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Insolvency and Bankruptcy Code (IBC): An Assessment of its Impact on Sustainable Performance of Selected Public Sector Banks in India

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Abstract

Purpose: *The Indian banking sector has experienced a lot of structural changes as far as its policy related to loan recovery is concerned. The Government of India set up debt recovery tribunals, enacted SARFAESI act and IBC to ensure smooth recovery of loan defaults of the banks. Hence the objective of the paper is to study the financial performance of the selected public sector banks pre and post IBC implementation.*

Design/Methodology/Approach: *The Research design selected for the study is descriptive. The study is based on secondary data collected from RBI websites, respective bank's websites, government reports and various research papers.*

Limitations/Implications: *The limitation of the study is that the researchers have studied the subject of financial performance of banks considering only the selected dimensions. The financial performance of banks depends upon different factors rather than only implementation of a single IBC act of loan resolution and recovery.*

Keywords: *Loan, Recovery, Profitability, Debt, Banks, IBC*

I. Introduction

The banking sector in India was facing the severe challenge of stressed assets leading to higher NPA post financial crisis of USA. Considering this, the Government of India enacted Insolvency and Bankruptcy Code 2016 in order to deal with increasing loan defaults of the banks and ensuring a smooth resolution plan so as to increase the loan recovery. The IBC code was a unique of its kind in India. The provisions of the original code apply to companies, limited liability partnerships, partnership firms and individuals in relation to their insolvency, liquidation or bankruptcy. The initiation of the resolution process can be done by the corporate debtor, financial creditor or operational creditor. However since 2016, the government has brought many amendments to the original acts depending upon emerging challenges from time to time.

NPA's of Scheduled Commercial Banks Recovered through Various Channels (Amount in Rs. Crore)

	2021-22			2022-23		
	No. of Cases referred	**Amount Involved**	**Amount Recovered**	**No. of cases referred**	**Amount Involved**	**Amount Recovered**
Lok Adalats	8506741	119006	2778	14249462	188527	3831
Debt Recovery Tribunal	30651	68956	12035	58073	402636	36924
SARFAESI Act	249645	121718	27349	185397	111805	30864
IBC	891	197959	47409	1261	133930	53968

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Source: RBI, IBBI

The table shows that the nonperforming assets of the scheduled commercial banks have been largely recovered through insolvency and bankruptcy code. Out of the total amount involved, 24 % of the amount is recovered in 2021-22 and 40% in 2022-23. This shows that the overall recovery must have impact on performance and profitability of the scheduled commercial banks.

Hence the authors through this paper have tried to study the impact of insolvency and bankruptcy code on loan recovery of the banks, and finally on the financial performance of the banks. The authors have tried to consider the various variables such as non-performing assets, net profit, return on assets, return on equity, net interest margin, capital to risk assets ratio so as to find out if there is any sustainable improvement in the financial performance of the selected public sector banks post IBC implementation or not.

II. Literature Review

Arti Chandani et. al (2018) in their study have analyzed the impact of IBC 2016 on NPA's of commercial banks with reference to Iron and Steel sector. The study largely is based on bank credit, recovery and default in the iron and steel sector. The authors have emphasized that the number of National company law tribunal is too low to handle the number of pending cases. There is an urgent need to infuse technology in the process so as to bring more transparency in the resolution process. Tanveer Khan has studied the impact of IBC on credit networks and firm performance during pre and post IBC era. According to the author, moving towards IBC was a creditor in control regime. The author has found that IBC has resulted in a significant reduction in cost of debt and improvement in debt structure and improvement in the overall performance of distressed firms. The IBC reforms related to resolution value, reduction in resolution timelines can lead to higher stressed recoveries in the medium to long term (India Ratings and Research). Jaimini Bhagwati (2022) has focused on insolvency and bankruptcy code and long term bulk lending in India. The study examines the effectiveness of IBC 2016 to enable quicker resolution of disputes between borrowers and lenders. The earlier legislations passed to resolution of disputes were Sick industrial companies act 1985 and securitization and reconstruction of financial assets and enforcement of securities interest act 2002. However the major limitations with these acts were that it took a long time to resolve cases involving bankruptcies and liquidation. The author has found that the resolution process is taking longer time than anticipated to arrive at judgments. There are many vacancies at national company law tribunal and there is lack of good professionals. The author is of the view that long delays in resolution process will make bulk long term project financially unviable for lenders and the economy has to pay the price for it. Esther tensing and Suresha B (2019) have studied the impact of IBC 2016 on commercial banks in India. The results of the study show a significant positive impact of IBC on the recovery rate, profitability and NPA of the banks. The authors have considered both private and public sector banks. Ankita Rajput and Gautam Prasad (2023) have studied the impact of insolvency and bankruptcy code on recovery of loans, profits and NPA in public sector banks. The different statistical tests used were Numerical Propulsion system simulation, correlation and regression, Shapiro wilk test, Anderson darling test etc. The findings of the study show that there is significant impact of IBC on the recovery of loans, profit and non-performing assets of the selected public sector banks. Monika and Shikha (2020) have studied about the recent amalgamation in Public Sector Banks. The authors have focused on operational synergies of the banks. The various banks groups considered by the authors are Punjab National Bank, Canara Bank, Union Bank of India and Indian Bank. The different ratios considered are Gross Advances, Total Business, Deposits, Capital Adequacy Ratio, and Net NPA ratio etc. The findings suggest that profitability, capital adequacy ratios of the banks strengthened post amalgamation. However the research paper lacks substantial evidence and analysis to draw firm conclusions. Devarajappa (2020) has studied the impact of merger on physical performance of selected public sector banks in India. The various ratios taken by the banks are deposits, advances, business, number of branches, number of employees and profit. To analyze the impact of merger, data of five years pre and post-merger have been considered. The various statistical tests used are T Test, Anova and Multiple Correlation methods. The findings of the study show that performance of all the banks improved in terms of increase in advances, deposits, business, number of branches and number of employees. Mayur kumar Dadresha (2023) studied the financial performance analysis of merged banks in India: An eagle model approach. The data has been collected and analyzed for 3 years pre and post-merger. The eagle model is based on five parameters such as earning quality (dividend payout ratio, interest income to total assets, interest income to total income, return on assets), Assets quality (total investment to total assets ratio, government securities to total investments, Net NPA, Gross NPA), Growth (growth of deposits, growth of advance, government securities to total assets), Liquidity (Liquid assets to demand deposit ratio, liquid assets to total assets, cash with banks to total assets, liquid assets to total deposits), Equity (capital adequacy ratio, advances to total assets). The researcher used Paired Sample T Test to compare the means. The findings of the study show that the bank's earning capability strengthened due to its high Return on Assets and Dividend Payout Ratio. Post-merger the bank's advances changed slightly while deposits improved. Philip Ayagreet. al. (2024) have studied the banks mergers and acquisitions and their performance post-merger in context of Sub Saharan Africa. The objective of the study is to study the impact of regulation induced banks merger and acquisitions on profitability of merged banks. The authors applied the dynamic panel Generalized Methods of Moments approach to analyze the relationship between Banks Merger and acquisition and profitability. The results of the study show that no improvement in profitability post-merger and acquisition. In contrast, the study found that bank profitability is affected across all profitability variables post-merger and acquisitions. The banks risks and profitability has negative relationship while liquidity and profitability show positive relationship. Manoj Anand & Jagandeep Singh (2008) have studied the impact of merger announcements on shareholder's wealth in case of selected private sector banks in India. The findings of the study show that the announcements of merger in the Indian banking industry have positive and significant effect on the shareholder's wealth. Gopal C. Mondal, Mihir K Pal, S. Ray (2017) have studied the impact of merger on performance of Indian Banks in case of merger of Nedungadi bank and Punjab National Bank. The authors have studied the different ratios of the banks 2 years before and two years post-merger. The statistical test used was Paired T test, independent T test to compare the related samples. The results of the study show that post-merger the efficiency and performance of banks have increased as post-merger improvement was seen in terms of liquidity and leverage parameters, profitability and shareholder's wealth. M. Darayseh & N.M. Alsharari (2023) have studied the determinants of merger and acquisition in the banking sector. The study is based on primary data collected from 500 respondents. The findings of the study show that income, growth, costs, survival, diversifications, security, legal determines the consolidation process leading to successful Merger and Acquisition in the banking industry. Isabel Figueiraset. al. (2021) have studied the bank mergers and acquisitions in the euro area and its impact on bank performance. The authors have suggested different reasons for bank mergers such as increasing profitability and efficiency, gain market share, diversify revenues etc. It has been found that merger between banks happened mostly in some core euro countries such as Belgium, Germany, Netherlands and Austria. It has also been found that merger and acquisitions involving banks with weaker capital and liquidity positions and higher cost efficiencies gives higher profitability post-merger. On an average merger and acquisitions lead to an improvement in the profitability of the merged entity. T. K. Dayitha (2024) has studied the impact of insolvency and bankruptcy code on financial stability and credit accessibility on the Indian banking sector. The author has found that the insolvency resolution has been streamlined, lender confidence increased and reduction in nonperforming assets. The author is of the view that IBC has created a better and positive environment improving the lending and financial stability. M. P. Ram Mohan and B. Gopalakrishnan (2023) have studied the effectiveness of the resolution process in the post IBC period. The findings of the study show that debt to asset ratio of the firms in the post resolution period improved. However the liquidity ratio does not change significantly post resolution period. It has also been found by the authors that the overall performance of the resolved firms significantly improved. The firm's profitability, liquidity, activity and turnover ratios have improved post resolution. Most of the firms are satisfied with the resolution process. However the study by the authors was on debtor's side and not on the creditor's performance post resolution and loan recovery. J Swaminathan (2024) in his speech mentioned on the positive impact of IBC. The introduction of IBC led to paradigm shift from debtors dominated to creditors dominated resolution and recovery process. It has to increase in credit discipline amongst debtors due to possible threat of loss of management control of their businesses. The recent repayment by the Byju's is an example to justify. There is marked decrease in nonperforming assets of the financial creditors.

After reviewing the different texts, journals, government reports, the authors are of the view that there are few research papers on the subject of study. Only few authors have studied the challenges in implementation of IBC and hence a comprehensive study of the impact of IBC on financial creditors' financial performance remained a research gap.

III. Research Methodology

A. Objectives of the study

1. To analyze the Performance of selected public sector banks pre and post IBC implementation.
2. To do a comparative analysis of various performance indicators of selected public sector banks pre and post IBC implementation.
3. To study the emerging challenges involved in resolution process, liquidation and loan recovery post IBC implementation.

B. Research Methodology

The research design for the study is descriptive in nature. The study has been comprehensive from multi perspectives considering all the stakeholders point of views. The study is based on secondary data collected from RBI, Banks' websites, Government of India reports and various research papers. The authors have used T- test statistics using sampled pair means in order to understand and analyze the different performance indicators of selected public sector banks pre and post IBC implementation. Besides correlation and regression tests were done in order to find out the dependency of Return on assets and Return on equity on GNPA, NNPA and Provisions covering ratio. The five banks selected for the study are State Bank of India (SBI), Bank of Baroda (BOB), Union Bank of India (UBI), Canara Bank and Punjab National Bank (PNB).

IV. Data Analysis and Interpretation Part A: Descriptive Statistics

1. Bank of Baroda

a) Gross NPA, Net NPA and Provisions and Contingencies (cr.)

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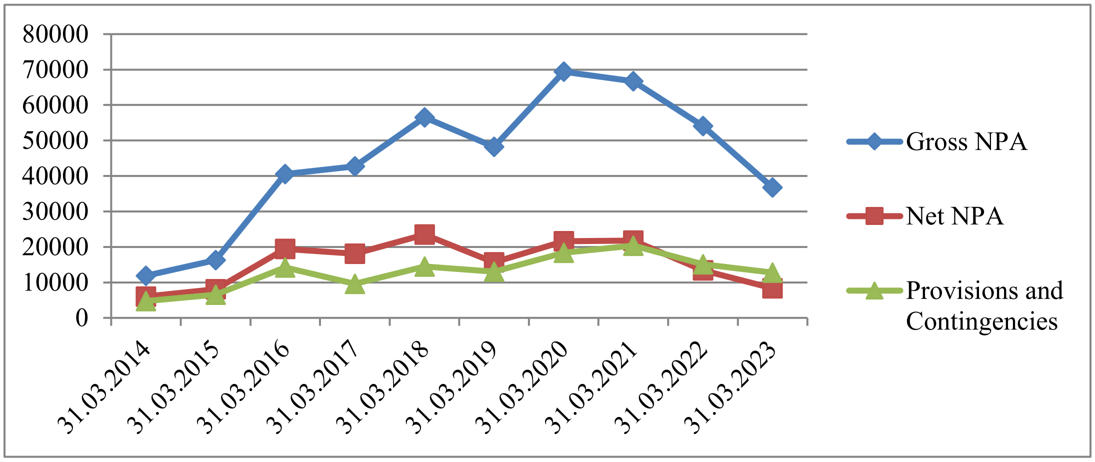

Chart no.1: Gross NPA, Net NPA and Provisions and Contingencies (BOB)

Observation: Based on the above chart, it can be seen that gross NPA, Net NPA and Provisions and contingencies of Baroda after reaching a high during pandemic have shown a decreasing trend. Thus overall it can be said that post insolvency and bankruptcy act, non-performing assets of the banks has decreased.

b) Gross NPA Ratio, Net NPA Ratio, Provisions Covering Ratio (%), and Capital to Risk Asset ratio (CRAR) (%)

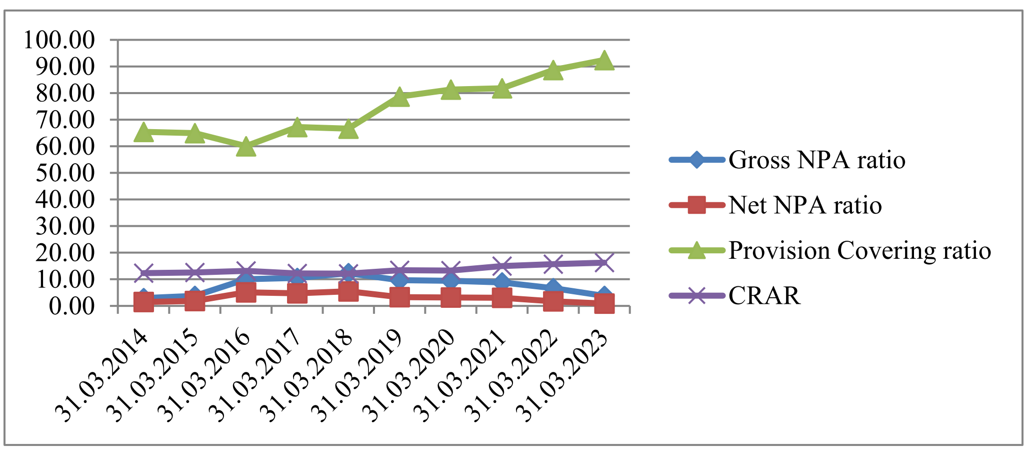

Chart no.2: Gross NPA Ratio, Net NPA Ratio, Provisions Covering Ratio (%), and Capital to Risk Asset ratio (CRAR) (%)

Observation: Based on the above chart, it can be observed that while gross and net NPA ratio have decreased and provision covering ratio and capital to risk asset ratio have shown an increasing trend post IBC. This is a positive trend as far as the bank's performance is concerned. The gross and net NPA ratio during 2014 and 2015 has been very high because of stressed assets of the banks.

c) Net Profit, Net Interest Income (Cr.)

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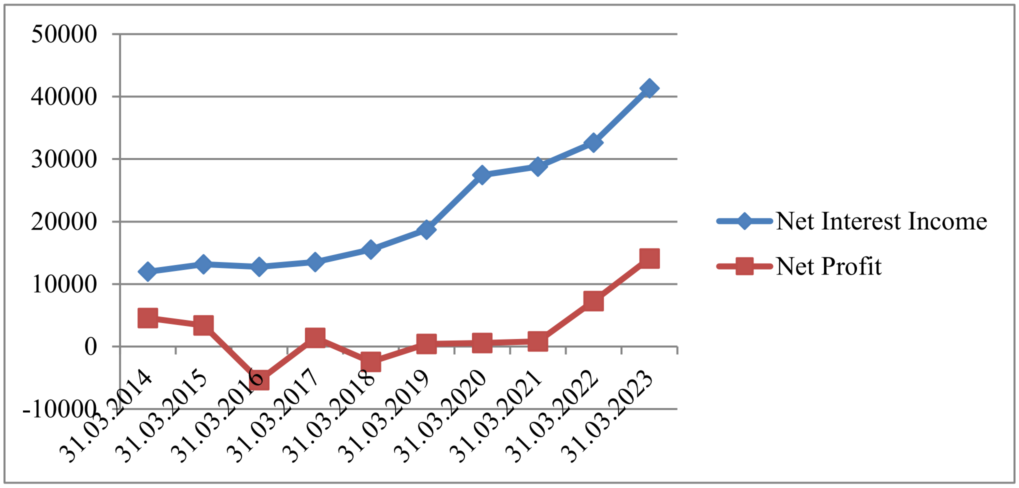

Chart no.3: Net interest income and net profit

Observation: based on the above chart, it can be said that the net profit and net interest income the bank have been increasing on year to year basis post IBC implementation.

d) Return on Assets, Return on Equity and Net Interest Margin (%)

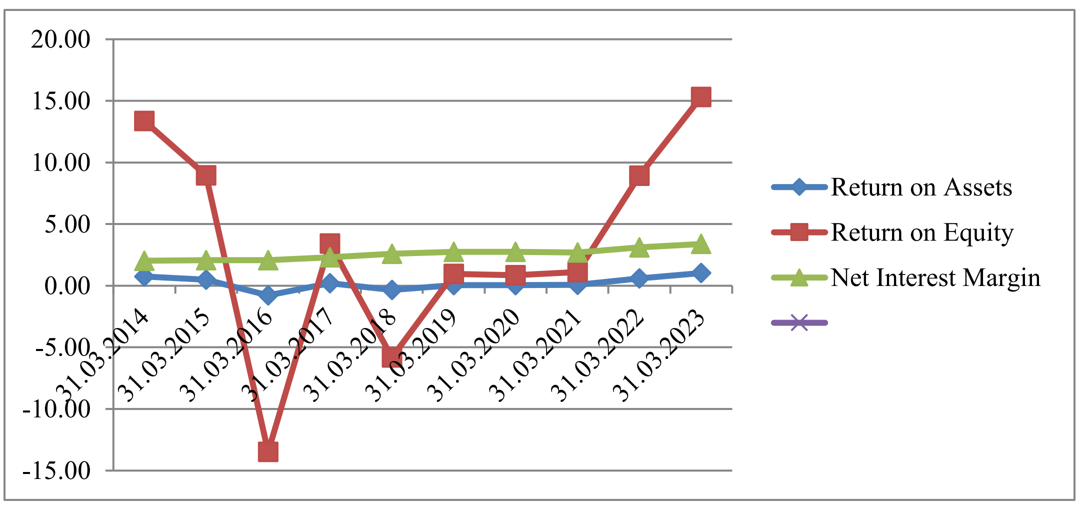

Chart no. 4: Return on Assets, Return on Equity, Net Interest Margin

Observation: The Return on Equity and Return on Assets have dropped from 2014 to 2016 and afterwards, have been continuously increasing since 2019.

2. State Bank of India

a) Gross NPA, Net NPAand Provisions and Contingencies (cr.)

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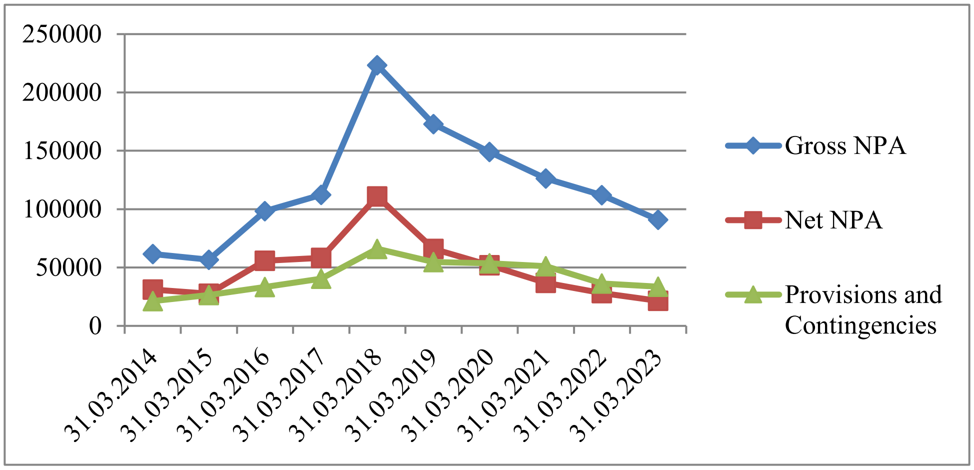

Chart no.5: Gross NPA, Net NPA and Provisions and Contingencies

Observation: Based on the above chart, the gross NPA, net NPA and Provisions and Contingencies of SBI have increased from 2014 to 2017 but afterwards have been continuously decreasing which is a good sign.

b) Gross NPA Ratio, Net NPA Ratio, Provisions Covering Ratio (%), and Capital to Risk Asset ratio (CRAR) (%)

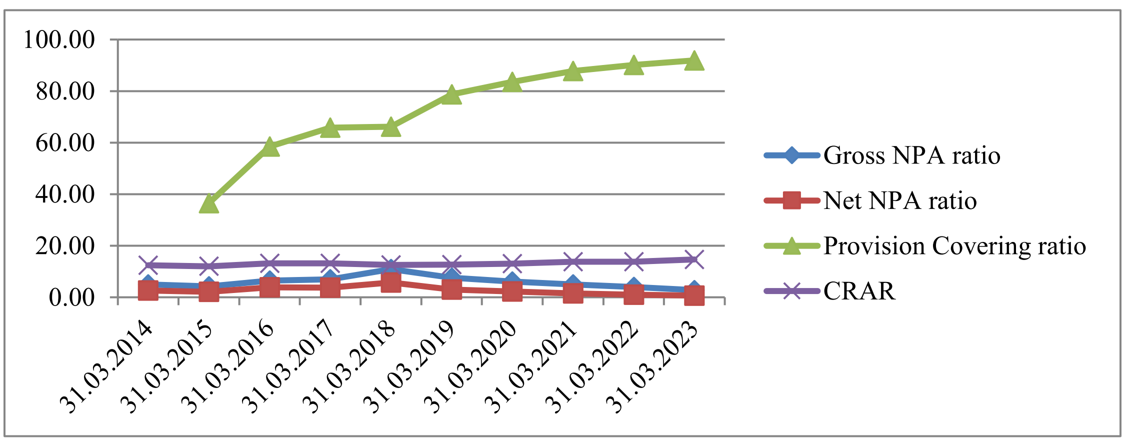

Chart no.6: Gross NPA ratio, net NPA ratio, Provisions Covering ratio and capital to risk asset ratio

Observation: The Gross NPA ratio, net NPA ratioof the bank after increasing till 2018 and have started decreasing afterwards. The Provision covering ratios have been continuously increasing.

c) Net Profit, Net Interest Income (Cr.)

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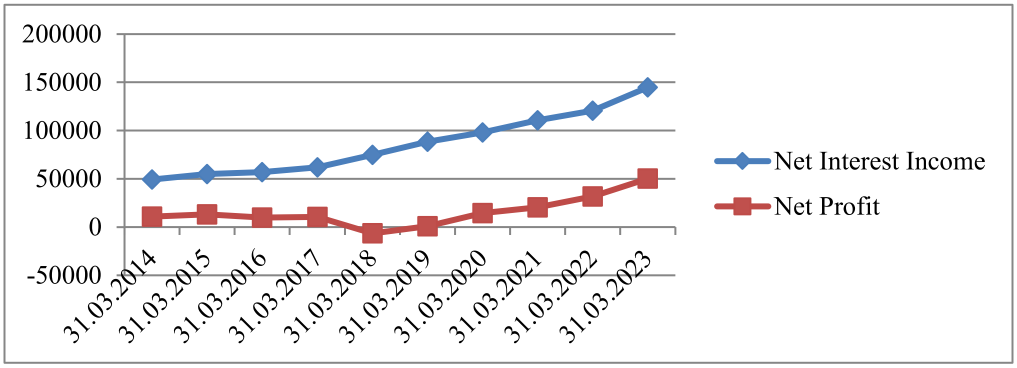

Chart no.7: Net Profit, Net Interest Income

Observation: The net profit and net interest income of the bank have been continuously increasing since 2018. This shows that bank's overall performance in terms of profitability is improving.

d) Return on Assets, Return on Equity and Net Interest Margin (%)

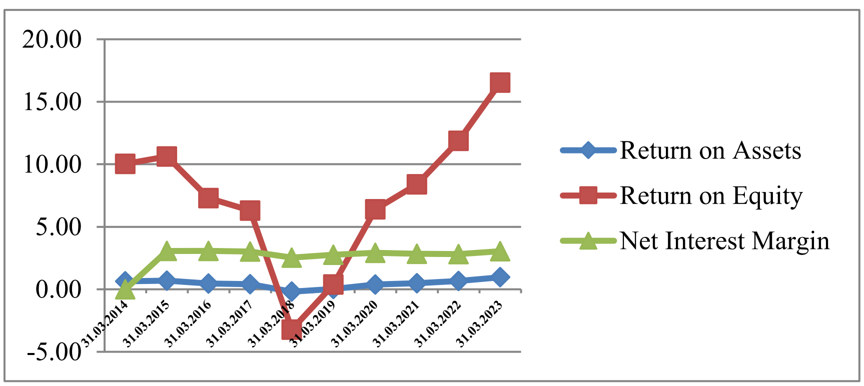

Chart no.8: Return on Assets, Return on Equity and Net Interest Margin

Observation: The Return on assets, return on equity and net interest margin of the bank have been continuously rising after 2018**.** Thus the performance of the bank has improved post IBC implementation.

3. Canara Bank

a) Gross NPA, Net NPAand Provisions and Contingencies (cr.)

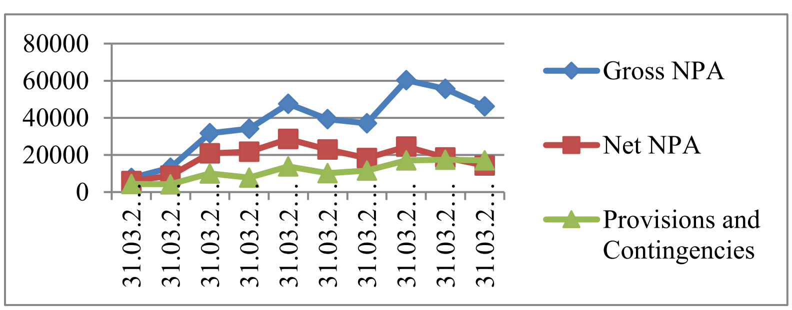

Chart no.9: Gross NPA, Net NPA, Provisions and Contingencies

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Observation: Based on the above chart, it can be said that gross NPA, net NPA and provisions and contingencies of Canara bank after increasing till 2018, started decreasing afterwards, However leaving the pandemic period, all these variables are showing a decreasing trend.

b) Gross NPA Ratio, Net NPA Ratio, Provisions Covering Ratio (%), and Capital to Risk Asset ratio (CRAR) (%)

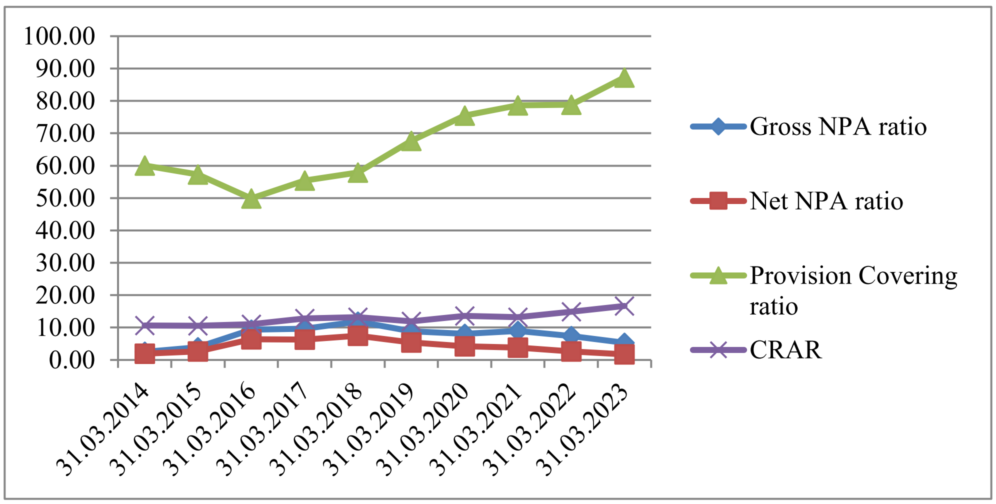

Chart no.10: Gross NPA ratio, net NPA ratio, Provisions Covering ratio and CRAR ratio

Observation: The gross NPA and net NPA ratio started decreasing after 2019 have been decreasing while CRAR and provisions covering ratio have been increasing. Thus we can say that as far as non-performance of the bank is concerned, the bank's performance is improving.

c) Net Profit, Net Interest Income (Cr.)

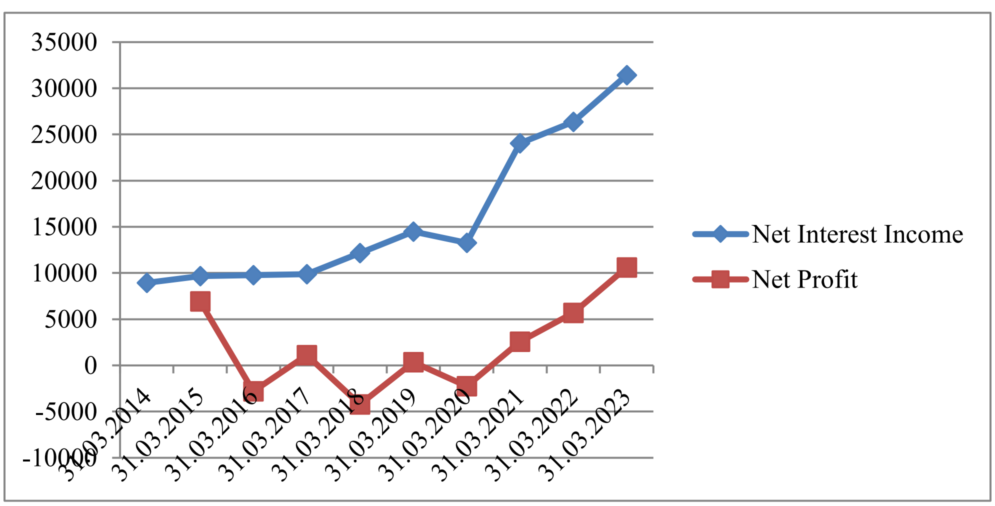

Chart no.11: Net Profit, Net Interest Income

Observation: Based on the above chart, it can be observed that the net profit and net interest income of the bank have been consistently increasing since 2020.

d) Return on Assets, Return on Equity and Net Interest Margin (%)

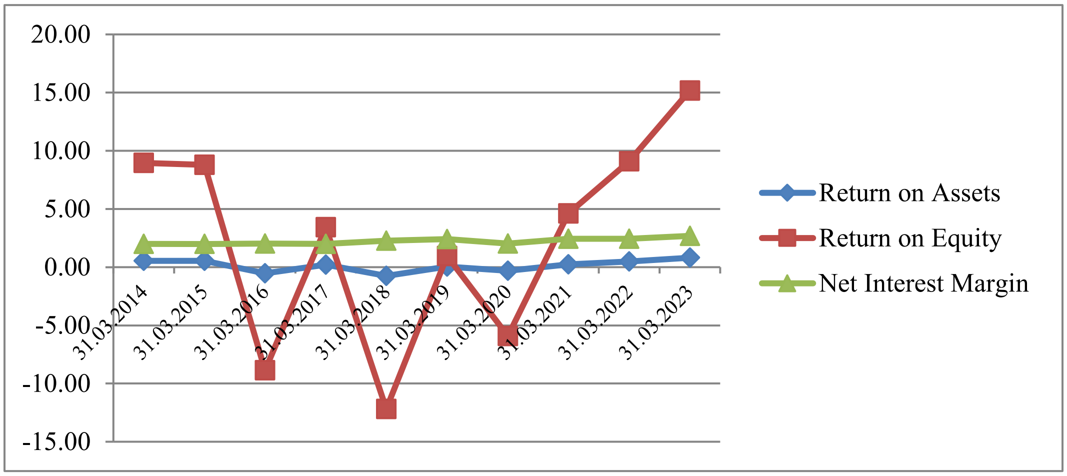

Chart no. 12: Return on Assets, Return on Equity and Net Interest Margin

Observation: Based on the above chart, it can be observed that return on assets, return on equity and net interest margin of the bank have been continuously increasing after 2020 which is a sign of improvement in performance.

4. Union Bank of India

a) Gross NPA, Net NPAand Provisions and Contingencies (cr.)

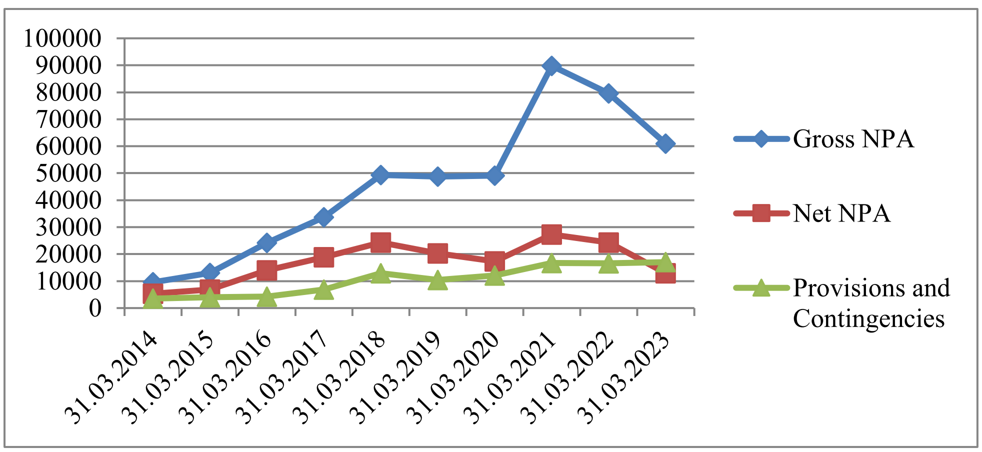

Chart no.13: Gross NPA, Net NPA, Provisions and Contingencies

Observation: The gross NPA, net NPA and provisions and contingencies of the Union Bank of India have been consistently decreasing since 2021 after reaching a high during pandemic.

b) Gross NPA Ratio, Net NPA Ratio, Provisions Covering Ratio (%), and Capital to Risk Asset ratio (CRAR) (%)

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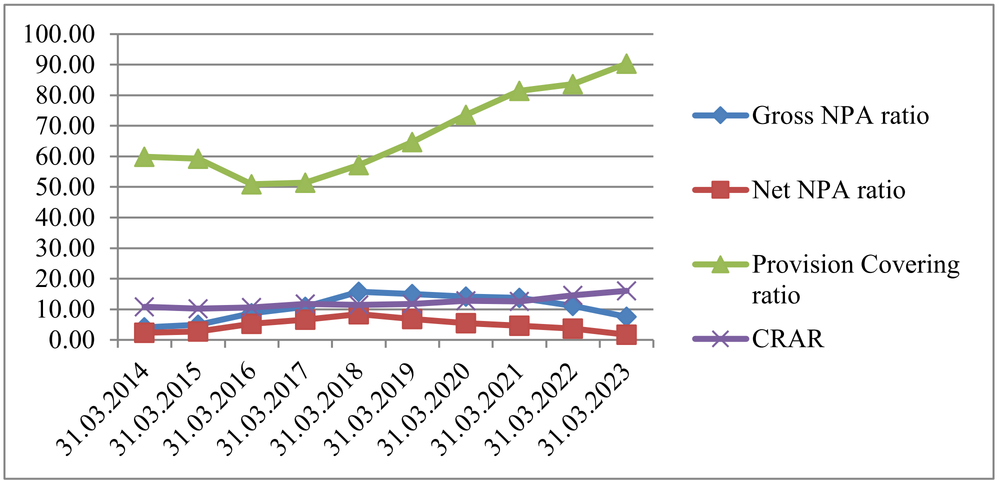

Chart no.14: Gross NPA ratio, Net NPA ratio, Provisions covering ratio and CRAR ratio

Observation: The gross NPA ratio, net NPA ratio of the bank has been consistently decreasing since 2018 while CRAR and provisions covering ratio have been increasing.

c) Net Profit, Net Interest Income (Cr.)

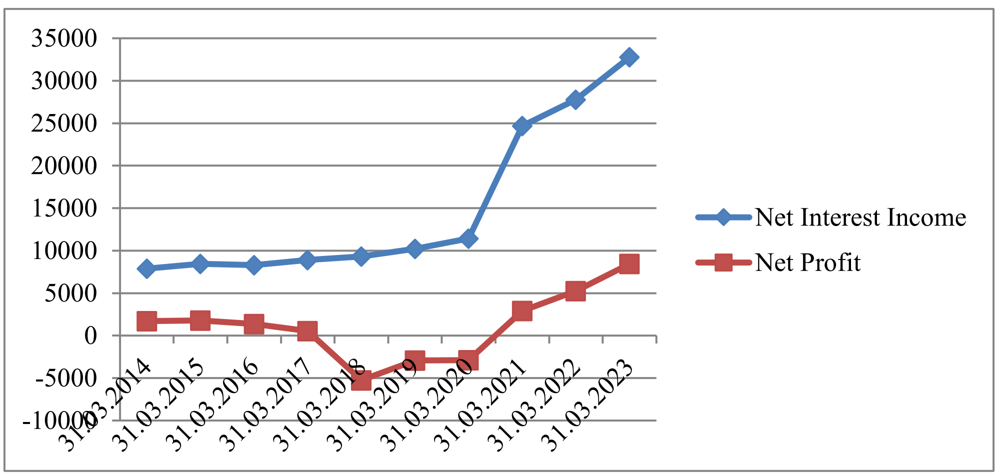

Chart no. 15: Net Profit and Net Interest Income

Observation: The net profit and net interest income of the bank have been continuously increasing since 2020 which is a sign of good performance of the bank.

d) Return on Assets, Return on Equity and Net Interest Margin (%)

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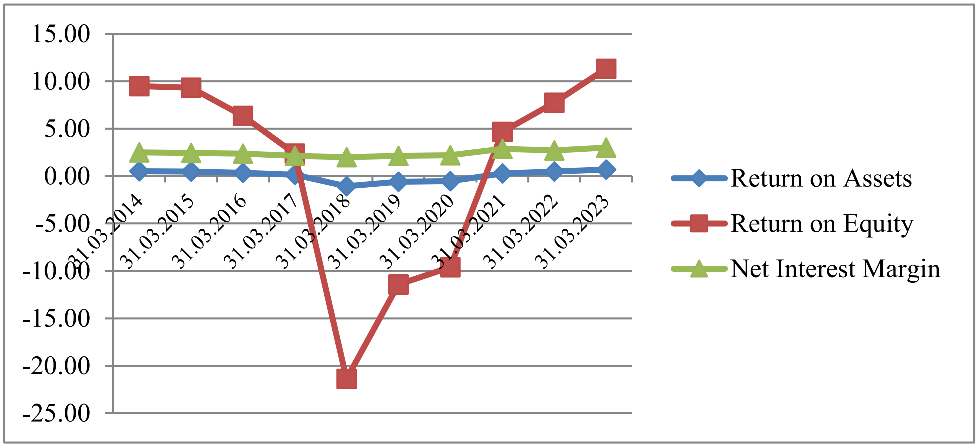

Chart no. 16: Return on Assets, Return on Equity and Net Interest Margin

Observation: Based on the chart, it can be observed that the return on assets, return on equity and net interest margin of the bank have been continuously increasing since 2020.

5. Punjab National Bank

a) Gross NPA, Net NPAand Provisions and Contingencies (cr.)

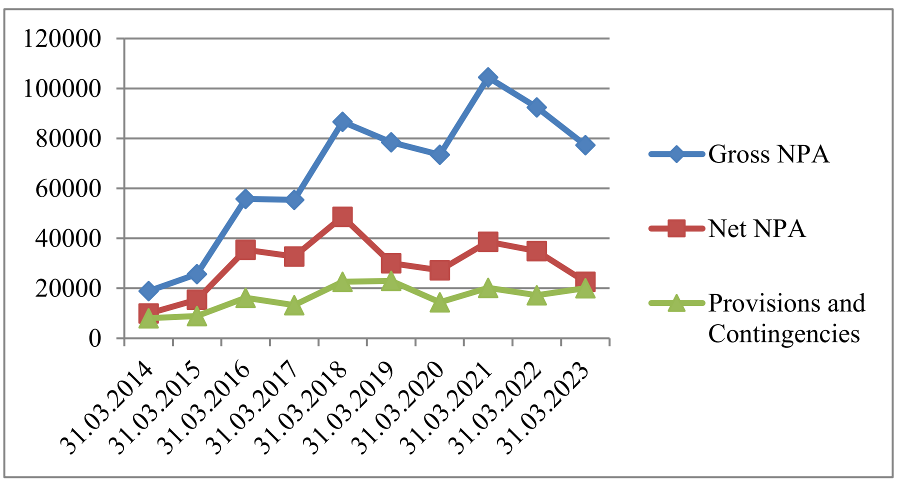

Chart no.17: Gross NPA, net NPA and Provisions and contingencies

Observation: The gross NPA, net NPA and provisions and contingencies of the bank have been consistently reducing since 2021. The chart shows that before 2018 all these variables increased which was a cause of concern for the bank.

b) Gross NPA Ratio, Net NPA Ratio, Provisions Covering Ratio (%), and Capital to Risk Asset ratio (CRAR) (%)

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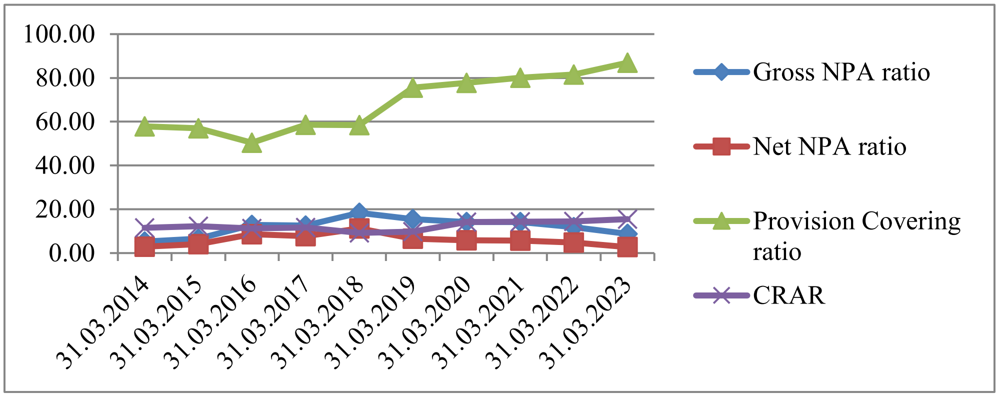

Chart no. 18: Gross NPA ratio, net NPA ratio, provisions covering ratio and CRAR ratio

Observation: The gross NPA ratio, net NPA ratio of the bank has been decreasing since 2020 while provisions covering ratio and CRAR of the bank have been consistently increasing since 2020.

c) Net Profit, Net Interest Income (Cr.)

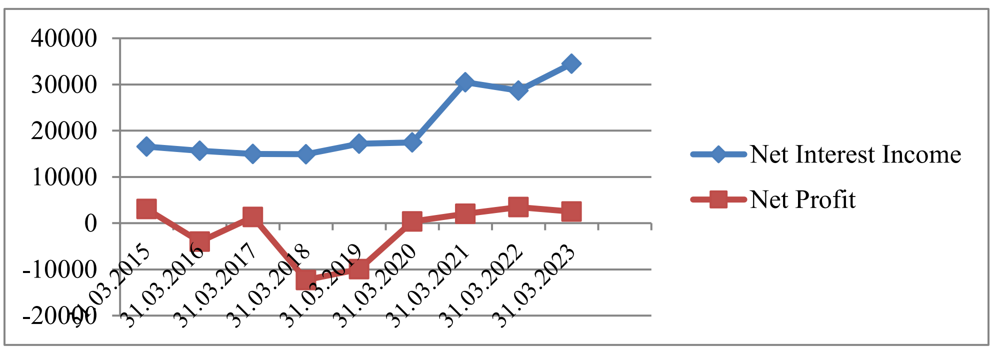

Chart no.19: Net Interest income, net profit

Observation: The net interest income and net profit of the bank have been continuously since 2020 which is a sign of good performance of Punjab National Bank.

d) Return on Assets, Return on Equity and Net Interest Margin (%)

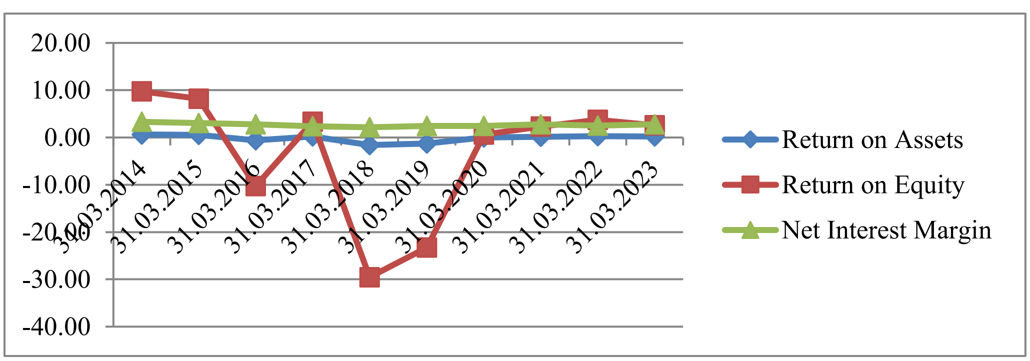

Chart no. 20: Return on Assets, Return on Equity and Net Interest Margin

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Observation: Based on the above chart, the return on asset, return on equity and net interest margin of the bank have been consistently increasing since 2020 Thus it can be said that post insolvency and bankruptcy code implementation, the bank's performance has improved.

Part B: Comparative Analysis of different performance indicators of selected Public Sector Banks Pre and Post IBC implementation

a) Gross Non Performing Assets (Cr.)

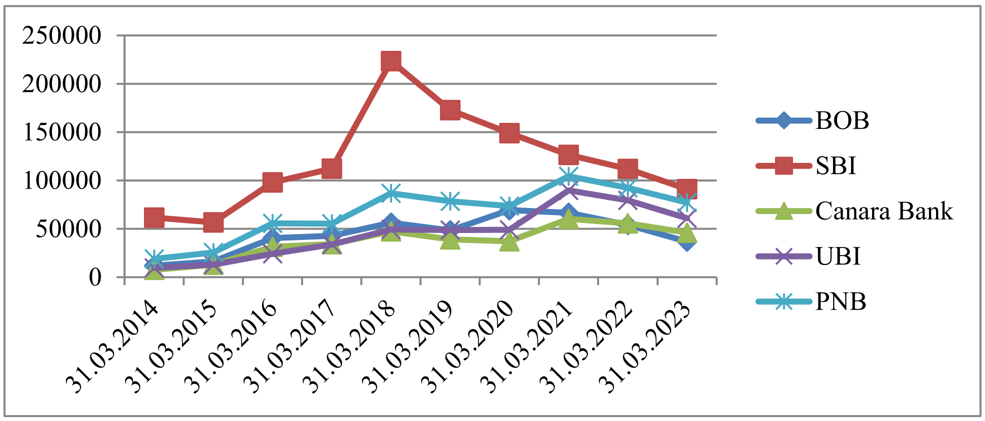

Chart no.21: Gross Nonperforming Assets of the banks

Observation: From the above chart, it is observed that gross nonperforming assets of the selected banks after increasing a high in 2018, started decreasing afterwards. This shows that most of selected banks were able to manage their gross nonperforming assets. SBI is one of the selected banks which has shown a gradual decline in nonperforming assets after 2018.

b) Net Non -Performing Assets (Cr.)

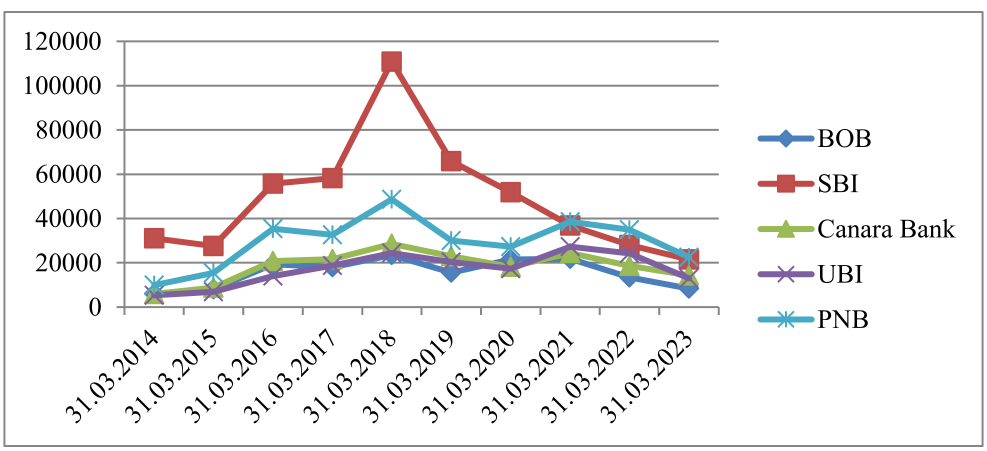

Chart no.22: Net Non-Performing Assets

Observation: Based on the above chart, it can be seen that net NPA of most of the selected banks decreased from 2021 while in case of SBI, it started decreasing since 2018.

c) Gross NPA ratio (%)

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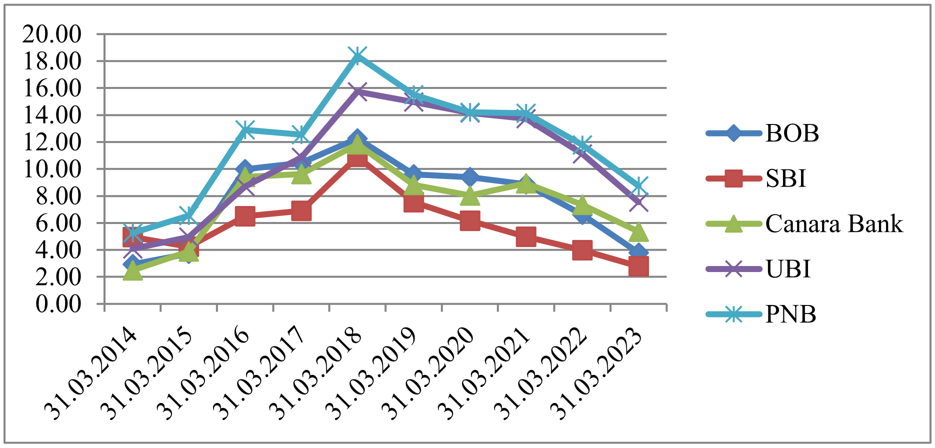

Chart no. 23: Gross NPA ratio

Observation: The gross NPA ratio of the banks has started decreasing since 2018except during pandemic when it was high.

d) Net NPA Ratio (%)

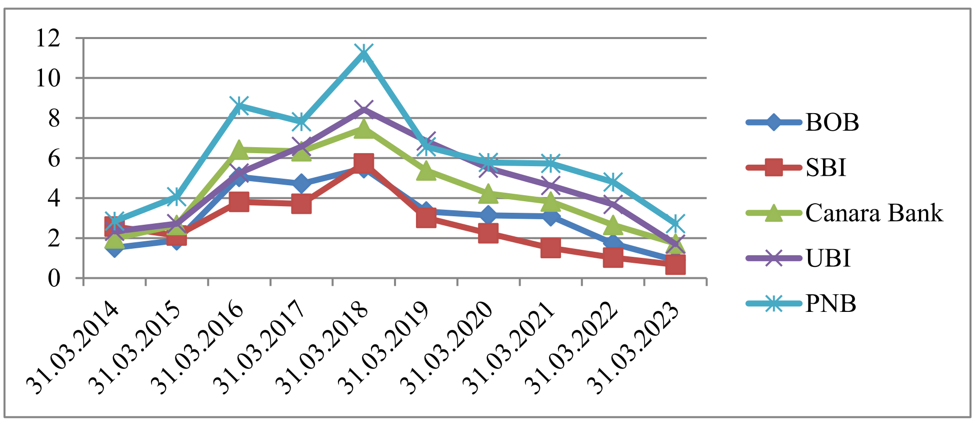

Chart no.24: Net NPA Ratio

Observation: The net NPA ratio of the banks has started decreasing since 2018 and consistently decreased except during the pandemic period.

e) Net Profit (Cr.)

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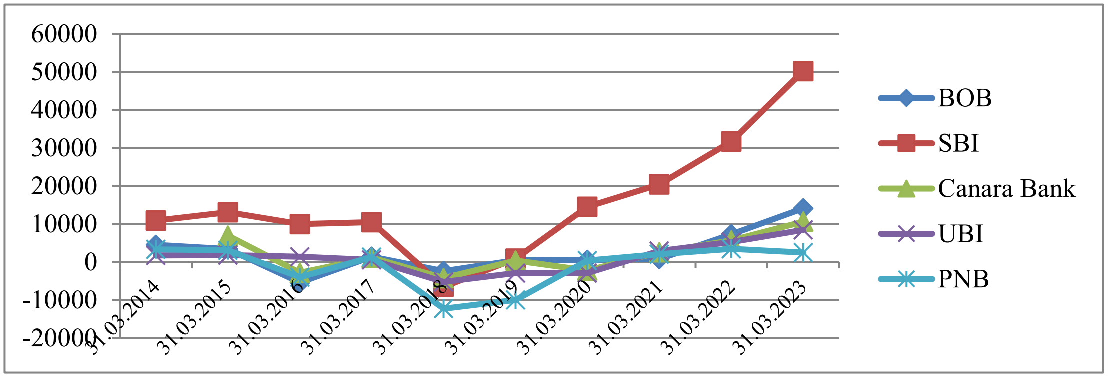

Chart no. 25: Net profit of selected banks

Observation: The net profit of the selected banks has increased since 2019 which is a positive sign post IBC implementation.

f) Return on Assets

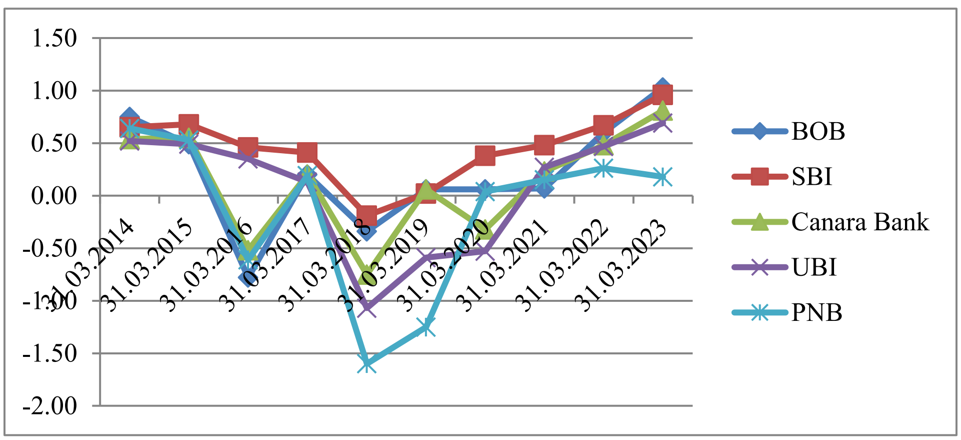

Chart no. 26: Return on Assets

Observation: The Return on Assets of the SBI and PNB after reaching a low in 2018 has started increasing. In case of Canara bank it decreased in 2019 and afterwards increased but again fall during pandemic but afterwards it has increased.

g) Return on Equity

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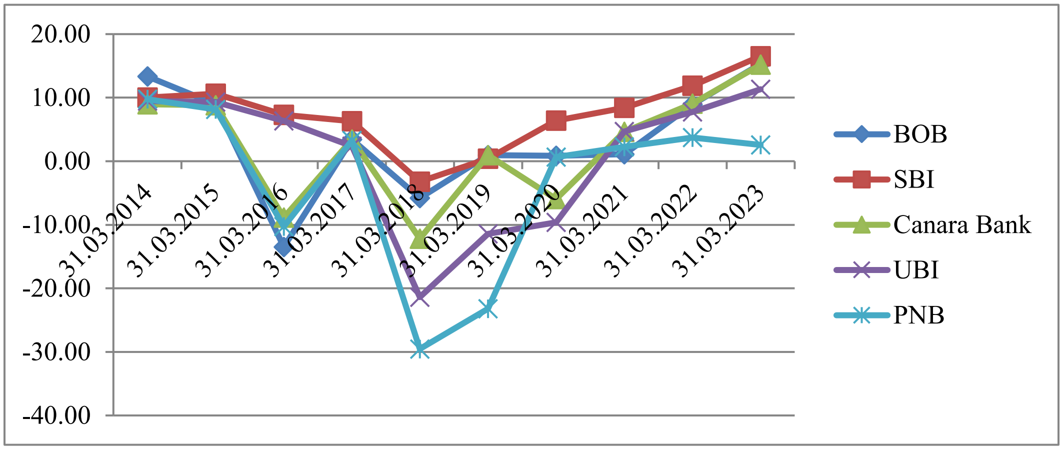

Chart 27: Return on Equity

Observation: The return on equity of most of the banks after touching a low during 2019 again started increasing except during the period of pandemic. Out of all the selected banks, the return on equity touched its lowest in case of PNB in 2019.

Part C: Inferential Statistics

1. The authors have applied Paired Samples T test in order to measure the different variables pre and post implementation of insolvency and bankruptcy code. The Paired samples T test compares the means of two measurements taken from the same subjects. The authors have tried to compare the means of samples of variables such as Gross NPA Ratio, Net NPA Ratio, provisions covering Ratio, Business per Employee Ratio, Return on Assets, Return on Equity, Capital to risk asset ratio pre and post Insolvency and Bankruptcy code (IBC) implementation. The authors have analyzed these different variables of all the selected banks taken together.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	GNPA Ratio Pre IBC	8.4024	25	4.20741	.84148
	GNPA Ratio Post IBC	9.1216	25	3.73759	.74752
Pair 2	NNPA Ratio Pre IBC	4.8532	25	2.54890	.50978
	NNPA Ratio Post IBC	3.4524	25	1.82330	.36466
Pair 3	Provisions covering ratio pre IBC	56.9800	25	8.58163	1.71633
	Provisions covering ratio post IBC	81.5528	25	7.06301	1.41260
Pair 4	BPE Pre IBC	15.1380	25	2.04269	.40854
	BPE Post IBC	20.6696	25	3.15771	.63154
Pair 5	ROA PRE IBC	.0768	25	.63378	.12676
	ROA Post IBC	.2112	25	.50804	.10161
Pair 6	ROE Pre IBC	1.0072	25	11.18903	2.23781
	ROE Post IBC	3.3348	25	8.97962	1.79592

Pair 7	CRAR Pre IBC	11.7904	25	1.05377	.21075
	CRAR Post IBC	13.9152	25	1.57391	.31478

Table no.1: Paired Sample Statistics

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	GNPA Ratio Pre IBC & GNPA Ratio Post IBC	25	-.183	.380
Pair 2	NNPA Ratio Pre IBC & NNPA Ratio Post IBC	25	-.218	.296
Pair 3	Provisions covering ratio pre IBC & Provisions covering ratio post IBC	25	.195	.350
Pair 4	BPE Pre IBC & BPE Post IBC	25	.391	.054
Pair 5	ROA PRE IBC & ROA Post IBC	25	-.397	.050
Pair 6	ROE Pre IBC & ROE Post IBC	25	-.382	.060
Pair 7	CRAR Pre IBC & CRAR Post IBC	25	.289	.161

Table 2: Paired Samples Correlations

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	GNPA Ratio Pre IBC - GNPA Ratio Post IBC	-.71920	6.11894	1.22379	-3.24497	1.80657	-.588	24	.562
Pair 2	NNPA Ratio Pre IBC - NNPA Ratio Post IBC	1.40080	3.44139	.68828	-.01974	2.82134	2.035	24	.053
Pair 3	Provisions covering ratio pre IBC - Provisions covering ratio post IBC	-24.57280	9.99505	1.99901	-28.69855	-20.44705	-12.292	24	.000
Pair 4	BPE Pre IBC - BPE Post IBC	-5.53160	3.01743	.60349	-6.77714	-4.28606	-9.166	24	.000
Pair 5	ROA PRE IBC - ROA Post IBC	-.13440	.95663	.19133	-.52928	.26048	-.702	24	.489
Pair 6	ROE Pre IBC - ROE Post IBC	-2.32760	16.80967	3.36193	-9.26629	4.61109	-.692	24	.495
Pair 7	CRAR Pre IBC - CRAR Post IBC	-2.12480	1.62155	.32431	-2.79414	-1.45546	-6.552	24	.000

Table 3: Paired Samples Test

Observation/Interpretation: Based on the results of the statistical test, it can be seen that Gross NPA Ratio, Net NPA Ratio, Provisions Covering ratio, Business per employee, Return on Assets, Return on equity,

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Capital to risk asset ratio pre and post IBC are weakly correlated.

The value of P (.495, 0.489, 0.562, 0.53) is more than the level of significance (0.05) in case of Return on Equity, Return on assets, Gross NPA Ratio, net NPA Ratio respectively and hence the null hypothesis is accepted. Thus there does not lay difference in means pre and post IBC. The Value of P (0.000) is less than the level of significance (0.05) in case of capital to Risk Assets, Business per employee and Provisions covering ratio and hence the null hypothesis is rejected. Thus it can be said that means of samples of capital to risk assets ratio pre and post IBC implementation differs. There is statistically significant improvement in CRAR, provisions covering ratio and business per employee post IBC implementation.

2. Multiple Regression analysis to study the dependence of GNPA Ratio, NNPA Ratio, Provisions Covering Ratio on .Return on Assets post IBC implementation of selected public sector banks i.e. Bank of Baroda, State Bank of India, Union Bank of India, Canara Bank, Punjab National Bank

Correlations					
		ROA post IBC	GNPA Ratio Post IBC	NNPA Ratio Post IBC	Provisions covering ratio post IBC
Pearson Correlation	ROA post IBC	1.000	-.762	-.826	.788
	GNPA Ratio Post IBC	-.762	1.000	.934	-.689
	NNPA Ratio Post IBC	-.826	.934	1.000	-.862
	Provisions covering ratio post IBC	.788	-.689	-.862	1.000
Sig. (1-tailed)	ROA post IBC	.	.000	.000	.000
	GNPA Ratio Post IBC	.000	.	.000	.000
	NNPA Ratio Post IBC	.000	.000	.	.000
	Provisions covering ratio post IBC	.000	.000	.000	.
N	ROA post IBC	25	25	25	25
	GNPA Ratio Post IBC	25	25	25	25
	NNPA Ratio Post IBC	25	25	25	25
	Provisions covering ratio post IBC	25	25	25	25

Table no.4: Correlation

Model Summary[b]									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.845[a]	.713	.672	.29074	.713	17.426	3	21	.000
a. Predictors: (Constant), Provisions covering ratio post IBC, GNPA Ratio Post IBC, NNPA Ratio Post IBC									
b. Dependent Variable: ROA post IBC									

Table no.5: Regression statistics Result

ANOVA[a]

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Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.419	3	1.473	17.426	.000[b]
	Residual	1.775	21	.085		
	Total	6.194	24			
a. Dependent Variable: ROA post IBC						
b. Predictors: (Constant), Provisions covering ratio post IBC, GNPA Ratio Post IBC, NNPA Ratio Post IBC						

Table no.6: Anova Test Results

Residuals Statistics[a]					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-.7165	.9303	.2112	.42911	25
Residual	-.86325	.35308	.00000	.27197	25
Std. Predicted Value	-2.162	1.676	.000	1.000	25
Std. Residual	-2.969	1.214	.000	.935	25
a. Dependent Variable: ROA post IBC					

Table no.7: Residual Statistics Result

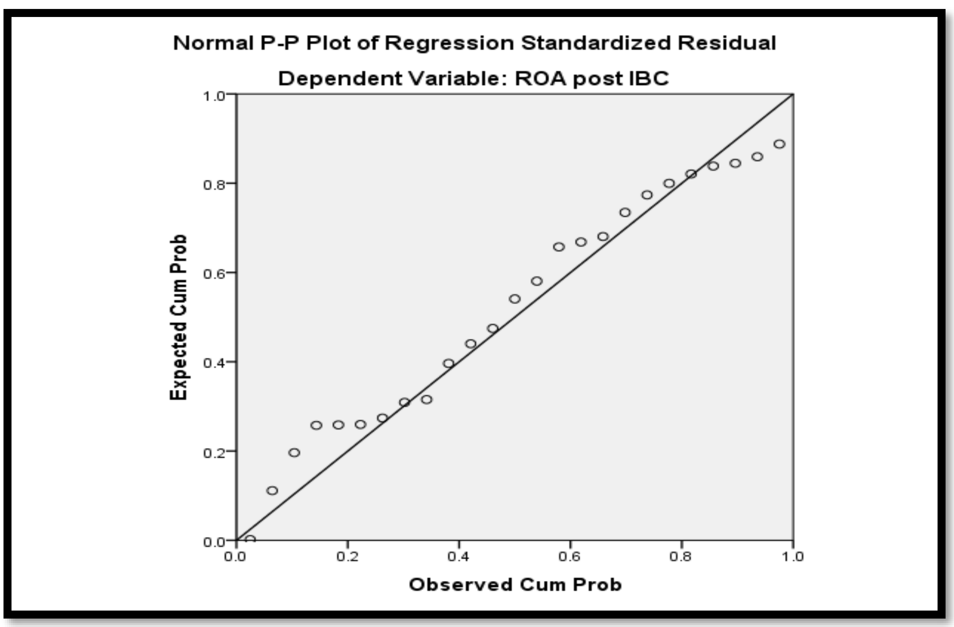

Chart no. 28: Normal PP Plot of Regression Standardized Residual

Observation/Interpretation: The authors applied multiple regression analysis on order to find out the impact of GNPA, NNPA, and Provisions Covering Ratio on Return on Assets of all the selected banks combined together post IBC. The tests of the result show that R =.845 and R^2= 0.713. A value of 0.84 indicates a good level of prediction. The Value of R Square i.e. 0.713 shows that 71% of the variance in ROA can be explained by the independent variables.

The *F*-ratio in the **ANOVA** table, tests whether the

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overall regression model is a good fit for the data. The table shows that the independent variables statistically significantly predict the dependent variable, $F(3, 21) = 17.426$, $p < .0005$ (i.e., the regression model is a good fit of the data).

Considering the normality of residuals with a normal P-P plot, it shows that the points generally follow the normal (diagonal) line with no strong deviation. This shows that the residuals are normally distributed.

3. Multiple Regression analysis to study the dependence of GNPA Ratio, NNPA Ratio, Provisions Covering Ratio on .Return on Equity post IBC implementation of selected public sector banks i.e. Bank of Baroda, State Bank of India, Union Bank of India, Canara Bank, Punjab National Bank

Correlations					
		ROE Post IBC	GNPA Ratio Post IBC	NNPA Ratio Post IBC	Provisions covering ratio post IBC
Pearson Correlation	ROE Post IBC	1.000	-.761	-.821	.769
	GNPA Ratio Post IBC	-.761	1.000	.934	-.689
	NNPA Ratio Post IBC	-.821	.934	1.000	-.862
	Provisions covering ratio post IBC	.769	-.689	-.862	1.000
Sig. (1-tailed)	ROE Post IBC	.	.000	.000	.000
	GNPA Ratio Post IBC	.000	.	.000	.000
	NNPA Ratio Post IBC	.000	.000	.	.000
	Provisions covering ratio post IBC	.000	.000	.000	.
N	ROE Post IBC	25	25	25	25
	GNPA Ratio Post IBC	25	25	25	25
	NNPA Ratio Post IBC	25	25	25	25
	Provisions covering ratio post IBC	25	25	25	25

Table no.8: Correlation

Model Summary[b]									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.834[a]	.695	.652	5.29749	.695	15.986	3	21	.000
a. Predictors: (Constant), Provisions covering ratio post IBC, GNPA Ratio Post IBC, NNPA Ratio Post IBC									
b. Dependent Variable: ROE Post IBC									

Table no.9: Regression Statistics Result

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1345.875	3	448.625	15.986	.000[b]
	Residual	589.330	21	28.063		
	Total	1935.206	24			
a. Dependent Variable: ROE Post IBC						
b. Predictors: (Constant), Provisions covering ratio post IBC, GNPA Ratio Post IBC, NNPA Ratio Post IBC						

Table no.10: Anova Test Result

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Residuals Statistics[a]					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-12.5215	15.7998	3.3348	7.48853	25
Residual	-15.72145	6.11063	.00000	4.95534	25
Std. Predicted Value	-2.117	1.665	.000	1.000	25
Std. Residual	-2.968	1.153	.000	.935	25
a. Dependent Variable: ROE Post IBC					

Table no.11: Residual Statistics

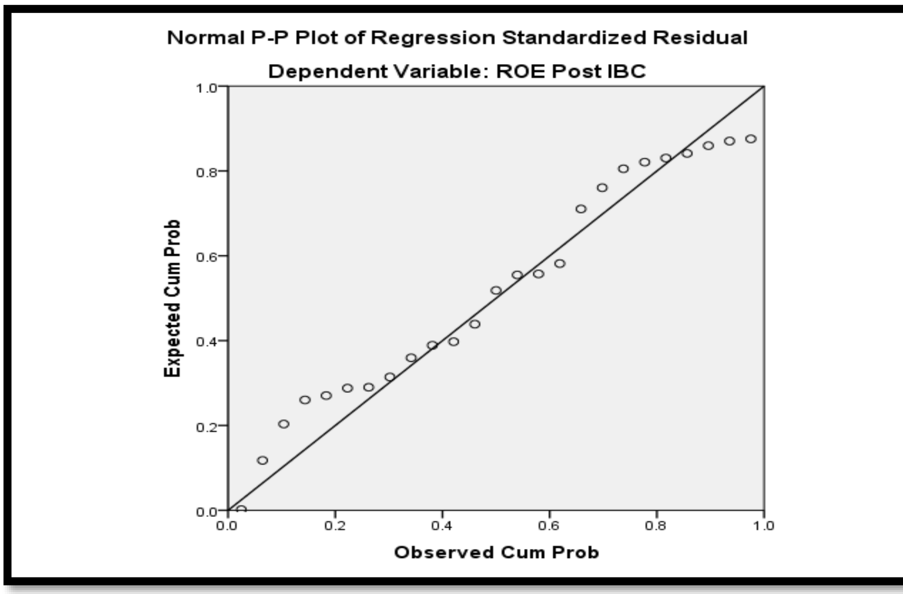

Chart no. 29: Normal PP Plot of Regression Standardized Residual

Observation/Interpretation: The authors applied multiple regression analysis on order to find out the impact of GNPA, NNPA, and Provisions Covering Ratio on Return on Equity of all the selected banks combined together post IBC. The tests of the result show that R =.834 and R^2= 0.695. A value of 0.83 indicates a good level of prediction. The Value of R Square i.e. 0.69 shows that 69% of the variance in ROE can be explained by the independent variables.

The F-ratio in the ANOVA table, tests whether the overall regression model is a good fit for the data. The table shows that the independent variables statistically significantly predict the dependent variable, $F (3, 21) = 15.18, p < .0005$ (i.e., the regression model is a good fit of the data).

Considering the normality of residuals with a normal P-P plot, it shows that the points generally follow the normal (diagonal) line with no strong deviation. This shows that the residuals are normally distributed.

V. Findings and Conclusions

Based on the results, the authors are of the view that there is positive change in capital to risk assets ratio, business per employee and provisions covering ratio and these variables improved in case of selected public sector banks post IBC implementation. The gross NPA, net NPA, Gross NPA ratio and Net NPA ratio has shown a decreasing a trend since IBC implementation in selected public sector banks. On the other hand, the net profit, return on assets and return on equity showed an increasing trend post IBC implementation. It has also been found that GNPA, NNPA and Provisions covering ratio strongly predict Return on Assets and Return on equity post IBC implantation. Overall, the authors concluded by saying that there is an overall positive environment as far as resolution and loan recovery of the banks is concerned post IBC implementation. This is also validated by RBI's report on trends and progress of banking sector in India. RBI's (2022-23) report suggests that 43% of the total amount of loan recovered by scheduled commercial banks is through insolvency and bankruptcy code in 2022-23. Further the report also suggested that during 2017-18 and 2022-23, the IBC has helped in recovering around Rs. 3 lakh crore more than the combined recovery through other legislations such as Lok Adalats, Debt Recovery Tribunals (DRTs) and the SARFAESI Act.

However, challenges remain such as legal disputes, slow repayment, lack of professions in resolution, meager recovery, crossing the timeline of 270 days etc. The Government of India needs to bring amendments to the existing act ensuring faster and speedy resolution, recovery.

VI. Limitations and Future Scope of Study

The overall study pertains to five selected public sector banks and hence it becomes difficult to make generalizations regarding the entire banking sector. Thus the future researchers can study the impact of IBC taking more banks from both public and private sector. The banks performance depends upon lot of factors and hence improvement in profitability and performance cannot merely be based on the impact of IBC implementation. The future researchers can study the recovery of banks from different sectors and particularly assessing its impact on their performance and profitability.

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