmetry of the series. Here the value of all three variables is negatively skewed. The value of kurtosis is more than 3 for all three variables so are classified as leptokurtic curve. The probability of GNPA, NNPA and NP is less than the 0.05 level of significance hence by rejecting the null hypothesis that distribution is not stationary, we conclude that distribution of these is good.

Table 9 : Descriptive Statistics of Bank of Baroda

Bank of Baroda										
Variable	OB	Mean	Median	Max.	Mini.	Std. Dev.	Skew.	Kurt.	Jb.	Prob.
GNPA	40	41418.30	45476.00	69381.00	7982.000	21432.81	-0.373087	1.749438	3.534470	0.170
NNPA	40	15125.40	16844.50	23483.00	4192.000	6682.657	-0.410449	1.715044	3.874977	0.144
NP	40	1505.600	1106.000	7272.000	-5395.00	3516.500	-0.332624	2.608670	0.992824	0.608

From Table 9 we conclude that, the Net Profit is dependent variable and NNPA and GNPA are the independent variables. Mean value shows us the average value of the series. The average value of GNPA is 41418.30, NNPA is 15125.40 and for NP is 1505.600 Median provide us the middle value. So, in the entire series the middle value for the GNPA is 45476.00, NNPA is 16844.50, and for NP is 1106.000. Here, the maximum value gives the maximum value in the entire series and minimum value gives us the minimum or smallest value in the

data set. The deviation of GNPA from average value is 21432.81, for NNPA it is 6682.657 and for NP it is 3516.500 Skewness shows the degree of asymmetry of the series. Here the value of all three variables is negatively skewed. The value of kurtosis is less than 3 for all three variables so are classified as platykurtic curve. The probability of GNPA, NNPA and NP is more than the 0.05 level of significance hence by not rejecting the null hypothesis that distribution is normal, we conclude that distribution of these is not good.

CANARA BANK

Table 10 : Net Profit as Dependent Variable by using Least Squares

Sample (adjusted): 2013 Q2 - 2022 Q4

Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4787.953	670.7802	7.137888	0.0000
GNPA (-1)	0.210383	0.031679	6.641173	0.0000
NNPA (-1)	-0.624985	0.073334	-8.522397	0.0000
R- squared	0.678608	Prob (F- statistic)	0.000000	
Adjusted R- squared	0.660753	Durbin- Watson stat	0.806612	

Estimated Coefficient of Regression Equation

Here, in the above table 10, the dependent variable is Net Profit (NP). NNPA and GNPA are the coefficients of the independent variables and C stands for constant term. Here, probability for GNPA and NNPA is less than 0.05 which means the respective independent value explains in a good way. GNPA and NNPA are significant variables those determine NP in a good way. R-squared value is 67.86% fit analysis. The Independent Value Variables that are GNPA and NNPA cumulatively

explains 67.86% of Dependent Variables. While considering Adjusted R- squared the Independent Variables cumulatively determine 66.07% of the Dependent Value which says the model is 67.86% fit and adjusted R-Square says the model is 66.07% fit. The more the value of R square and Adjusted R square the more fit the model. Now, with the Durbin-Watson statistic it is considered that the data set is auto correlated or not. Because the value is less than 2 which means the data is auto correlated.

INDIAN BANK

Table 11 : Net Profit as Dependent Variable by using Least Squares

Sample (adjusted): 2013 Q2 - 2022 Q4

Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1122.566	259.2359	4.330288	0.0001
GNPA(-1)	0.030923	0.016288	1.898542	0.0657
NNPA(-1)	- 0.002793	0.010171	- 0.274637	0.7852
R- squared		0.091052	Prob (F- statistic) 0.179352	
Adjusted R- squared		0.040555	Durbin- Watson stat 0.241280	

Here, in the above table 11, the dependent variable is Net Profit (NP). GNPA and NNPA are the coefficients of the independent variables and C stands for constant term. Here, probability for NNPA and GNPA is more than 0.05 which means the respective independent value GNPA and NNPA are insignificant variables those to determine dependent one. GNPA and NNPA are not significant variables for this regression model R-squared value is 9.105% fit analysis. The Independent Value Variables that are NNPA and GNPA cumulatively explains 9.105% of

Dependent Variables. While considering Adjusted R-squared the Independent Variables cumulatively determine 4.05% of the Dependent Value which says the model is 9.105% fit and adjusted R-Square says the model is 4.05% fit. The more the value of R square and Adjusted R square the more fit the model. Now, with the Durbin-Watson statistic it is considered that the data set is auto correlated or not. Because the value is less than 2 which means the data is auto correlated.

BANK OF BARODA

Table 12 : Net Profit as Dependent Variable by using Least Squares

Sample (adjusted): 2013 Q2 - 2022 Q4

Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7444.643	632.3730	11.77255	0.0000
NNPA(-1)	- 1.015034	0.094456	- 10.74611	0.0000
GNPA(-1)	0.226595	0.0 29560	7.665713	0.0000
R-squared		0.801732	Prob (F- statistic) 0.000000	
Adjusted R- squared		0.790717	Durbin- Watson stat 0.624879	

Here, in the above table 12, the dependent variable is Net Profit. NNPA and GNPA are the coefficients of the independent variables and C stands for constant term. Here, probability for NNPA and GNPA is less than 0.05 which means the respective independent value explains in a good way. NNPA and GNPA are significant variables those determine NP in a good way. NNPA and GNPA are not significant variables for this regression model. R-squared value is 80.17% fit analysis. The Independent Value Variables that are NNPA and GNPA cumulatively explains 80.17% of

Dependent Variables. While considering Adjusted R-squared the Independent Variables cumulatively determine 79.07% of the Dependent Value which says the model is 80.17% fit and adjusted R-Square says the model is 79.07% fit. The more the value of R square and Adjusted R square the more fit the model. Now, with the Durbin-Watson statistic it is considered that the data set is auto correlated or not. Because the value is less than 2 which means the data is auto correlated.

Table 13 : Augmented Dickey-Fuller Unit Root Test in Level including individual intercept and Phillips-Perron Fisher Unit Root Test in Level including individual intercept for Canara Bank

	Method	Statistic	Probability
Augmented Dickey-Fuller Unit Root Test in Level	ADF - Fisher Chi-square	4.35428	0.6288
	ADF - Choi Z-stat	0.01789	0.5071
Augmented Dickey-Fuller Unit Root Test in individual intercept	ADF - Fisher Chi-square	67.7366	0.0000
	ADF - Choi Z-stat	-7.28811	0.0000
Phillips-Perron Fisher Unit Root Test in Level	PP - Fisher Chi-square	4.75355	0.5758
	PP - Choi Z-stat	- 0.07583	0.4698
Phillips-Perron Fisher Unit Root Test in individual intercept	PP - Fisher Chi-square	71.1449	0.0000
	PP - Choi Z-stat	- 7.51740	0.0000

In the above table 13, by using the Augmented Dickey-Fuller Unit Root Test in Level, we can conclude that the null hypothesis is rejected which indicates that the given time series is stationary which means mean, variance and covariance do not change overtime. And, from Augmented Dickey-Fuller Unit Root Test in individual intercept, we can conclude that the null hypothesis is accepted which indicates that the given time series is not stationary which means mean, variance and covariance change

overtime. By using Phillips-Perron Fisher Unit Root Test in Level, we can conclude that the null hypothesis is rejected which indicates that the given time series is stationary which means mean, variance and covariance do not change overtime. And from using Phillips-Perron Fisher Unit Root Test in Level, we can conclude that the null hypothesis is rejected which indicates that the given time series is stationary which means mean, variance and covariance do not change overtime.

Table 14 : Augmented Dickey-Fuller Unit Root Test in Level including individual intercept and Phillips-Perron Fisher Unit Root Test in Level including individual intercept for Indian Bank

	Method	Statistic	Probability
Augmented Dickey-Fuller Unit Root Test in Level	ADF - Fisher Chi-square	4.55440	0.6021
	ADF - Choi Z-stat	0.59359	0.7236
Augmented Dickey-Fuller Unit Root Test in individual intercept	ADF - Fisher Chi-square	72.5404	0.0000
	ADF - Choi Z-stat	-7.44662	0.0000
Phillips-Perron Fisher Unit Root Test in Level	PP - Fisher Chi-square	8.58067	0.1986
	PP - Choi Z-stat	-0.53765	0.2954
Phillips-Perron Fisher Unit Root Test in individual intercept	PP - Fisher Chi-square	69.0920	0.0000
	PP - Choi Z-stat	-7.38770	0.0000

In the above table 14 by using Augmented Dickey-Fuller Unit Root Test in Level, we can conclude that the null hypothesis is rejected which indicates that the given time series is stationary which means mean, variance and covariance do not change overtime. And by using Augmented Dickey-Fuller Unit Root Test in individual intercept we can conclude, that the null hypothesis is accepted which indicates that the given time series is not stationary which means mean, variance and covariance change overtime.

By using Phillips-Perron Fisher Unit Root Test in Level, we can conclude that the null hypothesis is rejected which indicates that the given time series is stationary which means mean, variance and covariance do not change overtime. And by using Phillips-Perron Fisher Unit Root Test in individual intercept we can conclude that, the null hypothesis is accepted which indicates that the given time series is not stationary which means mean, variance and covariance change overtime.

Table 15 : Augmented Dickey-Fuller Unit Root Test in Level including individual intercept and Phillips-Perron Fisher Unit Root Test in Level including individual intercept for Bank of Baroda

	Method	Statistic	Probability
Augmented Dickey-Fuller Unit Root Test in Level	ADF - Fisher Chi-square	5.39596	0.4941
	ADF - Choi Z-stat	-0.38303	0.3509
Augmented Dickey -Fuller Unit Root Test in individual intercept	ADF - Fisher Chi-square	70.0698	0.0000
	ADF - Choi Z-stat	-7.44993	0.0000
Phillips-Perron Fisher Unit Root Test in Level	PP - Fisher Chi-square	5.82283	0.4433
	PP - Choi Z-stat	-0.49664	0.3097
Phillips-Perron Fisher Unit Root Test in individual intercept	PP - Fisher Chi-square	70.0823	0.0000
	PP - Choi Z-stat	-7.45072	0.0000

In the above table15,by using Augmented Dickey-Fuller Unit Root Test in Level, we can conclude that the null hypothesis is rejected which indicates that the given time series is stationary which means mean, variance and covariance do not change overtime. And by using Augmented Dickey-Fuller Unit Root Test in individual intercept we can conclude that the null hypothesis is accepted which indicates that the given time series is not stationary which means mean, variance and covariance change overtime. And by using Phillips-Perron Fisher Unit Root Test in individual intercept we can conclude that, the null hypothesis is accepted which indicates that the given time series is not stationary which means mean, variance and covariance change overtime and utilizing Phillips-Perron Fisher Unit Root Test in individual intercept we can conclude that, the null hypothesis is accepted which indicates that the given time series is not stationary which means mean, variance and covariance change overtime.

8. CONCLUSIONS

From the analysis and interpretation that is explained above it can be concluded that Bank of Baroda along with Canara Bank have been facing increasing NPA during the period 2012-13 to 2021-22. But, on the other hand Indian Bank have shown a drastic downfall in the NPA rate during the period of the study. From the correlation analysis it can be concluded that high negative correlation coefficient shows NPA negatively impacts profits of the banks for GNPA at 0.365 and for NNPA at 0.681 of Bank of Baroda, GNPA at 0.111 and for NNPA at 0.508. and positively impact profit of Indian Bank for GNPA at 0.228 and for negative NNPA at 0.041.

Banks must take preventive measures like post disbursement, audit of funds utilizations, strengthening appraisal of credit, corrective measures through the channels of recovery like Debt

Recovery Tribunal, Lok Adalat, newly passed insolvency legislation IBC code,2016 which gives power to RBI to direct deal with the bad loan cases for reducing the NPAs of the banks so as to increase the profit of the banks.

Few of the many apparent vulnerabilities of the “Banking Sector” the most crucial aspect of the Indian Financial System has been revealed by the means of careful and intended examination of the ongoing events, notably frauds, scams and defaults on loans by enormous corporations. Private sector banks are stuck in an untenable circumstance because they are concerned about their ability to appraise hazardous assets and provide for bad loans.

The vast variety of private banks executives worry about their productivity and performance and fear for their bank’s very survival in the extremely competitive and turbulent financial sector. On the other hand, it is generally recognised that public sector banks are unlikely to fail because they are owned by the government and, at best, worry about fresh frauds. Due to unworthy and reckless regulatory practices, the asset quality of majority of scheduled commercial banks has deteriorated extremely low levels. To address the flagrant instances of theft of public funds there is an obvious discrepancy between the various branches of the government that requires to be addressed holistically. Regarding their specific duty and authority in the implementation of regulatory processes and the enactment of sanctions against defaulting banks and financial institutions there is an apparent gap between the Government of India and RBI. The present approach of processing loan requests via high

net individuals including corporate houses is plagued with loopholes that might be easily leveraged by dishonest businesses working with dishonest bank employees. Regulatory failures have arisen from the banks’ faulty execution of the relevant information technology instruments enabling the BASEL a and b risk management rules.

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