An Analytical Study of NPAs in Public Sector Banks in India

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Abstract

When the funds lent by the bank become doubtful or irrecoverable, it is termed as non-performing assets (NPAs). Banks are required to make provisions for such NPAs. RBI has issued guidelines for the provision for NPAs. According to RBI guidelines assets are classified as standard assets, sub-standard assets, doubtful assets and loss assets. The per cent provision of 0.40 per cent, 10 per cent, 100 per cent and 100 per cent respectively are required to be made by the banks. The presented article attempts to find out the position of Gross NPAs and Net NPAs in public sector banks in India. Applying the test of hypothesis using the F-test, it is found that Gross NPAs to Total Assets Ratio shows decreasing trend. The article attempts to find out the ratio Gross NPAs and Net NPAs to Total Assets and Advances. This ratio shows fluctuating trend in all the public sector banks.

1.   INTRODUCTION

In the banking sector, when the fund lent by the bank becomes doubtful in the term of recovery or it becomes irrecoverable, it is termed as Non Performing Assets (NPA). RBI has classified the assets in to following categories:

a) **Standard Assets**: These are those assets which are not NPAs but they involve some business risk. Such assets require 0.40 % provision on global portfolio, but no provision is required on domestic portfolio.

b) **Sub-standard Assets:** From 31st March, 2001, RBI has termed these assets as those assets which have been considered as NPAs for a period less than or equal to 18 months. The general provision of 10% of total outstanding principal plus entire outstanding interest is required to be made on such sub-standard assets.

c) **Doubtful Assets:** From 31st March, 2001, RBI has termed these assets as the assets which have been considered as NPAs for a period of more than 18 months. On these assets, banks have to make 100% provision for unsecured portion and an additional provision of 20% to 50% advances, if doubtful for 3 years or more.

d) **Loss Assets:** These are the assets which are last by the bank or auditors or by RBI on inspection. For these NPAs, 100% provision for the outstanding amount must be made by the bank.

From the above classification, standard assets are considered as performing assets and sub-standard assets, doubtful assets and loss assets are

considered as NPAs. According to RBI guidelines, all banks are required to maintain NPAs on Gross as well as Net basis.

2.   NPA: NON-PERFORMING ASSETS

Advances are classified into performing and non-performing advances (NPAs) as per RBI guidelines. NPAs are further classified into sub-standard, doubtful and loss assets based on the criteria stipulated by RBI. An asset, including a leased asset, becomes nonperforming when it ceases to generate income for the Bank. An NPA is a loan or an advance where:

- Interest and/or installment of principal remains overdue for a period of more than 90 days in respect of a term loan.
- The account remains "out-of-order" in respect of an Overdraft or Cash Credit (OD/CC).
- The bill remains overdue for a period of more than 90 days in case of bills purchased and discounted.
- A loan granted for short duration crops will be treated as an NPA if the installments of principal or interest thereon remain overdue for two crop seasons.
- A loan granted for long duration crops will be treated as an NPA if the installments of principal or interest thereon remain overdue for one crop season.

The Bank classifies an account as an NPA only if the interest imposed during any quarter is not fully repaid within 90 days from the end of the relevant quarter. This is a key to the stability of the banking sector. There should be no hesitation in stating that Indian banks have done a remarkable job in containment of non-performing loans (NPL) considering the overhang issues and overall difficult environment.

In fact, recovery management is also linked to the banks' interest margins. The cost and recovery management supported by enabling legal framework hold the key to future health and competitiveness of the banks. No doubt, improving recovery-management in India is an area requiring expeditious and effective actions in legal, institutional and judicial processes.

3.   RESEARCH METHODOLOGY

a) **Sample for the purpose of study:** To check the position of NPAs in public sector banks in India, banks are classified in to 4 different categories, mentioned as below: (Refer appendix- Table no.1)

- State Bank of India (SBI)
- State Bank Associates, it includes 6 different banks i.e. State Bank of Bikaner & Jaipur, State Bank of Hyderabad, State Bank of Indore, State Bank of Mysore, State Bank of Patiala and State Bank of Travancore
- Nationalized Banks, and
- Other public sector banks

b) **Source of Data:** For the purpose of analysis of the position of NPAs in public sector banks in India, the required statistical data collected through secondary sources i.e. from various issues of The India Bankers, Indian Banking at a Glance-published by Indian Banks' Association, Annual

Table - A

RBI Guidelines for NPAs Recognition

Loans & Advances	Guidelines applicable from 31-3-2001	Guidelines applicable from 31-3-2004
Term loan interest and/or installment remain over due for more than	180 days	90 days
Overdraft/credit account	Remains out of order	Remains out of order
Bill purchased and discounted remains over due for more than	180 days	90 days
Agricultural loan interest and/or installments remains over due for	Two harvest seasons but not exceeding two and half years	Two harvest seasons but not exceeding two and half years
Other accounts-any amount to be received remains over due for more than	180 days	90 days

reports of the banks and website of RBI. It includes mainly the data of Total assets, Advances, Gross NPAs and Net NPAs of the public sector Banks. (Refer appendix- Table no. 2, 3 & 4)

c) Period of Study: The study is focused on the period of four financial years of banks i.e. from 2005-'06 to 2008-'09.

The data compiled from various sources for the duration for the period of study i.e. 2005-'06 to 2008-'09 is mentioned below in various tables. (Refer appendix- Table no. 2, 3 & 4)

H_{0R}- There is no significant difference in four years among 4 ratios.

H_{0C}- There is no significant difference in the 4 groups of public sector banks among four ratios.

f) Hypothesis Testing:

A)   Gross NPAs to Total Assets Ratio:

H_{0R}**:** There is no significant difference in four years

H_{0C}**:** There is no significant difference in 4 groups of banks as far as Gross NPAs to Total Assets Ratio is concern.

Table - B

Name of Banks	2005-'06	2006-'07	2007-'08	2008-'09	Total
SBI	1.95	1.76	1.78	1.62	7.11
SBI Associates	1.47	1.12	0.91	0.88	4.38
Nationalized Banks	2.24	1.64	1.25	1.10	6.23
Other Public Sector Banks	1.26	1.19	1.20	0.83	4.48
Total	6.92	5.71	5.14	4.43	**22.20**

Table - C

ANOVA Table

Sources of variation	Sum of squares	Degree of freedom	Sum of squares of means	F_{cal}	F_{tab} at 5% LOS
Due to Banks (**SSR**)	1.35	3	0.45	11.25	6.99
Due to Years (**SSC**)	0.83	3	0.28	7	6.99
Due to Error	0.34	9	0.04		
Total (SST)	**2.52**	**15**			

d) Method of Analysis and interpretation: To analyze the collected data, the technique of ratio is used. The collected data transferred in to various ratios i.e. Gross NPAs to Total Assets ratio, Net NPAs to Total Assets ratio, Gross NPAs to Advances ratio and Net NPAs to advances ratio (Refer appendix- Table no. 4 & 5).

After conversion of data in to various ratios, these ratios are tested with F test through two way ANOVA table. The main object of testing through ANOVA is to verify whether the collected data is comparable or not.

e) Hypothesis: For the analysis of following four ratios:

1)   Gross NPAs to Total Assets Ratio
2)   Net NPAs to Total Assets Ratio
3)   Gross NPAs to Advances Ratio
4)   Net NPAs to Advances Ratio

Correction factor = $\dfrac{(T)^2}{N} = \dfrac{(22.20)^2}{16} = \mathbf{30.8025}$

$$\text{SSC} = \frac{\Sigma(Ci^2)}{n} - \frac{(T)^2}{N}$$

$$= \frac{(6.92)^2}{4} + \frac{(5.71)^2}{4} + \frac{(5.14)^2}{4} + \frac{(4.43)^2}{4} - 30.8025$$

$$= \frac{47.89 + 32.60 + 26.42 + 19.63}{4} - 30.8025$$

$$= 31.635 - 30.8025$$

$$= \mathbf{0.8325}$$

$$\mathbf{SSR} = \frac{\Sigma(Ri^2)}{n} - \frac{(T)^2}{N}$$

$$= \frac{(7.11)^2}{4} + \frac{(4.38)^2}{4} + \frac{(6.23)^2}{4} + \frac{(4.48)^2}{4} - 30.8025$$

$$= \frac{50.55 + 19.18 + 38.81 + 20.07}{4} - 30.8025$$

$$= 32.1525 - 30.8025$$

$$= \mathbf{1.35}$$

$$\text{SST} = \sum Xij^2 - \frac{(T)^2}{N}$$

$$= [(1.95)^2 + (1.76)^2 + (1.78)^2 + - - - - - - - - - + (0.83)^2] - 30.8025$$

$$= 33.3230 - 30.8025$$

$$= \mathbf{2.52}$$

Conclusion

H_{0R} is Rejected, hence there is significant difference in four years at 5% level of significance

H_{0C} is Rejected, hence there is significant difference in the 4 groups of public sector

Banks at 5% level of significance

B)   Net NPAs to Total Assets Ratio:

H_{0R} There is no significant difference in four years

H_{0C} There is no significant difference in 4 groups of banks as far as Net NPAs to Total Assets Ratio is concerned.

$$= \frac{(2.86)^2}{4} + \frac{(2.63)^2}{4} + \frac{(2.67)^2}{4} + \frac{(2.32)^2}{4} - 6.8644$$

$$= \frac{8.18 + 6.92 + 7.13 + 5.38}{4} - 6.8644$$

$$= 6.9025 - 6.8644$$

$$= \mathbf{0.0381}$$

$$\text{SSR} = \frac{\Sigma (Ri^2)}{n} - \frac{(T)^2}{N}$$

$$= \frac{(3.94)^2}{4} + \frac{(1.80)^2}{4} + \frac{(2.02)^2}{4} + \frac{(2.72)^2}{4} - 6.8644$$

$$= \frac{15.52 + 3.24 + 4.08 + 7.40}{4} - 6.8644$$

$$= 7.56 - 6.8644$$

$$= \mathbf{0.6956}$$

$$\text{SST} = \sum Xij^2 - \frac{(T)^2}{N}$$

$$= [(0.99)^2 + (0.93)^2 + (1.03)^2 + - - - - - - - - - + (0.55)^2] - 6.8644$$

Table - D

Name of Banks	2005-'06	2006-'07	2007-'08	2008-'09	Total
SBI	0.99	0.93	1.03	0.99	3.94
SBI Associates	0.59	0.46	0.37	0.38	1.80
Nationalized Banks	0.64	0.54	0.44	0.40	2.02
Other Public Sector Banks	0.64	0.70	0.83	0.55	2.72
Total	2.86	2.63	2.67	2.32	**10.48**

Table -E
ANOVA Table

Sources of variation	Sum of squares	Degree of freedom	Sum of squares of means	F_{cal}	$F_{tab\ at\ 5\%\ los}$
Due to Banks (**SSR**)	0.6956	3	0.23	28.75	6.99
Due to Years (**SSC**)	0.0381	3	0.01	1.25	6.99
Due to Error	0.0763	9	0.008		
Total (SST)	**0.81**	**15**			

Correction factor $= \dfrac{(T)^2}{N} = \dfrac{(10.48)^2}{16} = \mathbf{6.8644}$

$$\text{SSC} = \frac{\Sigma (Ci^2)}{n} - \frac{(T)^2}{N}$$

$$= 7.6728 - 6.8644$$

$$= \mathbf{0.81}$$

Conclusion

H_{0R} is Rejected hence there is significant difference in four years at 5% level of significance

H_{0C} is Accepted hence there is no significant difference in the 4 groups of public sector banks at 5% level of significance

C)   Gross NPAs to Advances Ratio:

H_{0R} There is no significant difference in four years

H_{0C} There is no significant difference in 4 groups of banks as far as Gross NPAs to Advances Ratio is concerned.

$= 95.7325 - 90.73 = \textbf{5.0025}$

$$SST = \sum Xij^2 - \frac{(T)^2}{N}$$

$= [(3.68)^2 + (2.96)^2 + (3.08)^2 + - - - - - - - - - + (1.39)^2] - 90.73$

$\qquad = 100.4656 - 90.73 = \textbf{9.7356}$

Table - F

Name of Banks	2005-'06	2006-'07	2007-'08	2008-'09	Total
SBI	3.68	2.96	3.08	2.87	12.59
SBI Associates	2.65	1.85	1.49	1.40	7.39
Nationalized Banks	4.06	2.80	2.09	1.79	10.74
Other Public Sector Banks	2.12	1.97	1.90	1.39	7.38
Total	12.51	9.58	8.56	7.45	**38.10**

Table -G
ANOVA Table

Sources of variation	Sum of squares	Degree of freedom	Sum of squares of means	F_{cal}	$F_{tab at}$ 5% LOS
Due to Banks (**SSR**)	5.0025	3	1.6675	12.50	6.99
Due to Years (**SSC**)	3.5325	3	1.1775	8.83	6.99
Due to Error	1.2006	9	0.1334		
Total (SST)	**9.7356**	**15**			

Correction factor $= \dfrac{(T)^2}{N} = \dfrac{(38.10)^2}{16} = 90.73$

$$SSC \quad = \frac{\Sigma(Ci^2)}{n} - \frac{(T)^2}{N}$$

$= \dfrac{(12.51)^2}{4} + \dfrac{(9.58)^2}{4} + \dfrac{(8.56)^2}{4} + \dfrac{(7.45)^2}{4} - 90.73$

$= \dfrac{156.50 + 91.78 + 73.27 + 55.50}{4} - 90.73$

$= 94.2625 - 90.73$

$= \textbf{3.5325}$

$$SSR = \frac{\Sigma(Ri^2)}{n} - \frac{(T)^2}{N}$$

$= \dfrac{(12.59)^2}{4} + \dfrac{(7.39)^2}{4} + \dfrac{(10.74)^2}{4} + \dfrac{(7.38)^2}{4} - 90.73$

$= \dfrac{158.51 + 54.61 + 115.35 + 54.46}{4} - 90.73$

Conclusion:

H_{0R} is Rejected hence there is significant difference in four years at 5% level of significance

H_{0C} is Rejected hence there is no significant difference in the 4 groups of public sector banks at 5% level of significance

D)   Net NPAs to Advances Ratio:

H_{0R} There is no significant difference in four years

H_{0C} There is no significant difference in 4 groups of banks as far as Net NPAs to Advances Ratio is concern.

Correction factor $= \dfrac{(T)^2}{N} = \dfrac{(17.97)^2}{16} = 20.18$

$$SSC \quad = \frac{\Sigma(Ci^2)}{n} - \frac{(T)^2}{N}$$

$= \dfrac{(5.17)^2}{4} + \dfrac{(4.40)^2}{4} + \dfrac{(4.45)^2}{4} + \dfrac{(3.95)^2}{4} - 20.18$

$= \dfrac{26.73 + 19.36 + 19.80 + 15.60}{4} - 20.18$

Table -H

Name of Banks	2005-'06	2006-'07	2007-'08	2008-'09	Total
SBI	1.88	1.56	1.78	1.76	6.98
SBI Associates	1.06	0.76	0.61	0.61	3.04
Nationalized Banks	1.16	0.92	0.74	0.66	3.48
Other Public Sector Banks	1.07	1.16	1.32	0.92	4.47
Total	5.17	4.40	4.45	3.95	**17.97**

Table -I
ANOVA Table

Sources of variation	Sum of squares	Degree of freedom	Sum of squares of means	F_{cal}	F_{tab} at 5% LOS
Due to Banks (**SSR**)	2.3325	3	0.7775	30.61	6.99
Due to Years (**SSC**)	0.1925	3	0.0642	2.53	6.99
Due to Error	0.2285	9	0.0254		
Total (SST)	**2.7539**	**15**			

= 20.3725 - 20.18 = **0.1925**

$$SSR = \frac{\Sigma(Ri^2)}{n} - \frac{(T)^2}{N}$$

$$= \frac{(6.98)^2}{4} + \frac{(3.14)^2}{4} + \frac{(3.48)^2}{4} + \frac{(4.47)^2}{4} - 20.18$$

$$= \frac{48.75 + 9.24 + 12.11 + 19.98}{4} - 20.18$$

= 22.5125 - 20.18

= **2.3325**

$$SST = \sum Xij^2 - \frac{(T)^2}{N}$$

$$= [(1.88)^2 + (1.56)^2 + (1.78)^2 + - - - - - - - - - + (0.92)^2] - 20.18$$

= 22.9339 - 20.18

= **2.7539**

Conclusion:

H_{0R} is Rejected hence there is significant difference in four years at 5% level of significance

H_{0C} is Accepted hence there is no significant difference in the 4 groups of public sector banks at 5% level of significance

4.   TREND ANALYSIS

Following findings derived from the analysis of trends of Gross NPAs and NPAs to Total Assets ratio and Advances ratios (considering base year 2005-06, Refer appendix Table no. 7 & 8)

•   Considering 2005-06 as base year the Gross NPAs to Total Assets Ratio shows decreasing trend in all the 4 groups of banks during the period of four years. It shows that the banks are constantly applying their genuine efforts to reduce proportion of their Gross NPAs in total assets. The Net NPAs to Total Assets Ratio also shows decreasing trend in SBI Associates and nationalized banks but it shows fluctuating trend in SBI and other public sector banks. During the year 2006-07 it is increased to 104.04% in SBI and during 2006-'07 and 2007-08 it is increased to 109.375% and 129.688%

•   Considering 2005-'06 as base year the Gross NPAs to Advances Ratio shows decreasing trend in all the 4 groups of banks during the period of four years. It shows that the banks are constantly applying their efforts to recover their advances from customers.

•   The trend of Net NPAs to Advances Ratio also shows decreasing trend in SBI and its Associates and nationalized banks but it shows fluctuating trend in other public sector banks. During the year 2006-'07 it is increased to 108.41% and in 2007-'08 it increased to 123.36%. It shows efficient recovery of advances in sample units except other public sector banks.

APPENDIX

Table-1
A Table Showing Nos. of Public Sector Banks in India

Name of Banks	2005-06	2006-07	2007-08	2008-09
SBI	1	1	1	1
SBI Associates	7	7	7	6#
Nationalized Banks	19	19	19	19
Other Public Sector Banks	1	1	1	1
Total Public Sector Banks	28	28	28	27

State Bank of Saurashtra merged with SBI during the year 2008-'09

Table-2
A Table Showing Total Assets of Public Sector Banks (Rs. in Crores)

Name of Banks	2005-'06	2006-'07	2007-'08	2008-'09
SBI	4,94,029	5,66,565	7,21,526	9,64,432
SBI Associates	1,97,818	2,39,230	2,89,432	3,15,780
Nationalized Banks	12,34,462	15,30,531	18,80,271	23,14,102
Other Public Sector Banks	88,565	1,03,839	1,30,694	1,72,402
Total Public Sector Banks	20,14,874	24,40,166	30,21,924	37,66,716

Table-3
A Table Showing Advances of Public Sector Banks (Rs. in Crores)

Name of Banks	2005-'06	2006-'07	2007-'08	2008-'09
SBI	2,61,801	3,37,336	4,16,768	5,42,503
SBI Associates	1,09,878	1,44,933	1,76,954	1,97,103
Nationalized Banks	6,81,869	8,95,406	11,21,466	14,17,121
Other Public Sector Banks	52,739	62,471	82,213	1,03,428
Total Public Sector Banks	11,06,288	14,40,147	17,97,401	22,60,156

Table-4
A Table Showing Gross NPA and Net NPA in Public Sector Banks (Rs. In Crores)

Name of Bank	Gross NPA				Net NPA			
	2005-06	2006-07	2007-08	2008-09	2005-06	2006-07	2007-08	2008-09
SBI	9,628	9,998	12,837	15,589	4,911	5,258	7,424	9,552
SBI Associates	2,913	2,679	2,641	2,764	1,161	1,102	1,085	1,193
Nationalized Banks	27,702	25,060	23,410	25,368	7,929	8,244	8,245	9,339
Other Public Sector Banks	1,116	1,232	1,565	1,436	563	722	1,083	949
Total of Public Sector Banks	**41,538**	**38,968**	**40,452**	**45,156**	**14,564**	**15,325**	**17,836**	**21,033**

Table-5
A Table Showing Gross NPA and Net NPA % to Tabal Assets (Rs. In Crores)

Name of Bank	Gross NPA % to Total Assets				Net NPA %			
	2005-06	2006-07	2007-08	2008-09	2005-06	2006-07	2007-08	2008-09
SBI	1.95	1.76	1.78	1.62	0.99	0.93	1.03	0.99
SBI Associates	1.47	1.12	0.91	0.88	0.59	0.46	0.37	0.38
Nationalized Banks	2.24	1.64	1.25	1.10	0.64	0.54	0.44	0.40
Other Public Sector Banks	1.26	1.19	1.20	0.83	0.64	0.70	0.83	0.55
Total of Public Sector Banks	**2.06**	**1.60**	**1.34**	**1.20**	**0.72**	**0.63**	**0.59**	**0.56**

Table-6

A Table Showing Gross NPA and Net NPA % to Advances (Rs. In Crores)

Name of Bank	Gross NPA % to Advances				Net NPA % to Advance			
	2005-06	2006-07	2007-08	2008-09	2005-06	2006-07	2007-08	2008-09
SBI	3.68	2.96	3.08	2.87	1.88	1.56	1.78	1.76
SBI Associates	2.65	1.85	1.49	1.40	1.06	0.76	0.61	0.61
Nationalized Banks	4.06	2.80	2.09	1.79	1.16	0.92	0.74	0.66
Other Public Sector Banks	2.12	1.97	1.90	1.39	1.07	1.16	1.32	0.92
Total of Public Sector Banks	**3.75**	**2.71**	**2.25**	**2.00**	**1.32**	**1.06**	**0.99**	0.93

Table-7

A Table Showing Trend of Gross NPAs and Net NPA s to Assets Ratio (Considering 2005-'06) as base year)

Name of Bank	Trends of Gross NPA to Total Assets Ratio				Trends of Net NPA to Total Assets Ratio			
	2005-06	2006-07	2007-08	2008-09	2005-06	2006-07	2007-08	2008-09
SBI	100%	90.33%	91.28%	83.08%	100%	93.94%	104.04%	100%
SBI Associates	100%	76.19%	61.90%	56.86%	100%	77.97%	62.71%	64.41%
Nationalized Banks	100%	73.21%	55.80%	49.11%	100%	84.375%	68.75%	62.50%
Other Public Sector Banks	100%	94.44%	95.24%	65.87%	100%	109.375%	129.688%	85.938%
Total of Public Sector Banks	**100%**	**77.67%**	**65.05%**	**58.25%**	**100%**	**87.50%**	**81.94%**	**77.78%**

Table-8

A Table Showing Trend of Gross NPAs and Net NPA s to Advances Ratio (Considering 2005-'06) as base year)

Name of Bank	Trends of Gross NPA to Total Advances Ratio				Trends of Net NPA to Total Advances Ratio			
	2005-06	2006-07	2007-08	2008-09	2005-06	2006-07	2007-08	2008-09
SBI	100%	80.43%	83.70%	77.99%	100%	82.99%	94.68%	93.62%
SBI Associates	100%	69.81%	56.23%	52.83%	100%	71.70%	57.55%	57.55%
Nationalized Banks	100%	68.96%	51.48%	44.09%	100%	79.31%	63.79%	56.90%
Other Public Sector Banks	100%	92.92%	89.62%	65.57%	100%	108.41%	123.36%	85.98%
Total of Public Sector Banks	**100%**	**72.27%**	**60.00%**	**53.33%**	**100%**	**80.30%**	**75.00%**	**70.45%**

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