PUBLIC SECTOR BANK'S PROFITABILITY IN THE CLUTCHES OF NPA

Yasmin. A. Barodawala*

*Assistant Professor, Dr. Thakorbhai Patel Girl's Commerce College, Vadodara-Gujarat.**

Abstract:

Banks are a boon to mankind as it provides the fundamental need of finance. But this benefit becomes bleak when the banks start experiencing the arrival of bad loans. As the volume and magnitude of non-performing Assets increases, the pressure on the bank's profits and liquidity rises. The blowing up of the NPAs can lead to bankruptcy if not controlled on time. NPAs are the major detractors of the profits and in the long run affect the bank's image and cause harm to the economy as well. To reconsider this fearsome occurrence in detail, this paper studies the effect of Non-Performing Assets on the bank's Profits. The statistical tools employed to fulfill the objective as mentioned above are coefficient correlation, simple linear regression, F- Test and T-test. Using the secondary data for 10 years from 2012-13 to 2021-22, the entire Public sector is evaluated to measure the significant relationship between the variable of profits such as ROE, ROA and NIM with the NPA ratios that are GNPA and NNPA. The study recollects the idea, 'as NPA increases, Profit decreases'. Hypothesis so tested, shows a very strong negative relationship at 80%, with almost all the dependent and independent variables. Furthermore, the regression analysis has shown a negative coefficient for the variables, suggesting banks to prioritize the task of curbing the NPAs at the earliest, to save itself from the embarrassing state of distress.

Keywords: NPA, GNPA, NNPA, ROE, ROA, NIM and Public Sector Banks

Introduction

When the amount of bad loans increases the image of the bank is at stake, making the public loose trust in the bank. Which in turn may cause the depositors to take back their money deposited in such banks causing liquidity issues for the banks. When there is lack of liquidity the bank's lending of loans for productive activities is debarred. Only slowing down of the lending activity of banks, may slow down the economy and have a cascading effect of higher rate of unemployment, escalation in the inflation rates, affect the stock market

(it may become bear market) and hurt the whole country's economy. Now in order to maintain their profit margins, banks will be forced to increase the interest rates which again will become a burden on the economy.

In our country, India there are Public, Private and Foreign sector banks but as stated by (Chakraborty, 2017; Gulati, 2018) the Indian banking sector is mainly dominated by Public sector banks. Also many studies support the fact that Public sector banks carry huge amount of bad loans and are the worst sufferers of NPAs. These non-performing loans puts a strain on the working of the banks.

Various ratios to measure the profitability have been employed in the past researchers but majority have considered Return on Equity-ROE, Net Interest Margin- NIM and return on Assets- ROA as most accurate in evaluating the management efficiency in carrying on the business operations and recording the profits. (Brahmaiah & Ranajee, 2018; C.S.Balasubramaniam, 2011; Jafari, 2015)

Literature Survey:
By comparing the NPAs of the Public and Private banks, the researchers have taken Net NPA as independent variable to know the impact of rising NPA on the profits and other financial heads and found that NNPA has positive influence on the ROA. It also affects the EPS and Liquidity thus the profits of the banks (Chaudhari, 2020; Mehta & Kaushik, 2020; Wadhwa &

Ramaswamy, 2020). There is a positive and direct relationship between NPA of Banks and the Net profits. The returns are reduced due to the rise in volume of bad loans (Kavitha & Muthukrishna, 2019; Narula & Singla, 2014). In order to evaluate the levels of NPA in the entire banking sector as a whole, the study revealed that larger the size of NPA lower is the profitability of the banks and giving loans to the priority sector is having an insignificant impact on the profits (Jaswal et al., 2020; Kavitha & Muthukrishna, 2019; Pandya, 2015). Using Correlation and regression the study infers that Gross NPA has a negative impression on the ROA, which is the indicator of level of profits, but Net NPA has positive influence on the Bank's ROA (Chaudhari, 2020; Senthil Arasu et al., 2019). The heavy provisioning for the existing NPA and other contingencies has a burden on the present profits and on conducting the analysis of cost and income of banks, it is known that NPA heavily disrupts the final result, that is the profits (Gowda, 2019; Naaz, 2021). The decrease in Net volume of NPA results in increase in ROE as well as ROA and the profitability of banks can improve by increasing the quality of assets portfolio (Bepari & Sarkar, 2020; S & Rakhi, 2018). The analysis conducted clearly surfaces that profits of the banks are impacted by the presence of NPA and that the highest impact of NPA on profit is experienced by the banks belonging to public sector than the private and the foreign sector banks (Gulati, 2018; Tyagi, 2020). Factors which are bank specific

and the macro-economic factors together decide the profitability of the bank, out of the which the existence of bad loans has the major impact on the bank's profits (Boateng, 2018; Das & Uppal, 2021; Singh, 2010).

Research Methodology

Objectives

1. To know the relationship between NPA and Profitability of Public Sector Banks.
2. To study the impact of NPA on the Profits of Public Sector banks.

Hypothesis

H$_{01}$: There exists no relationship between ROE and Gross NPA to Gross Advances Ratio.

H$_{02}$: There is no relationship between ROE and Net NPA to Net Advances Ratio.

H$_{03}$: There exists no relationship between ROA and Gross NPA to Gross Advances Ratio.

H$_{04}$: There is no relationship between ROA and Net NPA to Net Advances Ratio.

H$_{05}$: There exists no relationship between NIM and Gross NPA to Gross Advances Ratio.

H$_{06}$: There is no relationship between NIM and Net NPA to Net Advances Ratio.

Method of Analysis

Profitability is measured through ROE, ROA and NIM. In this study they are taken as dependent variables. The non-performing assets which are the Gross NPA and Net NPA are taken as independent variables as shown in the chart below.

ROE	• GNPA • NNPA
ROA	• GNPA • NNPA
NIM	• GNPA • NNPA
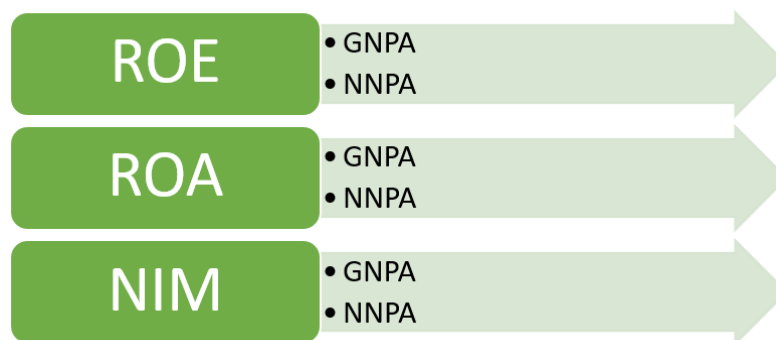
Statistical Design

The present study is casual in nature as the aim of the study is to analyze that there is a relationship between Net Profits of banks belonging to the Public Sector and the their NPAs. The data collected is analyzed using various statistical methods and SPSS software to evaluate the effect of NPA on the profitability of the banks.

The various statistical tools are:

1. Correlation Coefficient:

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

Correlation Coefficient measures the strength and direction of a relationship between two variables. The value of 'r' lies between + 1 and – 1.

- Strength: It can be somewhere between -1 and +1. The relationship between the two variables is better when the absolute value of the coefficient is greater.
- Direction: The relationship direction is shown by the sign so obtained by the coefficient. The coefficient is positive if all factors have a tendency to rise or decrease at the same time. The coefficient is negative if one variable continues to rise while the other decreases.
- Significance: The p-value is equated to the degree of significance to decide if the relationship between variables is significant. The significance level in this analysis is 0.05. (denoted as $\propto$ or alpha). A $\propto$ of 0.05 symbolizes that there is a 5% probability of assuming that there is a connection when there isn't one. The p-value indicates when the correlation coefficient is slightly different from 0, since a correlation of 0 specifies non-existence of a linear relationship.

The R^2 value indicates how much the predictor variable (NPA) can explain the total variation in the criterion/response variable (Net Profits). R^2 indicates the portion of variation in the y-variable that is due to variation in the x-variables.

2. Regression Analysis:

The regression equation is as follows:

$$Y = a + b_1 x_1 + \mu$$

$$a = \frac{(\sum y)(\sum x^2) - (\sum x)(\sum xy)}{n(\sum x^2) - (\sum x)^2}$$

$$b = \frac{n(\sum xy) - (\sum x)(\sum y)}{n(\sum x^2) - (\sum x)^2}$$

The association between one or more outcome/response variables and the predictor variable evaluated statistically is known as regression analysis. The regression coefficients denote the change occurred in predictor variable due to change in response variable considering change of one unit.

P VALUE

The p-value indicates whether the regression model envisages the dependent variable significantly or not. It tests the null hypothesis whether there is no substantial effect of NPA on the Net Profits of the banks. A p-value < 0.05 specifies that the null hypothesis is false-not true and hence, can be rejected. A lesser p-value would indicate that the regression model can significantly predict the dependent variable and that it is a good fit.

3. **F –Test**

F-test is to measure the importance of total multiple regression models. The F-test is used to determine the importance of regression coefficients at individual level at 0.05 levels of significance.

4. **T-Test**

$$t = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}}}$$

Sample Design and Size

Non Probability Purposive and Convenient sampling is employed for the study and only one Group that is, Public Sector Banks of India is selected for analyzing its NPA and its effect on the profitability during the period of study.

Method of Data collection and Period of study

The study is based on secondary data collected from database on Indian Economy of RBI, economic times and other related websites. The period of study is for 10 years from 2012-13 to 2021-22.

Data Analysis and Interpretation

In order to evaluate the relationship and impact of Gross and Net NPA on the Profits measured through ROE, ROA and NIM the following hypothesis are tested.

H01: There exists no relationship between ROE and Gross NPA to Gross Advances Ratio.

COMPREHENSIVE TABLE OF ANALYSIS 1:

Model no.	Banks	R	R^2	F-Test	T-Test	P-Value	Significance	Hypothesis (H_0)
2	Public Sector	-.831[a]	.691	17.886	-4.229	.003[b]	Significant	Rejected

Regression Model 1:

ROE=a + β. x1 + e

X1= GNPA

Y= 20.739 -2.315X1 +e

Interpretation Table 1: The correlation coefficient as shown by R is -0.895 signifying a strong negative correlation between GNPA and ROE, which means that increase in one variable leads to a subsequent decrease in the other. The overall regression was statistically significant ($R2 = 0.801$, $F (1,8) =28.122$, $p < 0.001$). It was found that GNPA significantly predicted ROE ($β = -2.315$, $p < 0.001$). The null hypothesis is rejected and infers that there is a relationship between ROE and the Gross NPA of the Public sector banks.

H02: There is no relationship between ROE and Net NPA to Net Advances Ratio.

COMPREHENSIVE TABLE OF ANALYSIS 2:

Model no.	Banks	R	R^2	F-Test	T-Test	P-Value	Significance	Hypothesis (H0)
3	Public Sector	-.887[a]	.786	25.771	-5.077	.001[b]	Significant	Rejected

Regression Model 3:

ROA=a + β. x1 + e

X1= GNPA

Y= 1.267 -0.137X1 +e

Interpretation Table 3: A very strong but negative correlation between ROA and GNPA is reflected in the table at R= -0.887, suggesting that when the volume of bad loans increases the Return on Assets declines considerably. The overall regression was statistically significant ($R2 = 0.786$, $F (1,8) =25.771$, $p < 0.001$). It was found that GNPA significantly predicted ROA ($β = -0.137$ $p < 0.001$). The null hypothesis fails to be accepted, because there exists a relationship between ROA and the GNPA impacting the performance of the banks.

H04: There is no relationship between ROA and Net NPA to Net Advances Ratio.

COMPREHENSIVE TABLE OF ANALYSIS 4:

Model no.	Banks	R	R^2	F-Test	T-Test	P-Value	Significance	Hypothesis (H_0)
4	Public Sector	-.831[a]	.691	17.912	-4.232	.003[b]	Significant	Rejected

Regression Model 4:

ROA=a + β. x1 + e

X1= NNPA

Y= 0.948 -0.202X1 +e

Interpretation Table 4: The table is displaying the R value at -0.831 demonstrating an inverse and negative relationship between ROA and NNPA of Public Sector Banks which is very strong. When NNPA rises the ROA of banks falls. The overall regression was statistically significant ($R2 = 0.691$, F (1,8) =17.912, $p < 0.003$). It was found that NNPA significantly predicted ROA (β = -0.202, $p < 0.003$). Thus the null hypothesis holds untrue and states that there is a relationship between ROA and the NNPA impacting of the banks.

H05: There exists no relationship between NIM and Gross NPA to Gross Advances Ratio.

COMPREHENSIVE TABLE OF ANALYSIS 5:

Model no.	Banks	R	R^2	F-Test	T-Test	P-Value	Significance	Hypothesis (H_0)
5	Public Sector	-.714[a]	.509	7.262	-2.695	.031[b]	Significant	Rejected

Regression Model 5:

NIM=a + β. x1 + e

X1= GNPA

Y= 2.599 -0.031 X1 +e

Interpretation Table 5: The two variables NIM and GNPA were tested and it is known from the R Value in the table that they are strongly associated at -0.714, however the relation is negative between the two variables, advocating that when GNPA hikes up the NIM

declines significantly. The overall regression was statistically significant ($R^2 = 0.509$, F $(1,8) = 7.262$, $p < 0.031$). It was found that GNPA significantly predicted NIM ($\beta = -0.202$, $p < 0.031$). Thus the null hypothesis is rejected and proves that there is a relationship between NIM and the GNPA of the Public Sector banks.

H06: There is no relationship between NIM and Net NPA to Net Advances Ratio.

COMPREHENSIVE TABLE OF ANALYSIS 6:

Model no.	Banks	R	R^2	F-Test	T-Test	P-Value	Significance	Hypothesis (H_0)
	Public Sector	-.953ª	.908	78.892	-8.882	.000ᵇ	Significant	Rejected

Regression Model 6:
NIM=a + β. x1 + e
X1= NNPA
Y= 2.628 -0.070 X1 +e

Interpretation Table 6: To assess the association between NIM and NNPA, the coefficient correlation in the table 6 evidences a very strong negative relation at R=-0.953. The upturn of Provisioned Bad loans (NNPA), greatly and strongly affects the Net Interest Margin (NIM) of the banks under the study. The overall regression was statistically significant ($R^2 = 0.908$, F $(1,8) = 78.892$, $p < 0.000$). It was found that NNPA significantly predicted NIM ($\beta = -0.070$, $p < 0.000$). The P value is less than 0.05 and hence the null hypothesis is not accepted, inferring that there is a very strong relationship between NIM and the NNPA of banks and the presence of the bad loans definitely affects the working and the profitability of the banks.

Findings and Conclusion.
On conducting the analysis, it is inferred that, the correlation between the variables of profitability, that is ROE, ROA and NIM all have shown a negative relation with the ratios of bad loans, that is Gross as well as Net NPA. In all the hypothesis testing, expect one, the correlation coefficient is more that 80% indicating a very strong relationship between the predictor and the response variable. Thus it is clear that when the volume of NPA rises the amount of profit decreases considerably. This is justified further as the results of the present study have established NPA as the major attacker of profits of the banking industry, because all the regression coefficients of the study are found to be negative in the analysis. Thus NPA is that intruding negative phenomena, in front of which all the positive income

source gets throttled. It can completely push the banks in a distressed situation as it nullifies the huge portion of earned profits, due to the intake of provisions needed to service the NPAs. If these bad loans are not timely reined, it has the caliber to put all the banking activities at a question.

References

1. Bepari, R., & Sarkar, S. C. (2020). Impact Of Non-Performing Assets On Profitability Performance Of Selected Public Sector Banks And Private Sector Banks In India: A Comparative Study. Internationaljournal Of Multidisciplinaryeducationalresearch, 09(5(5)), 46–51. http://www.ijmer.in

2. Boateng, K. (2018). Determinants of Bank Profitability : A Comparative Study of Indian and Ghanaian Banks. 5(5), 643–654.

3. Brahmaiah, B., & Ranajee. (2018). Factors Influencing Profitability of Banks in India. Theoretical Economics Letters, 08(14), 3046–3061. https://doi.org/10.4236/tel.2018.814189.

4. C.S.Balasubramaniam. (2011). Non-Performing Assets and Profitability of Commercial Banks in India : Assessment and Emerging Issues. Abhinav, 1, 41–52.

5. Chakraborty, S. A. (2017). Effect of NPA on banks profitability. International Journal of Engineering Technology, Management and Applied Sciences, 05(05), 201–210. https://www.academia.edu/ Chaudhari, A. (2020). A Study on Impact of Non-Performing Assets on Profitability of Public and Private Sector Banks. 5(4), 163–166.

6. Das, S. K., & Uppal, K. (2021). NPAs and profitability in Indian banks: an empirical analysis. Future Business Journal, 7(1), 1–9. https://doi.org/10.1186/s43093-021-00096-3

7. Gowda, I. P. M. (2019). Implications of NPAs on the Profitability of SCBs-A Comparative Study of Public, Private and Foreign Banks. Amity Journal of Finance ADMAA, 4(2), 88–109.

8. Gulati, P. R. (2018). Comparative analysis of impact of npas on profitability. IJRAR-International Journal of Research and Analytical Reviews, 5(2), 1763–1770.

9. Jafari, N. (2015). Management of NPC. Iranian Journal of Child Neurology, 9(4), 24. https://doi.org/10.22037/ijcn.v9i4.11024

10. Jaswal, U., Patil, S., & Giri, S. (2020). A Study on Impact of NPA's on Banks Profitability (Case on selected Banks) 1991-2019. SSRN Electronic Journal, 1–16. https://doi.org/10.2139/ssrn.3526023

11. Kavitha, N., & Muthukrishna, V. (2019). Impact of non-performing assets on the profitability in Indian scheduled commercial banks. African Journal of Business Management, 13(4), 128–137. https://doi.org/10.5897/ajbm2018.8683

12. Mehta, K., & Kaushik, V. (2020). ISSN NO : 2231-3990 Performance analysis through NPA of Public Sector Banks and Private Sector Banks Page No : 1917 Page No : 1918. IX(2231), 1917–1927.

13. Naaz, S. Y. (2021). Analysis of the Effect of the Non-Performing Assets on the Profitability of the Public Sector Banks. Ilkogretim Online, 20(1), 2100–2111. https://doi.org/10.17051/ilkonline.2021.01.230

14. Narula, S., & Singla, M. (2014). Empirical Study on Non Performing Assets of Bank. International Journal of Advance Research in Computer Science and Management Studies, 02(01), 194–199. www.ijarcsms.com

15. Pandya, B. (2015). Impact of Priority Sector Advances on Bank Profitability : Evidence From Scheduled Commercial Banks of India. BVIMSR's Journal of Management Research, 7(2), 75–81.

16. S, M. K., & Rakhi, M. (2018). Relationship between Non-Preforming Assets (NPA) and Profitability of Development Banks: The Case of India. Asian Journal of Research in Banking and Finance, 08(06), 99–111. https://doi.org/http://dx.doi.org/10.5958/2249-7323.2018.00047.0

17. Senthil Arasu, B., Sridevi, P., Nageswari, P., & Ramya, R. (2019). A Study on Analysis of Non-Performing Assets and its Impact on Profitability. International Journal of Scientific Research in Research Paper. Multidisciplinary Studies, 6, 1–10. www.moneycontrol.com.

18. Singh, D. (2010). Bank Specific And Macroeconomic Determinants Of Bank Profitability: The Indian Evidence. Paradigm: A Management Research Journal, 14(01). https://doi.org/ https://doi.org/10.1177/0971890720100107

19. Tyagi, A. (2020). Impact of NPA on the Profitability of Banks-with special references to Indian Banks. International Journal of Advanced Science and Technology, 29(9s), 2520–2526.

20. Wadhwa, R., & Ramaswamy, K. (2020). Impact of NPA on Profitability of Banks. October. https://doi.org/10.46647/ijetms.2020.v04i03.001

Websites

1. https://dbie.rbi.org.in/DBIE/dbie.rbi?site=publications
2. https://economictimes.indiatimes.com
3. https://www.sebi.gov.in
4. https://www.rbi.org.in
5. https://www.india.gov.in/official-website-reserve-bank-india

Annexure

Table showing ROE, ROA, NIM, GNPA and NNPA of Public Sector Banks of India for 10 years from 2012-13 to 2021-22

	Year	ROE	ROA	NIM	GNPA	NNPA
Public Sector Banks	2012-13	13.24	0.80	2.57	3.60	2.00
	2013-14	8.48	0.50	2.45	4.40	2.60
	2014-15	7.76	0.46	2.35	5.00	2.90
	2015-16	-3.47	-0.07	2.23	9.30	5.70
	2016-17	-2.05	-0.10	2.12	11.70	6.90
	2017-18	-14.62	-0.84	2.08	14.60	8.00
	2018-19	-11.44	-0.65	2.33	11.60	4.80
	2019-20	-4.16	-0.23	2.37	10.30	3.70
	2020-21	4.67	0.28	2.45	9.54	3.10
	2021-22	6.91	0.55	2.44	7.60	1.80