CHAPTER - 5

ANALYSIS AND INTERPRETATION

Mounting up of Non-Performing Assets in recent years is one of the foremost and formidable issues that have shaken the entire banking sector. At the Macro level, NPAs have clogged off the supply line of credit to the potential borrowers, thereby having a negative impact on capital formation and arresting the economic activity in the country. At the Micro level, the unjustifiable level of NPAs has wrinkled the profitability of banks by minimizing interest income and provisioning requirements, besides restricting the recycling of funds contributing to serious asset- liability mismatches.

In this Chapter, an analysis of data relating to NPAs i.e magnitude and trend, asset portfolio, occupation wise analysis, risk assessment, impact of economic indicators for the period of 2005-06 to 2014-15 has been made. Data has been presented along with a discussion on striking observations. Accordingly the observations are presented in the following five sections.

5.1 Magnitude and trend of NPAs in Public and Private Sector banks.

5.2 Portfolio of NPA in Public and Private Sector Banks

5.3 Occupation wise distribution of NPA in public and private sector banks.

5.4 Book value insolvency of Indian Commercial banks.

5.5 Procyclical effect of banks NPA with reference to economic indicators

5.1 TO MEASURE THE MAGNITUDE AND TREND OF NPA'S IN INDIAN PUBLIC AND PRIVATE SECTOR BANKS

The Reserve Bank of India has introduced prudential norms of income recognition and asset classification to Indian scheduled commercial banks; via its circular dated February 9, 1993 and subsequent circulars thereon. The ratio used to judge the extent of the NPA problem of the bank is Gross NPA / Gross Advance and Net NPA/Net advance. Hence, the two banks with same gross NPAs may be able to show different levels of net NPAs. So, the net NPAs have to be supplemented by gross NPA figures. "Reduction in non-performing assets by banks does not convey a full picture of their financial well-being", says Assets Reconstruction Company (India) Ltd (ARCIL). In this context, the following analysis deals with the magnitude and Trend of NPAs in Indian public and private sector banks for the period 2005-06 to 2014-15 in the following framework.

5.1.1 To assess the Credit portfolio of Public and Private sector banks

5.1.1.1 To examine the level of NPAs in Public and Private sector banks with respective to net NPA to net advances

5.1.1.2 To examine the level of NPAs in Public and Private sector banks with respective to gross NPA to gross advances

5.1.2 To assess the Asset portfolio of Public and Private sector banks

5.1.2.1 To examine the level of NPAs in Public and Private sector banks with respective to net NPA to Total assets

5.1.2.2 To examine the level of NPAs in Public and Private sector banks with respective to gross NPA to Total assets

5.1.1 TO ASSESS THE CREDIT PORTFOLIO OF PUBLIC AND PRIVATE SECTOR BANKS

This section deals with analysing the credit portfolio of Indian public and private sector banks. For better analysis, banks are grouped into four divisions namely SBI &its associates, Other nationalised Banks (excluding SBI Group), old private sector banks and new private sector banks. In order to analyse the credit portfolio, the level of net NPA to net advances and the level of gross NPA to gross advances has been examined. The banks are then categorised into three categories viz high, moderate and low level net NPAs. Further the banks are ranked based on their NPA ratios.

5.1.1.1 To examine the level of NPAs in Public and Private sector banks with respective to net NPA to net advances

The net NPA to net advances ratio is used as a measure of the overall quality of the bank's loan book. Non-performing assets are those assets for which interest is overdue for more than 90 days. Higher ratio reflects rising bad quality of advances in banks. The ratio is to be counted in terms of percentage and the formula for calculating net NPA is as follows.

$$\text{Net NPA ratio} = \frac{\text{Net NPA}}{\text{Net advances}} \times 100$$

TABLE 5.1: NET NPA/NET ADVANCES OF PUBLIC SECTOR BANKS DURING THE PERIOD 2005-06 TO 2014-15

S.No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank
1	Bank of Baroda	Other Nationalised	0.82	8.07	1
2	Corporation Bank	Other Nationalised	1	17.01	2
3	Syndicate Bank	Other Nationalised	1.06	8.25	3
4	Andhra Bank	Other Nationalised	1.07	28.43	4
5	Indian Bank	Other Nationalised	1.07	12.21	5
6	State Bank of Hyderabad	SBI & its Associates	1.08	20.06	6
7	Vijaya Bank	Other Nationalised	1.22	8.49	7
8	Union Bank of India	Other Nationalised	1.34	5.68	8
9	State Bank of Travancore	SBI & its Associates	1.38	3.33	9
10	Punjab National Bank	Other Nationalised	1.4	30.20	10
11	Canara Bank	Other Nationalised	1.44	8.99	11
12	Bank of India	Other Nationalised	1.45	8.47	12
13	State Bank of Mysore	SBI & its Associates	1.46	11.31	13
14	Punjab & Sind Bank	Other Nationalised	1.5	3.86	14
15	IDBI Ltd.	Other Nationalised	1.5	11.05	15
16	Oriental Bank of Commerce	Other Nationalised	1.51	7.97	16
17	State Bank of Bikaner & Jaipur	SBI & its Associates	1.51	21.16	17
18	State Bank of Patiala	SBI & its Associates	1.53	14.64	18
19	Bank of Maharashtra	Other Nationalised	1.54	7.52	19

TABLE 5.1 (Continued)

S.No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank
20	Allahabad Bank	Other Nationalised	1.72	16.86	20
21	Dena Bank	Other Nationalised	1.81	2.31	21
22	State Bank of India	SBI & its Associates	1.9	1.21	22
23	Indian Overseas Bank	Other Nationalised	1.96	24.21	23
24	Central Bank of India	Other Nationalised	2.17	3.38	24
25	UCO Bank	Other Nationalised	2.22	7.43	25
26	United Bank of India	Other Nationalised	2.73	12.30	26
	Average		**1.515**	**11.71**	

Source: Department of Banking Supervision, RBI

The above table indicates the quality of credit portfolio in Public sector banks in India. Higher net NPA/net advances reflect the low credit portfolio of banks and vice versa. From the table 5.1, it can be observed that United Bank of India has got higher net NPA / net advances when compared with all other public sector banks with average magnitude 2.73% and growth rate 12.30% over the study period 2005-06 to 2014-15. Bank of Baroda records the lowest net NPA/net advances among the public sector banks over the study period with the magnitude 0.82% and growth rate 8.07%. The overall average of net NPA/net advances is found to be 1.52% and growth rate 11.71%.

It is observed that Punjab National Bank has got highest growth rate 30.20% of net NPA/net advances during the study period when compared to all other public sector banks. Whereas State Bank of India records the minimum growth rate of net NPA/ net advances which is 1.21% during 2005-06 to 2014-15 and that reveals, State Bank of India has consistent declining trend throughout 10 years and speaks the efficient management of NPAs. This would not have been possible for SBI without the ability of management to check slippages in one hand and closely monitoring existing NPAs.

TABLE 5.2: SUMMARY OF NET NPA/NET ADVANCES OF PUBLIC SECTOR BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Public Sector Banks				Total Public	
	SBI & its Associates		Other Nationalised			
	No of Banks	Percent	No of Banks	Percent	No of Banks	Percent
High	-	-	3	15	3	11.54
Moderate	3	50	7	35	10	38.46
Low	3	50	10	50	13	50
Total	6	100	20	100	26	100

Low 0.82-1.46: Moderate-1.47-2.1; High- 2.2-2.73

It has been observed that among the public sector banks, three banks namely United Bank of India, UCO Bank and Central Bank of India are found to be in high category net NPA/net advances with averages 2.73 %, 2.22%, and 2.17 % respectively. 10 banks are found to be in moderate category in which three banks belongs to SBI group and & seven banks are from other nationalised banks. There are 13 banks in low category group in which three belong to SBI group and 10 banks are from other nationalised banks. This reveals that only 50% of the public sector banks are in the low category of net NPA/ net advances and 38.46% of the banks are found to be in moderate category and 11.54% of the banks in high category. It is also found that there are no banks from SBI group in high category of net NPA/ net advances.

TABLE 5.3: NET NPA/NET ADVANCES OF SBI & ITS ASSOCIATES

S.No.	Name of the Bank	Avg.	CAGR	Rank
1	State Bank of Hyderabad	1.08	20.06	1
2	State Bank of Travancore	1.38	3.33	2
3	State Bank of Mysore	1.46	11.31	3
4	State Bank of Bikaner & Jaipur	1.51	7.97	4
5	State Bank of Patiala	1.53	14.64	5
6	State Bank of India	1.9	1.21	6
	Average	**1.48**	**9.75**	

Source: Department of Banking Supervision, RBI

Table 5.3 shows the quality of credit portfolio in State Bank of India & its Associates. Higher net NPA/net advances reflect the low credit portfolio of banks and vice versa. It can be observed that State Bank of India has got higher net NPA / net advances when compared with all other banks in SBI group with average magnitude 1.9% and growth rate 1.21% over the study period 2005-06 to 2014-15. State Bank of Hyderabad records the lowest net NPA/net advances among the SBI group over the study period with the magnitude 1.08 and growth rate 20.06%. The overall average of net NPA/net advances is found to be 1.48% and the growth is 9.75%.

With regard to the growth rate, it is observed that State Bank of Hyderabad has got higher growth rate 20.06% of net NPA/net advances during the study period when compared to all other banks in SBI group. Whereas State Bank of India records the minimum growth rate of net NPA/ net advances which is 1.21% during 2005-06 to 2014-15.

TABLE 5.4: SUMMARY OF NET NPA/NET ADVANCES OF SBI & ITS ASSOCIATES DURING THE PERIOD 2005-06 TO 2014-15

	SBI & its Associates	
	No of Banks	**Percent**
High	1	16.67
Moderate	4	66.67
Low	1	16.67
Total	6	100

Low 1.08-1.35; Moderate 1.36-1.62; High 1.63-1.9

It has been observed that among the banks in SBI group, only State Bank of India is found to be in high category net NPA/net advances and 4 banks in moderate category and only 1 bank (i.e.) State Bank of Hyderabad is in low category group.

TABLE 5.5: NET NPA/NET ADVANCES OF OTHER NATIONALISED BANKS DURING THE PERIOD 2005-06 TO 2014-15

S.No.	Name of the Bank	Avg.	CAGR	Group Rank
1	Bank of Baroda	0.82	8.07	1
2	Corporation Bank	1	17.01	2
3	Syndicate Bank	1.06	8.25	3
4	Andhra Bank	1.07	28.43	4
5	Indian Bank	1.07	12.21	5

TABLE 5.5 (Continued)

S.No.	Name of the Bank	Avg.	CAGR	Group Rank
6	Vijaya Bank	1.22	8.49	6
7	Union Bank of India	1.34	5.68	7
8	Punjab National Bank	1.4	30.20	8
9	Canara Bank	1.44	8.99	9
10	Bank of India	1.45	8.47	10
11	Punjab & Sind Bank	1.5	3.86	11
12	IDBI Ltd.	1.5	11.05	12
13	Oriental Bank of Commerce	1.51	21.16	13
14	Bank of Maharashtra	1.54	7.52	14
15	Allahabad Bank	1.72	16.86	15
16	Dena Bank	1.81	2.31	16
17	Indian Overseas Bank	1.96	24.21	17
18	Central Bank of India	2.17	3.38	18
19	UCO Bank	2.22	7.43	19
20	United Bank of India	2.73	12.30	20
	Average	**1.53**	**12.29**	

Source: Department of Banking Supervision, RBI

The above table indicates the quality of credit portfolio in Public sector banks excluding SBI & its Associates in India. Higher net NPA/net advances reflects the low credit portfolio of banks and vice versa. From the table 5.5, it can be observed that United Bank of India has got higher net NPA / net advances when compared to all other nationalised sector banks with average magnitude 2.73% and growth rate 12.30% over the study period 2005-06 to 2014-15. Bank of Baroda records the lowest net NPA/net advances among the other nationalised banks over the study period with the magnitude 0.82% and growth rate 8.07%. The overall average of net NPA/net advances is found to be 1.53% and growth rate 12.29%.

It is observed that Punjab National Bank has got higher growth rate 30.20% of net NPA/net advances during the study period when compared to all other nationalised banks. Whereas Dena Bank records the minimum growth rate of net NPA/ net advances which is 2.31% during 2005-06 to 2014-15 and that reveals, Dena Bank has consistent declining trend throughout 10 years and speaks the efficient management of NPAs. This would not have been possible for Dena Bank without the ability of management to check slippages in one hand and closely monitoring existing NPAs.

TABLE 5.6: SUMMARY OF NET NPA/NET ADVANCES OF OTHER NATIONALISED BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Other Nationalised Banks	
	No of Banks	Percent
High	3	15
Moderate	7	35
Low	10	50
Total	20	100

Low 0.82-1.46; Moderate-1.47-2.1; High- 2.2-2.73

It has been observed that among the public sector banks, 15 percent of the bank namely United Bank of India, UCO Bank and Central Bank of India are found to be in high category net NPA/net advances with averages 2.73 %, 2.22%, and 2.17 % respectively. 35 percent of the banks are found to be in moderate category and 10 banks in low category group. This reveals that only 50% of the public sector banks are in the low category of net NPA/net advances.

TABLE 5.7: NET NPA/NET ADVANCES OF PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S.No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank
1	Nainital Bank	Old Private Sector	0	0	1
2	YES Bank	New Private Sector	0.09	3.66	2
3	HDFC Bank	New Private Sector	0.34	-5.50	3
4	Karur Vysya Bank	Old Private Sector	0.37	-0.38	4
5	Axis Bank	New Private Sector	0.47	-7.28	5
6	Federal Bank	Old Private Sector	0.6	-2.60	6
7	Tamilnad Bank	Old Private Sector	0.74	-11.09	7
8	South Indian Bank	Old Private Sector	0.78	-6.40	8
9	Jammu & Kashmir Bank	Old Private Sector	0.83	11.65	9
10	Ratnakar Bank	Old Private Sector	0.84	-20.30	10
11	City Union Bank	Old Private Sector	0.98	-3.97	11
12	IndusInd Bank	New Private Sector	1	-17.37	12
13	Kotak Mahindra Bank	New Private Sector	1.21	14.38	13
14	ICICI Bank	New Private Sector	1.27	8.38	14
15	Karnataka Bank	Old Private Sector	1.48	5.31	15

TABLE 5.7 (Continued)

S.No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank
16	Development Credit Bank	New Private Sector	1.8	-13.88	16
17	Dhanalakshmi Bank	Old Private Sector	1.86	1.55	17
18	Catholic Syrian Bank	Old Private Sector	2.04	3.31	18
19	Lakshmi Vilas Bank	Old Private Sector	2.07	-0.21	19
	Average	**1.02**	**-2.26**		

Source: Department of Banking Supervision, RBI

The above table indicates the quality of credit portfolio in Private sector banks in India. Higher net NPA/net advances reflect the low credit portfolio of banks and vice versa. From the table 5.7, it can be observed that Lakshmi Vilas Bank has got highest net NPA / net advances when compared to all private sector banks with average magnitude 2.07% and growth rate -0.21% over the study period 2005-06 to 2014-15. Nainital Bank maintains 0% net NPA during the study period. YES Bank records the lowest net NPA/net advances among the private sector banks with the magnitude 0.09% and growth rate 3.66%. The overall average of net NPA/net advances is found to be 1.02% and growth rate -2.26%.

It is observed that Kotak Mahindra Bank has got higher growth rate of net NPA/net advances which is 14.38% during the study period when compared to all other private sector banks. Whereas IndusInd Bank records the minimum growth rate of net NPA/ net advances which is -17.37% during 2005-06 to 2014-15 and that reveals, IndusInd Bank has consistent declining trend and speaks the efficient management of NPAs This would not have been possible for the bank without the ability of management to check slippages on one hand and closely monitoring of existing NPAs.

TABLE 5.8: SUMMARY OF NET NPA/NET ADVANCES OF PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Private Sector				Total Private	
	Old Private		New Private			
	No of Banks	Percent	No of Banks	Percent	No of Banks	Percent
High	4	33.33	1	14.28	5	26.32
Moderate	5	41.67	3	42.86	8	42.1
Low	3	25	3	42.86	6	31.58
Total	12	100	7	100	19	100

Low 0.00-0.69; Moderate-0.70-1.38; High- 1.38-2.07

It has been observed that among the private sector banks, five banks namely Lakshmi Vilas Bank, Catholic Syrian Bank, Dhanalakshmi Bank, Development credit Bank and Karnataka Bank are found to be in high category net NPA/net advances with averages 2.07 %, 2.04%, 1.86% , 1.8% and 1.48% respectively out of which four are old Private Sector Banks. Eight banks are found to be in moderate category and six banks in low category group out of which three banks are new private sector banks and three are old private sector banks. It can be observed that new private sector banks are better in terms of net NPA/net advances when compared with old private sector banks.

TABLE 5.9: NET NPA/NET ADVANCES OF OLD PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S.No.	Name of the Bank	Avg.	CAGR	Group Rank
1	Tamilnad Mercantile Bank	0	0	1
2	Karur Vysya Bank	0.37	-0.38	2
3	Federal Bank	0.6	-2.60	3
4	Nainital Bank	0.7	-11.09	4
5	South Indian Bank	0.78	-6.40	5
6	Jammu & Kashmir Bank	0.83	11.65	6
7	Ratnakar Bank	0.84	-20.30	7
8	City Union Bank	0.98	-3.97	8
9	Karnataka Bank	1.48	5.31	9
10	Dhanalakshmi Bank	1.86	1.55	10
11	Catholic Syrian Bank	2.04	3.31	11
12	Lakshmi Vilas Bank	2.07	-0.21	12
	Average	**1.11**	**-2.85**	

Source: Department of Banking Supervision, RBI

Table 5.9 indicates the quality of credit portfolio in old Private sector banks in India. Higher net NPA/net advances reflect the low credit portfolio of banks and vice versa. It can be observed that Lakshmi Vilas Bank has got higher net NPA / net advances when compared with all old private sector banks with average magnitude 2.07% and growth rate -0.21% over the study period 2005-06 to 2014-15. Nainital Bank maintains 0% net NPA/net advances during the study period. Karur Vysya Bank records the lowest net NPA/net advances among the old private sector banks with the magnitude 0.37% and growth rate -0.38%. The overall average of net NPA/net advances is found to be 1.11% and growth rate -2.85%.

It is observed that Jammu & Kashmir Bank has got higher growth rate of net NPA/net advances which is 11.65% during the study period when compared to all other old private sector banks. Whereas Ratnakar Bank records the minimum growth rate of net NPA/ net advances which is -20.30% during 2005-06 to 2014-15 and that reveals, Ratnakar Bank has consistent declining trend throughout 10 years and reflection the efficient management of NPAs. This would not have been possible for the bank without the ability of loan appraisal and credit risk management.

TABLE 5.10: SUMMARY OF NET NPA/NET ADVANCES OF OLD PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Old Private Banks	
	No of Banks	**Percent**
High	3	25
Moderate	5	41.67
Low	4	33.33
Total	12	100

Low 0.00-0.69; Moderate-0.70-1.38; High- 1.39-2.07

It has been observed that among the old private sector banks, three banks namely Lakshmi Vilas Bank, Catholic Syrian Bank and Dhanalakshmi Bank, are found to be in high category net NPA/net advances with averages 2.07%, 2.04% and 1.86% respectively. Five banks are found to be in moderate category and four banks in low category group.

TABLE 5.11: NET NPA/NET ADVANCES OF NEW PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Avg.	CAGR	Group Rank
1	YES Bank	0.09	3.66	1
2	HDFC Bank	0.34	-5.50	2
3	Axis Bank	0.47	-7.28	3
4	IndusInd Bank	1	-17.37	4
5	Kotak Mahindra Bank	1.21	14.38	5
6	ICICI Bank	1.27	8.38	6
7	Development Credit Bank	1.8	-13.88	7
	Average	**0.88**	**-2.52**	

Source: Department of Banking Supervision, RBI

The above table indicates the quality of credit portfolio in New Private sector banks operating in India. Higher net NPA/net advances reflect the low credit portfolio of banks and vice versa. From the table 5.11, it can be observed that Development Credit Bank has got higher net NPA / net advances when compared to all other new private sector banks with average magnitude 1.8% and growth rate -13.88% over the study period 2005-06 to 2014-15. YES Bank records the lowest net NPA/net advances among the new private sector banks with the magnitude 0.09% and growth rate 3.66%. The overall average of net NPA/net advances is found to be 0.88% and growth rate -2.52%.

It is observed that Kotak Mahindra Bank has got higher growth rate of net NPA/net advances which is 14.38% during the study period when compared to all other new private sector banks. Whereas IndusInd Bank records the minimum growth rate of net NPA/ net advances which is -17.31% during 2005-06 to 2014-15 and that reveals, IndusInd Bank has consistent declining trend throughout 10 years and speaks the efficient management of NPAs. This would not have been possible for the bank without the ability of management to check slippages in one hand and closely monitoring existing NPAs.

TABLE 5.12: SUMMARY OF NET NPA/NET ADVANCES OF NEW PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	New Private Banks	
	No of Banks	**Percent**
High	2	29
Moderate	2	29
Low	3	42
Total	7	100

Low 0.09-0.66; Moderate-0.67-1.23; High- 1.24-1.8

Also, it has been observed that among the new private sector banks, three banks namely Development credit Bank, ICICI Bank and Kotak Mahindra Bank are found to be in high category net NPA/net advances with averages 1.8%, 1.27% and 1.21% respectively. Two banks are found to be in moderate category and two banks in low category group.

TABLE 5.13: NET NPA/NET ADVANCES OF PUBLIC AND PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S.No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank	
					Group Rank	Overall Rank
1	Nainital Bank	Private Sector	0	0	1	1
2	YES Bank	Private Sector	0.09	3.66	2	2
3	HDFC Bank	Private Sector	0.34	-5.50	3	3
4	Karur Vysya Bank	Private Sector	0.37	-0.38	4	4
5	Axis Bank	Private Sector	0.47	-7.28	5	5
6	Federal Bank	Private Sector	0.6	-2.60	6	6
7	Tamilnad Bank	Private Sector	0.74	-11.09	7	7
8	South Indian Bank	Private Sector	0.78	-6.40	8	8
9	Bank of Baroda	Public Sector	0.82	8.07	1	9
10	Jammu & Kashmir Bank	Private Sector	0.83	11.65	9	10
11	Ratnakar Bank	Private Sector	0.84	-20.30	10	11
12	City Union Bank	Private Sector	0.98	-3.97	11	12
13	Corporation Bank	Public Sector	1	-17.37	2	13
14	IndusInd Bank	Private Sector	1	17.01	12	14
15	Syndicate Bank	Public Sector	1.06	8.25	3	15
16	Andhra Bank	Public Sector	1.07	28.43	4	16
17	Indian Bank	Public Sector	1.07	12.21	5	17
18	State Bank of Hyderabad	Public Sector	1.08	20.06	6	18
19	Kotak Mahindra Bank	Private Sector	1.21	14.38	13	19
20	Vijaya Bank	Public Sector	1.22	8.49	7	20
21	ICICI Bank	Private Sector	1.27	8.38	14	21
22	Union Bank of India	Public Sector	1.34	5.68	8	22
23	State Bank of Travancore	Public Sector	1.38	3.33	9	23
24	Punjab National Bank	Public Sector	1.4	30.20	10	24
25	Canara Bank	Public Sector	1.44	8.99	11	25
26	Bank of India	Public Sector	1.45	8.47	12	26
27	State Bank of Mysore	Public Sector	1.46	11.31	13	27
28	Karnataka Bank	Private Sector	1.48	5.31	15	28
29	Punjab & Sind Bank	Public Sector	1.5	3.86	14	29
30	IDBI	Public Sector	1.5	11.05	15	30
31	State Bank of Bikaner & Jaipur	Public Sector	1.51	7.97	16	31
32	Oriental Bank of Commerce	Public Sector	1.51	21.16	17	32

TABLE 5.13 (Continued)

S.No.	Name of the Bank	Bank Category	Avg	CAGR	Rank	
					Group Rank	Overall Rank
33	State Bank of Patiala	Public Sector	1.53	14.64	18	33
34	Bank of Maharashtra	Public Sector	1.54	7.52	19	34
35	Allahabad Bank	Public Sector	1.72	16.86	20	35
36	Development Credit Bank	Private Sector	1.8	-13.88	16	36
37	Dena Bank	Public Sector	1.81	2.31	21	37
38	Dhanalakshmi Bank	Private Sector	1.86	1.55	17	38
39	State Bank of India	Public Sector	1.9	1.21	22	39
40	Indian Overseas Bank	Public Sector	1.96	24.21	23	40
41	Catholic Syrian Bank	Private Sector	2.04	3.31	18	41
42	Lakshmi Vilas Bank	Private Sector	2.07	-0.21	19	42
43	Central Bank of India	Public Sector	2.17	3.38	24	43
44	UCO Bank	Public Sector	2.22	7.43	25	44
45	United Bank of India	Public Sector	2.73	12.30	26	45
	Average	**1.32**	**5.99**			

Source: Department of Banking Supervision, RBI

The above table indicates the quality of credit portfolio in Public and private sector banks operating in India. Higher net NPA/net advances reflect the low credit portfolio of banks and vice versa. From the table 5.13, it can be observed that United Bank of India has got higher net NPA / net advances when compared to all public and private sector banks with average magnitude 2.73% and growth rate 12.30% over the study period 2005-06 to 2014-15. Nainital Bank maintains 0% net NPA/net advances during the study period. YES Bank records the lowest net NPA/net advances among the public and private sector banks with the magnitude 0.09% and growth rate 3.66%. The overall average of net NPA/net advances is found to be 1.32% and growth rate 5.99%.

It is observed that Punjab National Bank has got higher growth rate 30.20% of net NPA/net advances during the study period when compared to all public and private sector banks operating in India. Whereas Ratnakar Bank records the minimum growth rate of net NPA/ net advances which is -20.30% during 2005-06 to 2014-15 which reveals that Ratnakar Bank has consistent declining trend and speaks the efficient management of NPAs.

TABLE 5.14: SUMMARY OF NET NPA/NET ADVANCES OF PUBLIC AND PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Public Sector				Total Public		Private Sector				Total Private		All Banks	
	SBI & its Associates		Other Nationalised				Old Private		New Private					
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
High	1	17	4	20	**5**	**19**	3	25	-	-	**3**	**16**	**8**	**18**
Moderate	5	83	15	75	**20**	**77**	2	17	4	57	**6**	**31**	**26**	**58**
Low	-	-	1	5	**1**	**4**	7	58	3	43	**10**	**53**	**11**	**24**
Total	6	100	20	100	**26**	**100**	12	100	7	100	**19**	**100**	**45**	**100**

Low 0.00-0.91; Moderate-0.92-1.82; High- 1.83-2.73

It has been observed that among the total public and private sector banks, 18 percent of the banks are found to have high level of net NPA/net advances, 58 percent of the banks are found to have moderate level and 24 percent of the banks in low level out of which only one bank is public sector bank and remaining ten banks are private sector banks. This reveals that private sector banks are better in performance than public sector banks with regard to net NPA/net advances.

5.1.1.2 To examine the level of NPAs in Public and Private sector banks with respective to Gross NPA to Gross advances

The Gross NPA to Gross advances ratio is used as a measure of the overall quality of the bank's loan book. Non-performing assets are those assets for which interest is overdue for more than 90 days. Higher ratio reflects rising bad quality of advances in banks. The ratio is to be counted in terms of percentage and the formula for calculating gross NPA is as follows.

$$\text{Gross NPA ratio} = \frac{\text{Gross NPA}}{\text{Gross Advances}} \times 100$$

TABLE 5.15: GROSS NPA/GROSS ADVANCES OF PUBLIC SECTOR BANKS DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank
1	Canara Bank	Other Nationalised	2.03	5.74	1
2	Corporation Bank	Other Nationalised	2.06	6.50	2
3	Indian Bank	Other Nationalised	2.24	4.23	3
4	Bank of Baroda	Other Nationalised	2.32	-0.49	4
5	Andhra Bank	Other Nationalised	2.44	10.68	5
6	Vijaya Bank	Other Nationalised	2.46	-1.38	6
7	State Bank of Hyderabad	SBI & its Associates	2.53	8.13	7
8	State Bank of Travancore	SBI & its Associates	2.57	0.60	8
9	Syndicate Bank	Other Nationalised	2.69	-2.58	9
10	State Bank of Bikaner & Jaipur	SBI & its Associates	2.74	5.61	10
11	IDBI Ltd.	Other Nationalised	2.76	11.13	11
12	State Bank of Patiala	SBI & its Associates	2.87	8.50	12
13	Punjab & Sind Bank	Other Nationalised	2.98	-7.33	13
14	Bank of India	Other Nationalised	2.99	4.25	14
15	Union Bank of India	Other Nationalised	3.12	2.64	15
16	Allahabad Bank	Other Nationalised	3.13	3.23	16
17	State Bank of Mysore	SBI & its Associates	3.16	1.94	17
18	Dena Bank	Other Nationalised	3.19	-1.79	18
19	Oriental Bank of Commerce	Other Nationalised	3.3	-1.75	19
20	Bank of Maharashtra	Other Nationalised	3.33	1.25	20
21	Punjab National Bank	Other Nationalised	3.51	4.83	21
22	UCO Bank	Other Nationalised	3.75	7.76	22
23	State Bank of India	SBI & its Associates	3.79	1.55	23
24	Indian Overseas Bank	Other Nationalised	3.82	9.43	24
25	Central Bank of India	Other Nationalised	4.49	-1.27	25
26	United Bank of India	Other Nationalised	4.83	7.42	26
Average			**3.04**	**3.42**	

Source: Department of Banking Supervision, RBI

The above table indicates the quality of credit portfolio in Public sector banks in India. Higher Gross NPA/Gross advances reflect the low credit portfolio of banks and vice versa. From the table 5.15, it can be observed that United Bank of India has got higher Gross NPA / Gross advances when compared to all public sector banks with average magnitude 4.83% and growth rate 7.42% over the study period 2005-06 to 2014-15. Canara Bank records the lowest Gross NPA/ Gross advances among the public sector banks over the study period with the magnitude 2.03% and growth rate

5.74%. The overall average of net NPA/net advances is found to be 3.04% and growth rate 3.42%.

It is observed that IDBI Bank has got highest growth rate 11.13% of Gross NPA/ Gross advances during the study period when compared to all public sector banks. Whereas Punjab& Sind Bank records the minimum growth rate of Gross NPA/ Gross advances which is -7.33% during 2005-06 to 2014-15 and that reveals, Punjab& Sind Bank has consistent declining trend throughout 10 years and speaks the efficient management of NPAs. This would not have been possible for Punjab& Sind Bank without the ability of management to check slippages in one hand and closely monitoring existing NPAs.

TABLE 5.16: SUMMARY OF GROSS NPA/GROSS ADVANCES OF PUBLIC SECTOR BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Public Sector Banks				**Total Public**	
	SBI & its Associates		**Other Nationalised**			
	No of Banks	**Percent**	**No of Banks**	**Percent**	**No of Banks**	**Percent**
High	-	-	2	10	2	8
Moderate	2	33.33	10	50	12	46
Low	4	66.66	8	40	12	46
Total	6	100	20	100	26	100

Low 2.03-2.96; Moderate 2.97-3.89; High 3.9 - 4.83

It has been observed that among the public sector banks, eight percent of the banks namely United Bank of India and Central Bank of India are found to be in high category Gross NPA/ Gross advances with averages 4.83 % and 4.49% respectively. 12 banks are found to be in moderate category in which two banks belong to SBI group and & 10 banks are from other nationalised banks. There are 12 banks in low category group in which four banks belongs to SBI group and eight banks are from other nationalised banks. This reveals that only 46.15% of the public sector banks are in the low category of Gross NPA/ Gross advances and 46.15% of the banks are found to be in moderate category and 7.69% of the banks in high category. It is also found that there are no banks from SBI group in high category of Gross NPA/ Gross advances.

TABLE 5.17: GROSS NPA/GROSS ADVANCES OF SBI & ITS ASSOCIATES DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Avg.	CAGR	Rank
1	State Bank of Hyderabad	2.53	8.13	1
2	State Bank of Travancore	2.57	0.60	2
3	State Bank of Mysore	2.74	5.61	3
4	State Bank of Bikaner & Jaipur	2.87	8.50	4
5	State Bank of Patiala	3.16	1.94	5
6	State Bank of India	3.79	1.55	6
	Average	**2.94**	**4.39**	

Source: Department of Banking Supervision, RBI

Table 5.17 shows the quality of credit portfolio in State Bank of India & its Associates. Higher Gross NPA/ Gross advances reflect the low credit portfolio of banks and vice versa. It can be observed that State Bank of India has got higher Gross NPA / Gross advances when compared to all other banks in SBI group with average magnitude 3.79% and growth rate 1.55% over the study period 2005-06 to 2014-15. State Bank of Hyderabad records the lowest Gross NPA/ Gross advances among the SBI group over the study period with the magnitude 2.53% and growth rate 8.13%. The overall average of Gross NPA/ Gross advances is found to be 2.94% and the growth is 4.39%.

With regard to the growth rate, it is observed that State Bank of Bikaner & Jaipur has got higher growth rate 8.5% of Gross NPA/ Gross advances during the study period when compared to all other banks in SBI group. Whereas State Bank of Travancore records the minimum growth rate of Gross NPA/ Gross advances which is 0.60% during 2005-06 to 2014-15.

TABLE 5.18: SUMMARY OF GROSS NPA/GROSS ADVANCES OF SBI & ITS ASSOCIATES DURING THE PERIOD 2005-06 TO 2014-15

	SBI & its Associates	
	No of Banks	**Percent**
High	1	16.67
Moderate	1	16.67
Low	4	66.66
Total	6	100

Low 2.53-2.95; Moderate 2.96-3.37; High 3.38-3.79

Also, it has been observed that among the banks in SBI group, only State Bank of India is found to be in high category Gross NPA/ Gross advances and State Bank of Patiala in moderate category and four banks are in low category group.

TABLE 5.19: GROSS NPA/GROSS ADVANCES OF OTHER NATIONALISED BANKS DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Avg.	CAGR	Group Rank
1	Canara Bank	2.03	5.74	1
2	Corporation Bank	2.06	6.50	2
3	Indian Bank	2.24	4.23	3
4	Bank of Baroda	2.32	-0.49	4
5	Andhra Bank	2.44	10.68	5
6	Vijaya Bank	2.46	-1.38	6
7	Syndicate Bank	2.69	-2.58	7
8	IDBI Ltd.	2.76	11.13	8
9	Punjab & Sind Bank	2.98	-7.33	9
10	Bank of India	2.99	4.25	10
11	Union Bank of India	3.12	2.64	11
12	Allahabad Bank	3.13	3.23	12
13	Dena Bank	3.19	-1.79	13
14	Oriental Bank of Commerce	3.3	-1.75	14
15	Bank of Maharashtra	3.33	1.25	15
16	Punjab National Bank	3.51	4.83	16
17	UCO Bank	3.75	7.76	17
18	Indian Overseas Bank	3.82	9.43	18
19	Central Bank of India	4.49	-1.27	19
20	United Bank of India	4.83	7.42	20
	Average	**3.07**	**3.13**	

Source: Department of Banking Supervision, RBI

The above table indicates the quality of credit portfolio in Public sector banks excluding SBI & its Associates in India. Higher Gross NPA/ Gross advances reflect the low credit portfolio of banks and vice versa. From the table 5.19, it can be observed that United Bank of India has got higher Gross NPA / Gross advances when compared to all other nationalised sector banks with average magnitude 4.83% and growth rate 7.42% over the study period 2005-06 to 2014-15. Canara Bank records the lowest Gross NPA/ Gross advances among other nationalised banks over the study period with the magnitude 2.03% and growth rate 5.75%. The overall average of Gross net NPA/ Gross advances is found to be 3.07% and growth rate 3.13%.

It is observed that IDBI Bank has got higher growth rate 11.13% of Gross NPA/ Gross advances during the study period when compared to all other nationalised banks. Whereas Dena Bank records the minimum growth rate of Gross NPA/ net Gross advances which is -1.79% during 2005-06 to 2014-15 and that reveals, Dena Bank has consistent declining trend throughout 10 years and speaks the efficient management of NPAs. This would not have been possible for Dena Bank without the ability of management to check slippages in one hand and closely monitoring existing NPAs.

TABLE 5.20: SUMMARY OF GROSS NPA/GROSS ADVANCES OF OTHER NATIONALISED BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Other Nationalised Banks	
	No of Banks	**Percent**
High	2	10
Moderate	10	50
Low	8	40
Total	20	100

Low 2.03-2.96; Moderate-2.97-3.89; High- 3.9-4.83

It has been observed that among the other nationalised sector banks, three banks namely United Bank of India and Central Bank of India are found to be in high category Gross net NPA/ Gross advances with averages 4.83 % and 4.89% respectively. Ten banks are found to be in moderate category and eight banks in low category group. This reveals that only 40% of the other nationalised banks are in the low category of Gross NPA/ Gross advances.

TABLE 5.21: GROSS NPA/ GROSS ADVANCES OF PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank	
					Group Rank	Overall Rank
1	YES Bank	New Private Sector	0.31	40.77	1	1
2	HDFC Bank	New Private Sector	1.23	-4.43	2	2
3	Axis Bank	New Private Sector	1.24	-2.03	3	3
4	IndusInd Bank	New Private Sector	1.68	-11.85	4	4
5	Karur Vysya Bank	Old Private Sector	1.87	-7.21	5	5
6	City Union Bank	Old Private Sector	1.89	-8.08	6	6
7	South Indian Bank	Old Private Sector	2.05	-10.16	7	7
8	Nainital Bank	Old Private Sector	2.07	4.55	8	8
9	Kotak Mahindra Bank	New Private Sector	2.3	11.37	9	9
10	Jammu & Kashmir Bank	Old Private Sector	2.53	9.05	10	10
11	Tamilnad Mercantile Bank	Old Private Sector	2.65	-13.59	11	11
12	Ratnakar Bank	Old Private Sector	2.87	-20.45	12	12
13	Federal Bank	Old Private Sector	3.03	-7.85	13	13
14	Lakshmi Vilas Bank	Old Private Sector	3.48	-4.01	14	14
15	Karnataka Bank	Old Private Sector	3.55	-5.38	15	15
16	Catholic Syrian Bank	Old Private Sector	3.82	-1.48	16	16
17	ICICI Bank	New Private Sector	3.84	9.61	17	17
18	Dhanalakshmi Bank	Old Private Sector	3.85	0.01	18	18
19	Development Credit Bank	New Private Sector	5.6	-19.29	19	19
Average			**2.62**	**-2.13**		

Source: Department of Banking Supervision, RBI

The above table indicates the quality of credit portfolio in Private sector banks in India. Higher Gross NPA/ Gross advances reflect the low credit portfolio of banks and vice versa. From the table 5.21, it can be observed that Development Credit Bank has got highest Gross NPA / Gross advances when compared with all private sector banks with average magnitude 5.6% and growth rate -19.21% over the study period 2005-06 to 2014-15. YES Bank records the lowest Gross NPA/ Gross advances among the private sector banks with the magnitude 0.31% and growth rate 40.77%. The overall average of Gross NPA Gross /net advances is found to be 2.62% and growth rate -2.13%.

It is observed that YES Bank has got highest growth rate of Gross NPA/ Gross advances which is 40.77% during the study period when compared to all private sector banks. Whereas Dhanalakshmi Bank records the minimum growth rate of Gross NPA/ Gross advances which is -19.29% during 2005-06 to 2014-15 and that reveals, Dhanalakshmi Bank has consistent declining trend and speaks the efficient management of NPAs. This would not have been possible for the bank without the ability of management to check slippages in one hand and closely monitoring existing NPAs.

TABLE 5.22: SUMMARY OF GROSS NPA/ GROSS ADVANCES OF PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Private Sector				Total Private	
	Old Private		New Private			
	No of Banks	Percent	No of Banks	Percent	No of Banks	Percent
High	1	8.33	2	28.57	3	15.78
Moderate	7	58.33	1	14.28	8	42.10
Low	4	33.33	4	57.14	8	42.10
Total	12	100	7	100	19	100

Low - 0.31-2.07; Moderate-2.08-3.83; High- 3.84-5.6

It has been observed that among the private sector banks, two banks namely Dhanalakshmi Bank and Development credit Bank are found to be in high category Gross net NPA/ Gross advances with averages 5.6% and 3.85% respectively. Eight banks are found to be in moderate category out of which only one is from new private sector and seven banks are from old private sector. There are eight banks in low category group out of which four banks are new private sector banks and four are old private sector banks.

TABLE 5.23: GROSS NPA/GROSS ADVANCES OF OLD PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Avg.	CAGR	Group Rank
1	Karur Vysya Bank	**1.87**	-7.21	1
2	City Union Bank	**1.89**	-8.08	2
3	South Indian Bank	**2.05**	-10.16	3
4	Nainital Bank	**2.07**	4.55	4
5	Jammu & Kashmir Bank	**2.53**	9.05	5
6	Tamilnad Mercantile Bank	**2.65**	-13.59	6
7	Ratnakar Bank	**2.87**	-20.45	7
8	Federal Bank	**3.03**	-7.85	8
9	Lakshmi Vilas Bank	**3.48**	-4.01	9

TABLE 5.23 (Continued)

S. No.	Name of the Bank	Avg.	CAGR	Group Rank
10	Karnataka Bank	**3.55**	-5.38	10
11	Catholic Syrian Bank	**3.82**	-1.48	11
12	Dhanalakshmi Bank	**3.85**	0.01	12
	Average	**2.81**	**-5.38**	

Source: Department of Banking Supervision, RBI

Table 5.23 indicates the quality of credit portfolio in old Private sector banks in India. Higher Gross NPA/ Gross advances reflect the low credit portfolio of banks and vice versa. It can be observed that Dhanalakshmi Bank has got higher Gross NPA / Gross advances when compared with all old public sector banks with average magnitude 3.85% and growth rate 0.01% over the study period 2005-06 to 2014-15. Karur Vysya Bank records the lowest Gross NPA/ Gross advances among the old private sector banks with the magnitude 1.87% and growth rate -7.21% and that reveals, Karur Vysya Bank has consistent declining trend throughout 10 years and speaks the efficient management of NPAs. The overall average of Gross NPA/ Gross advances is found to be 2.81% and growth rate -5.38%.

It is observed that Jammu & Kashmir Bank has got higher growth rate of Gross NPA/ Gross advances which is 9.05% during the study period when compared to all other old private sector banks. Whereas Ratnakar Bank records the minimum growth rate of Gross NPA/ Gross advances which is -20.45% during 2005-06 to 2014-15. This would not have been possible for the bank without the ability of loan appraisal and credit risk management.

TABLE 5.24: GROSS NPA/GROSS ADVANCES OF OLD PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Old Private Banks	
	No of Banks	**Percent**
High	4	33.33
Moderate	3	25
Low	5	41.67
Total	12	100

Low 1.87-2.53; Moderate-2.54-3.19; High- 3.2-3.85

It has been observed that among the old private sector banks, four banks namely Dhanalakshmi Bank, Catholic Syrian Bank, Karnataka Bank and Lakshmi Vilas Bank are found to be in high category Gross NPA/ Gross advances with averages 3.855, 3.82%, 3.55% and 3.48% respectively. Three banks are found to be in moderate category and five banks in low category group.

TABLE 5.25: GROSS NPA/GROSS ADVANCES OF NEW PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Avg.	CAGR	Group Rank
1	YES Bank	**0.31**	**40.77**	1
2	HDFC Bank	**1.23**	**-4.43**	2
3	Axis Bank	**1.24**	**-2.03**	3
4	IndusInd Bank	**1.68**	**-11.85**	4
5	Kotak Mahindra Bank	**2.3**	**11.37**	5
6	ICICI Bank	**3.84**	**9.61**	6
7	Development Credit Bank	**5.6**	**-19.29**	7
	Average	**2.31**	**3.45**	

Source: Department of Banking Supervision, RBI

The above table indicates the quality of credit portfolio in New Private sector banks operating in India. Higher Gross NPA/ Gross advances reflect the low credit portfolio of banks and vice versa. From the table 5.25, it can be observed that Development Credit Bank has got higher Gross NPA / Gross advances when compared to all other new private sector banks with average magnitude 5.6% and growth rate -19.29% over the study period 2005-06 to 2014-15. YES Bank records the lowest Gross NPA/ Gross advances among the new private sector banks with the magnitude 0.31% and growth rate 40.77%. The overall average of Gross NPA/ Gross advances is found to be 2.31% and growth rate 3.45%.

It is observed that YES Bank has got higher growth rate of Gross NPA/ Gross advances which is 40.77% during the study period when compared to all other new private sector banks. Whereas Development Credit Bank records the minimum growth rate of Gross NPA/ Gross advances which is -19.29% during 2005-06 to 2014-15 and that reveals, Development Credit Bank has consistent declining trend throughout 10 years and speaks the efficient management of NPAs. This would not have been possible for the bank without the ability of management to check slippages in one hand and closely monitoring existing NPAs.

TABLE 5.26: SUMMARY OF GROSS NPA/GROSS ADVANCES OF NEW PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	New Private Banks	
	No of Banks	Percent
High	1	14.29
Moderate	2	28.57
Low	4	57.14
Total	7	100

Low 0.31-2.07; Moderate-2.08-3.84; High- 3.85-5.6

It has been observed that among the new private sector banks, only one bank namely Development credit Bank is found to be in high category Gross NPA/ Gross advances with averages 5.6% and two banks are found to be in moderate category. Four banks are found to be in low category group.

TABLE 5.27: GROSS NPA/GROSS ADVANCES OF PUBLIC AND PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank	
					Group Rank	Overall Rank
1	YES Bank	Private Sector	0.31	40.77	1	1
2	HDFC Bank	Private Sector	1.23	-4.43	2	2
3	Axis Bank	Private Sector	1.24	-2.03	3	3
4	IndusInd Bank	Private Sector	1.68	-11.85	4	4
5	Karur Vysya Bank	Private Sector	1.87	-7.21	5	5
6	City Union Bank	Private Sector	1.89	-8.08	6	6
7	Canara Bank	Public Sector	2.03	5.74	7	7
8	South Indian Bank	Private Sector	2.05	-10.16	8	8
9	Corporation Bank	Public Sector	2.06	6.50	1	9
10	Nainital Bank Ltd.	Private Sector	2.07	4.55	9	10
11	Indian Bank	Public Sector	2.24	4.23	10	11
12	Kotak Mahindra Bank	Private Sector	2.3	11.37	11	12

TABLE 5.27 (Continued)

S. No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank	
					Group Rank	Overall Rank
13	Bank of Baroda	Public Sector	2.32	-0.49	2	13
14	Andhra Bank	Public Sector	2.44	10.68	12	14
15	Vijaya Bank	Public Sector	2.46	-1.38	3	15
16	State Bank of Hyderabad	Public Sector	2.53	8.13	4	16
17	Jammu & Kashmir Bank	Private Sector	2.53	9.05	5	17
18	State Bank of Travancore	Public Sector	2.57	0.60	6	18
19	Tamilnad Mercantile Bank Ltd.	Private Sector	2.65	-13.59	13	19
20	Syndicate Bank	Public Sector	2.69	-2.58	7	20
21	State Bank of Bikaner & Jaipur	Public Sector	2.74	5.61	14	21
22	IDBI	Public Sector	2.76	11.13	8	22
23	State Bank of Patiala	Public Sector	2.87	8.50	9	23
24	Ratnakar Bank	Private Sector	2.87	-20.45	10	24
25	Punjab & Sind Bank	Public Sector	2.98	-7.33	11	25
26	Bank of India	Public Sector	2.99	4.25	12	26
27	Federal Bank	Private Sector	3.03	-7.85	13	27
28	Union Bank of India	Public Sector	3.12	2.64	15	28
29	Allahabad Bank	Public Sector	3.13	3.23	14	29
30	State Bank of Mysore	Public Sector	3.16	1.94	15	30
31	Dena Bank	Public Sector	3.19	-1.79	16	31
32	Oriental Bank of Commerce	Public Sector	3.3	-1.75	17	32
33	Bank of Maharashtra	Public Sector	3.33	1.25	18	33
34	Lakshmi Vilas Bank	Private Sector	3.48	-4.01	19	34
35	Punjab National Bank	Public Sector	3.51	4.83	20	35
36	Karnataka Bank	Private Sector	3.55	-5.38	16	36
37	UCO Bank	Public Sector	3.75	7.76	21	37
38	State Bank of India	Public Sector	3.79	1.55	17	38
39	Indian Overseas Bank	Public Sector	3.82	9.43	22	39
40	Catholic Syrian Bank	Private Sector	3.82	-1.48	23	40
41	ICICI Bank	Private Sector	3.85	9.61	18	41
42	Dhanalakshmi Bank	Private Sector	3.85	0.01	19	42
43	Central Bank of India	Public Sector	4.49	-1.27	24	43
44	United Bank of India	Public Sector	4.83	7.42	25	44
45	Development Credit Bank	Private Sector	5.6	-19.29	26	45
	Average		**2.87**	**1.08**		

Source: Department of Banking Supervision, RBI

The above table indicates the quality of credit portfolio in Public and private sector banks operating in India. Higher Gross NPA/ Gross advances reflect the low credit portfolio of banks and vice versa. From the table 5.27, it can be observed that Development Credit Bank has got higher Gross NPA / Gross advances when compared with all public and private sector banks with average magnitude 5.6% and growth rate -19.29% over the study period 2005-06 to 2014-15. YES Bank records the lowest Gross NPA/ Gross advances among the public and private sector banks with the magnitude 0.31% and growth rate 40.77% The overall average of Gross NPA/ Gross advances is found to be 2.87% and growth rate 1.08%.

It is observed that YES Bank has got higher growth rate 40.77% of Gross NPA/ Gross advances during the study period when compared to all public and private sector banks operating in India. Whereas Ratnakar Bank records the minimum growth rate of Gross NPA/ Gross advances which is -20.45% during 2005-06 to 2014-15, which reveals that YES Bank has consistent declining trend and speaks the efficient management of NPAs.

TABLE 5.28: SUMMARY OF GROSS NPA/GROSS ADVANCES OF PUBLIC AND PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Public Sector				Total Public		Private Sector				Total Private		All banks	
	SBI & its Associates		Other Nationalised				Old Private		New Private					
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
High	-	-	2	10	**2**	**8**	1	8	2	29	**3**	**16**	**5**	**11**
Moderate	6	100	16	80	**22**	**85**	7	58	1	14	**8**	**42**	**30**	**67**
Low	-	-	2	10	**2**	**7**	4	33	4	57	**8**	**42**	**10**	**22**
Total	6	100	20	100	**26**	**100**	12	100	7	100	**19**	**100**	**45**	**100**

Low 0.31-2.07; Moderate-2.08-3.84; High- 3.85-5.6

It has been observed that among the public and private sector banks, 11 percent of the banks are found to be in high category Gross NPA/ Gross advances. 67 percent of the banks are found to be in moderate category out of which 22 banks are the public sector banks and eight are the private sector banks and twenty two percent of the banks in low category group out of which only two banks are from public sector banks and remaining eight banks are from the private sector banks. This reveals that private sector banks are better in performance than public sector banks with regard to Gross NPA/ Gross advances.

5.1.2 TO ASSESS THE ASSET PORTFOLIO OF PUBLIC AND PRIVATE SECTOR BANKS

5.1.2.1 To examine the level of NPAs in Public and Private sector banks with respective to net NPA to Total assets

The net NPA to total assets ratio is used as a measure of the overall quality of the bank's loan book. Non-performing assets are those assets for which interest is overdue for more than 90 days. Higher net NPA/total assets ratio reflects rising bad quality of assets in banks. The ratio is to be counted in terms of percentage and the formula for calculating net NPA is as follows.

$$\text{Net NPA ratio} = \frac{\text{Net NPA}}{\text{Total Assets}} \times 100$$

TABLE 5.29: NET NPA/TOTAL ASSETS OF PUBLIC SECTOR BANKS DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank
1	Bank of Baroda	Other Nationalised	0.49	9.17	1
2	Corporation Bank	Other Nationalised	0.61	17.95	2
3	Indian Bank	Other Nationalised	0.67	15.98	3
4	Syndicate Bank	Other Nationalised	0.69	9.55	4
5	Andhra Bank	Other Nationalised	0.71	31.37	5
6	Vijaya Bank	Other Nationalised	0.73	9.93	6
7	Union Bank of India	Other Nationalised	0.86	6.77	7
8	Canara Bank	Other Nationalised	0.88	9.19	8
9	Punjab National Bank	Other Nationalised	0.88	33.67	9
10	Punjab & Sind Bank	Other Nationalised	0.9	7.18	10
11	IDBI	Other Nationalised	0.91	10.13	11
12	Bank of India	Other Nationalised	0.93	10.00	12
13	Oriental Bank of Commerce	Other Nationalised	0.94	22.26	13
14	Bank of Maharashtra	Other Nationalised	0.95	10.21	14
15	Allahabad Bank	Other Nationalised	1.07	19.31	15
16	Dena Bank	Other Nationalised	1.08	3.59	16
17	Indian Overseas Bank	Other Nationalised	1.21	24.65	17
18	State Bank of Bikaner & Jaipur	SBI & its Associates	1.24	3.10	18
19	Central Bank of India	Other Nationalised	1.3	5.31	19
20	UCO Bank	Other Nationalised	1.37	7.30	20

TABLE 5.29 (Continued)

S. No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank
21	State Bank of Travancore	SBI & its Associates	1.46	-3.63	21
22	United Bank of India	Other Nationalised	1.48	13.82	22
23	State Bank of India	SBI & its Associates	1.58	2.07	23
24	State Bank of Patiala	SBI & its Associates	1.6	7.05	24
25	State Bank of Mysore	SBI & its Associates	1.77	-3.72	25
26	State Bank of Hyderabad	SBI & its Associates	2.09	-0.53	26
	Average		**1.09**	**10.83**	

Source: Department of Banking Supervision, RBI

The above table indicates the quality of asset portfolio in Public sector banks in India. Higher net NPA/Total assets reflect the poor quality portfolio of banks and vice versa. From the table 5.29, it can be observed that State Bank of Hyderabad has got highest net NPA / total assets when compared to all public sector banks with average magnitude 2.09% and growth rate -0.53% over the study period 2005-06 to 2014-15. Bank of Baroda records the lowest net NPA/Total assets among the public sector banks over the study period with the magnitude 0.49% and growth rate 9.17%. The overall average of net NPA/Total assets is found to be 1.09% and growth rate 10.83%.

It is observed that Punjab National Bank has got highest growth rate 33.67% of net NPA/Total assets during the study period when compared to all public sector banks. Whereas State Bank of Mysore records the minimum growth rate of net NPA/ Total assets which is -3.72% during 2005-06 to 2014-15 and that reveals, State Bank of Mysore has consistent declining trend throughout 10 years and reflects the efficient management of NPAs.

TABLE 5.30 SUMMARY OF NET NPA/TOTAL ASSETS OF PUBLIC SECTOR BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Public Sector Banks				Total Public	
	SBI & its Associates		Other Nationalised			
	No of Banks	Percent	No of Banks	Percent	No of Banks	Percent
High	4	66.67	-	-	4	15.38
Moderate	2	33.33	6	30	8	30.77
Low	-	-	14	70	14	53.84
Total	6	100	20	100	26	100

Low- 0.49 - 1.02; Moderate - 1.03 - 1.55; High - 1.56-2.09

It has been observed that among the public sector banks, four banks namely State Bank of Hyderabad , State Bank of Mysore, State Bank of Patiala and State Bank of India are found to be in high category net NPA/Total assets with averages 2.09%, 1.77%, 1.6% and 1.58% respectively. Eight banks are found to be in moderate category in which two banks belongs to SBI group and six banks are from other nationalised banks. There are 14 banks in low category group and all banks are from other nationalised banks. This reveals that 53.84% of the public sector banks are in the low category of net NPA/ total assets and 30.77% of the banks are found to be in moderate category and 15.38% of the banks in high category. It is also found that there are no banks from SBI group in low category of net NPA/ total assets.

TABLE 5.31: NET NPA/TOTAL ASSETS OF SBI & ITS ASSOCIATES DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Avg.	CAGR	Rank
1	State Bank of Bikaner & Jaipur	**1.24**	3.10	1
2	State Bank of Travancore	**1.46**	-3.63	2
3	State Bank of India	**1.58**	2.07	3
4	State Bank of Patiala	**1.6**	7.05	4
5	State Bank of Mysore	**1.77**	-3.72	5
6	State Bank of Hyderabad	**2.09**	-0.53	6
		1.62	0.72	

Source: Department of Banking Supervision, RBI

Table 5.31 shows the quality of asset portfolio in State Bank of India & its Associates. Higher net NPA/Total assets reflect the low quality asset portfolio of banks and vice versa. It can be observed that State Bank of Hyderabad has got higher net NPA / Total assets when compared to all other banks in SBI group with average magnitude 2.09% and growth rate -0.53% over the study period 2005-06 to 2014-15. State Bank of Bikaner & Jaipur records the lowest net NPA/Total assets among the SBI group over the study period with the magnitude 1.24% and growth rate 3.10%. The overall average of net NPA/Total assets is found to be 1.62% and the growth is 0.72%.

With regard to the growth rate, it is observed that State Bank of Patiala has got higher growth rate 7.05% of net NPA/Total assets during the study period when compared to all other banks in SBI group. Whereas State Bank of Mysore records the minimum growth rate of net NPA/ total assets which is -3.72% during 2005-06 to 2014-15.

TABLE 5.32: SUMMARY OF NET NPA/TOTAL ASSETS OF SBI & ITS ASSOCIATES DURING THE PERIOD 2005-06 TO 2014-15

	SBI & its Associates	
	No of Banks	**Percent**
High	1	16.67
Moderate	3	50
Low	2	33.33
Total	6	100

Low- 1.24-1.52; Moderate- 1.53-1.8; High - 1.9-2.09

It has been observed that among the banks in SBI group, only State Bank of Hyderabad is found to be in high category net NPA/Total assets and 3 banks in moderate category and only 1 bank (i.e.) State Bank of Bikaner & Jaipur is in low category group.

TABLE 5.33: NET NPA/TOTAL ASSETS OF OTHER NATIONALISED BANKS DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Avg.	CAGR	Group Rank
1	Bank of Baroda	0.49	9.17	1
2	Corporation Bank	0.61	17.95	2
3	Indian Bank	0.67	15.98	3
4	Syndicate Bank	0.69	9.55	4
5	Andhra Bank	0.71	31.37	5
6	Vijaya Bank	0.73	9.93	6
7	Union Bank of India	0.86	6.77	7
8	Canara Bank	0.88	9.19	8
9	Punjab National Bank	0.88	33.67	9
10	Punjab & Sind Bank	0.9	7.18	10
11	IDBI	0.91	10.13	11
12	Bank of India	0.93	10.00	12
13	Oriental Bank of Commerce	0.94	22.26	13
14	Bank of Maharashtra	0.95	10.21	14
15	Allahabad Bank	1.07	19.31	15
16	Dena Bank	1.08	3.59	16
17	Indian Overseas Bank	1.21	24.65	17

TABLE 5.33 (Continued)

S. No.	Name of the Bank	Avg.	CAGR	Group Rank
18	Central Bank of India	1.3	5.31	18
19	UCO Bank	1.37	7.30	19
20	United Bank of India	1.48	13.82	20
	Average	**0.93**	**13.87**	

Source: Department of Banking Supervision, RBI

The above table indicates the quality of asset portfolio in Public sector banks excluding SBI & its Associates in India. Higher net NPA/Total assets reflect the poor asset quality portfolio of banks and vice versa. From the table 5.33, it can be observed that United Bank of India has got higher net NPA / total assets when compared with all other nationalised sector banks with average magnitude 1.48% and growth rate 13.82% over the study period 2005-06 to 2014-15. Bank of Baroda records the lowest net NPA/Total assets among the other nationalised banks over the study period with the magnitude 0.49% and growth rate 9.17%. The overall average of net NPA/Total assets is found to be 0.93% and growth rate 13.87%.

It is observed that Punjab National Bank has got higher growth rate 33.67% of net NPA/Total assets during the study period when compared to all other nationalised banks. Whereas Dena Bank records the minimum growth rate of net NPA/ total assets which is 3.59% during 2005-06 to 2014-15 and that reveals, Dena Bank has consistent declining trend throughout 10 years and speaks the efficient management of NPAs This would not have been possible for Dena Bank without the ability of management to check slippages in one hand and closely monitoring of existing NPAs.

TABLE 5.34: SUMMARY OF NET NPA/TOTAL ASSETS OF OTHER NATIONALISED BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Other Nationalised Banks	
	No of Banks	**Percent**
High	4	20
Moderate	10	50
Low	6	30
Total	20	100

Low 0.49-0.82; Moderate-0.83-1.15; High- 1.16-1.48

It has been observed that among the public sector banks, four banks namely United Bank of India, UCO Bank, Central Bank of India and Indian Overseas Bank are found to be in high category net NPA/Total assets with averages 21.48%, 1.37%, 1.3% and 1.21% respectively. Ten banks are found to be in moderate category and six banks in low category group. This reveals that only 30% of the other nationalised banks are in the low category of net NPA/total assets.

TABLE 5.35: NET NPA/TOTAL ASSETS OF PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S.No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank	
					Group Rank	Overall Rank
1	Nainital Bank	Old Private Sector	0	0	1	1
2	YES Bank	New Private Sector	0.05	2.31	1	2
3	HDFC Bank	New Private Sector	0.18	-3.31	2	3
4	Karur Vysya Bank	Old Private Sector	0.23	0.58	2	4
5	Axis Bank	New Private Sector	0.26	-4.08	3	5
6	Federal Bank	Old Private Sector	0.36	-1.81	3	6
7	Ratnakar Bank	Old Private Sector	0.41	-20.04	4	7
8	Tamilnad Mercantile Bank	Old Private Sector	0.44	-8.43	5	8
9	Jammu & Kashmir Bank	Old Private Sector	0.47	12.25	6	9
10	South Indian Bank	Old Private Sector	0.47	-5.80	7	10
11	IndusInd Bank	New Private Sector	0.62	-1.97	8	11
12	City Union Bank	Old Private Sector	0.62	-3.58	4	12
13	Kotak Mahindra Bank	New Private Sector	0.69	14.28	5	13
14	ICICI Bank	New Private Sector	0.7	8.73	6	14
15	Karnataka Bank	Old Private Sector	0.84	7.00	9	15
16	Development Credit Bank	New Private Sector	0.99	-11.50	7	16
17	Dhanalakshmi Bank	Old Private Sector	1.03	1.08	10	17
18	Catholic Syrian Bank	Old Private Sector	1.19	3.94	11	18
19	Lakshmi Vilas Bank	Old Private Sector	1.29	0.77	12	19
		Average	**0.57**	**-0.50**		

Source: Department of Banking Supervision, RBI

The above table indicates the quality of asset portfolio of Private sector banks in India. Higher net NPA/Total assets reflect the poor quality asset portfolio of banks and vice versa. From the table 5.35, it can be observed that Lakshmi Vilas Bank has got highest net NPA / total assets when compared with all other private sector banks with average magnitude 1.29% and growth rate 0.77% over the study period 2005-06 to 2014-15. Nainital Bank has 0% net NPA/Total assets followed by YES Bank with the magnitude 0.05% and growth rate 2.31%. The overall average of net NPA/Total assets is found to be 0.57% and growth rate -0.50%.

It is observed that Kotak Mahindra Bank has got higher growth rate of net NPA/Total assets which is 14.28% during the study period when compared to all other private sector banks. Whereas Ratnakar Bank records the minimum growth rate of net NPA/ total assets which is -20.04% during 2005-06 to 2014-15 and that reveals, Ratnakar Bank has consistent declining trend and speaks the efficient management of NPAs. This would not have been possible for the bank without the ability of management to check slippages in one hand and closely monitoring existing NPAs.

TABLE 5.36: SUMMARY OF NET NPA/TOTAL ASSETS OF PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Private Sector				Total Private	
	Old Private		New Private			
	No of Banks	Percent	No of Banks	Percent	No of Banks	Percent
High	3	25	1	14.29	4	21.05
Moderate	5	41.67	3	42.86	8	42.10
Low	4	33.33	3	42.86	7	36.84
Total	12	100	7	100	19	100

Low- 0.00-0.43; Moderate-0.44-0.86; High- 0.87-1.29

It has been observed that among the private sector banks, four banks namely Lakshmi Vilas Bank, Catholic Syrian Bank, Dhanalakshmi Bank, and Development credit Bank are found to be in high category net NPA/Total assets with averages 1.29%, 1.19%, 1.03% and 0.99% respectively out of which three are old Private Sector Banks. Eight banks are found to be in moderate category and four banks in low category group out of which three bank are old private sector banks. It can be observed that new private sector banks are better in terms of net NPA/Total assets when compared with old private sector banks.

TABLE 5.37: NET NPA/TOTAL ASSETS OF OLD PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Avg.	CAGR	Group Rank
1	Nainital Bank	0	0	1
2	Karur Vysya Bank	0.23	0.58	2
3	Federal Bank	0.36	-1.81	3
4	Ratnakar Bank	0.41	-20.04	4
5	Tamilnad Mercantile Bank	0.44	-8.43	5
6	Jammu & Kashmir Bank	0.47	12.25	6
7	South Indian Bank	0.47	-5.80	7
8	City Union Bank	0.62	-3.58	8
9	Karnataka Bank	0.84	7.00	9
10	Dhanalakshmi Bank	1.03	1.08	10
11	Catholic Syrian Bank	1.19	3.94	11
12	Lakshmi Vilas Bank	1.29	0.77	12
	Average	**0.61**	**-1.17**	

Source: Department of Banking Supervision, RBI

Table 5.37 indicates the quality of asset portfolio in old Private sector banks in India. Higher net NPA/Total assets reflect the low asset quality portfolio of banks and vice versa. It can be observed that Lakshmi Vilas Bank has got higher net NPA / total assets when compared to old private sector banks with average magnitude 1.29% and growth rate 0.77% over the study period 2005-06 to 2014-15. Nainital Bank has zero net NPA/Total assets. Karur Vysya Bank records the lowest net NPA/Total assets among the old private sector banks with the magnitude 0.23% and growth rate 0.58%. The overall average of net NPA/Total assets is found to be 0.61% and growth rate -1.17%.

It is observed that Jammu & Kashmir Bank has got higher growth rate of net NPA/Total assets which is 12.25% during the study period when compared to all other old private sector banks. Whereas Ratnakar Bank records the minimum growth rate of net NPA/ total assets which is -20.04% during 2005-06 to 2014-15 and that reveals, Ratnakar Bank has consistent declining trend throughout 10 years and speaks the efficient management of NPAs. This would not have been possible for the bank without the ability of loan appraisal and credit risk management.

TABLE 5.38: SUMMARY OF NET NPA/TOTAL ASSETS OF OLD PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Old Private Banks	
	No of Banks	**Percent**
High	4	33.33
Moderate	5	41.67
Low	3	25
Total	12	100

Low 0.00-0.43; Moderate-0.44-0.86; High- 0.87-1.29

It has been observed that among the old private sector banks, 33 % of the banks has shown high level of NPA which includes four banks namely Lakshmi Vilas Bank, Catholic Syrian Bank, Dhanalakshmi Bank and Karnataka Bank are found to be in high category net NPA/Total assets with averages 1.29%, 1.19%, 1.03% and 0.84% respectively. 41.67% of the banks are found to be in moderate category and 25 % of the banks in low category group namely Nainital Bank, Karur Vysya Bank and Federal Bank.

TABLE 5.39: NET NPA/TOTAL ASSETS OF NEW PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Avg.	CAGR	Group Rank
1	YES Bank	0.05	2.31	1
2	HDFC Bank	0.18	-3.31	2
3	Axis Bank	0.26	-4.08	3
4	IndusInd Bank	0.62	-1.97	4
5	Kotak Mahindra Bank	0.69	14.28	5
6	ICICI Bank	0.7	8.73	6
7	Development Credit Bank	0.99	-11.50	7
	Average	**0.50**	0.64	

Source: Department of Banking Supervision, RBI

The above table indicates the quality of asset portfolio in New Private sector banks operating in India. Higher net NPA/Total assets reflect the low asset quality portfolio of banks and vice versa. From the table 5.39, it can be observed that Development Credit Bank has got higher net NPA / total assets when compared to all other new private sector banks with average magnitude 0.99% and growth rate -

11.50% over the study period 2005-06 to 2014-15. YES Bank records the lowest net NPA/Total assets among the private sector banks with the magnitude 0.05% and growth rate 2.31%. The overall average of net NPA/Total assets is found to be 0.50% and growth rate 0.64%.

It is observed that Kotak Mahindra Bank has got higher growth rate of net NPA/Total assets which is 14.28% during the study period when compared to all other new private sector banks. Whereas Development Credit Bank records the minimum growth rate of net NPA/ total assets which is -11.50% during 2005-06 to 2014-15 and that reveals, Development Credit Bank has consistent declining trend throughout 10 years and speaks the efficient management of NPAs. This would not have been possible for the bank without the ability of management to check slippages in one hand and closely monitoring existing NPAs.

TABLE 5.40: SUMMARY OF NET NPA/TOTAL ASSETS OF NEW PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	New Private Banks	
	No of Banks	**Percent**
High	3	42.86
Moderate	1	14.29
Low	3	42.86
Total	7	100

Low 0.05-0.36; Moderate-0.37-0.67; High- 0.68-0.98

It has been observed that among the new private sector banks, three banks namely Development credit Bank, ICICI Bank and Kotak Mahindra Bank are found to be in high category net NPA/Total assets with averages 0.99%, 0.7% and 0.69% respectively. One bank in moderate category and three banks in low category group.

TABLE 5.41: NET NPA/TOTAL ASSETS OF PUBLIC AND PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank	
					Group Rank	Overall Rank
1	Nainital Bank	Private Sector	**0**	0	1	1
2	YES Bank	Private Sector	**0.05**	2.31	2	2
3	HDFC Bank	Private Sector	**0.18**	-3.31	3	3
4	Karur Vysya Bank	Private Sector	**0.23**	0.58	4	4
5	Axis Bank	Private Sector	**0.26**	-4.08	5	5
6	Federal Bank	Private Sector	**0.36**	-1.81	6	6
7	Ratnakar Bank	Private Sector	**0.41**	-20.04	7	7
8	Tamilnad Mercantile Bank	Private Sector	**0.44**	-8.43	8	8
9	Jammu & Kashmir Bank	Private Sector	**0.47**	12.25	9	9
10	South Indian Bank	Private Sector	**0.47**	-5.80	10	10
11	Bank of Baroda	Public sector	**0.49**	9.17	1	11
12	Corporation Bank	Public sector	**0.61**	17.95	2	12
13	IndusInd Bank	Private Sector	**0.62**	-1.97	11	13
14	City Union Bank	Private Sector	**0.62**	-3.58	12	14
15	Indian Bank	Public sector	**0.67**	15.98	3	15
16	Syndicate Bank	Public sector	**0.69**	9.55	4	16
17	Kotak Mahindra Bank	Private Sector	**0.69**	14.28	13	17
18	ICICI Bank	Private Sector	**0.7**	8.73	14	18
19	Andhra Bank	Public sector	**0.71**	31.37	5	19
20	Vijaya Bank	Public sector	**0.73**	9.93	6	20
21	Karnataka Bank	Private Sector	**0.84**	7.00	15	21
22	Union Bank of India	Public sector	**0.86**	6.77	7	22
23	Canara Bank	Public sector	**0.88**	9.19	8	23
24	Punjab National Bank	Public sector	**0.88**	33.67	9	24
25	Punjab & Sind Bank	Public sector	**0.9**	7.18	10	25
26	IDBI	Public sector	**0.91**	10.13	11	26
27	Bank of India	Public sector	**0.93**	10.00	12	27
28	Oriental Bank of Commerce	Public sector	**0.94**	22.26	13	28
29	Bank of Maharashtra	Public sector	0.95	10.21	14	29
30	Development Credit Bank	Private Sector	0.99	11.50	16	30
31	Dhanalakshmi Bank	Private Sector	1.03	1.08	17	31
32	Allahabad Bank	Public sector	1.07	19.31	15	32
33	Dena Bank	Public sector	1.08	3.59	16	33
34	Catholic Syrian Bank	Private Sector	1.19	3.94	18	34
35	Indian Overseas Bank	Public sector	1.21	24.65	17	35
36	State Bank of Bikaner & Jaipur	Public sector	1.24	3.10	18	36
37	Lakshmi Vilas Bank	Private Sector	1.29	0.77	19	37

TABLE 5.41 (Continued)

S.No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank	
					Group Rank	Overall Rank
38	Central Bank of India	Public sector	1.3	5.31	19	38
39	UCO Bank	Public sector	1.37	7.30	20	39
40	State Bank of Travancore	Public sector	1.46	-3.63	21	40
41	United Bank of India	Public sector	1.48	13.82	22	41
42	State Bank of India	Public sector	1.58	2.07	23	42
43	State Bank of Patiala	Public sector	1.6	7.05	24	43
44	State Bank of Mysore	Public sector	1.77	-3.72	25	44
45	State Bank of Hyderabad	Public sector	2.09	-0.53	26	45
	Average		**0.89**	**6.05**		

Source: Department of Banking Supervision, RBI

The above table indicates the quality of asset portfolio in Public and private sector banks operating in India. Higher net NPA/Total assets reflect the low credit portfolio of banks and vice versa. From the table 5.41, it can be observed that State Bank of Hyderabad has got higher net NPA / total assets when compared to all public and private sector banks with average magnitude 2.09% and growth rate -0.53% over the study period 2005-06 to 2014-15. Nainital Bank maintains 0% net NPA during the study period. YES Bank records the lowest net NPA/Total assets among the public and private sector banks with the magnitude 0.05% and growth rate 2.31%. The overall average of net NPA/Total assets is found to be 0.89% and growth rate 6.05%.

It is observed that Punjab National Bank has got higher growth rate 33.65% of net NPA/Total assets during the study period when compared to all public and private sector banks operating in India. Whereas Ratnakar Bank records the minimum growth rate of net NPA/ total assets which is -20.04% during 2005-06 to 2014-15 which reveals that Ratnakar Bank has consistent declining trend and speaks the efficient management of NPAs.

TABLE 5.42: SUMMARY OF NET NPA/TOTAL ASSETS OF PUBLIC AND PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Public Sector				Total Public		Private Sector				Total Private		All Banks	
	SBI & its Associates		Other Nationalised				Old Private		New Private					
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
High	5	83	1	5	**6**	**23**	-	-	-	-	**-**	**-**	**6**	**13**
Moderate	1	17	15	75	**16**	**62**	4	33	1	14	**5**	**26**	**21**	**47**
Low	-	-	4	20	**4**	**15**	8	67	6	86	**14**	**74**	**18**	**40**
Total	6	100	20	100	**26**	**100**	12	100	7	100	**19**	**100**	**45**	**100**

Low- 0.00-0.70; Moderate- 0.71-1.4; High- 1.41-2.09

It has been observed that among the public and private sector banks, thirteen percent of the banks are found to be in high category net NPA/Total assets and all banks belong to public sector group. 47 percent of the banks are found to be in moderate category out of which 16 banks are public sector banks and five are private sector banks and 40 percent of the banks in low category group out of which four banks are public sector banks and remaining 14 banks are from the private sector. This reveals that private sector banks are better in performance than public sector banks with regard to net NPA/total assets.

5.1.2.2 To examine the level of NPAs in Public and Private sector banks with respective to Gross NPA to Total assets

The Gross NPA to Total assets ratio is used as a measure of the overall quality of the bank's loan book. Non-performing assets are those assets for whose interest is overdue for more than 90 days. Higher ratio reflects rising bad quality of asset in banks. The ratio is to be counted in terms of percentage and the formula for calculating gross NPA is as follows.

$$\text{Gross NPA ratio} = \frac{\text{Gross NPA}}{\text{Total Assets}} \times 100$$

TABLE 5.43: GROSS NPA/TOTAL ASSETS OF PUBLIC SECTOR BANKS DURING THE PERIOD 2005-06 TO 2014-15

S.No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank
1	Canara Bank	Other Nationalised	1.24	5.83	1
2	Corporation Bank	Other Nationalised	1.25	7.38	2
3	Indian Bank	Other Nationalised	1.36	7.70	3
4	Bank of Baroda	Other Nationalised	1.38	0.73	4
5	Vijaya Bank	Other Nationalised	1.44	0.00	5
6	Andhra Bank	Other Nationalised	1.58	13.24	6
7	State Bank of Hyderabad	SBI & its Associates	1.61	11.17	7
8	State Bank of Travancore	SBI & its Associates	1.66	1.56	8
9	IDBI	Other Nationalised	1.68	10.95	9
10	Punjab & Sind Bank	Other Nationalised	1.69	-4.40	10
11	Syndicate Bank	Other Nationalised	1.73	-1.47	11
12	State Bank of Bikaner & Jaipur	SBI & its Associates	1.8	7.40	12
13	State Bank of Patiala	SBI & its Associates	1.84	10.98	13
14	Bank of India	Other Nationalised	1.88	5.40	14
15	Dena Bank	Other Nationalised	1.89	-0.57	15
16	Allahabad Bank	Other Nationalised	1.92	5.57	16
17	Union Bank of India	Other Nationalised	1.98	3.79	17
18	Bank of Maharashtra	Other Nationalised	2.02	3.79	18
19	Oriental Bank of Commerce	Other Nationalised	2.02	-0.75	19
20	State Bank of Mysore	SBI & its Associates	2.05	2.70	20
21	Punjab National Bank	Other Nationalised	2.16	7.03	21
22	State Bank of India	SBI & its Associates	2.17	-6.55	22
23	UCO Bank	Other Nationalised	2.32	7.62	23
24	Indian Overseas Bank	Other Nationalised	2.35	9.69	24
25	United Bank of India	Other Nationalised	2.62	9.06	25
26	Central Bank of India	Other Nationalised	2.64	0.60	26
Average			**1.86**	**4.56**	

Source: Department of Banking Supervision, RBI

The above table indicates the quality of asset portfolio in Public sector banks in India. Higher Gross NPA/Total assets reflect the low quality asset portfolio of banks and vice versa. From the table 5.43, it can be observed that Central Bank of India has got higher Gross NPA / Total assets when compared with to other public sector banks with average magnitude 2.64% and growth rate 0.60% over the study period 2005-06 to 2014-15. Canara Bank records the lowest Gross NPA/ Total assets among the public sector banks over the study period with the magnitude 1.24% and growth rate 5.83%. The overall average of gross NPA/total assets is found to be 1.86% and growth rate 4.56%.

It is observed that Andhra Bank has got highest growth rate 13.24% of Gross NPA/ Total assets during the study period when compared to all other public sector banks. Whereas State Bank of India records the minimum growth rate of Gross NPA/ Total assets which is -6.55% during 2005-06 to 2014-15 and that reveals, State Bank of India has consistent declining trend throughout 10 years and speaks the efficient management of NPAs. This would not have been possible for State Bank of India without the ability of management to check slippages in one hand and closely monitoring existing NPAs.

TABLE 5.44: SUMMARY OF GROSS NPA/TOTAL ASSETS OF PUBLIC SECTOR BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Public Sector Banks				Total Public	
	SBI & its Associates		Other Nationalised			
	No of Banks	Percent	No of Banks	Percent	No of Banks	Percent
High	-	-	4	20	4	15.38
Moderate	4	66.68	8	40	12	46.15
Low	2	33.33	8	40	10	38.46
Total	6	100	20	100	26	100

Low -1.24-1.71: Moderate-1.72-2.18; High- 2.19-2.64

It has been observed that among the public sector banks, four banks are found to be in high category Gross NPA/ Total assets. 12 banks are found to be in moderate category in which four banks belong to SBI group and eight banks are from other nationalised banks. There are ten banks in low category group where eight banks are from other nationalized banks and two banks are from SBI group. This reveals that only 38.46% of the public sector banks are in the low category of Gross NPA/ Total assets, 46.15% of the banks are found to be in moderate category and 15.38% of the banks in high category. It is also found that there are no banks from SBI group in high category of Gross NPA/ Total assets.

TABLE 5.45: GROSS NPA/TOTAL ASSETS OF SBI & ITS ASSOCIATES DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Avg.	CAGR	Rank
1	State Bank of Hyderabad	**1.61**	11.17	1
2	State Bank of Travancore	**1.66**	1.56	2
3	State Bank of Bikaner & Jaipur	**1.8**	7.40	3
4	State Bank of Patiala	**1.84**	10.98	4
5	State Bank of Mysore	**2.05**	2.70	5
6	State Bank of India	**2.17**	-6.55	6
	Average	**1.86**	**4.54**	

Source: Department of Banking Supervision, RBI

Table 5.45 shows the quality of asset portfolio in State Bank of India & its Associates. Higher Gross NPA/ Total assets reflect the low quality asset portfolio of banks and vice versa. It can be observed that State Bank of India has got the higher Gross NPA / Total assets when compared with all other banks in SBI group with average magnitude 2.17% and growth rate -6.55% over the study period 2005-06 to 2014-15. State Bank of Hyderabad records the lowest Gross NPA/ Total assets among the SBI group over the study period with the magnitude 1.61% and growth rate 11.17%. The overall average of Gross NPA/ Total assets is found to be 1.86% and the growth is 4.54%.

With regard to the growth rate, it is observed that State Bank of Hyderabad has got higher growth rate 11.17% of Gross NPA/ Total assets during the study period when compared to all other banks in SBI group. Whereas State Bank of India records the minimum growth rate of Gross NPA/ Total assets during 2005-06 to 2014-15.

TABLE 5.46: SUMMARY OF GROSS NPA/TOTAL ASSETS OF SBI & ITS ASSOCIATES DURING THE PERIOD 2005-06 TO 2014-15

	SBI & its Associates	
	No of Banks	**Percent**
High	2	33.33
Moderate	1	16.67
Low	3	50
Total	6	100

Low -1.61-1.8 Moderate 1.81-1.99 High 2-2.17

It has been observed that among the banks in SBI group, two banks are found to be in high category Gross NPA/ Total assets, one bank moderate category and three banks are in low category group.

TABLE 5.47: GROSS NPA/TOTAL ASSETS OF OTHER NATIONALISED BANKS DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Avg.	CAGR	Group Rank
1	Canara Bank	**1.24**	5.83	1
2	Corporation Bank	**1.25**	7.38	2
3	Indian Bank	**1.36**	7.70	3
4	Bank of Baroda	**1.38**	0.73	4
5	Vijaya Bank	**1.44**	0.00	5
6	Andhra Bank	**1.58**	13.24	6
7	IDBI	**1.68**	10.95	7
8	Punjab & Sind Bank	**1.69**	-4.40	8
9	Syndicate Bank	**1.73**	-1.47	9
10	Bank of India	**1.88**	5.40	10
11	Dena Bank	**1.89**	-0.57	11
12	Allahabad Bank	**1.92**	5.57	12
13	Union Bank of India	**1.98**	3.79	13
14	Bank of Maharashtra	**2.02**	3.79	14
15	Oriental Bank of Commerce	**2.02**	-0.75	15
16	Punjab National Bank	**2.16**	7.03	16
17	UCO Bank	**2.32**	7.62	17
18	Indian Overseas Bank	**2.35**	9.69	18
19	United Bank of India	**2.62**	9.06	19
20	Central Bank of India	**2.64**	0.60	20
	Average	**1.86**	**4.56**	

Source: Department of Banking Supervision, RBI

The above table indicates the quality of asset portfolio in Public sector banks excluding SBI & its Associates in India. Higher Gross NPA/ Total assets reflect the low quality asset portfolio of banks and vice versa. From the table 5.47, it can be observed that Central Bank of India has got higher Gross NPA / Total assets when compared to all other nationalised sector banks with average magnitude 2.64% and growth rate 0.60% over the study period 2005-06 to 2014-15. Canara Bank records the lowest Gross NPA/ Total assets among the other nationalised banks over the study period with the magnitude 1.24% and growth rate 5.83%. The overall average of Gross net NPA/ Total assets is found to be 1.86% and growth rate 4.56%.

It is observed that IDBI Bank has got higher growth rate 13.24% of Gross NPA/ Total assets during the study period when compared to all other nationalised banks. Whereas Punjab & Sind Bank records the minimum growth rate of Gross NPA/ net Total assets which is -4.40% during 2005-06 to 2014-15 and that reveals, Punjab & Sind Bank has consistent declining trend throughout 10 years and speaks the efficient management of NPAs This would not have been possible for Punjab & Sind Bank without the ability of management to check slippages in one hand and closely monitoring existing NPAs.

TABLE 5.48: SUMMARY OF GROSS NPA/TOTAL ASSETS OF OTHER NATIONALISED BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Other Nationalised Banks	
	No of Banks	Percent
High	4	20
Moderate	8	40
Low	8	40
Total	20	100

Low- 1.24-1.71; Moderate-1.72-2.18; High- 2.19-2.65

It has been observed that among the other nationalised sector banks, four banks namely Central Bank of India, United Bank of India, Indian Overseas Bank and UCO Bank are found to be in high category Gross NPA/ Total assets with averages 2.64%, 2.625, 2.35% and 2.32% respectively. Eight banks are found to be in moderate category and eight banks in low category group. This reveals that only 20% of the other public sector banks are in the high category of Gross NPA/ Total assets.

TABLE 5.49: GROSS NPA/ TOTAL ASSETS OF PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S.No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank	
					Group Rank	Overall Rank
1	YES Bank	New Private Sector	**0.17**	18.29	1	1
2	Axis Bank	New Private Sector	**0.68**	1.59	2	2
3	HDFC Bank	New Private Sector	**0.7**	-1.72	1	3
4	IndusInd Bank	New Private Sector	**0.95**	-10.23	3	4
5	Nainital Bank	Old Private Sector	**0.97**	3.90	2	5

TABLE 5.49 (Continued)

S.No.	Name of the Bank	Bank Category	Avg	CAGR	Rank	
					Group Rank	Overall Rank
6	City Union Bank	Old Private Sector	1.2	-7.89	3	6
7	Karur Vysya Bank	Old Private Sector	1.2	-6.40	4	7
8	South Indian Bank	Old Private Sector	1.27	-9.72	5	8
9	Kotak Mahindra Bank	New Private Sector	1.32	12.20	6	9
10	Ratnakar Bank	Old Private Sector	1.44	-20.41	7	10
11	Jammu & Kashmir Bank	Old Private Sector	1.46	10.00	8	11
12	Tamilnad Mercantile Bank	Old Private Sector	1.51	-11.86	4	12
13	Federal Bank	Old Private Sector	1.87	-7.29	5	13
14	ICICI Bank	New Private Sector	1.94	10.27	6	14
15	Karnataka Bank	Old Private Sector	2.04	-4.15	9	15
16	Dhanalakshmi Bank	Old Private Sector	2.15	-0.05	7	16
17	Lakshmi Vilas Bank	Old Private Sector	2.19	-3.17	10	17
18	Catholic Syrian Bank	Old Private Sector	2.26	-1.06	11	18
19	Development Credit Bank	New Private Sector	3.26	-18.05	12	19
	Average		**1.50**	**-2.41**		

Source: Department of Banking Supervision, RBI

The above table indicates the quality of asset portfolio in Private sector banks in India. Higher Gross NPA/ Total assets reflect the low quality asset portfolio of banks and vice versa. From the table 5.49, it can be observed that Development Credit Bank has got highest Gross NPA / Total assets when compared to all private sector banks with average magnitude 3.26% and growth rate -18.05% over the study period 2005-06 to 2014-15. YES Bank records the lowest Gross NPA/ Total assets among the private sector banks with the magnitude 0.17% and growth rate 18.29%. The overall average of Gross NPA Gross /net advances is found to be 1.50% and growth rate -2.41%.

It is observed that YES Bank has got highest growth rate of Gross NPA/ Total assets which is 18.29% during the study period when compared to all other private sector banks. Whereas Ratnakar Bank records the minimum growth rate of Gross NPA/ Total assets which is -20.41% during 2005-06 to 2014-15 and that reveals, Ratnakar Bank has consistent declining trend and speaks the efficient management of NPAs. This would not have been possible for the bank without the ability of management to check slippages in one hand and closely monitoring existing NPAs.

TABLE 5.50: SUMMARY OF GROSS NPA/ TOTAL ASSETS OF PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Private Sector				Total Private	
	Old Private		New Private			
	No of Banks	Percent	No of Banks	Percent	No of Banks	Percent
High	3	25	4	57.14	7	36.84
Moderate	8	66.67	2	28.57	10	52.63
Low	1	8.33	1	14.28	2	10.52
Total	12	100	7	100	19	100

Low 0.17-1.2; Moderate-1.21-2.23; High- 2.24-3.26

It has been observed that among the private sector banks, seven banks are found to be in high category Gross NPA/ Total assets out of which four are new private sector banks and three are old private sector banks. 10 banks are found to be in moderate category out of which two are from new private sector and eight banks are from old private sector. There are seven banks in low category group out of which four banks are new private sector banks and three are old private sector banks.

TABLE 5.51: GROSS NPA/TOTAL ASSETS OF OLD PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Avg.	CAGR	Group Rank
1	Nainital Bank	**0.97**	3.90	1
2	City Union Bank	**1.2**	-7.89	2
3	Karur Vysya Bank	**1.2**	-6.40	3
4	South Indian Bank	**1.27**	-9.72	4
5	Ratnakar Bank	**1.44**	-20.41	5
6	Jammu & Kashmir Bank	**1.46**	10.00	6
7	Tamilnad Mercantile Bank	**1.51**	-11.86	7
8	Federal Bank	**1.87**	-7.29	8
9	Karnataka Bank	**2.04**	-4.15	9
10	Dhanalakshmi Bank	**2.15**	-0.05	10
11	Lakshmi Vilas Bank	**2.19**	-3.17	11
12	Catholic Syrian Bank	**2.26**	-1.06	12
	Average	**1.63**	**-4.84**	

Source: Department of Banking Supervision, RBI

Table 5.51 indicates the quality of asset portfolio in old Private sector banks in India. Higher Gross NPA/ Total assets reflect the poor quality asset portfolio of banks and vice versa. It can be observed that Catholic Syrian Bank has got higher Gross NPA / Total assets when compared with all other old private sector banks with average magnitude 2.26% and growth rate -1.06% over the study period 2005-06 to 2014-15. Nainital Bank records the lowest Gross NPA/ Total assets among the old private sector banks with the magnitude 0.97% and growth rate 3.90% and that reveals, Nainital Bank has consistent declining trend throughout 10 years and speaks the efficient management of NPAs. The overall average of Gross NPA/ Total assets is found to be 1.63% and growth rate –4.84%.

It is observed that Jammu & Kashmir Bank has got higher growth rate of Gross NPA/ Total assets which is 10% during the study period when compared to all other old private sector banks. Whereas, Ratnakar Bank records the minimum growth rate of Gross NPA/ Total assets which is -20.41% during 2005-06 to 2014-15. This would not have been possible for the bank without the ability of loan appraisal and credit risk management.

TABLE 5.52 SUMMARY OF GROSS NPA/TOTAL ASSETS OF OLD PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Old Private Banks	
	No of Banks	**Percent**
High	5	41.67
Moderate	3	25
Low	4	33.33
Total	12	100

Low- 0.97-1.4; Moderate-1.41-1.83; High- 1.84-2.26

It has been observed that among the old private sector banks, five banks namely, Catholic Syrian Bank, Karnataka Bank, Lakshmi Vilas Bank, Dhanalakshmi Bank and Karnataka Bank are found to be in high category Gross NPA/ Total assets with averages 2.26%, 2.19%, 2.15% and 2.04% respectively. Three banks are found to be in moderate category and four banks in low category group.

TABLE 5.53: GROSS NPA/TOTAL ASSETS OF NEW PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S. No.	Name of the Bank	Avg.	CAGR	Group Rank
1	YES Bank	0.17	18.29	1
2	Axis Bank	0.68	1.59	2
3	HDFC Bank	0.7	-1.72	3
4	IndusInd Bank	0.95	-10.23	4
5	Kotak Mahindra Bank	1.32	12.20	5
6	ICICI Bank	1.94	10.27	6
7	Development Credit Bank	3.26	-18.05	7
	Average	**1.29**	**1.76**	

Source: Department of Banking Supervision, RBI

The above table indicates the quality of asset portfolio in New Private sector banks operating in India. Higher Gross NPA/ Total assets reflect the low credit portfolio of banks and vice versa. From the table 5.53, it can be observed that Development Credit Bank has got higher Gross NPA / Total assets when compared to all other new private sector banks with average magnitude 3.26% and growth rate -18.05% over the study period 2005-06 to 2014-15. YES Bank records the lowest Gross NPA/ Total assets among the new private sector banks with the magnitude 0.17% and growth rate 18.29%. The overall average of Gross NPA/ Total assets is found to be 1.29% and growth rate 1.76%.

It is observed that YES Bank has got higher growth rate of Gross NPA/ Total assets which is 18.29% during the study period when compared to all other new private sector banks. Whereas Development Credit Bank records the minimum growth rate of Gross NPA/ Total assets which is -18.05% during 2005-06 to 2014-15 and that reveals, Development Credit Bank has consistent declining trend throughout 10 years and speaks the efficient management of NPAs. This would not have been possible for the bank without the ability of management to check slippages in one hand and closely monitoring existing NPAs.

TABLE 5.54: SUMMARY OF GROSS NPA/TOTAL ASSETS OF NEW PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	New Private Banks	
	No of Banks	Percent
High	4	57.14
Moderate	2	28.57
Low	1	14.28
Total	7	100

Low 0.17-1.2; Moderate-1.21-2.23; High- 2.24-3.26

It has been observed that among the new private sector banks, four banks are found to be in high category Gross NPA/ Total assets, two banks are found to be in moderate category and only one bank is found to be in low category group which is YES Bank.

TABLE 5.55: GROSS NPA/TOTAL ASSETS OF PUBLIC AND PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

S .No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank	
					Group Rank	Overall Rank
1	YES Bank	Private Sector	0.17	18.29	1	1
2	Axis Bank	Private Sector	0.68	1.59	2	2
3	HDFC Bank	Private Sector	0.7	-1.72	3	3
4	IndusInd Bank	Private Sector	0.95	-10.23	4	4
5	Nainital Bank	Private Sector	0.97	3.90	5	5
6	City Union Bank	Private Sector	1.2	-7.89	6	6
7	Karur Vysya Bank	Private Sector	1.2	-6.40	7	7
8	Canara Bank	Public Sector	1.24	5.83	8	8
9	Corporation Bank	Public Sector	1.25	7.38	1	9
10	South Indian Bank	Private Sector	1.27	-9.72	9	10
11	Kotak Mahindra Bank	Private Sector	1.32	12.20	10	11
12	Indian Bank	Public Sector	1.36	7.70	11	12
13	Bank of Baroda	Public Sector	1.38	0.73	2	13
14	Vijaya Bank	Public Sector	1.44	0.00	12	14
15	Ratnakar Bank	Private Sector	1.44	-20.41	3	15
16	Jammu & Kashmir Bank	Private Sector	1.46	10.00	4	16

TABLE 5.55 (Continued)

S.No.	Name of the Bank	Bank Category	Avg.	CAGR	Rank	
					Group Rank	Overall Rank
17	Tamilnad Mercantile Bank	Private Sector	1.51	-11.86	5	17
18	Andhra Bank	Public Sector	1.58	13.24	6	18
19	State Bank of Hyderabad	Public Sector	1.61	11.17	13	19
20	State Bank of Travancore	Public Sector	1.66	1.56	7	20
21	IDBI	Public Sector	1.68	10.95	14	21
22	Punjab & Sind Bank	Public Sector	1.69	-4.40	8	22
28	Dena Bank	Public Sector	1.89	-0.57	15	28
29	Allahabad Bank	Public Sector	1.92	5.57	14	29
30	ICICI Bank	Private Sector	1.94	10.27	15	30
31	Union Bank of India	Public Sector	1.98	3.79	16	31
32	Bank of Maharashtra	Public Sector	2.02	3.79	17	32
33	Oriental Bank of Commerce	Public Sector	2.02	-0.75	18	33
34	Karnataka Bank	Private Sector	2.04	-4.15	19	34
35	State Bank of Mysore	Public Sector	2.05	2.70	20	35
36	Dhanalakshmi Bank	Private Sector	2.15	-0.05	16	36
37	Punjab National Bank	Public Sector	2.16	7.03	21	37
38	State Bank of India	Public Sector	2.17	-6.55	17	38
39	Lakshmi Vilas Bank	Private Sector	2.19	-3.17	22	39
40	Catholic Syrian Bank	Private Sector	2.26	-1.06	23	40
41	UCO Bank	Public Sector	2.32	7.62	18	41
42	Indian Overseas Bank	Public Sector	2.35	9.69	19	42
43	United Bank of India	Public Sector	2.62	9.06	24	43
44	Central Bank of India	Public Sector	2.64	0.60	25	44
45	Development Credit Bank	Private Sector	3.26	-18.05	26	45
	Average		**1.71**	**1.62**		

Source: Department of Banking Supervision, RBI

The above table indicates the quality of asset portfolio in public and private sector banks operating in India. Higher Gross NPA/ Total assets reflect the low asset portfolio of banks and vice versa. From the table 5.55, it can be observed that Development Credit Bank has got higher Gross NPA / Total assets when compared to all public and private sector banks with average magnitude 3.26% and growth rate -

18.05% over the study period 2005-06 to 2014-15 followed by Central Bank of India, United Bank of India, Indian Overseas Bank and UCO Bank with averages 2.64%, 2.625, 2.35% and 2.32% respectively YES Bank records the lowest Gross NPA/ Total assets among the public and private sector banks with the magnitude 0.17% and growth rate 18.29% The overall average of Gross NPA/ Total assets is found to be 1.71% and growth rate 1.62%.

It is observed that YES Bank has got higher growth rate 18.29% of Gross NPA/ Total assets during the study period when compared to all public and private sector banks operating in India. Whereas Ratnakar Bank records the minimum growth rate of Gross NPA/ Total assets which is -20.41% during 2005-06 to 2014-15, which reveals that Ratnakar Bank has consistent declining trend and speaks the efficient management of NPAs.

TABLE 5.56: SUMMARY OF GROSS NPA/TOTAL ASSETS OF PUBLIC AND PRIVATE BANKS DURING THE PERIOD 2005-06 TO 2014-15

	Public Sector				**Total Public**		**Private Sector**				**Total Private**		**All banks**	
	SBI & its Associates		**Other Nationalised**				**Old Private**		**New Private**					
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
High	-	-	4	20	**4**	**15**	1	8	1	14	**2**	**10**	**6**	**13**
Moderate	6	100	16	80	**22**	**85**	8	67	2	29	**10**	**53**	**32**	**71**
Low	-	-	-	-	-	**-**	3	25	4	57	**7**	**37**	**7**	**16**
Total	6	100	20	100	**26**	**100**	12	100	7	100	**19**	**100**	**45**	**100**

Low 0.17-1.2; Moderate-1.21-2.23; High- 2.24-3.26

It has been observed that among the public and private sector banks, thirteen percent of the banks are found to be in high category Gross NPA/ Total assets. 71 percent of the banks are found to be in moderate category and 16 percent of the banks in low category group where all banks are from the private sector banks. This reveals that private sector banks are better in performance than public sector banks with regard to Gross NPA Total assets.

5.2 PORTFOLIO OF NPA IN INDIAN PUBLIC AND PRIVATE SECTOR BANKS

Non-performing assets have become the menace for the Indian banking sector. Nonperforming assets have been detrimental to the efficient performance of Indian banks. Their continued amelioration in absolute terms proved the survival of Indian banks very difficult. As on March 2015, the total NPA of Indian public sector banks stand at Rs.196072 crore against the standard asset Rs. 5838443 crore which is 3.3 percent of total advances. This study attempts to analyse the various portfolio of NPAs of Indian Public sector banks with special reference to standard assets, sub-standard assets, doubtful assets and loss assets for the period 2005-06 to 2014-15.

The present NPA problem in Indian banking system stems from the fact that the commercial sector is primarily depending on the banking system for its financial needs. It is necessary to analyse the portfolio of NPAs to reduce its level and improve the financial health of institution.

With this background, this section analysis the portfolio of NPAs in Indian public and private sector banks for the period of 10 years in the following framework.

- Section 5.2.1 deals with Classification of Advances in Public sector banks
- Section 5.2.2 deals with Classification of Advances in Private sector banks

TABLE: 5.57 PORTFOLIO OF ADVANCES IN PUBLIC SECTOR BANKS

(Rs in Billion)

Years	Sub-standard Advances		Doubtful Advances		Loss Advances		Gross NPAs		Total Advances
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	
2006	113	1	246	2.17	55	0.49	414	3.65	11340
2007	143	0.98	198	1.35	48	0.33	389	2.66	14651
2008	173	0.95	192	1.06	40	0.22	405	2.23	18191
2009	203	0.89	206	0.9	41	0.18	450	1.97	22828
2010	288	1.05	254	0.93	58	0.21	599	2.19	27335
2011	350	1.05	332	0.99	65	0.19	747	2.23	33465
2012	623	1.58	490	1.24	60	0.15	1173	2.98	39428
2013	815	1.79	761	1.67	68	0.15	1645	3.61	45601
2014	958	1.84	1216	2.33	99	0.19	2273	4.36	52159
2015	1054	1.88	1630	2.9	100	0.18	2785	4.96	56167
Mean	**472.00**	**1.30**	**552.50**	**1.55**	**63.40**	**0.23**	**1088.00**	**3.08**	**32116.50**
Std Deviation	**359.47**	**0.42**	**500.66**	**0.69**	**21.16**	**0.10**	**867.52**	**1.02**	**15835.97**
Co-efficient of variation	**76.16**		**90.62**		**33.37**		**79.74**		**49.31**
CAGR	**25.02**		**20.34**		**6.61**		**21**		**17.35**

Source: http://rbi.dbie.org

CHART: 5.1 PORTFOLIO OF ADVANCES IN PUBLIC SECTOR BANKS

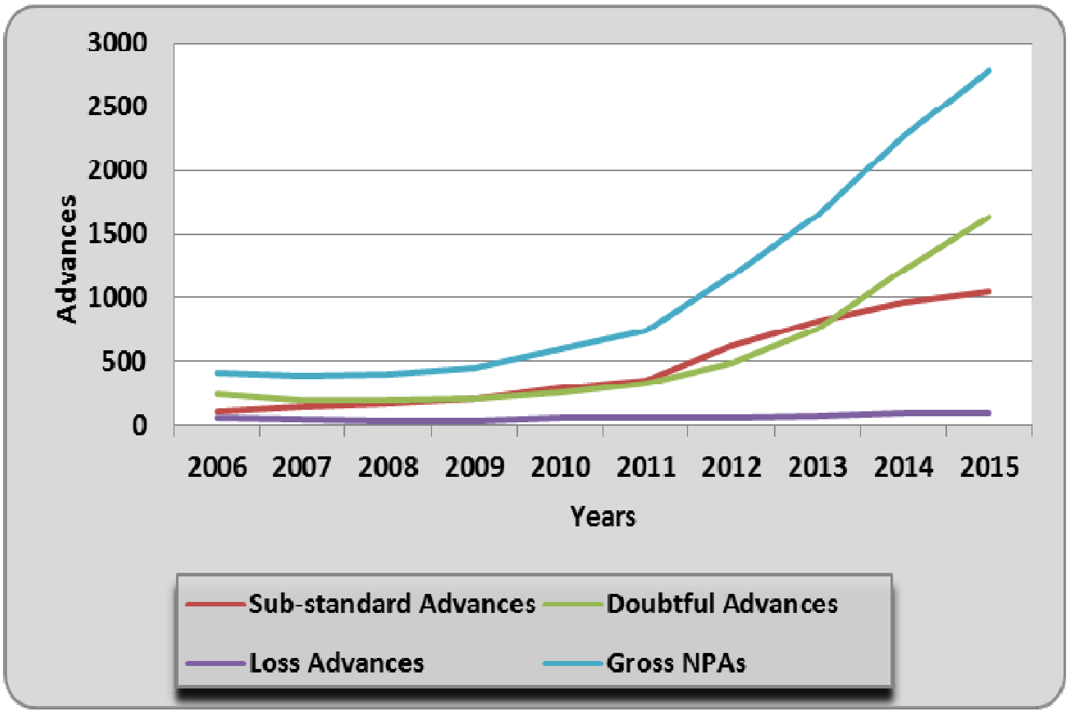


Table No 5.57 reveals the complete classification of advances in public sector banks for the period under study. The classification include sub-standard, doubtful and loss advances. Sub-Standard advances, Doubtful Advances and Loss Advances have been decreasing till 2009 that reveals public sector banks were efficient in managing NPAs. But after 2009, standard advances started declining whereas sub-standard advances, doubtful Advances and loss Advances showed an increasing trend until 2015. This indicates that NPAs started mounting up after 2009 and public sector banks were not able to manage efficiently.

For public sector banks, percentage share of gross NPAs to total advances have shown a fluctuating trend with CAGR 21% whereas growth rate of total advances is found to be 17%. This shows that growth of gross NPAs is higher than the growth rate of total advances. Growth of NPA is 3.65 % in 2006 which decreased to 2.23 % in 2008 and further came down to 1.97% in 2009. Then it increased to 2.19 % in 2010 and further increased sharply up to 4.96 % in the year 2015. Growth rate of loss advances is found to be 6% which is a good indicator but due to the mounting up of sub-standard and doubtful advances in recent years, there is a possibility of increase in loss advances in near future.

TABLE: 5. 58 PORTFOLIO OF ADVANCES IN PRIVATE SECTOR BANKS

(Rs in Billion)

Years	Sub-standard Advances		Doubtful Advances		Loss Advances		Gross NPAs		Total Advances
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	
2006	24	0.76	44	1.39	9	0.28	78	2.46	3176
2007	44	1.05	39	0.93	9	0.21	92	2.19	4201
2008	73	1.39	45	0.86	12	0.23	130	2.47	5259
2009	106	1.81	50	0.85	13	0.22	170	2.91	5850
2010	89	1.38	66	1.02	22	0.34	176	2.73	6442
2011	45	0.55	108	1.33	29	0.36	182	2.24	8118
2012	52	0.53	104	1.06	29	0.3	185	1.89	9814
2013	64	0.55	112	0.97	32	0.28	208	1.79	11592
2014	86	0.63	114	0.84	42	0.31	242	1.78	13613
2015	108	0.67	176	1.09	52	0.32	337	2.09	16087
Mean	**69.10**	**0.93**	**85.80**	**1.03**	**24.90**	**0.29**	**180.00**	**2.26**	**8415.20**
Std Deviation	**28.16**	**0.45**	**44.37**	**0.19**	**14.65**	**0.05**	**74.59**	**0.39**	**4264.25**
Co-efficient of variation	**40.75**		**51.71**		**58.86**		**41.44**		**50.67**
CAGR	**16.23**		**14.87**		**19.17**		**15.76**		**17.6**

Source: http://rbi.dbie.org

CHART: 5.2 PORTFOLIO OF ADVANCES IN PRIVATE SECTOR BANKS

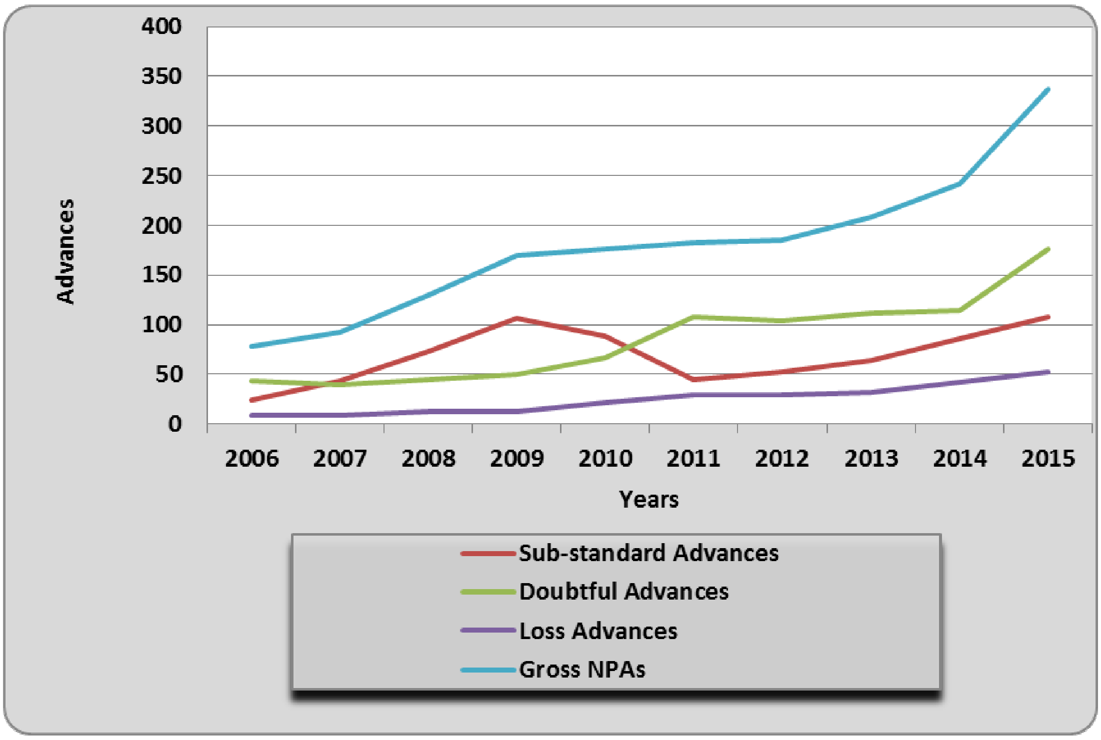


Table No 5.58 reveals the empirical data analysis of the asset-wise classification of advances in Private Sector Banks during the study period of 2005-2006 to 2014-2015. The classification include standard, sub-standard, doubtful and loss assets. For private sector banks, percentage share of gross NPAs to total advances has shown a fluctuating trend over the study period. It was 0.28 % in 2006 which decreased to 2.19 % in 2008 and increased to 2.91 % in 2009. It again shown a decreased trend till 2013 and then increased to 2.09 % in 2015. The Standard Advances have been marginally increasing year by year until 2014 and on other hand the sub-standard advances, doubtful advances and loss advances have been marginally decreasing.

Also CAGR of gross NPA is found to be 15.76 and growth rate of total advances is found to be 17.6 %. In 2015, growth rate of sub-standard advances, doubtful advances and loss advances marginally increased. Standard deviation is found to be higher for standard advances. On the basis of co-efficient of variation of asset-wise classification of advances, it is identified that Doubtful advances (58.8) have shown greater inconsistency than other advances.

TABLE: 5.59 COMPARATIVE ANALYSIS OF PORTFOLIO OF NPA's IN PUBLIC AND PRIVATE SECTOR BANKS

(Values in Growth percentages)

Classification	Particulars	Public	Private
Sub-Standard Advances	Mean	1.30	0.93
	Std Deviation	0.42	0.45
	Co-efficient of variation	31.94	48.49
	CAGR	6.52	-1.25
Doubtful Advances	Mean	1.55	1.03
	Std Deviation	0.69	0.19
	Co-efficient of variation	44.62	18.66
	CAGR	2.94	-2.4
Loss Advances	Mean	0.23	0.29
	Std Deviation	0.10	0.05
	Co-efficient of variation	45.82	17.99
	CAGR	-9.53	1.34
Gross NPA	Mean	3.08	2.26
	Std Deviation	1.02	0.39
	Co-efficient of variation	33.20	17.17
	CAGR	3.11	-1.62

From the above table, it is clear that Portfolio of NPAs in private sector banks is better when compared to public sector banks. CAGR is found to be negative in case of sub-standard and doubtful advances in private sector banks during the study period whereas loss advances is found to be positive. CAGR of loss advances is found to be negative in public sector banks but other two components are positive. It can be predicted that mounting up of sub-standard and doubtful advances in public sector banks can result in increase in loss advances in near future. Also, Standard deviation is comparatively lesser in private sector banks and mean is found to be higher in public sector banks during the study period 2005-06 to 2014-15. Therefore, it can be concluded that asset wise portfolio classification of NPAs in private sector banks is better as compared to private sector banks.

5.3 OCCUPATION-WISE NON-PERFORMING ASSETS IN INDIAN PUBLIC AND PRIVATE SECTOR BANKS

The issue of Non-Performing Assets (NPAs) has gained growing attention in the last few decades in view of the established fact that the immediate consequence of bubbling up of NPAs in the banking system is bank failure. The study of occupation wise NPAs is synonymous to know the functional efficiency of banks and believed to be the major cause of the economic stagnation problems. As per the Global Financial Stability Report of International Monetary Fund, (IMF, 2009), identifying and dealing with distressed assets, and recapitalizing weak but viable institutions and resolving failed institutions are stated as the two of the three important priorities which directly relate to NPAs.

RBI has divided the Priority Sector into the following categories. The main areas under Priority Sector Lending scheme are as follows: (i) Agriculture (ii) Small-Scale Industries, (iii) Small business/Service enterprises (small business, retail trade, Professional and self-employed, small road and water transport operations), (iv) State-sponsored organizations for SC/ST (v) Retail loan: Educational Loan, Housing Loan, Consumption Loan, (vi) Micro credit, Loans to software industry, Food and agro process sector and Venture capital (vii) Export credit. Based on the discussion this section aims to analyse the Occupation-wise distribution of credits in the following framework.

5.3.1 - Occupation-Wise Distribution of Credit Takers' Accounts in Public Sector Banks

5.3.2 - Occupation-Wise Distribution of Credit Takers' Accounts in Private Sector Banks

5.3.3 - Occupation-Wise Distribution of Credit Limit of Public Sector Banks

5.3.4 - Occupation-Wise Distribution of Credit Limit of Private Sector Banks

5.3.5- -Occupation-Wise Distribution of Outstanding Credit in Public Sector Banks

5.3.6 - Occupation-Wise Distribution of Outstanding Credit in Private Sector Banks

5.3.1 - Occupation-Wise Distribution of Credit Takers' Accounts in Public Sector Banks

This section deals with analyzing the number of credit takers accounts in public sector banks for the period of ten years. Proportion of various occupations have been calculated. ANOVA has been done to identify whether there is a significant difference between the occupations.

The table 5.60 describes the occupation-wise distribution of credit takers accounts in public sector banks. A research analysis has been performed between the years from 2005-2006 to 2014-2015. The survey indicates that the majority i.e., 58.19 percent of account-holders in Public Sector banks are Agriculturists. The number of credit takers accounts in Agriculture was 20065097 at the beginning of the year 2005-2006 and it increased to 49263407 at the end of the year 2014- 2015. Followed by 25.40 percent of credit takers are Personal Loans holders and the number of credit takers accounts in Personal Loans was 16480888 at the beginning of the year 2005-2006 and it went down to 1858591 during 2011-2012. Later, it gradually raised and reached its maximum i.e., 20578819 at the end of the study 2014-2015. Similarly, 8 per cent of credit takers are Trade Ventures. The number of credit takers accounts in trade was 4132585 at the beginning of the year 2005-2006 and it reached its maximum i.e., 5724844 during 2011-2012 but it reduced to 4030326 at the end of the year 2015-2015.

Further, 4.08 per cent of account-holders are Professionals & Other Services and the number of accounts was 1053946 at the beginning of the year 2005-2006 and it attained its maximum of 6474550 during the year 2010-2011 and at the end of the year 2014-2015 it reduced to 1643707. Consequently, 3.44 per cent of account-holders are in Industrial Sector and the number of credit takers accounts in Industries was 2275375 at the beginning of the year 2005-2006 but it reduced to 1878996 at the end of the year 2014-2015. Moreover, 0.6 per cent of credit takers are transport operators, the number of credit takers accounts of Transport Operators at the beginning of the year 2005-2006 was 295503 and it gradually increased to 545491 at the end of the year 2014-2015. A batch of 0.25 per cent of credit takers in Public Sector Banks are in Financing. The number of credit takers accounts in Finance was 66669 at the beginning of the year 2005-2006 and it attained a maximum of 265625 at the end of the year 2015-2014.

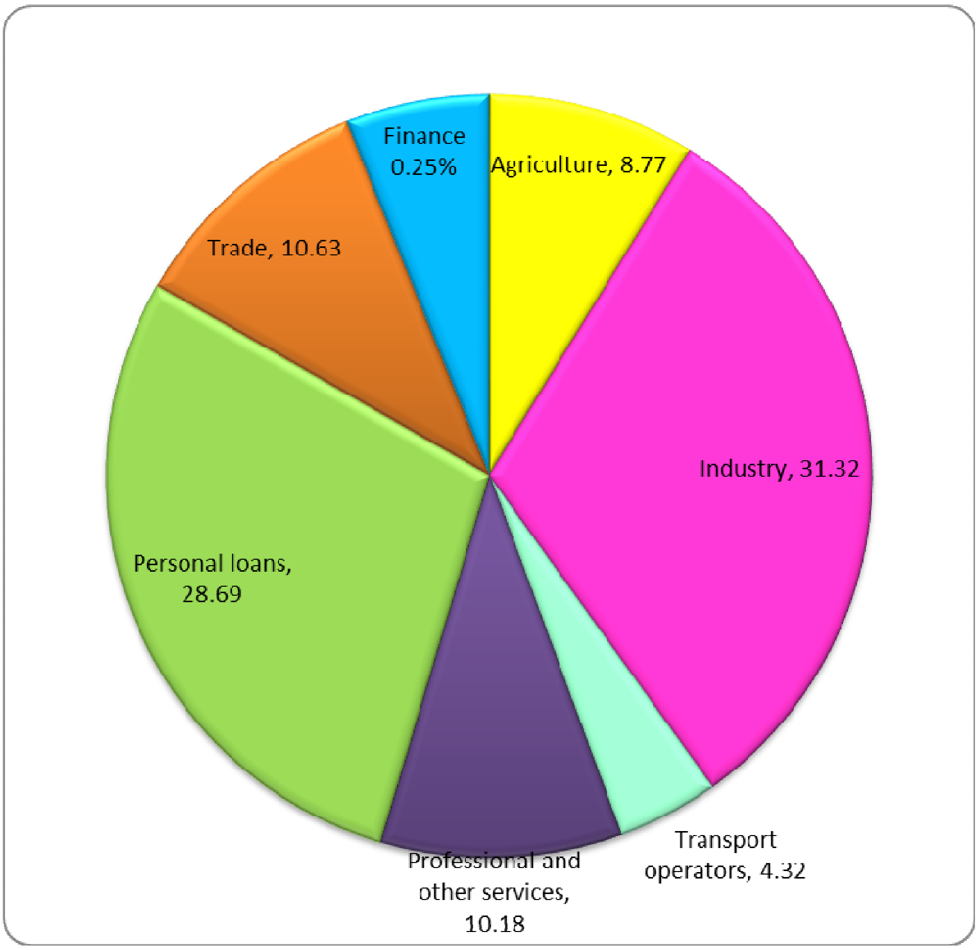
TABLE: 5.60 OCCUPATION-WISE DISTRIBUTION OF CREDIT TAKERS' ACCOUNTS IN PUBLIC SECTOR BANKS

(No of Accounts)

Year	Agriculture	Industry	Transport operators	Professional and other services	Personal loans	Trade	Finance
2005-06	20065097	2275375	295503	1053946	16480888	4132585	66669
2006-07	23083099	2135473	287966	1188626	16494125	4397523	98059
2007-08	26314376	2213077	288614	1363351	16654015	4357495	98049
2008-09	28329901	2224096	279458	1403844	1858591	4281131	101842
2009-10	29139336	2081971	328957	1612184	19313780	4166105	238875
2010-11	31635584	1707640	258469	6474550	10320849	5149351	127152
2011-12	33800660	1546526	229109	3997948	7544657	5724844	92768
2012-13	40475251	1649180	379540	2798464	14014529	4935565	157231
2013-14	47149842	1751834	529970	1598979	20484401	4146285	221693
2014-15	49263407	1878996	545491	1643707	20578819	4030326	265625
Total	**329256553**	**19464168**	**3423077**	**23135599**	**143744654**	**45321210**	**1467963**
Mean	**32925655**	**1946416**	**342307**	**2313560**	**14374465**	**4532121**	**146796**
SD	**9327979.36**	**256559.71**	**104825.9**	**1625422**	**5781031.22**	**526516.8**	**66944.01**
CV (%)	**28.33**	**13.18**	**30.62**	**70.25633**	**40.22**	**11.62**	**45.60**
CGAR	**9.4**	**-1.9**	**6.32**	**4.54**	**2.25**	**-0.25**	**14.82**
Proportions of Credit takers A/c's	**58.19**	**3.44**	**0.6**	**4.08**	**25.40**	**8**	**0.25**
f-value	**73.43**						
p-value	**0.000**						
s/ns	**S**						

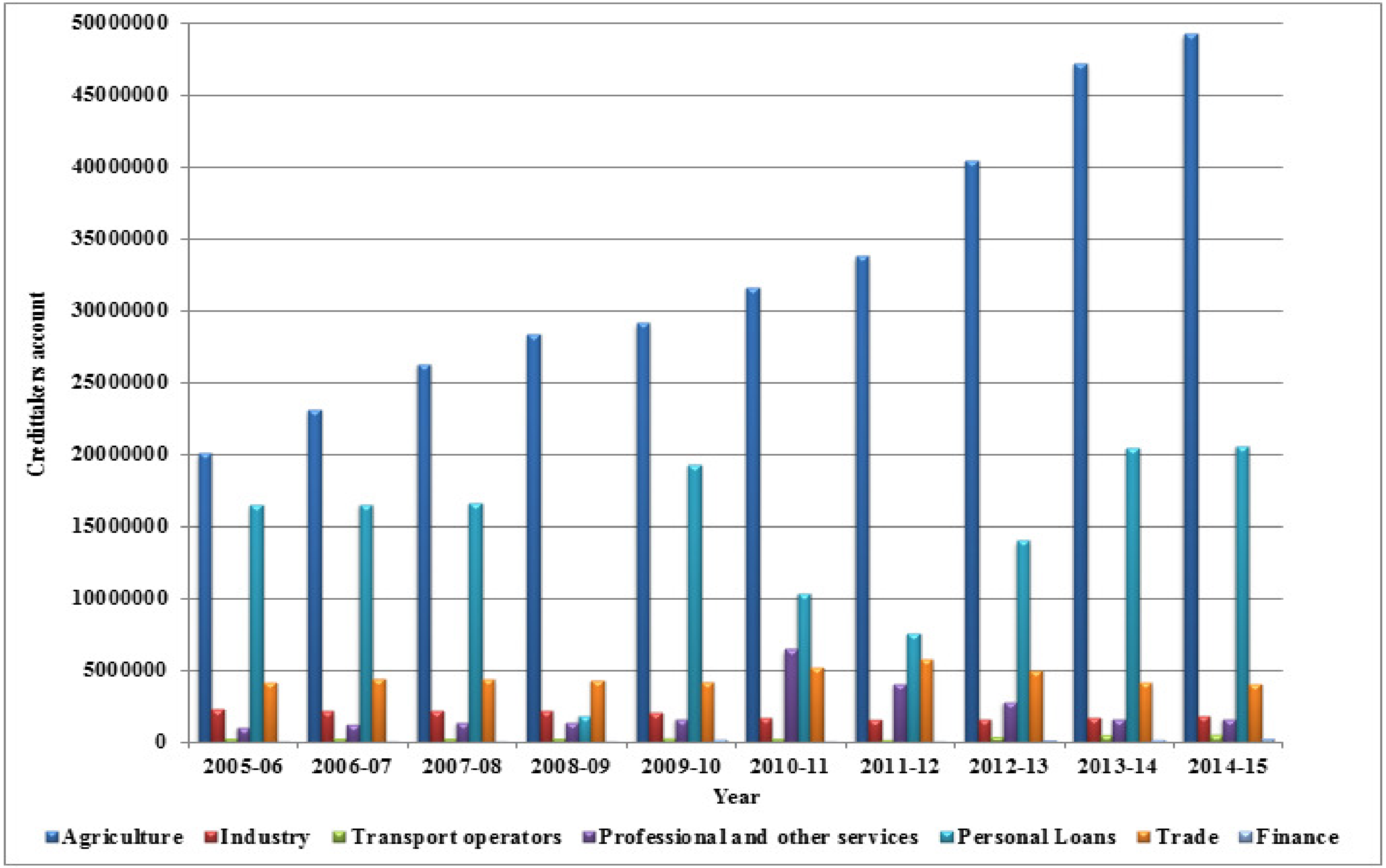
Source: http://rbi.dbie.org

CHART: 5.3 PROPORTION OF CREDIT TAKERS' ACCOUNTS IN PUBLIC SECTOR BANKS



On the basis of co-efficient of variation of credit takers account it has been identified that Professional and Other Services and Finance has shown greater consistency in the credit takers account. The compound annual growth rate has been higher in the Agriculture (9.4) and negative compound growth rate is observed in the Industry (-1.9). From the above chart, it is inferred that maximum proportion of credit takers account is in the agriculture (58.19) when compared to other occupations. The proportion is found to be lesser in finance sector which is 0.25 percent. Further ANOVA has been calculated to identify the significant difference between the various occupations and the results reveals that there is significant difference between occupation-wise distributions of credit takers account in public sector banks.

CHART: 5.4 OCCUPATION-WISE DISTRIBUTION OF CREDIT TAKERS ACCOUNTS IN PUBLIC SECTOR BANKS



Source: http://rbi.dbie.org

5.3.2: OCCUPATION-WISE DISTRIBUTION OF CREDIT TAKERS' ACCOUNTS IN PRIVATE SECTOR BANKS

This section deals with analyzing the number of credit takers accounts in private sector banks for the period of ten years. Proportion of various occupations has been calculated. ANOVA has been done to identify whether there is a significant difference between the occupations.

The table 5.61 indicates the Occupation-wise distribution of credit takers accounts in private Sector Banks. A survey has been made during the study period from 2005-2006 to 2014-2015. The survey indicates that the majority i.e., 71.6 per cent of credit takers are Personal loan holders of Private Sector Banks. The number of credit takers accounts of Personal loan holders was 8316699 at the beginning of the year 2005-2006 and it increased to 21185366 at the end of the year 2014-2015. Followed by, 13.91 per cent of account-holders in Private Sector Banks are Agriculturists and the number of credit takers accounts in Agricultural Sector was 1394164 at the beginning of the year and it reached its maximum of 7753422 at the end of the study 2014-2015. Further,6.25 per cent of account-holders are from Professionals and Other services, the number of accounts in this area was 134574 at the beginning of the year 2005-2006 and then there were fluctuations in between and it was 1537501 at the end of the year 2014-2015.

Subsequently, 3.6 per cent of credit takers are from Industries and the number of credit takers accounts in this sector was 191188 at the beginning of the year 2005-2006 and at the end of 2014-2015 it was 742696. Similarly, 2.33 per cent of account-holders are Transport operators, the number of account-holders in this sector was 191718 and on the end of the year 2014-2015 the number increased to 1397815. Further, 2.16 per cent of accounts-holders are Trade and the number of credit takers accounts was 250745 at the beginning of the year 2005-2006 and it increased to 1262078 at the end of the year 2014-2015. Similarly, 0.11 per cent of credit takers are in Financing and the number of account-holders in this section at the beginning of the year 2005-2006 was observed to be 14574 and it increased to 41996 at the end of the year 2014-2015.

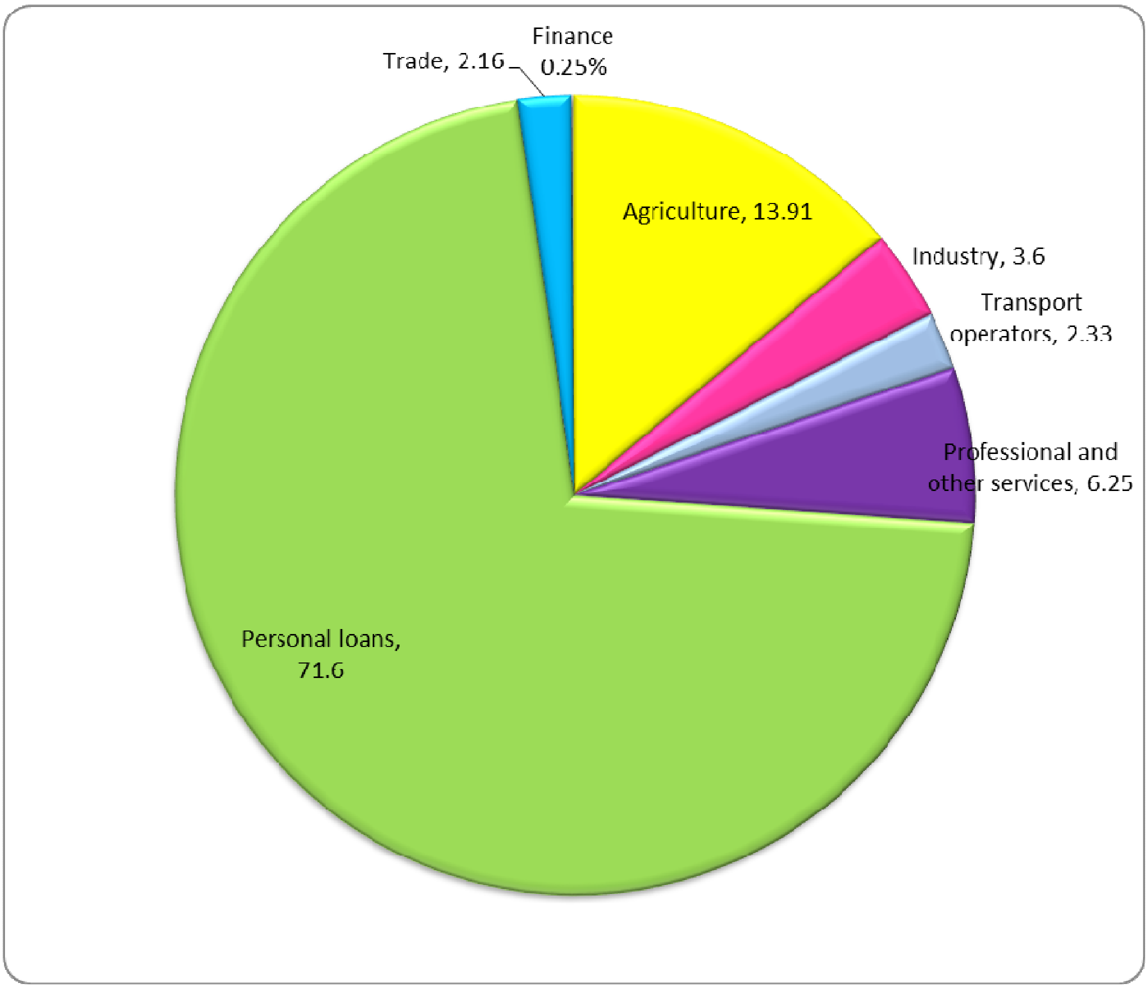
TABLE: 5.61 OCCUPATION-WISE DISTRIBUTION OF CREDIT TAKERS' ACCOUNTS IN PRIVATE SECTOR BANKS

(No of Accounts)

Year	Agriculture	Industry	Transport operators	Professional and other services	Personal loans	Trade	Finance
2005-06	1394164	191188	191718	134574	8316699	250745	14574
2006-07	1254264	273235	275359	1057703	11642539	300229	24775
2007-08	2221226	1220300	343619	3843172	16924742	430910	22101
2008-09	3933657	5450005	428800	3057064	24603473	618473	19716
2009-10	2847639	550721	498474	2256516	22380410	566102	42078
2010-11	3497476	335843	498647	346909	24094361	518480	32985
2011-12	4295607	204805	498820	2644436	25939571	474864	25857
2012-13	5381382	451528	974226	1778075	23942349	713470	38394
2013-14	6467156	698251	1449631	911714	21945127	952076	50930
2014-15	7753422	742696	1397815	1537501	21185366	1262078	41996
Total	**39045993**	**10118572**	**6557109**	**17567664**	**200974637**	**6087427**	**313406**
Mean	**3904599**	**1011857**	**655710**	**1756766**	**20097463**	**608742**	**31340**
SD	**2028742.82**	**1508821**	**431895.09**	**1138073**	**5615516.32**	**289593.5**	**11134.75**
CV(%)	**51.95**	**149.11**	**65.86**	**64.78**	**27.94**	**47.57**	**35.52**
CAGR	**18.72**	**14.53**	**21.98**	**27.58**	**9.8**	**17.54**	**11.16**
Proportions of Credit takers A/c's	**13.91**	**3.6**	**2.33**	**6.25**	**71.6**	**2.16**	**0.11**
f-value	**82.82**						
p-value	**0.000**						
s/ns	**S**						

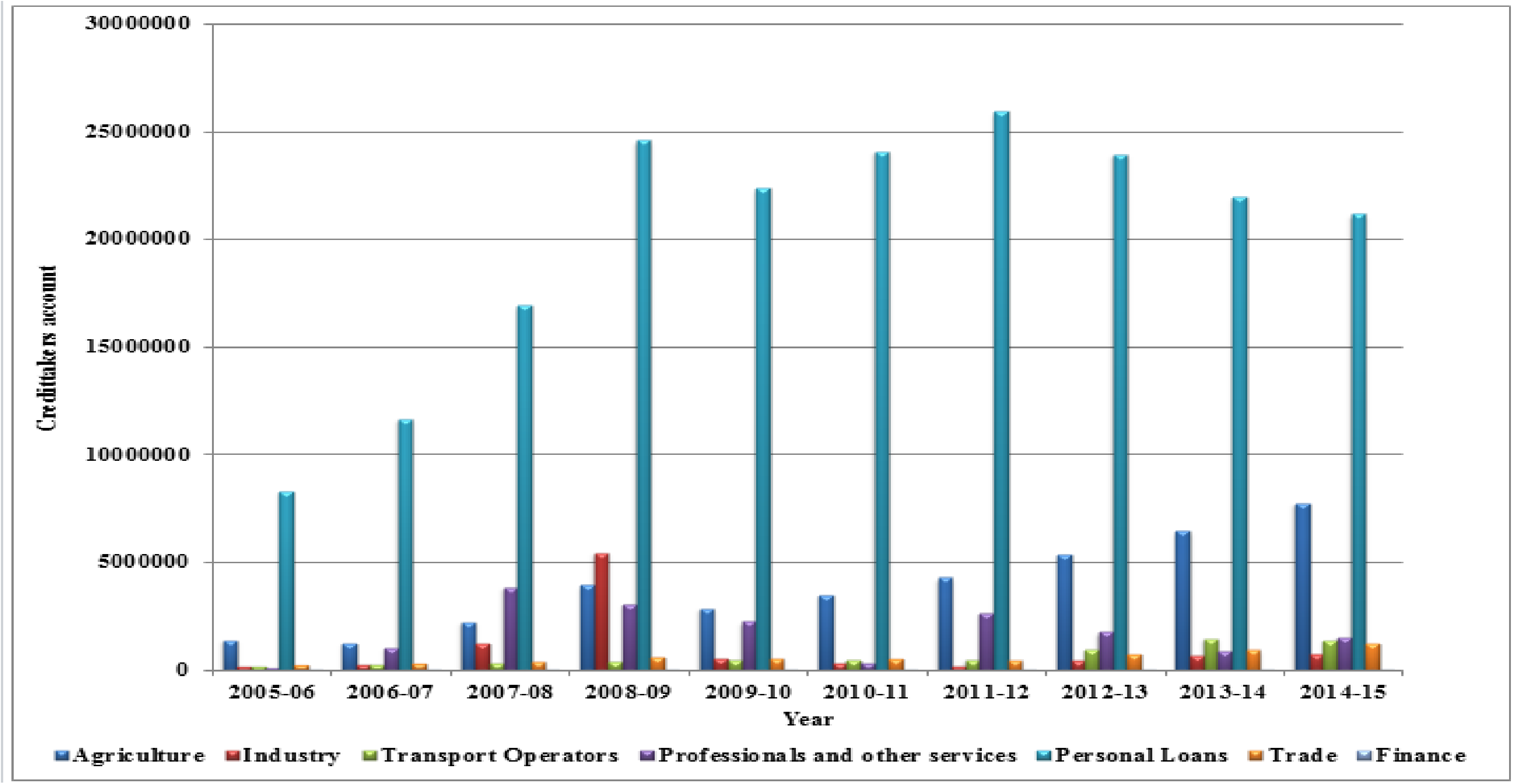
Source: http://rbiSource: http://.rbi.dbie.org

CHART: 5.5 PROPORTION OF CREDIT TAKERS' ACCOUNTS IN PRIVATE SECTOR BANKS



On the basis of co-efficient of variation of credit takers account it has been identified that Industry has shown greater consistency in the credit takers account. The compound annual growth rate has been higher in the Professional and other services (27.58) and lower compound growth rate in personal loans (9.8). From the above finding it is inferred that maximum proportion of credit takers account is in the Personal loans (71.6) when compared to other occupations. The ANOVA results show that there is significant difference between occupation-wise distributions of credit takers account in Private Sector Banks.

CHART: 5.6 OCCUPATION-WISE DISTRIBUTION OF CREDIT TAKERS ACCOUNTS IN PRIVATE SECTOR BANKS



Source: http://rbi.dbie.org

5.3.3: OCCUPATION-WISE DISTRIBUTION OF CREDIT LIMIT IN PUBLIC SECTOR BANKS

This section deals with analyzing the number of Credit Limit in public sector banks for the period of ten years. Proportion of various occupations has been calculated. ANOVA has been done to identify whether there is a significant difference between the occupations. The table 5.62 determines the Occupation-wise distribution of credit limit of Public Sector Banks in India. An empirical study has been performed for a study period from 2005-2006 to 2014-2015.

The study indicates that the Public Sector Banks have set maximum i.e., 45.00 per cent credit limit to Industries, at the beginning of the year 2005-2006 the credit limit to industries was Rs.653135 crore and at the end of the year 2014-2015 it wasRs.3263638 crore. Subsequently, the Public Sector Banks fixed a credit limit of 13.60 per cent to provide Personal loans and the credit limit was Rs.250093 crore at the beginning of the year 2005-2006 and it was Rs.999115 crore at the end of the year 2014-2015. Followed by, the Public Sector Banks have fixed a credit limit of 12.06 per cent to Agriculturists, the credit limit of Agriculturists at the beginning of the year 2005-2006 was Rs.166120 crore and it increased to Rs.733487 crore at the end of the year 2014-2015.

Similarly, the Public Sector Banks have given a credit limit of 11.36 per cent to Trade ventures and the credit limit during the year 2005-2006 was Rs.179783 crore and at the end of the year 2014-2015 it increased to Rs.778783 crore. Subsequently, the Public Sector Banks have fixed 9.26 per cent credit limit to Finance, the credit limit of this area was Rs.84649 crore at the beginning of the year 2005-2006 and it gradually increased to Rs.601989 crore at the end of the year 2014-2015. Further, the Public Sector Banks fixed a credit limit of 6.79 per cent to Professionals and Other services, the credit-limit was Rs.69489 crore at the beginning of the year 2005-2006 and it rose to Rs.418370 crore at the end of the year 2014-2015. Similarly, the Public Sector Banks have set a credit limit of 1.88 per cent to Transport Operators and the credit limit to this sector was Rs.17107 crore at the beginning of the year 2005-2006 and it increased to Rs.932277 crore at the end of the year 2014-2015.

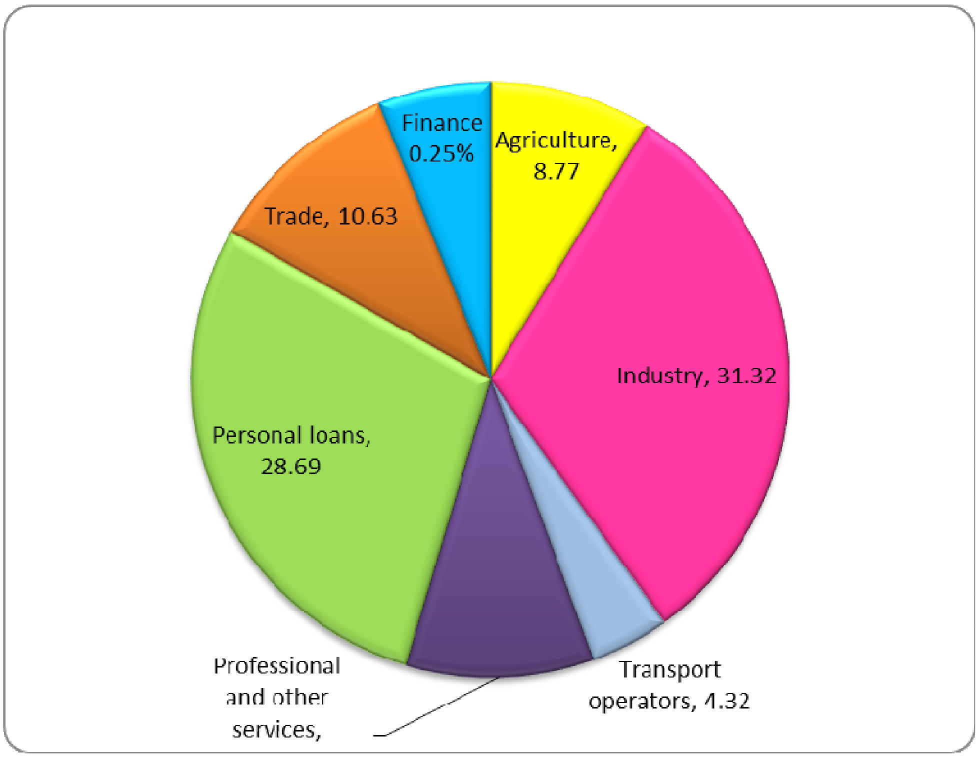
TABLE: 5.62 OCCUPATION-WISE DISTRIBUTION OF CREDIT LIMIT IN PUBLIC SECTOR BANKS

(Amount in Rs.Crore)

Year	Agriculture	Industry	Transport operators	Professional and other services	Personal loans	Trade	Finance
2005-06	166120	653135	17107	69489	250093	179783	84649
2006-07	212305	890975	17430	102879	300925	225541	120591
2007-08	238071	1001656	30187	146569	329380	215927	165370
2008-09	266964	1126086	52281	208813	360526	206723	226777
2009-10	347098	1642844	67512	288226	478031	375912	213021
2010-11	575298	2060976	102056	355271	611803	546388	412023
2011-12	953528	2585530	154275	437912	783010	794175	796931
2012-13	825105	2851726	133859	428825	824414	749866	665240
2013-14	696683	3117922	113443	419738	865818	705558	533549
2014-15	733487	3263638	932277	418370	999115	778783	601989
Total	**5014659**	**19194487**	**1620427**	**2876092**	**5803115**	**4778656**	**3820140**
Mean	**501465.9**	**1919449**	**162042.7**	**287609.2**	**580311.5**	**477865.6**	**382014**
SD	**274001**	**937315.5**	**260838**	**137648.3**	**258342.7**	**250234.3**	**241036.3**
CV (%)	**54.64**	**48.83**	**160.96**	**47.85**	**44.51**	**52.36**	**63.09**
CGAR	**16.01**	**17.45**	**18.48**	**19.66**	**14.86**	**15.79**	**21.67**
Proportions of Credit takers A/c's	**12.06**	**45.00**	**1.88**	**6.79**	**13.60**	**11.36**	**9.26**
f-value	**17.964**						
p-value	**0.000**						
s/ns	**S**						

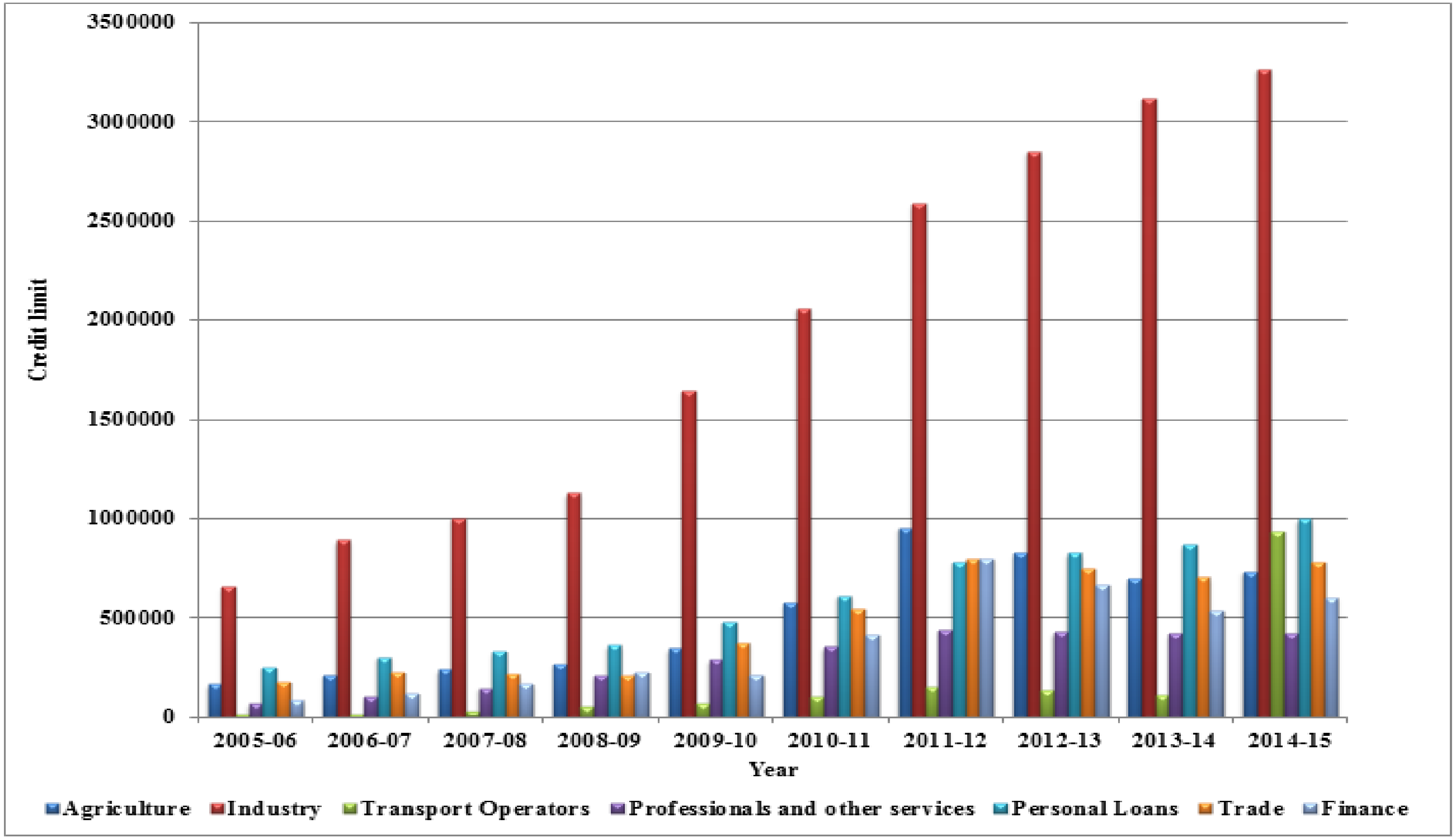
Source: http://rbi.dbie.org

CHART: 5.7 PROPORTION OF CREDIT LIMIT IN PUBLIC SECTOR BANKS



On the basis of co-efficient of variation of credit limit it has been identified that Transport operators has shown greater consistency in the credit limit. The compound annual growth rate has been higher in the Finance (21.67) and lower compound growth rate in Personal loan (14.86). From the above finding, it has been inferred that maximum proportion of credit limit has been found in the Industry (45.00) when compared to other occupations. The ANOVA result shows that there is significant difference between occupation-wise distributions of credit limit of Public Sector Banks.

CHART: 5.8 OCCUPATION-WISE DISTRIBUTION OF CREDIT LIMIT OF PUBLIC SECTOR BANKS



Source: http://rbi.dbie.org

5.3.4 - OCCUPATION-WISE DISTRIBUTION OF CREDIT LIMIT IN PRIVATE SECTOR BANKS

This section deals with analyzing the Credit Limit in private sector banks for the period of ten years. Proportion of various occupations has been calculated. ANOVA has been done to identify whether there is a significant difference between the occupations. The following table 5.63 determines the occupation-wise distribution of credit limit of Private Sector Banks in India. A survey has been performed between the study period from 2005-2006 to 2014-2015.

The study indicates that the Private Sector Banks have given maximum i.e., 34.12 per cent credit limit to Industries, the credit limit of Industries was Rs.129308 crore at the beginning of the year 2005-2006 and it increased to Rs.909524 crore at the end of the year 2014-2015.Followed by, the Private Sector Banks fixed a credit limit of 27.71 per cent to Personal loan holders, the credit limit was Rs.130979 crore at the beginning of the year 2005-2006 and it increased to Rs.593128 crore at the end of the year 2014-2015.Subsequently, the Private Sector Banks have fixed a credit limit of 10.03 percent for Professionals and Other services, the credit limit was Rs.27457 crore at the beginning of the year 2005-2006 and it gradually increased to Rs.200252 crore at the end of the year 2014-2015.Similarly, the Private Sector Banks have fixed a credit limit of 9.43 per cent to Trade, the credit limit was Rs.31855 crore at the beginning of the year 2005-2006 and it increased to Rs.253739 crore at the end of the year 2014-2015.

Further, the Private Sector Banks have set a credit limit of 7.70 per cent to Finance, the credit limit was Rs.26401 crore at the beginning of the year 2005-2006 and it slowly stood up to Rs.1222934 crore at the end of the year 2014-2015.Moreover, the Private Sector Banks have given a credit limit of 6.73 per cent to Agriculturists, the credit limit was Rs.17043 crore at the beginning of the year 2005-2006 and it increased to Rs. 177996 crore at the end of the year 2014-2015.Further, the Private Sector Banks have fixed a credit limit of 4.27 per cent to Transport operators, the credit limit was 10183 at the beginning of the year 2005-2006 and it increased to 90627 at the end of the year 2014-2015.

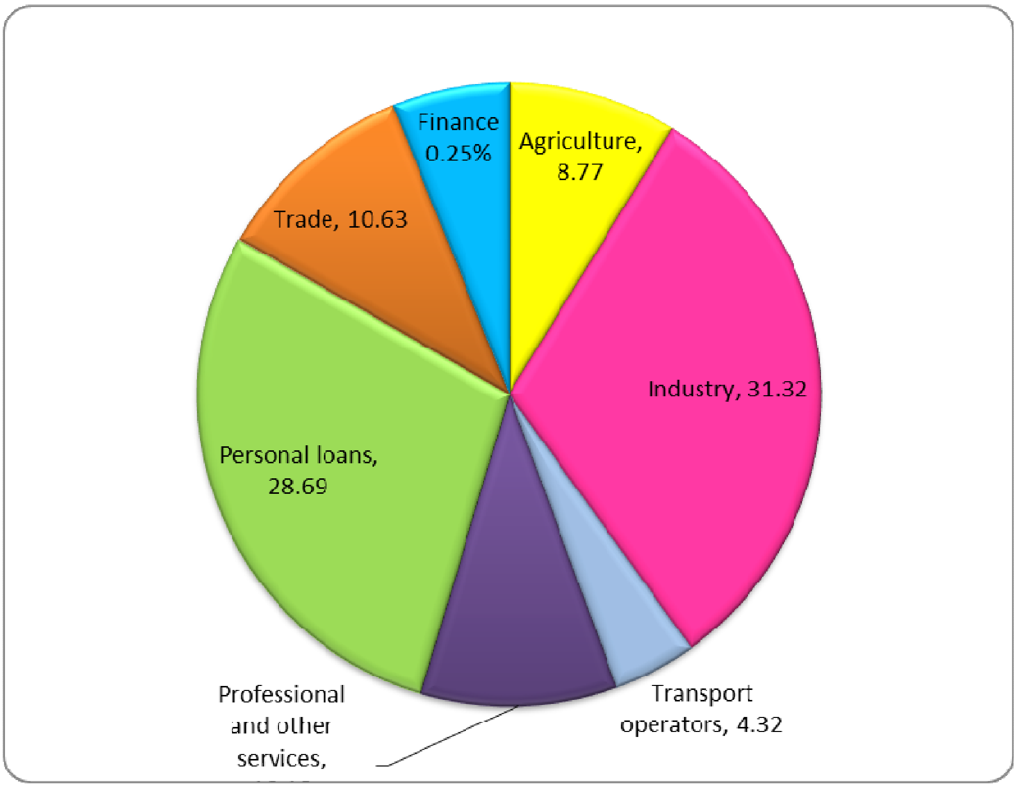
TABLE: 5.63 OCCUPATION-WISE DISTRIBUTION OF CREDIT LIMIT IN PRIVATE SECTOR BANKS

(Amount in Rs.Crore)

Year	Agriculture	Industry	Transport operators	Professional and other services	Personal loans	Trade	Finance
2005-06	17043	129308	10183	27457	130979	31855	26401
2006-07	27270	158468	12475	36371	193979	40337	27956
2007-08	44798	184075	24531	75430	247442	48266	24209
2008-09	45022	202269	31890	79666	237584	68099	37904
2009-10	64204	274325	42979	96623	232818	95203	61382
2010-11	78991	331006	49577	119456	278035	79286	107727
2011-12	97184	399398	57188	147685	332034	86333	189064
2012-13	55918	545915	72349	163077	397840	147103	151738
2013-14	146512	692433	87510	178468	463646	207874	114411
2014-15	177996	909524	90627	200252	593128	253739	122934
Total	**754938**	**3826721**	**479309**	**1124485**	**3107484**	**1058095**	**863726**
Mean	**75493.8**	**382672.1**	**47930.9**	**112448.5**	**310748.4**	**105809.5**	**86372.6**
SD	**49149.21**	**245215.87**	**27541.86**	**56239.48**	**131761.10**	**70491.03**	**55896.46**
CV (%)	**65.1**	**64.08**	**57.46**	**50.01**	**42.4**	**66.62**	**64.72**
CGAR	**26.44**	**21.54**	**24.43**	**21.98**	**16.3**	**23.06**	**16.63**
Proportions of Credit takers A/c's	**6.73**	**34.12**	**4.27**	**10.03**	**27.71**	**9.43**	**7.70**
f-value	**11.72**						
p-value	**0.000**						
s/ns	**S**						

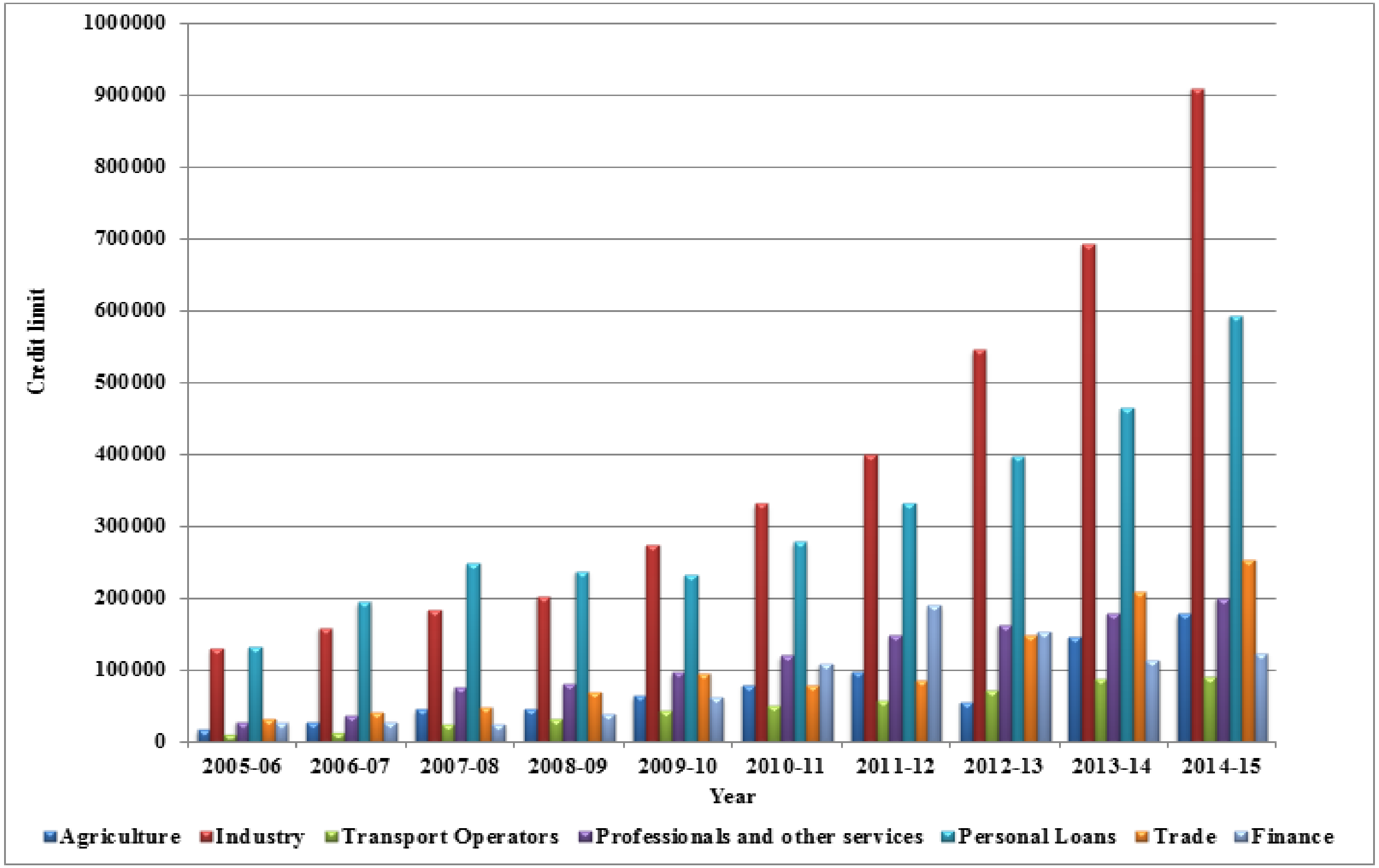
Source: http://rbi.dbie.org

CHART 5.9: PROPORTION OF CREDIT LIMIT IN PRIVATE SECTOR BANKS



On the basis of co-efficient of variation of credit limit it has been identified that Trade and Agriculture has shown greater consistency in the credit limit. The compound growth rate has been higher in the Agriculture (26.44) and lower compound growth rate in Personal loans (16.30). From the above finding, it has been inferred that maximum proportion of credit limit has been found in the Industry (34.12) when compared to other occupations. The ANOVA result shows that there is significant difference between occupation-wise distributions of credit limit of private sector banks.

CHART: 5.10 OCCUPATION-WISE DISTRIBUTION OF CREDIT LIMIT OF PRIVATE SECTOR BANKS



Source: http://rbi.dbie.org

5.3.5: OCCUPATION-WISE DISTRIBUTION OF OUTSTANDING CREDIT IN PUBLIC SECTOR BANKS

This section deals with analyzing the outstanding Credit in public sector banks for the period of ten years. The table 5.64 indicates the occupation-wise distribution of outstanding credit of Public Sector Banks, during the study period from 2005-2006 to 2014-2015. The Public Sector Banks have distributed Rs.428364 crores to Industry at the beginning of the year 2005-2006 and it increased to Rs.22100324 crores at the end of the year 2014-2015, the Public Sector Banks have distributed 45.21 per cent of its total credit to the Personal loan holders. The Personal loans sector have borrowed Rs.205680 crores at the beginning of the year 2005-2006 and it increased to Rs.756709 crores at the end of the year 2014-2015 and the amount outstanding in the personal loans sector during the study period from 2005-2006 to 2014-2015 was 15.36 per cent of the total credit. Similarly, the credit outstanding in the Agriculture was Rs.139374 crores at the beginning of the year 2005-2006 and it increased to Rs.636571 crores at the end of the year 2014-2015 and the Public Sector Banks have distributed 12.5 per cent of the total credit to the Agriculture sector.

Further, the Public Sector Banks have distributed Rs.119574 crores to Trade venturers at the beginning of the year 20052-2006 and it increased to Rs.45461 crores at the end of the year 2014-2015. Also, the Public Sector Banks have distributed 9.22 per cent of its total credit to the Trade sector. Consequently, the amount outstanding in the Financial institutions was Rs.69989 crores at the beginning of the year 2005-2006 and it increased to Rs.427715 crores at the end of the year 2014-2015, also the Public Sector Banks have distributed 8.8 per cent of its total credit to Financial institutions. It has been inferred that Professional and Other services has been given high priority by the Public Sector Banks, the credit borrowed by the services sector at the beginning of the year 2005-2006 was Rs.51465 crores and on 2014-2015 it has been increased to Rs.300978 crores, the Public Sector Banks have distributed 6.9 per cent of its total credit to the service sector. Followed by, the Transport operators have borrowed Rs.12825 crores at the beginning of the year 2005-2006 and at the end of the year 2014-2015 it was Rs.68200 crores, the Public Sector Banks have distributed 1.92 per cent of its total credit to this sector.

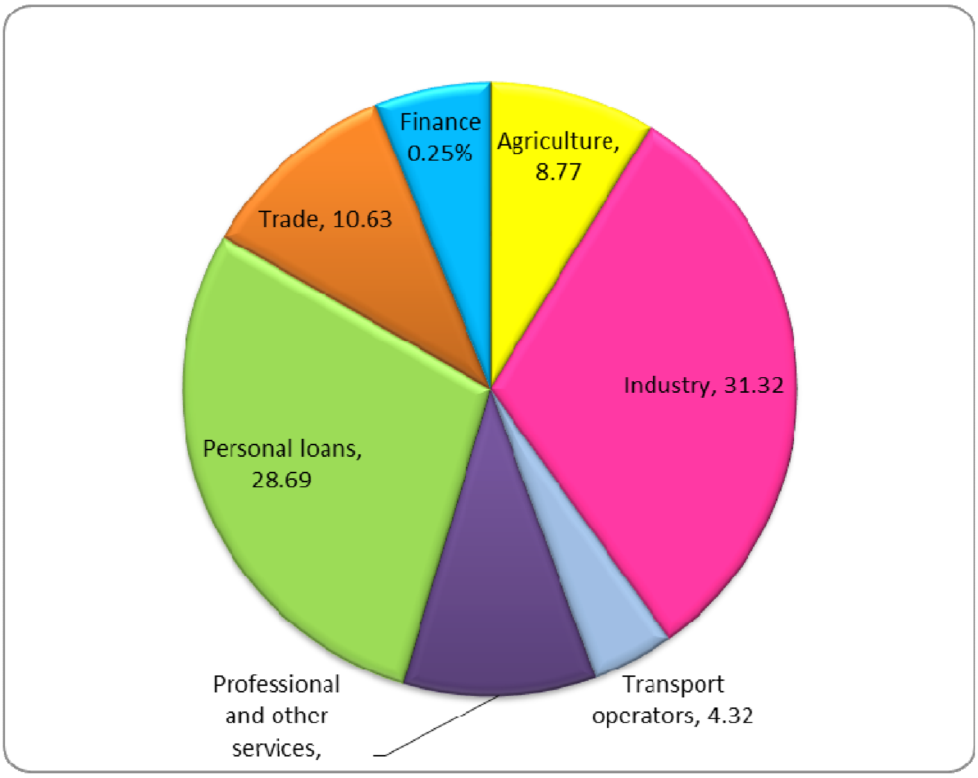
TABLE: 5.64 OCCUPATION-WISE DISTRIBUTION OF OUTSTANDING CREDIT IN PUBLIC SECTOR BANKS

(Amount in Rs.Crore)

Year	Agriculture	Industry	Transport operators	Professional & other services	Personal loans	Trade	Finance
2005-06	139374	428364	12825	51465	205680	119574	69989
2006-07	177836	564581	14177	78172	244969	150895	98070
2007-08	205412	734543	23552	114010	267574	161992	142727
2008-09	237264	955671	39127	23151	195765	193978	166385
2009-10	296330	1102277	56459	220950	378654	219423	172519
2010-11	343598	1307237	75449	259882	461734	253386	254386
2011-12	398406	1550308	100826	305674	563042	292606	375102
2012-13	499203	1823642	84774	305497	609576	349954	384812
2013-14	600001	2096976	68722	305320	656110	407302	394522
2014-15	636571	2210324	68200	300978	756709	457461	427715
Total	**3533997**	**12773923**	**544111.8**	**1965099**	**4339813**	**2606571**	**2486228**
Mean	**353399.7**	**1277392**	**54411.18**	**196509.9**	**433981.3**	**260657.1**	**248622.8**
SD	**167228.5**	**597799.8**	**29072.45**	**110933.8**	**194191**	**108220.8**	**128951**
CV (%)	**47.31993**	**46.79845**	**53.43102**	**56.452**	**44.7464**	**41.51845**	**51.86611**
CGAR	**16.63**	**17.83**	**18.19**	**19.32**	**13.91**	**14.36**	**19.84**
Proportions of Credit takers A/c's	**12.5**	**45.21**	**1.92**	**6.995**	**15.36**	**9.22**	**8.8**
f-value	**22.07**						
p-value	**0.000**						
s/ns	**S**						

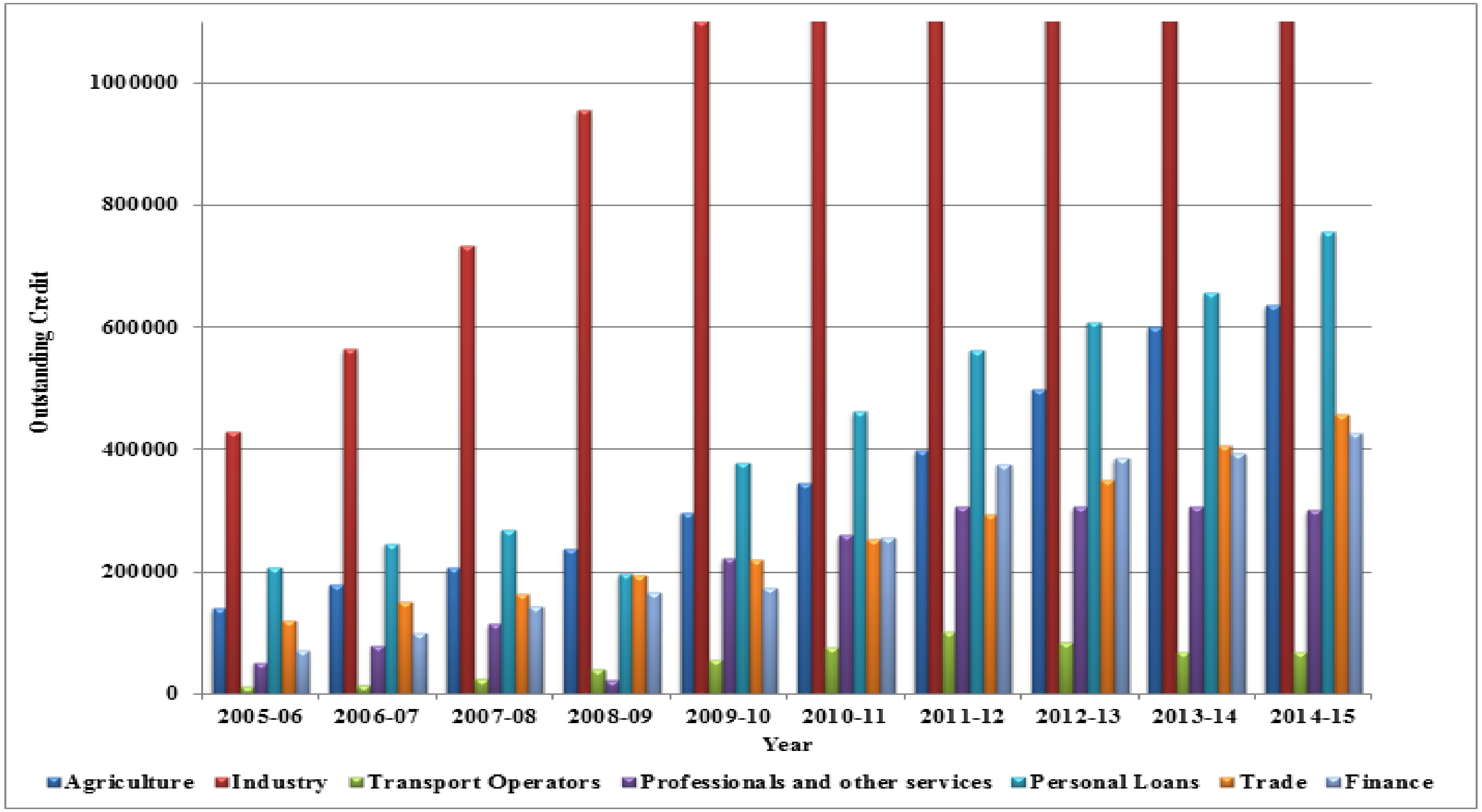
Source: http://rbi.dbie.org

CHART: 5.11 PROPORTION OUTSTANDING CREDIT IN PUBLIC SECTOR BANKS



On the source of co-efficient of variation of outstanding credit it has been identified that Professional and Other services & Transport operators have shown greater consistency in the outstanding credit. The compound growth rate has been higher in the Finance (19.84) and lower compound growth rate is Personal Loans (13.91). From the above finding, it has been inferred that maximum proportion of outstanding credit limit has been found in the Industry (45.21) when compared to other occupations. The ANOVA result shows that there is significant difference between occupation-wise distributions of outstanding credit of Public Sector Banks.

CHART: 5.12 OCCUPATION-WISE DISTRIBUTION OF OUTSTANDING CREDIT IN PUBLIC SECTOR BANKS



Source: http://rbi.dbie.org

5.3.6: OCCUPATION-WISE DISTRIBUTION OF OUTSTANDING CREDIT IN PRIVATE SECTOR BANKS

This section deals with analyzing the outstanding Credit in private sector banks for the period of ten years. Proportion of various occupations has been calculated. ANOVA has been done to identify whether there is a significant difference between the occupations. The table 5.65 indicates the Occupation-wise distribution of outstanding credit of Private Sector Banks, during the study period from 2005-2006 to 2014-2015. The Private Sector Banks have distributed Rs.95858 crores to Industries at the beginning of the year 2004-2005 and it increased to Rs.467569 crores at the end of the year 2014-2015. Also, the Private Sector Banks have distributed 31.32 per cent of its total credit to the Industries. It has been inferred that the Private Sector Banks have given more emphasis to Personal loan holders, the total credit borrowed by the Personal holders at the beginning of the year 2005-2006 was Rs.104717 crores and in 2014-2015 it has been increased to Rs.312854 crores, the Private Sector Banks have distributed its major share i.e., 28.69 percent of its total credit to the Personal loan holders.

Moreover, the Private Sector Banks have distributed Rs.22936 crores to Trade ventures at the beginning of the year 2005-2006 and it increased to Rs.174526 crores at the end of the year 2014-2015 and thus the Private Sector Banks have distributed 10.63 per cent of its total credit to the Trade ventures. Consequently, the amount outstanding in the Agricultural sector was Rs.13773 crores at the beginning of the year 2005-2006 and it increased to Rs.142457 crores at the end of the year 2014-2015, also the Private Sector Banks have distributed 8.76 per cent of its total credit to the Agricultural sector. Similarly, the Financial institutions have borrowed Rs.18160 crores at the beginning of the year 2005-2006 and it increased to Rs.84699 crores at the end of the year 2014-2015 and the amount outstanding in the Financial institutions during the study period 2005-2014 was 6.09 per cent of the total credit. Followed by, the Transport operators have borrowed Rs.8786 crores at the beginning of the year 2005-2006 and at the end of the year 2014-2015 it was Rs.58336crores, the Private Sector Banks have distributed 4.31 per cent of its total credit to this sector.

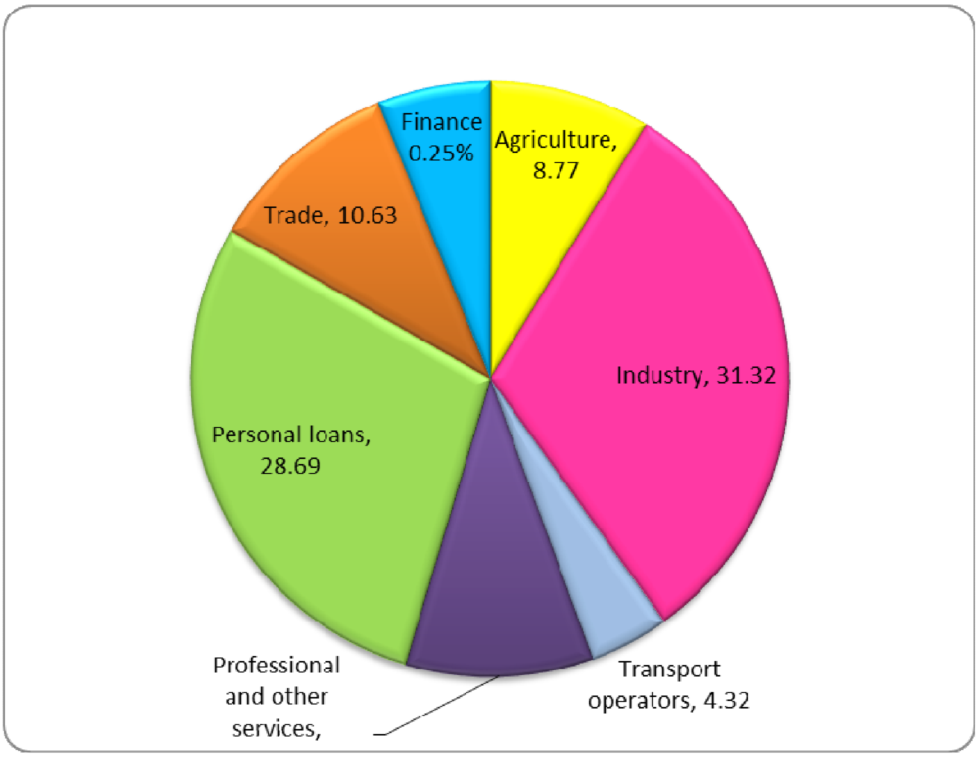
TABLE: 5.65 OCCUPATION-WISE DISTRIBUTION OF OUTSTANDING CREDIT IN PRIVATE SECTOR BANKS

(Amount in Rs.Crore)

Year	Agriculture	Industry	Transport operators	Professional & other services	Personal loans	Trade	Finance
2005-06	13773	95858	8786	20220	104717	22936	18160
2006-07	22204	120197	10693	27098	145331	31148	18938
2007-08	36080	123332	19571	54926	159790	34552	16134
2008-09	40654	129913	21005	56120	162701	48254	20704
2009-10	48530	186209	26158	58346	131827	62560	47823
2010-11	45798	172066	24473	59096	185630	54193	36224
2011-12	47658	172318	25312	61240	188959	56300	37422
2012-13	105221	361124	53432	121511	335717	125722	74584
2013-14	115127	377613	56240	120544	293518	138846	74323
2014-15	142457	467569	58336	138053	312854	174526	84699
Total	617503	2206199	304006.3	717154	2021045	749037	429011
Mean	**61750.32**	**220619.9**	**30400.63**	**71715.42**	**20215**	**74904**	**42901**
SD	**41048.84**	**124334.2**	**17659.81**	**38574.4**	**77400.41**	**49474.11**	**24965.09**
CV (%)	**66.48**	**56.36**	**58.09**	**53.79**	**38.3**	**66.05**	**58.2**
CGAR	**26.32**	**17.17**	**20.84**	**21.18**	**11.57**	**22.5**	**16.65**
Proportions of Credit takers A/c's	**8.77**	**31.32**	**4.32**	**10.18**	**28.69**	**10.63**	**6.09**
f-value	**13.49**						
p-value	**0.000**						
s/ns	**S**						

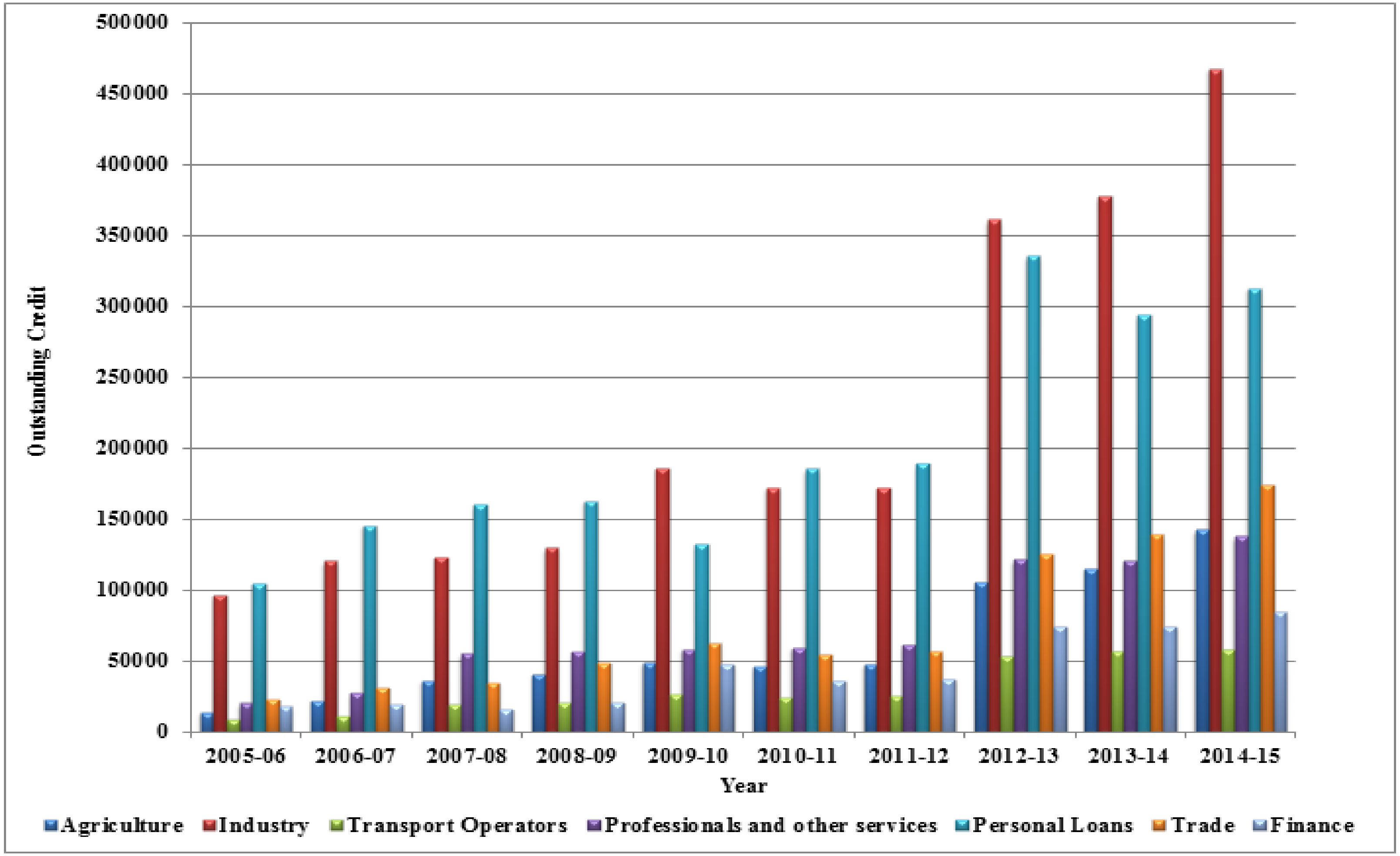
Source: http://rbi.dbie.org

CHART: 5.13 PROPORTION OF OUTSTANDING CREDIT IN PRIVATE SECTOR BANKS



On the resource of co-efficient of variation of outstanding credit it has been identified that Agriculture and Trade have shown greater consistency in the outstanding credit. The compound growth rate has been higher in the Agriculture (26.32) and lower compound growth rate in Personal loans (11.57). From the above findings, it is has been inferred that maximum proportion of outstanding credit limit has been found in the Industry (31.32) when compared to other occupations. The ANOVA result shows that there is significant difference between occupation-wise distributions of outstanding credit of private sector banks.

CHART 5.14 OCCUPATION-WISE DISTRIBUTION OF OUTSTANDING CREDIT OF PRIVATE SECTOR BANKS



Source: http://rbi.dbie.org

5.4 TO STUDY THE BOOK VALUE INSOLVENCY OF INDIAN PUBLIC AND PRIVATE SECTOR BANKS

Banks are the major financial intermediaries as they are playing a foremost role in the economic development of the country. Indian banks have performed sound during the recent financial turmoil, as is evident from the annual credit growth, profitability and trends in Non-Performing Assets (NPA) of the banks. This consistent performance of Indian banks has been achieved through the efforts of Reserve Bank of India (RBI). Indian banking system has grown through many significant changes during the post-reform period. Deregulation of interest rates, provisioning and capital adequacy, emergence of new private sector banks, and increasing use of technology have changed the whole picture of Indian banks.

However, the challenges of banks have also been increasing continuously during the post-reform era. Now, banks are constrained to encounter various types of risks like credit risk, liquidity risk, market risk, interest rate risk, and insolvency risk. Handling of such risks in an efficient and integrated manner is essential for maintaining the resonant financial health. Failure in managing these risks efficiently affects the financial stability of a bank, which leads to the probability of insolvency of the bank. However, Indian banks are in a strong position and there is lesser probability of them getting exposed to book value insolvency. But still there are some instances where banks had gone to the threshold of the insolvency.

One of that is the Global Trust Bank. Global Trust Bank, one of the new generation banks, started its operations in 1994 and began showing adverse growth in 2002. The bank became sick with huge bad debts in 2004. On February 7, 2014, United Bank of India reported a net loss of Rs. 1,683 crore for the nine months ended December 31, 2013 compared with a net profit of Rs.361 crore a year earlier. The story of United Bank of India and UCO Bank highlighted the deep NPA mess in the banking sector. The two banks, like any others, rapidly expanded their loan books on the back of high economic growth [(1)]. Such increasing importance of risk management prompted the present study. Therefore, the present study is an attempt to analyse the book value insolvency of Indian commercial banks.

5.4.1 Z-Statistic: Measure of Insolvency Risk

Z- Statistic uses the data on the banks' expected profits, the likelihood of these profits to be realized, and the bank's capital base. The Z Statistic Captures the likelihood of bank earnings in a given year becoming low enough to exhaust the bank's capital base and thus the likelihood of the bank becoming insolvent (Sinha et al, 2010).

The Z Statistic is defined as:

$$Z = \text{Return on assets (ROA)} + \frac{\text{Capital to assets Ratio}}{\text{SD of ROA}}$$

Where

ROA = Net Income/ Average of Total Assets

Capital to asset Ratio = Equity/ Total Assets

Higher value of Z Statistic indicates lower insolvency risk, because higher value of Z corresponds to higher value level of equity relative to a potential shock to the earnings of a bank. Thus, banks with risky loan portfolios can maintain a low risk of insolvency as long as they are adequately capitalized. Conversely, more volatility in the ROA would lead to a lower z- Statistic and a higher risk of bankruptcy.

Thus, probability of book value insolvency (P) that is inversely associated with Z-Statistic is computed as:

$$P= \frac{1}{2Z^2}$$

5.4.2 Calculation of Return on Assets:

Return on Assets known as ROA is the relationship between net profits (after taxes) and assets employed to earn profits. This ratio measures the profitability of the bank in relation to assets employed in the bank. It explains the efficiency of the business in using its assets to generate net income. Thus,

$$ROA= \frac{\text{Net profit after tax}}{\text{Total assets}}$$

An increasing trend of ROA indicates that the profitability of the banks is improving. Conversely, a decreasing trend means profitability is decreasing. The results of ROA of nationalised, SBI and its associates, old private sector and New Private sector banks are shown in Table 1. Perusal of the table reveals that on an average ROA of private sector banks is higher in comparison to public sector banks during the study period.

Table 5.66 Return on Assets of Public and Private Sector Banks

		Return on assets									
		Sector								Total	
		Nationalised Banks		SBI & Associated		New Private Sector		Old Private Sector		Mean	S.D
		Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D		
Year	2006	0.85	0.40	0.90	0.26	0.80	1.36	0.89	0.58	0.86	0.64
	2007	0.96	0.27	0.95	0.15	0.99	0.38	0.98	0.50	0.97	0.34
	2008	1.03	0.32	0.95	0.10	1.02	0.44	1.19	0.41	1.06	0.35
	2009	0.98	0.35	0.99	0.17	0.81	0.97	1.30	0.39	1.04	0.50
	2010	0.97	0.35	0.99	0.16	1.10	1.09	1.03	0.58	1.01	0.55
	2011	0.98	0.31	0.99	0.18	1.39	0.50	1.07	0.57	1.07	0.43
	2012	0.84	0.28	0.88	0.19	1.51	0.39	1.10	0.75	1.02	0.51
	2013	0.71	0.24	0.82	0.17	1.62	0.27	1.10	0.59	0.97	0.48
	2014	0.38	0.42	0.56	0.22	1.73	0.22	0.75	0.94	0.71	0.73
	2015	0.33	0.18	0.60	0.25	1.81	0.22	0.67	0.91	0.69	0.70
Average		0.80	0.39	0.86	0.23	1.28	0.75	1.01	0.65	0.94	0.55

All banks showed an increasing trend in ROA from 2006-2008 and then started fluctuating during the period 2009-2011. This may be due to the impact of global financial crisis. The slowdown in growth in the balance sheets of banks witnessed since 2011-12 continued till 2014-15. There is a drastic decrease in ROA of banks in 2013-14. Profitability declined on account of higher provisioning on banks delinquent loans and lacklustre credit growth. Variations in mean and standard deviation are higher in 2009 and 2014.

During the study period 2005-06 to 2014-15, Private sector banks have the higher ROA (mean) of 1.1424 (1.2780 and 1.0068 for old and new private sector banks respectively)than the public sector banks with a mean 0.8317 which is a sign that management of private sector banks is using assets fund more efficiently to increase earning capacity. Standard deviation of ROA is only 0.3134 in the case of public sector banks while it is very high (0.6974) in the case of private sector banks during the study period. The profitability dimension of the indicators showed an improvement in 2015 but it remained sluggish.

5.4.2 Calculation of Capital to Asset Ratio:

Bank capital to assets is the ratio of bank capital and reserves to total assets capital and reserves include funds contributed by owners, retained earnings, general and special reserves, provisions and valuation adjustments. Capital includes Tier I capital (paid-up shares and common stock), which is a common feature in all countries banking systems, and total regulatory capital, which includes several specified types of subordinated debt instruments that need not be repaid if the funds are required to maintain minimum capital levels (these comprise Tier II and Tier III capital). Total assets include all financial and non-financial assets.

The overall average of Indian banks is found to be 0.9387 with a standard deviation 0.5491. The banks experienced a maximum of Return on asset ratio in 2011 which is 1.0660 and a minimum in 0.6880 in 2014.

Table 5.67 Capital to Asset Ratio of Public and Private Sector Banks

		Capital to Asset Ratio									
		Sector								Total	
		Nationalised Banks		SBI & Associates		New Private Sector		Old Private Sector		Mean	S.D
		Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D		
Year	2006	5.87	1.30	4.06	2.00	7.65	3.20	6.90	1.92	6.18	2.15
	2007	5.65	1.31	3.84	1.83	6.53	1.29	7.76	3.57	6.11	2.47
	2008	5.50	1.12	3.63	1.90	9.00	2.39	8.61	4.65	6.63	3.30
	2009	5.38	1.07	4.08	2.29	9.25	3.06	8.41	3.95	6.62	3.13
	2010	5.13	0.97	4.19	2.24	9.99	2.46	8.02	3.19	6.53	2.91
	2011	5.58	0.76	4.63	2.71	9.67	2.76	9.55	7.71	7.15	4.64
	2012	5.74	0.69	4.53	2.41	9.41	2.22	7.62	3.01	6.65	2.50
	2013	5.67	0.68	4.35	2.23	9.67	2.10	7.45	2.02	6.59	2.27
	2014	4.80	1.97	5.77	0.65	10.72	2.56	6.67	2.15	6.99	2.60
	2015	5.28	1.42	5.09	2.21	11.04	2.56	6.82	1.81	7.06	2.76
Average		5.46	1.20	4.42	2.04	9.29	2.67	7.78	3.40	6.65	2.84

Banks capital to asset ratio experienced a fluctuating trend over the study period. Average of capital to asset ratio is also high in the case of private sector banks during 2006-07 to 2014-15 as Return on assets ratio.

Capital to asset ratio in the case of nationalised banks was 5.8699 in 2006 but it declined to 5.1267 in 2010. From 2011 the nationalised banks experienced a fluctuating trend till 2015. The ratio was very low in 2014 which is 4.7981 and then increased to 5.2785 in 2015. The average mean for nationalised banks is found to be 5.4612 with the standard deviation 1.2016. In case of SBI and its associates, capital to asset ratio is declining from 2006-2009. But in the year 2008-09, the value of capital to asset ratio increased to 4.0769 and further 5.7731 with the standard deviation 0.6549 in the year 2013-14 which is found to be maximum during the study period. There is a slight decrease in capital to asset ratio of SBI and its associates in 2014-15 which is 5.0920 with the standard deviation 2.2091. The average mean of capital to asset ratio for SBI and its associates is found to be 4.4176 with the standard deviation 2.0379 for the period 2005-06 to 2014-15.

In case of private sector banks, new private sector banks has a greater average mean of 9.2919 with a standard deviation 2.6714 than the old private sector banks that has mean 7.78054 and standard deviation 3.39662 for the study period. New private sector banks experienced an increasing trend from the year 2007 to 2015. Capital to asset ratio is found to be the highest in 2015 which is 11.0361 with a standard deviation of 2.5558 and it is minimum in the year 2007 which is 6.5308 with a standard deviation 1.2935. In case of old private sector banks, the ratio showed a fluctuating trend for the study period. The ratio is found to be maximum in 2011 which is 9.5462 with a standard deviation of 7.7110 and minimum in2014 which is 6.6701 and standard deviation 1.8056. the average mean of old private sector banks is 7.78054 with a standard deviation of 3.39662 for the study period 2006-15.

The overall average of Capital to asset ratio of Indian banks is found to be 6.6502 with a standard deviation 2.8384. The banks experienced a maximum of capital to asset ratio in 2011 which is 7.1475 with a standard deviation 4.6420 and a minimum in 6.1104 with a standard deviation 2.4717 in 2007.

5.4.3 Calculation of Z-Statistic:

Table 5.68 Z-Statistic of Public and Private Sector Banks

Year	Z Statistic						
	Sector						
	Nationalised Banks	**SBI & Associates**	**Public Sector**	**New Private Sector**	**Old Private Sector**	**Private Sector**	**Mean**
	Mean	Mean		Mean	Mean		
2006	15.41	16.74	16.07	6.43	12.76	9.59	13.48
2007	22.02	26.40	24.21	18.41	16.42	17.42	20.55
2008	18.41	38.28	28.34	21.32	22.33	21.83	22.56
2009	16.24	25.20	20.72	10.38	22.60	16.49	18.22
2010	15.55	26.47	21.01	10.26	14.94	12.60	16.02
2011	19.13	26.63	22.88	20.75	17.84	19.30	20.04
2012	21.58	24.48	23.03	25.87	11.27	18.57	19.89
2013	23.98	26.66	25.32	37.18	13.75	25.47	23.67
2014	11.81	26.81	19.31	51.34	7.85	29.60	24.45
2015	29.76	33.68	25.52	52.22	8.14	30.18	27.85
	19.39	27.13	22.64	25.42	14.79	20.10	20.67

The results of Z –Statistic are shown in the above table. Perusal of the table reveals that Z Statistic of public sector banks is much greater than that of private sector banks. This is due to the difference in the variability of Return on assets as measured by the standard deviation of Return on assets. Standard deviation of Return on assets [σ(ROA)] is only 0.0314 in case of public sector banks, while it is very high (0.6974) in the case of private sector banks during the study period. The significant difference in the variability of Return on assets leads to lower Z-Statistic of the private sector banks despite higher Return on assets and Capital to asset ratio.

Z value in the case of public sector banks was 16.0729 in the year 2006 and then increased to 28.3444 in 2008 but it declined to 20.7199 in the year 2008-09. This decline is mainly due to the impact of global financial crisis as banking operations of the public sector banks were affected due to the global economic meltdown. But in the year 2009-10, the value of Z-Statistic increased to 21.0104 and further to 25.3226 in 2012-13. Due to the sudden dip in Return on assets, again the Z-Statistic decreased to 19.3102 that increased the insolvency risks of public sector banks. Due to the efforts taken by RBI, Z Statistic increased to 25.5236 in the financial year 2014-15. The overall average Z-Statistic for public sector banks is found to be 22.6422 for the study period 2005-06 to 2014-15.

Z value of private sector banks 9.5942 in the year 2006-07, and increased to 21.825 in the year 2007-08. But it declined to 16.4929 in the year 2008-09 and 12.6001 in 2009-10. This decline clearly depicts the Impact of global recession on the operations of the private sector banks. As major private sector banks of India have large foreign investments and operate at international level, they are much affected by the economic meltdown. After that period, private sector banks improved their position, as value of Z-Statistic increased to 19.2951 in 2010-11and further to 25.4685, 29.5996, and 30.1775 in the years 2012-13, 2013-14 and 2014-15 respectively. The overall average Z Statistic for private sector banks is found to be 20.1043 for the study period 2005-06 to 2014-15.

Z-Statistic for public sector banks is higher than private sector banks from 2005-06 to 2011-12. But after 2012, private sector banks experienced higher Z-Statistic than public sector banks. Overall, Public sector banks had a higher Z Statistic (22.6422) in comparison to private sector banks (20.1043) for the study period 2005-06 to 2014-15. Hence, public sector banks were in a better position as compared to the private sector banks. During the last three years private sector banks have greater Z Statistic than public sector banks. This indicates that public sector banks are safer than private sector banks, as the probability of book value insolvency is much lower in the public sector banks. Probability of Book value insolvency for Indian banks is shown in the following Table 5.69

5.4.4 Calculation of Probability of Book value insolvency

Table 5.69 Probability of Book value insolvency of Public and Private Sector Banks

Year	Probability of Book value insolvency						Mean
	Sector						
	Nationalised Banks	SBI & Associated	Public Sector	New Private Sector	Old Private Sector	Private Sector	
	Mean	Mean	Mean	Mean	Mean	Mean	
2006	0.0021	0.0018	0.0019	0.0121	0.0031	0.0054	0.0037
2007	0.0010	0.0007	0.0009	0.0015	0.0019	0.0016	0.0013
2008	0.0015	0.0003	0.0006	0.0011	0.0010	0.0010	0.0008
2009	0.0019	0.0008	0.0012	0.0046	0.0010	0.0018	0.0015
2010	0.0021	0.0007	0.0011	0.0047	0.0022	0.0031	0.0021
2011	0.0014	0.0007	0.0010	0.0012	0.0016	0.0013	0.0011
2012	0.0011	0.0008	0.0009	0.0007	0.0039	0.0014	0.0012
2013	0.0009	0.0007	0.0008	0.0004	0.0026	0.0008	0.0008
2014	0.0036	0.0007	0.0013	0.0002	0.0081	0.0006	0.0010
2015	0.0006	0.0004	0.0008	0.0002	0.0076	0.0005	0.0007
	0.0013	0.0007	0.0010	0.0008	0.0023	0.0012	0.0011

The above table reveals the probability of book value insolvency of Indian banks. It is calculated using the formula

$$\text{Probability of book value insolvency, } \mathbf{P} = \frac{1}{2Z^2}$$

In 2006, the book value insolvency of public sector banks is found to be 0.0019, whereas the for private sector banks it is found to be 0.0054 which is higher. That shows private sector banks have more insolvency risk than public sector banks. This trend continued till 2012. For the years, 2007- 2011, the probability of book value insolvency for public sector banks is 0.0009, 0.0006, 0.0012, 0.0011, and 0.0009 respectively. The probability of book value insolvency of private sector banks during 2007-11 is 0.0016, 0.0010, 0.0018, 0.0031, 0.0013, and 0.0014 respective years. But in 2013, for both public and private sector banks the mean value of the probability of book value solvency is found to 0.0008. After 2013, the probability of banks getting insolvent for public sector banks is found to be higher than private sector banks. The probability of book value insolvency of public sector banks is found to be higher over the study period in 2014 which is 0.0013. In 2015, the insolvency risk decreased to 0.0008. Similarly for private sector banks, the probability of book value insolvency risk reduced to 0.0005 in 2015 from 0.0006 in 2014.

The overall probability of book value insolvency risk for public sector banks is found to be 0.0010 and private sector banks is 0.0012 for the study period 2006-2015. Lower the insolvency risk, higher the financial health of the banks. Hence, from the Table 5.68, it can be inferred that public sector banks have lesser insolvency risk than private sector banks except the last three years.

For a broader picture, Return on assets, Capital to asset ratio, standard deviation of Return on assets and Z-Statistic of 45 Indian commercial banks is calculated and ranks have been assigned to each bank.

Table 5.70 Ranking of Public sector banks based on Insolvency Risk:

S No.	Name of the Bank	Bank category	Z-Mean	Group Rank
1	State Bank of Bikaner and Jaipur	SBI & its Associates	37.89	1
2	State Bank of India	SBI & its Associates	35.14	2
3	State Bank of Mysore	SBI & its Associates	33.26	3
4	State Bank of Patiala	SBI & its Associates	29.9	4
5	State Bank of Travancore	SBI & its Associates	26.82	5
6	Indian Bank	Other Nationalised	26.52	6
7	Oriental Bank of Commerce	Other Nationalised	23.5	7
8	IDBI Bank Limited	Other Nationalised	22.64	8
9	State Bank of Hyderabad	SBI & its Associates	21.31	9
10	Bank of Baroda	Other Nationalised	20.94	10
11	Allahabad Bank	Other Nationalised	20.89	11
12	Canara Bank	Other Nationalised	20.89	12
13	Punjab and Sind Bank	Other Nationalised	20.39	13
14	Andhra Bank	Other Nationalised	19.87	14
15	Indian Overseas Bank	Other Nationalised	19.04	15
16	Corporation Bank	Other Nationalised	18.96	16
17	United Bank of India	Other Nationalised	18.41	17
18	Central Bank of India	Other Nationalised	18.35	18
19	Bank of India	Other Nationalised	18.3	19
20	Union Bank of India	Other Nationalised	18.06	20
21	Dena Bank	Other Nationalised	17.99	21
22	Punjab National Bank	Other Nationalised	17.75	22
23	Vijaya Bank	Other Nationalised	17.19	23
24	Bank of Maharashtra	Other Nationalised	17.15	24
25	Syndicate Bank	Other Nationalised	15.77	25
26	UCO Bank	Other Nationalised	15.15	26

The above table reveals the ranking of public sector banks based on the Z mean. All SBI banks have higher Z Statistic and fall in top five categories except State bank of Hyderabad which ranks nine. Higher Z statistic means the lower insolvency risk. Hence, all SBI banks have lesser insolvency risk when compared to other nationalised banks. Punjab National Bank, Vijaya Bank, Bank of Maharashtra, Syndicate Bank and UCO Bank are the banks that got bottom five rank with Z mean 17.75, 17.19, 17.15, 15.77 and 15.15 respectively.

Table 5.71 Ranking of Private sector banks based on Insolvency Risk:

S No.	Name of the Bank	Bank Category	Z-Mean	Group Rank
1	Federal Bank	Old private sector	45.98	1
2	Kotak Mahindra Bank	New Private Sector	33.65	2
3	ICICI Bank	New Private Sector	31.12	3
4	Ratnakar Bank	Old private sector	30.93	4
5	HDFC Bank	New Private Sector	25.99	5
6	Axis Bank Limited	New Private Sector	22.81	6
7	Nainital Bank	Old private sector	22.68	7
8	IndusInd Bank	New Private Sector	22.37	8
9	Development Credit Bank	New Private Sector	22.15	9
10	Jammu & Kashmir Bank	Old private sector	19.95	10
11	Yes Bank	New Private Sector	19.85	11
12	Tamilnad Mercantile Bank	Old private sector	17.48	12
13	Karur Vysya Bank	Old private sector	15.27	13
14	City Union Bank	Old private sector	14.3	14
15	Karnataka Bank	Old private sector	13.31	15
16	South Indian Bank	Old private sector	11.37	16
17	Lakshmi Vilas Bank	Old private sector	11.27	17
18	Dhanalakshmi Bank	Old private sector	9.19	18
19	Catholic Syrian Bank	Old private sector	9.09	19

The above table reveals the ranking of private sector banks based on the Z mean. Higher Z statistic means the lower insolvency risk. Three new private sector banks are found in top five ranking and two are old private sector banks. Only the old private sector banks are found in bottom five ranks.

Table 5.72 Ranking of Public and Private sector banks based on Insolvency Risk:

S No.	Name of the Bank	Bank category	Z-Mean	Rank
1	Federal Bank	Old private sector	45.98	1
2	State Bank of Bikaner and Jaipur	SBI & its Associates	37.89	2
3	State Bank of India	SBI & its Associates	35.14	3
4	Kotak Mahindra Bank	New Private Sector	33.65	4
5	State Bank of Mysore	SBI & its Associates	33.26	5
6	ICICI Bank	New Private Sector	31.12	6
7	Ratnakar Bank	Old private sector	30.93	7
8	State Bank of Patiala	SBI & its Associates	29.9	8

9	State Bank of Travancore	SBI & its Associates	26.82	9
10	Indian Bank	Other Nationalised	26.52	10
11	HDFC Bank	New Private Sector	25.99	11
12	Oriental Bank of Commerce	Other Nationalised	23.5	12
13	Axis Bank Limited	New Private Sector	22.81	13
14	Nainital Bank	Old private sector	22.68	14
15	IDBI Bank Limited	Other Nationalised	22.64	15
16	IndusInd Bank	New Private Sector	22.37	16
17	Development Credit Bank	New Private Sector	22.15	17
18	State Bank of Hyderabad	SBI & its Associates	21.31	18
19	Bank of Baroda	Other Nationalised	20.94	19
20	Allahabad Bank	Other Nationalised	20.89	20
21	Canara Bank	Other Nationalised	20.89	21
22	Punjab and Sind Bank	Other Nationalised	20.39	22
23	Jammu & Kashmir Bank	Old private sector	19.95	23
24	Andhra Bank	Other Nationalised	19.87	24
25	Yes Bank	New Private Sector	19.85	25
26	Indian Overseas Bank	Other Nationalised	19.04	26
27	Corporation Bank	Other Nationalised	18.96	27
28	United Bank of India	Other Nationalised	18.41	28
29	Central Bank of India	Other Nationalised	18.35	29
30	Bank of India	Other Nationalised	18.3	30
31	Union Bank of India	Other Nationalised	18.06	31
32	Dena Bank	Other Nationalised	17.99	32
33	Punjab National Bank	Other Nationalised	17.75	33
34	Tamilnad Mercantile Bank	Old private sector	17.48	34
35	Vijaya Bank	Other Nationalised	17.19	35
36	Bank of Maharashtra	Other Nationalised	17.15	36
37	Syndicate Bank	Other Nationalised	15.77	37
38	Karur Vysya Bank	Old private sector	15.27	38
39	UCO Bank	Other Nationalised	15.15	39
40	City Union Bank	Old private sector	14.3	40
41	Karnataka Bank	Old private sector	13.31	41
42	South Indian Bank	Old private sector	11.37	42
43	Lakshmi Vilas Bank	Old private sector	11.27	43
44	Dhanalakshmi Bank	Old private sector	9.19	44
45	Catholic Syrian Bank	Old private sector	9.09	45

The above table reveals the overall ranking of Indian public and private sector banks. State Bank of Bikaner and Jaipur has been ranked number one among all 45 Indian public and private sector banks. Three public sector banks and two private sector banks are found in top five ranking. Only the old private sector banks have got bottom five ranks that include Karnataka Bank, South Indian Bank, Lakshmi Vilas Bank, Dhanalakshmi Bank and Catholic Syrian Bank.

5.5 Comparison of Book Value insolvency of Public and Private Sector banks

In order to compare the book value insolvency of public and private sector banks, the following hypothesis framed

Null Hypothesis (H_0): There is no significant difference in the book value insolvency of public and private sector banks.

Alternate Hypothesis (H_1): There is a significant difference in the book value insolvency of public and private sector banks.

Table 5.73 Comparison of Book Value insolvency of Public and Private Sector banks

	Public sector	**Private sector**
Mean	22.00	20.98
Variance	36.47	91.10
Standard deviation	6.03	9.54
Observations	26	19
Pooled Variance	59.34	
Df	43	
t Stat	0.43	
P(T<=t) one-tail	0.33	
t Critical one-tail	1.68	
P(T<=t) two-tail	0.66	
t Critical two-tail	2.01	

The result of t-test reveals that there is no significant difference in the book value insolvency of public and private sector banks of India. Calculated t value is 0.43 which is lesser than the tabulated value, 2.01. P-Value is found to be 0.66 which is greater than 0.05, the level of significant. Since the calculated value is lesser than the critical value and the p-value greater than the level of significance, null hypothesis is accepted and alternative hypothesis is rejected. The mean of book value insolvency of public sector banks (22.00) is higher than that of private sector banks (20.98). The standard deviation of book value insolvency is higher in case of private sector banks (9.54) in compared to the public sector banks (6.03). This shows that the fluctuation in the risk management is more in private sector banks than the public sector banks.

5.6 Regression analysis-Determinants of Insolvency risk of Indian commercial banks

There are several external and internal factors affecting the risk management of the banks. Some of the factors have positive effect, while others have negative effect on the performance of banks. In this study, five internal factors (capital adequacy, non-performing loans, liquidity, size of the banks and net interest margin) have been selected to identify their impact on the book value insolvency of the Indian Commercial banks. For the purpose multiple regression analysis has been applied.

$$\mathbf{Z = \alpha + \beta_1\, CAR - \beta_2\, NPL + \beta_3\, In\ TA + \beta_4\, LQ + \beta_5\, NIM + \varepsilon}$$

Where

Dependent variable

Z = Safety Index of Book value insolvency

Independent variables

CAR = Capital Adequacy Ratio

NPL = Non Performing Loan

In TA = natural Log of Total assets (bank size)

LQ = Ratio of Liquid Assets to Total assets

NIM = Net Interest Margin

Table 5.74 Regression analysis-Determinants of Insolvency risk of Indian commercial banks

	Capital adequacy ratio	Ratio of net NPA To net advances	Log of Total Assets	Net Interest Margin	Ratio of Liquid Assets to Total Assets
Capital adequacy ratio	1	-.266	-.238	.337	-.003
Ratio of net NPA To net advances		1	.115	-.264	.009
Log of Total Assets			1	-.247	-.015
Net Interest Margin				1	-.029
Ratio of Liquid Assets to Total Assets					1

Variable	Beta Coefficient	t-Statistic	R^2	F-Statistic	Sig
Capital adequacy ratio	0.241	4.746	0.36	8.129	**
Ratio of net NPA to net advances	-0.17	-0.349			
Log of Total assets	0.153	3.214			
Net Interest Margin	0.094	1.872			
Ratio of Liquid assets to Total assets	-0.016	-0.357			
Constant	-27.715				

**-Significant at 1% level

High z statistic indicates low book value insolvency exposure of the bank. Thus, Z Statistic is used as a safety index from insolvency risk. The results reveal that the net NPA to advances variable is highly correlated to all other variables. Significance of the variable is checked at 1% level.

The results shows that bank size (log of total assets) is significantly, positively associated with Z statistic. Thus, bank size is inversely related to book value insolvency. Banks with large assets face lower insolvency risk as large assets indicates higher risk taking ability of the banks as they have sufficient assets to pay their liabilities and thus it reduces the chances of book value insolvency. Capital adequacy is inversely related to book value insolvency. Adequate capital base ensures the capability of a bank in meeting the unexpected loses that can push banks towards insolvency. All the Indian commercial banks maintain capital adequacy above 9% as prescribed by RBI. It is a good indicator of financial soundness of Indian public and private sector banks.

High level of NPA has an adverse effect on the overall performance of the banks. NPA management has received critical attention after the financial sector reforms. The result reveals an inverse association between NPA and Z Statistic. Therefore, book value insolvency is positively associated with NPA. The higher the NPA level, the higher are the chances of a bank becoming insolvent. Net interest margin is inversely related to insolvency risk. Net interest margin shows efficiency of the bank in earning its income and also enhances its revenue generation capacity. Large net interest margin shows the capacity of the bank to meet its expenses as and when these occur, thus securing a safe position for the bank from book value insolvency.

5.5 PROCYCLICAL EFFECT OF INDIAN BANKS NON-PERFORMING ASSETS

Supervisors and policy makers give rising attention to the possible procyclical nature of behaviour of banks. To ensure macro-economic and financial stability, it is important that regulators understand whether, and to what extent, banks are affected by the macroeconomic indicators and lending cycles.

This objective attempts to provide a comprehensive investigation of these issues using a dataset of Indian Public and Private sector banks over the period 2005-2006 to 2014-2015. By estimating static panel data model, this study investigates whether loan loss provisions and non-performing assets confirm a cyclical pattern. The estimated relations are also studied to analyse the sector wise behaviour of Indian commercial banks to assess the effects of macroeconomic shocks on balance sheets of the banks.

The analysis concentrates on the evolution of loan loss provisions and non-performing assets to identify whether they show the expected cyclical pattern. This empirical analysis aims at investigating how Indian commercial banks riskiness is affected by changes in general economic conditions.

Accounting ratios for each individual institution are built up using the supervisory statistics that banks are required to report to the Reserve Bank of India and Capitaline, the macro economic variables are drawn from the Reserve Bank of India and Indiastat. The macro economic variables and the bank-specific indicators are taken on an annual basis. Since the study focuses on the evolution of banks' riskiness through the business cycle, the longer time span is preferred to obtain the higher frequency of the observations. Annual data are therefore used. Table 5.75 list the variables that are considered in the analysis.

Table 5.75 Selected Variables

Name	Description
CRGR	Growth in Advances
NPROST	Provision (t) to advances(t)
NPAST	Net NPA(t) to Net advances (t)
NPAFC	Net NPA (t) to Net advance(t-1)
CIR	Cost to Income ratio
LNINTMAR	LN(Interest earned/Interest expended)
OPBR	Operating profit before provision
GDPGR	GDP Growth(at factor cost)

5.5.1 Loan loss provisions Model

Loan loss provisions are normally raised on a case-by-case basis to cover potential losses on non-performing assets; portfolio-specific general provisions are allowed for homogeneous categories of loans, such as sectoral loans and country-risk exposures. From the analysis, it emerges that NPROST are negatively related to GDP (GDPGR) and credit growth (CRGR) implying that, on average, banks provision is less in favourable economic times. The estimated model for loan loss provisions is the following:

$$\mathbf{NPROSTit = \alpha + BSVit\text{-}j\beta + GDPGRt\text{-}j\delta + ui + \varepsilon it} \qquad (1)$$

Where, i= 1,...,45 ; t= 2006,..., 2015; j= 0, 1, depending on the variable

NPROST is the loan loss provision ratio, BSV are the bank-specific variables, GDPGR is the growth of GDP, u the individual unobservable effects and ε the error term. Credit growth (CRGR - contemporaneous and lagged by 1 year) is the growth of advances for each bank. It might signal either a positive phase of the business cycle if it is led by demand factors by suggesting a negative sign or an aggressive supply policy of banks, which in turn entails lower credit standards, the exposure to excessive risks and higher future provisions by suggesting a positive sign. It is therefore reasonable that CRGR will show a negative sign when current values are considered and will show a positive sign when lagged (Salas and Saurina, 2002). The variable is used to decide whether banks pursuing higher lending growth rates are more likely to accept riskier borrowers.

NPAST is the ratio of the stock of non-performing assets at t to total loans at t. It provides a reliable proxy for the overall quality of a portfolio management by banks. The worse is the creditworthiness of the customers, the higher the provisions against loan losses. The operating profit before provision (OPBR) is a measure of profitability before loan loss provisions are registered in banks' balance sheets. It can be thus used to test whether banks use provisions to modify their income. If this hypothesis holds good, the coefficient of the OPPR should have a positive sign. As far as the profitability indicator is concerned, the positive sign of the current OPPR coefficient indicates that banks tend to use provisions to maintain their income over a period of time, as found by Arpa et al. (2001), Bikker and Hu (2002) and Valckx (2003). GDPGR is the annual growth of GDP at factor cost and is the main and most direct measure of aggregate economic activity. According to the prevailing view that banks do not provision at good times, it is expected to be inversely related to loan loss provisions. So for this reason, along with the contemporaneous value, one lag is introduced in the specification to understand the delay with which the worsening of the economy affects banks credit quality.

Table 5.76 Regression Analysis for Public sector Banks

Dependent Variable: **Provisions to advances**

Independent variables	**Fixed Effects**				**Random Effects**			
	B	Std. Err.	t	P>|t|	B	z-value	P>|z|	Sig.
Growth In Advances	-2.10764	0.595011	-3.54	**	-0.0240	0.2010	-0.120	Ns
Growth In Advances(Lag1)	-0.56591	0.213215	-2.65	**	-0.1493	0.1872	-0.800	Ns
Net NPA To net advances	0.082668	0.001923	42.98	**	0.0828	0.0020	41.590	**
Net NPA To net advances (Lag1)	-0.01182	0.00236	-5.01	**	-0.0101	0.0023	-4.430	**
Net NPA(t) To net advances(t-1)	-0.18039	0.088827	-2.03	*	-0.1216	0.0939	-1.300	Ns
Net NPA(t) To net advances(t-1) (Lag1)	0.345527	0.105353	3.28	**	0.1819	0.1007	1.810	Ns
Operating Profit before provision	19311.03	5141.223	3.76	**	16287.3900	5159.3550	3.160	**
GDP Growth at Factor cost	-670.715	5754.915	-0.12	Ns	-1765.3550	5908.9170	-0.300	Ns
GDP Growth at Factor cost (Lag1)	-6.99377	5.419662	-1.29	Ns	-9.3535	5.7441	-1.630	Ns
(Constant)	18130.39	18395.05	0.99	Ns	-38818.7800	8012.5510	-4.840	**
R^2	0.5496				0.9603			
F-statistic	776.97			**				
Wald ($\chi 2$)					6717.51			**
Hausman ($\chi 2$)	9.22			*				

The dependent variable Provisions to advances is regressed upon using the following independent variables.

- Growth In Advances
- Growth In Advances (Lag1)
- Net NPA To net advances
- Net NPA To net advances (Lag1)
- Net NPA (t) To net advances (t-1)
- Net NPA (t) To net advances (t-1) (Lag1)
- GDP Growth at Factor cost
- GDP Growth at Factor cost (Lag1)

Lag1 indicates the one year lagged values for the respective variable to assess the lagged effect of the independent variables.

In both the models, Growth in Advances and its lag variable, Net NPA (t) to net advances (t-1), Net NPA (t) to net advances (Lag 1) and GDP Growth at Factor cost and its lag variable have significant negative effect on Provision to advances that reveals banks do not provision at good times. Operating profit before provision, Net NPA (t) to net advances (t-1) (Lag 1) and Net NPA (t) to net advances is found to have positive effect on the dependent variable in both the models which indicates the overall quality of a portfolio management by banks.

The R^2 value is found to be 0.54 in fixed effects and 0.96 in Random effects that shows high correlation between the dependent variable and independent variables. F-test and Wald Chi square test showed that the there is significant correlation between the dependent variable and selected independent variables.

The Hausman Test was carried out to compare the fixed effects model with random effects model. The null hypothesis is that the individual effects are uncorrelated with the independent variables. The test result shows that the chi square value (9.22) is significant indicates that fixed effect model is better than the random effect model.

Table 5.77 Regression Analysis for Private Banks

Dependent Variable: **Provisions to advances**

Independent variables	Fixed Effects				Random Effects			
	B	Std. Err.	t	P>|t|	B	z-value	P>|z|	Sig.
Growth In Advances	2.414643	5.570047	0.43	Ns	3.411891	4.569526	0.75	Ns
Growth In Advances(Lag1)	-3.781884	5.254462	-0.72	Ns	-4.402466	4.893573	-0.9	Ns
Net NPA To net advances	-0.0993537	0.1134544	-0.88	Ns	-0.1178857	0.1017191	-1.16	Ns
Net NPA To net advances (Lag1)	0.0507391	0.1295672	0.39	Ns	0.0384874	0.1168868	0.33	Ns
Net NPA(t) To net advances(t-1)	0.5711816	1.669739	0.34	Ns	0.9512046	1.393362	0.68	Ns
Net NPA(t) To net advances(t-1) (Lag1)	1.656923	1.290284	1.28	Ns	1.604974	1.256565	1.28	Ns
Operating Profit before provision	-63918.55	36078.27	-1.77	Ns	-22257.39	28607.87	-0.78	Ns
GDP Growth at Factor cost	51500.42	37161.53	1.39	Ns	27386.95	34046.01	0.8	Ns
GDP Growth at Factor cost (Lag1)	-7.540878	43.91497	-0.17	Ns	-9.753669	43.14685	-0.23	Ns
(Constant)	92349.85	59025.16	1.56	Ns	20940.67	34002	0.62	Ns
R^2	0.4719				0.4881			
F-statistic	5.56			**				
Wald ($\chi 2$)					171.66			**
Hausman ($\chi 2$)	4.60			Ns				

The dependent variable Provisions to advances were regressed upon using the following independent variables.

- Growth In Advances
- Growth In Advances (Lag1)
- Net NPA To net advances
- Net NPA To net advances (Lag1)
- Net NPA(t) To net advances(t-1)
- Net NPA(t) To net advances(t-1) (Lag1)
- GDP Growth at Factor cost
- GDP Growth at Factor cost (Lag1)

Lag1 indicates the one year lagged values for the respective variable to assess the lagged effect of the independent variables.

In both the models, Growth in advances with one year lag, Net NPA (t) to net advances, Operating profit before provision and GDP Growth at Factor cost (Lag 1) is found to have significant negative effect on Provision to advances. Growth in Advances, Net NPA (t) to net advances (t-1) (Lag 1) , Net NPA (t) to net advances (t-1), Net NPA (t) to net advances(Lag 1) and GDP Growth at Factor cost is found to have positive effect on the dependent variable in both the models.

The R^2 value is found to be 0.47 in fixed effects and 0.49 in Random effects that shows high correlation between the dependent variable and independent variables. F-test and Wald Chi square test showed that the there is significant correlation between the dependent variable and selected independent variables.

The Hausman Test was carried out to compare the fixed effects model with random effects model. The null hypothesis is that the individual effects are uncorrelated with the independent variables. The test result shows that the chi square value (4.60) is not significant which indicates that fixed effect model is no better than the random effect model.

Table 5.78 Regression Analysis for All Banks

Dependent Variable: **Provisions to advances**

Independent variables	**Fixed Effects**				**Random Effects**			
	B	Std. Err.	t	P>|t|	B	z-value	P>|z|	Sig.
Growth In Advances	4.888053	1.384033	3.53	**	0.983712	0.876722	1.120	Ns
Growth In Advances(Lag1)	-0.52232	0.826963	-0.63	Ns	-1.91913	0.828024	-2.320	*
Net NPA To net advances	0.079642	0.00967	8.24	**	0.068401	0.009906	6.900	**
Net NPA To net advances (Lag1)	0.002078	0.011105	0.19	Ns	-0.00105	0.011056	-0.090	Ns
Net NPA(t) To net advances(t-1)	-0.68139	0.380254	-1.79	Ns	-0.54749	0.399301	-1.370	Ns
Net NPA(t) To net advances(t-1) (Lag1)	0.642697	0.406417	1.58	Ns	0.981389	0.417828	2.350	*
Operating Profit before provision	-23493.5	17820.31	-1.32	Ns	379.484	15784.12	0.020	Ns
GDP Growth at Factor cost	31534.47	18907.66	1.67	Ns	43455.45	18410.81	2.360	*
GDP Growth at Factor cost (Lag1)	-9.70819	19.92215	-0.49	Ns	-0.32882	21.02365	-0.020	Ns
(Constant)	-55288	34406.7	-1.61	Ns	-33409.8	20811.79	-1.610	Ns
R^2	0.3655				0.5208			
F-statistic	37.00			**				
Wald (χ^2)					443.47			**
Hausman ($\chi 2$)	15.33			**				

The dependent variable Provisions to advances were regressed upon using the following independent variables.

- Growth in Advances
- Growth in Advances (Lag1)
- Net NPA to net advances
- Net NPA to net advances (Lag1)
- Net NPA(t) To net advances(t-1)
- Net NPA(t) To net advances(t-1) (Lag1)
- GDP Growth at Factor cost
- GDP Growth at Factor cost (Lag1)

Lag1 indicates the one year lagged values for the respective variable to assess the lagged effect of the independent variables.

In the two models, only Growth In Advances (Lag1), Net NPA (t) to net advances (t-1) and GDP Growth at Factor cost (Lag1) have significant negative effect on Provision to advances. Operating profit before provision is found to have negative effect on Provision to advances in the fixed effect model. GDP growth at factor cost and growth in advances is found to have positive effect on the dependent variable in both the models.

In Random Effects model Net NPA to Net Advances at one year lag has affected Provisions to advances negatively, whereas the same has positive effect in fixed asset model.

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The R^2 value is found to be 0.36 in fixed effects and 0.52 in Random effects that shows high correlation between the dependent variable and independent variables. F-test and Wald Chi square test showed that the there is significant correlation between the dependent variable and selected independent variables.

The Hausman Test was carried out to compare the fixed effects model with random effects model. The null hypothesis is that the individual effects are uncorrelated with the independent variables. The test result shows that the chi square value (15.33) is significant indicates that fixed effect model is better than the random effect model.

5.5.2 Non-Performing Assets Model

The estimated model for loan loss provisions is the following:

$$\mathbf{NPAFLit = \alpha + BSVit\text{-}j\beta + GDPGRt\text{-}j\delta + ui + \varepsilon it} \qquad (1)$$

Where, i= 1,...,45 ; t= 2006,..., 2015; j= 0, 1, depending on the variable

NPAFL is the ratio of the flow of non-performing loans at t to total performing loans at t-1, i.e. the default rate. It explains the banks' ability to select good new borrowers. Provisions are often made only when losses actually appear and their amount is typically determined on the basis of the losses experienced in the past (Laeven and Majnoni, 2003). In other words, bank management uses provisions to adjust the value of their portfolio in consistent with the observed ex-post default rate. The expected sign is positive since banks that are not able to screen potential debtors are more likely to incur loan losses in the future. As far as the Indian banking sector is concerned all the banks does not seem to fit into this argument. Indian banks, based on past experience are able to choose better borrowers with the only exception being the private sector banks.

Table 5.79 Regression Analysis for Public sector Banks

Dependent Variable: **Net NPA(t) to Net Advances(t-1)**

Independent variables	**Fixed Effects**				**Random Effects**			
	B	Std. Err.	t	P>ltl	B	Std. Err.	z-value	Sig.
Growth In Advances	-0.03034	0.006022	-5.04	**	-0.03000	0.005929	-5.06	**
Growth In Advances(Lag1)	-0.01319	0.00317	-4.16	**	-0.01313	0.003139	-4.18	**
LN(Int Earned/Int Expended)	-0.94213	0.729574	-1.29	Ns	-1.18268	0.700599	-1.69	Ns
LN(Int Earned/Int Expended) (Lag1)	2.563322	0.564234	4.54	**	2.458541	0.558565	4.4	**
Cost to income ratio	0.033702	0.009742	3.46	**	0.036383	0.009329	3.9	**
Cost to income ratio(Lag1)	-0.01072	0.008892	-1.21	Ns	-0.00966	0.008703	-1.11	Ns
GDP Growth at Factor cost	-0.07854	0.03387	-2.32	*	-0.07285	0.032938	-2.21	*
GDP Growth at Factor cost (Lag1)	-0.25904	0.031406	-8.25	**	-0.25738	0.031162	-8.26	**
(Constant)	3.477274	0.536022	6.49	**	3.368831	0.495973	6.79	**
R^2	0.6554				0.6546			
F-statistic	53.72			**				
Wald ($\chi2$)					5.72			Ns
Hausman ($\chi2$)	24.01			**				

The dependent variable Net NPA (t) to Net Advances (t-1)was regressed upon using the following independent variables for public sector banks.

- Growth In Advances
- Growth In Advances (Lag1)
- LN(Int Earned/Int Expended)
- LN(Int Earned/Int Expended) (Lag1)
- Cost to income ratio
- Cost to income ratio (Lag1)
- GDP Growth at Factor cost
- GDP Growth at Factor cost (Lag1)

Lag1 indicates the one year lagged values for the respective variable to assess the lagged effect of the independent variables.

In the two models, Growth in Advances, Growth in Advances (Lag1), LN (Int Earned/Int Expended), Cost to income ratio (Lag1), GDP Growth at Factor cost and GDP Growth at Factor cost (Lag1) were found to have significant negative effect on Net NPA (t) to Net Advances (t-1) that reveals banks do not provision at good times. Cost to income ratio and LN(Int Earned/Int Expended) (Lag1) were found to have positive effect on Net NPA(t) to Net Advances(t-1) which indicates the overall quality of a portfolio management by banks.

The R^2 value is found to be 0.65 in fixed effects model and Random effects model that shows there is a high correlation between the dependent variable and independent variables. F-test and Wald Chi square test showed that the there is significant correlation between the dependent variable and selected independent variables in case of fixed asset model and not significant in case of random effect model.

The Hausman Test was carried out to compare the fixed effects model with random effects model. The null hypothesis is that the individual effects are uncorrelated with the independent variables. The test result shows that the chi square value (24.01) is significant indicates that fixed effect model is better than the random effect model.

Table 5.80 Regression Analysis for Private Banks

Dependent Variable: **Net NPA (t) to Net Advances (t-1)**

Independent variables	Fixed Effects				Random Effects			
	B	Std. Err.	T	P>|t|	B		z-value	Sig.
Growth In Advances	-0.01228	0.003325	-3.69	**	-0.01311	0.003263	-4.02	**
Growth In Advances(Lag1)	-0.00882	0.003135	-2.81	**	-0.00898	0.003091	-2.9	**
LN(Int Earned/Int Expended)	-0.75687	0.278601	-2.72	**	-0.72977	0.254138	-2.87	**
LN(Int Earned/Int Expended) (Lag1)	-0.64034	0.218125	-2.94	**	-0.66259	0.211395	-3.13	**
Cost to income ratio	-0.00271	0.001338	-2.02	*	-0.00198	0.001285	-1.54	Ns
Cost to income ratio(Lag1)	-0.00044	0.001313	-0.34	Ns	0.000189	0.001248	0.15	Ns
GDP Growth at Factor cost	0.008298	0.041598	0.2	Ns	0.019273	0.040478	0.48	Ns
GDP Growth at Factor cost (Lag1)	-0.03812	0.036373	-1.05	Ns	-0.04111	0.036071	-1.14	Ns
(Constant)	4.37479	0.625825	6.99	**	4.139246	0.582424	7.11	**
R^2	0.2660				0.6546			
F-statistic	7.29			**				
Wald (χ2)					65.12			**
Hausman (χ2)	24.01			**				

The dependent variable Net NPA (t) to Net Advances (t-1)was regressed upon using the following independent variables for public sector banks.

- Growth In Advances
- Growth In Advances (Lag1)
- LN(Int Earned/Int Expended)
- LN(Int Earned/Int Expended) (Lag1)
- Cost to income ratio
- Cost to income ratio (Lag1)
- GDP Growth at Factor cost
- GDP Growth at Factor cost (Lag1)

Lag1 indicates the one year lagged values for the respective variable to assess the lagged effect of the independent variables.

In the two models, Growth in Advances, Growth in Advances (Lag1), LN (Int Earned/Int Expended), LN (Int Earned/Int Expended) (Lag1), Cost to income ratio and GDP Growth at Factor cost (Lag1) were found to have significant negative effect on Net NPA (t) to Net Advances (t-1) that reveals banks do not provision at good times. Cost to income ratio (Lag1) is found to have negative impact on dependent variable in fixed assets model and positive impact in random effect model. GDP Growth at Factor cost is found to have positive effect on Net NPA (t) to Net Advances(t-1).

The R^2 value is found to be 0.26 in case of fixed effects model and 0.65 in case of Random effects model that shows there is a moderate correlation between the dependent variable and independent variables in fixed effect model and high correlation in random effect model. F-test and Wald Chi square test showed that the there is significant correlation between the dependent variable and selected independent variables in case of fixed asset model and not significant in case of random effect model.

The Hausman Test was carried out to compare the fixed effects model with random effects model. The null hypothesis is that the individual effects are uncorrelated with the independent variables. The test result shows that the chi square value (24.01) is significant indicates that fixed effect model is better than the random effect model.

Table 5.81 Regression Analysis for All Banks

Dependent Variable: **Net NPA (t) to Net Advances (t-1)**

Independent variables	**Fixed Effects**				**Random Effects**			
	B	Std. Err.	t	P>|t|	B		z-value	Sig.
Growth In Advances	-0.01524	0.00309	-4.93	0	-.0148937	0.003058	-4.87	**
Growth In Advances(Lag1)	-0.00801	0.002368	-3.38	0.001	-0.00785	0.00238	-3.3	**
LN(Int Earned/Int Expended)	-0.81103	0.262943	-3.08	0.002	-0.24218	0.206839	-1.17	Ns
LN(Int Earned/Int Expended) (Lag1)	-0.70236	0.202423	-3.47	0.001	-0.62498	0.20066	-3.11	**
Cost to income ratio	-0.00227	0.001438	-1.58	0.115	0.000918	0.001283	0.72	Ns
Cost to income ratio(Lag1)	-0.00094	0.00137	-0.68	0.494	0.00004	0.001309	-0.03	Ns
GDP Growth at Factor cost	-0.01204	0.025	-0.48	0.63	-0.00104	0.025354	-0.04	Ns
GDP Growth at Factor cost (Lag1)	-0.18308	0.024677	-7.42	0	-0.19136	0.024995	-7.66	**
(Constant)	5.061155	0.29118	17.38	0	4.155508	0.223875	18.56	**
R^2	0.4000				0.2615			
F-statistic	32.92			**				
Wald ($\chi2$)					258.96			**
Hausman ($\chi2$)	24.01			**				
LM ($\chi2$)					90.44			**

The dependent variable Net NPA (t) to Net Advances (t-1)was regressed upon using the following independent variables.

- Growth In Advances
- Growth In Advances (Lag1)
- LN(Int Earned/Int Expended)
- LN(Int Earned/Int Expended) (Lag1)
- Cost to income ratio
- Cost to income ratio (Lag1)
- GDP Growth at Factor cost
- GDP Growth at Factor cost (Lag1)

Lag1 indicates the one year lagged values for the respective variable to assess the lagged effect of the independent variables.

In the two models, except cost to income ratio, all other selected independent variables are found to have significant negative effect on Net NPA (t) to Net Advances (t-1). Cost to income ratio is found to have negative effect on Net NPA (t) to Net Advances (t-1) in the fixed effect model and found to have positive effect on the dependent variable in Random Effects model.

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The R^2 value is found to be 0.40 in fixed effects model and 0.26 in Random effects that shows high correlation between the dependent variable and independent variables in case of fixed asset model and moderate correlation in case of random effect model. F-test and Wald Chi square test showed that the there is significant correlation between the dependent variable and selected independent variables.

The Hausman Test was carried out to compare the fixed effects model with random effects model. The null hypothesis is that the individual effects are uncorrelated with the independent variables. The test result shows that the chi square value (90.44) is significant indicates that fixed effect model is better than the random effect model.