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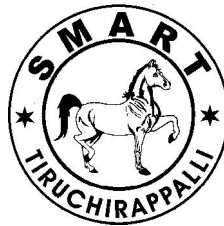
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CREDIT DEPOSIT RATIO AND NET INTEREST MARGIN (NIM) OF INDIAN COMMERCIAL BANKS – AN ANALYSIS

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Abstract

The process of economic growth needs development of capital resources, besides other structural changes like improvement in skill and efficiency of manpower, better organization of production and distribution, better health, education, etc. The financial institutions are one of the main instruments of economic development as they provide financial resources. An efficient financial system can perform this function by raising the level of economic activity. Financial institutions are the tools to mobilize savings and encourage investments by diverting it to productive channels. Financial institutions occupy a key position in modern economy. The banks manage everyday money matters for private individuals and companies such as the payment of salaries and bills and the repayment of loans, other means of payment such as bank cards or charge cards, can be added to the current accounts. In addition to normal current accounts, the banks also offer accounts paying higher rates of interest, intended for investment purposes. Every day money matters are managed through the banks. Banks also offer loans and opportunities for investing money in securities or investment accounts. About 80 percent of the operating revenue from a typical community bank comes from the Net Interest Margin (NIM). It is the percentage difference between the interest income produced by a bank's earning assets (Loans & Investments) and its major expense – interest paid to its depositors. The net difference between interest earned and interest paid is a key measure of bank's profitability. The paper provides a comprehensive study of functional spread of Commercial Banks and analysis of NIM for three sectors of banks and its variations over the period.

Introduction

Today, financial institutions are one of the most important service industries in the Indian Economy. The financial institutions as a financial intermediary, play an extremely significant role in enriching the economic and social life the world over. The present financial institutions function as financial intermediaries who provide means and mechanism of transferring command over resources from those who have an excess of income over expenditure to those who can make use of the same for adding to the volume of productive capital.

The traditional theory of the financial institution, based on profitability, liquidity and safety, has now given way to public utility or social and innovative financing system. 'Profit' is the simplest and most convenient measuring rod for appraising the performance and

efficiency of banks. The survival and sustained growth are possible only when there is a regular flow of profits.

A plethora of factors viz, size and composition of working funds, interest rate structure, credit portfolio, operating cost effectiveness etc, influence profitability. Net Interest Margin (NIM) is a measure of the difference between interest income generated by banks or other financial institutions by their lending and interest paid on borrowings (for example, deposits). Net Interest Margin is expressed as net interest income (interest earned minus interest paid on borrowing funds) as a percentage of earning assets (any asset, such as a loan, that generates interest income).

A bank has net interest income of Rs. 5 on outstanding average loans of Rs. 100. The bank's net interest margin is $5/100 = 5\%$. The

Net Interest Margin is basically related to the difference between interest on borrowing accounts and interest from savings account.

Review of Related Literature

A review of some of the studies undertaken previously is given below.

The analysis of net interest margin is an attempt to measure the cost of financial intermediation, that is, the difference between the gross cost paid by a borrower to a bank and the net returns received by a depositor (Brock and Suarez, 2000). Generally, high interest margins are taken to be unfavorable because they lead to disintermediation. Low deposit rates represent unattractive returns for maintaining deposit accounts and hence discouraging savings. High loan rates, on the other hand, make the cost of funds increasingly prohibitive to potential users, thereby inhibiting investment activity. Nevertheless, while high net interest margins have usually been associated with inefficiency, they may also contribute to the strengthening of a country's banking system (Saunders and Schumacher, 2000). This happens when profits earned from high spreads are being channeled by banks to their capital bases. For example, high spreads and healthy capital ratios were both observed among Colombian banks (Barajas, Steiner and Salazar, 1999)

On the other hand, very low spreads can not always be taken positively, especially in liberalized but inadequately regulated environments where certain mechanisms ensuring the closure of or intervention in poorly capitalized or unstable banks are absent. If weak banks are allowed to continue operating, there is the likelihood that they will adopt the strategy of offering lower loan rates to gain additional market share or to grow out of their troubles. This was presumed in some Latin American countries in the period after financial liberalization reforms in the region over the last decade (Brock and Suarez, 2000).

Jude S. Doliente (2003) studied the determinants of Net Interest Margin (NIM) of banks. He investigated the determinants of the region's net interest margins while taking into consideration bank-specific factors, namely: collateral, capital, liquid assets, operating expenses and loan quality in four South East Asian countries- Indonesia, Malaysia, Philippines and Thailand.

Sarkar, Sarkar and Bhamuk (SSB) studied the relationship between ownership and performance in Indian banking by using, inter alia, NIM as a performance indicator. While this study finds an ownership effect, it does not take into account the effect of regulatory requirements on different banks as may be manifested in indicators such as the Non Performing Assets (NPAs) and the Capital to Risk-Weighted Assets Ratio (CRAR).

A more recent paper by Kannan, Narain and Ghosh (KNG-2001), studied the determinants of NIM in Indian banking industry, and estimated the relationship between NIM and variables, indicative of the health of banks, including indicators of regulatory requirements such as NPA and CRAR.

The study by Bhaumik and Dimova (2003) used data from 1995-96 through 1997-98 for all Scheduled Commercial Banks (SCBs), excluding Regional Rural Banks (RRBs) using Returns on Assets as the performance indicator and the variables from the SSB study as explanatory variables. They found an ownership effect as well as a convergence of performance among bank groups over time.

Rudra Senasarma and Saurabh Ghose (2004) studied the relationship between ownership and performance using the balance sheet data of all Scheduled Commercial Banks (excluding RRBs) for the period 1998 to 2001.

Objectives of the Study

The following are the objectives of the present study.

- (i) To study the functional spread of the Scheduled Commercial Banks.
- (ii) To study the overall NIM of Commercial Banks.
- (iii) To analyze the variation of NIM between Public Sector Banks and Private Sector Banks.
- (iv) To analyze the variation of NIM between Public Sector Banks and Old Private Sector Banks.

Hypotheses of the Study

The following Hypotheses have been framed and tested.

1. There is no linear relationship between Y and X;
2. There is linear relationship between Y and X;
3. There is a variation between the NIM of Public Sector Banks and the NIM of Private Sector Banks.
4. There is a variation between the NIM of Public Sector Banks and the NIM of Old Private Sector Banks.

Data Collection

To fulfill the objectives of the above study, only secondary data were collected from the Banking Website, various issues of Report on Trend and Progress of Banking in India and Statistical Tables relating to Banks in India (Reserve bank of India 1999, 2000, 2001& 2006), A Quarterly Statistics on Deposits and Credits of Scheduled Commercial Banks for the year 2006 and Reserve Bank of India Bulletin for recent years were also consulted.

Frame Work of Analysis

The collected data were processed both manually and with the help of computers using SPSS (Statistical Package for Social Science). The averages, standard deviation and coefficient of variation were employed to test the hypotheses.

Analysis and Discussion

Commercial Banking System in India consisted of 218 scheduled commercial banks (including foreign banks) as on 31 March 2006. Of the scheduled commercial banks, 161 are in public sector of which 133 are Regional Rural Banks (RRBs) and these accounts for about 75.2 per cent of the deposits of all scheduled commercial banks. The regional rural banks were specially set up to increase the flow of credit to small borrowers in the rural areas. The remaining 28 banks, other than RRBs, in the public sector consist of 19 nationalized banks, 8 banks in SBI group and IDBI Ltd. They transact all types of commercial banking business. Some important indicators in regard to progress of commercial banking in India since 1999 are given in Table -1. Amongst the public sectors banks, as on 31 March 2006, the nationalized banks (including IDBI Ltd.) group is the biggest unit with 33,868 offices, deposits aggregating to Rs 10,13,664 crore and advances of Rs 8,21,066 crore. The State Bank of India group (SBI and its seven associates) with 13,820 offices, with deposit aggregating to Rs 4,90,375 crore and advances Rs 3,50,961 crore is the second largest. The nationalized banks account for 67.3 per cent of aggregate banking business (aggregate of deposits and advances) conducted by the public sector banks (excluding RRBs) and 48.0 percent of the aggregate business of all scheduled commercial banks. The SBI and its associates as a group account for 32.7 percent of aggregate banking business conducted by the public sector banks (excluding RRBs) and 23.3 percent of the aggregate business of all scheduled commercial banks.

Functional Spread

Functional spread has two aspects. It encompasses mobilization of deposits and deployment of credit. Commercial banks are required to mobilize untapped savings of the economy in the form of deposits and channelize such deposits for the purpose of productive investment in the economy. The performance of Commercial Banks in the field of deposit mobilization in India is mentioned in **Table -2**. It is evident from the above table that the Commercial Banks had mobilized a sum of Rs.9, 89,141 crores in the year 2000-01. This further increased to Rs.11, 31,187 crores in 2002 and later to Rs.20, 93,042 crores in the year 2006. Over the period, the increase was 2.1 times.

Deposits mobilizations by the Scheduled Commercial Banks has been illustrated in the following **Bar-Diagram-1**

Deployment of Credit

Deposits are the basic raw materials for the banks. Deposits help the bank to channelize credit for productive investment in the economy. Higher the deposit mobilization, larger the scope for deployment of funds in the economy. The performance of banks in the sphere of deployment of credit is seen from **Table-3**. It is observed from the above table that Commercial Banks had deployed a sum of Rs.5, 29,272 crores in the year 2001. The amount of outstanding credit then increased to Rs.6, 09,053 crores in 2002 and further to Rs.15, 07,077 crores in 2006. The increase over the period was 2.85 times.

Credit-Deposit Ratio

As a result of the expansion of the functional spread, credit deposit ratio of the Scheduled Commercial Banks improved considerably. In a real sense, this refers to utilization of credit and explains as to what extent Commercial Banks have utilized credit

out of the deposits mobilized. The credit-deposit ratio achieved by Commercial Banks is shown in **Table-4**

Table-5 indicates that in the year 2001, the credit deposit ratio, realised by the Commercial Banks, was 53.51 per cent. In the year 2002, the CD Ratio stood at 53.84 per cent which further increased to 72.00 per cent in 2006. This indicates that the Commercial Banks are capable of mobilizing savings for financing the delivery of financial services to the society, particularly in the years 2005 and 2006 (Nationally prescribed minimum was 60 per cent).

In order to test the hypothesis that there is a linear relationship between the Y and X, the following Test of ANOVA was tried.

From the table, the calculated value of F is 15.183. The table value of F with (1,4) degrees of freedom at the given significance level of 0.01 is 21.20. Since the calculated value of F(15.183) is less than the table value of F(21.20), accept the null hypothesis and reject the alternate hypothesis. In other words, there is no linear relationship between Y and X.

Net Interest Margins of Commercial Banks

In many ways, Indian banking is a reflection of the Indian economy. The robust growth experienced by the industrial and services sector is mirrored by the growth of the Indian banks. Therefore, if the entire economy is growing so rapidly, it is but natural that the banking assets and earnings also will grow. NIM is one of the important criteria to measure the bank's profitability. Net Interest Margin (NIM) obtained by the Commercial Banks are furnished in Table -5.

It is evident from Table-6 that the NIM of public sector banks for the financial year 2006-07 was 2.65 per cent. On the other hand, the private sector banks secured 2.45 per cent and

the old private sector banks registered 2.83 per cent. Compared to the public sector banks, old private sector banks performed well. NIM of three sectors of banks is illustrated in the following **Bar-Diagram- 2**. The ANOVA results to test the null hypothesis are shown in **Table - 7**.

In order to test the hypothesis that there is variation between the NIM of Public Sector Banks and the NIM of Private Sector Banks, the following analysis has been done in **Table - 9**.

In order to test the hypothesis that there is variation between the NIM of Public Sector Banks and the NIM of Old Private Sector Banks, the following analysis has been done in **Table - 10**.

Findings

A study of deposits of scheduled commercial banks reveals that between 2001-2006, the deposits growth has been consistently positive. Over the period, the increase was 2.1 times. An investigation into the growth of bank credit during 2001-2006 reveals that there has been tremendous achievement in the field of credit deployment. The increase over the period was 2.85 times.

A close look at the Credit-Deposit Ratio of the scheduled commercial banks during 2001-2006 gives a clear picture which shows that it could achieve a nationally prescribed minimum of 60 per cent only in the years 2005 and 2006. Regarding the NIM of the commercial banks, even though the public sector banks are ranked second, the achievement was not satisfactory, particularly during the years 2006 and 2007 as compared to the year 2004 due to the stiff competition from private sector banks. In this connection, the performance is high in the case of old private sector banks which stand

first. There is no linear relationship between Y and X as per the ANOVA Analysis. Co-efficient of variation of Public Sector Banks is less than the C.V. of Private Sector Banks. Hence Public Sector Banks are more consistent (i.e., private sector banks are more variation). Since C.V. of Public Sector Banks is less than the C.V. of Old Private Sector Banks, Public Sector Banks are more consistent (i.e., old private sector banks experience more variation).

One of the major factors for the decline of NIM was the slowdown in credit off take and low level of investment made by the banks. Moreover, attempts to raise low cost resources (included current and savings account) had not yielded big results due to competition from postal savings and mutual funds. Net Interest Margins (NIM) are under pressure for the banking industry because deposit rates have gone up and there has been no corresponding increase in lending rates.

Suggestion and Conclusion

Public sector banks depend largely on their interest income as compared to their peers in the private sector and their fee-based earnings coming from services remain quite low. In banking regime, marked by high interest rates, the PSU banks seem to be lagging behind in their fee based income as evident from a dip on this count. Their fee based income declined by 10 per cent as compared to the private sector banks, registering a sizable growth of 29 per cent in the fiscal year 2006-07. Banks face increasing costs incurred on staff, provision for sanctions, technology and advertising among others. Banks have to, therefore, create new avenues of business such as fee-based income.

The current high interest regime has augmented the interest income of the public sector banks by 18 per cent, although less than

a whopping rise of 44 per cent recorded by private sector banks in the financial year 206-07. Drastic operational steps may have to be taken by public sector banks in order to increase their interest income.

The study found that some of the major PSU banks registered a decline in their fee-based income in the fiscal year 2006-07. This include United Bank of India, witnessing a downward trend by 26.76 per cent, followed by State Bank of India with a decline 22.41 per cent, Allahabad Bank (21.98 per cent), Punjab National Bank (18.15 per cent) and Dena Bank (10.82 per cent). However, Indian Bank increased its fee-based income by 58.29 per cent in the financial year 2006-07, followed by Bank of India, recording a growth of 31.96 per cent, Andhra Bank (14.13 per cent), Oriental Bank of Commerce (9.13 per cent) and Bank of Baroda (1.07 per cent).

Rise in Net Interest Margin (NIM) could be attributed to interest rate increase in the prime lending rate. Thus, rise in interest rates had a impact on public sector banks' interest income, which showed a robust growth of about 18 per cent at Rs. 94,763.50 crores in fiscal year 2006-07 against Rs. 80,162.77 crores in the previous financial year.

Compared to private sector banks, some of the public sector banks were not able to devise alternative non-interest, fee-based sources of earnings. Absence of direct customer service and requirement of innovative product and services as per the customers' expectations could be one of the reasons for decline in fee-based income of the banks. Adequate attention should be paid to these issues.

What could cause a rise in the Net Interest Margin (NIM)?

1. If there is less competition between banks, they can charge more for borrowing and pay less for deposits account.
2. A lower liquidity ratio means more funds can be used to earn interest, rather than being kept in non-interest bearing cash reserves.
3. Increase the use of credit cards and bank transfers. This may reduce demand for cash withdrawals and this will allow banks to have a lower liquidity ratio and therefore increase the Net Interest Margin.
4. If there is an increase in loan defaults, then the interest earned will fall dramatically. Hence the banks should take appropriate steps in this regard.

The traditional theory of the financial institution based on profitability, liquidity and safety has now given way to public utility, or social and innovative financing system. In the early days of banking, it was designed to provide maximum value only to a few. But there is a paradigm shift in the present day world of mass society and consumerism where the slogan for the financial system ought to be maximum good for the maximum number of people.

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Table -1
Progress of Commercial Banks in India

Item	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
Number of Commercial Banks							
a. Scheduled Commercial Banks of which :Regional	303	297	301	298	294	291	288
Rural Banks	302	297	296	294	289	286	284
b. Non-Scheduled Commercial Banks	196	196	196	196	196	196	196
	1	-	5	4	5	5	4

Source : Basic Statistical Returns of Scheduled Commercial Banks in India, Volume-34, 2005.

Table - 2
Deposit Mobilization by Commercial Banks (Scheduled)

Year	Amount (Rs .In Crores)
2000-01	9,89,141
2001-02	11,31,187
2002-03	13,11,761
2003-04	15,42,284
2004-05	17,32,858
2005-06	20,93,042
2006-07	NA

Source: Basic Statistical Returns of Scheduled Commercial Banks in India, 2006.

Bar-Diagram 1
Deposits Mobilization of Scheduled Commercial Banks

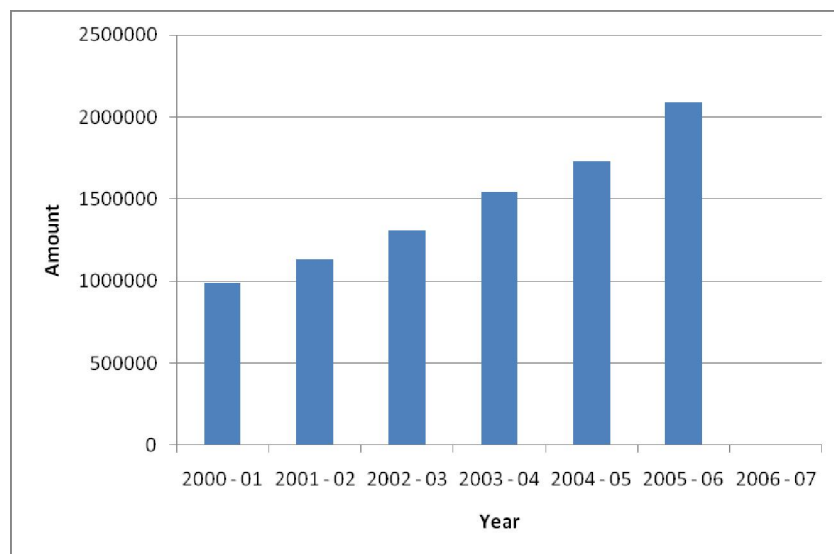


Table - 3
Deployment of Credit by Commercial Banks (Scheduled)

Year	Amount (Rs. in Crores)
2000-01	5,29,272
2001-02	6,09,053
2002-03	7,46,432
2003-04	8,65,594
2004-05	11,24,300
2005-06	15,07,077
2006-07	NA

Source : Basic Statistical Returns of Scheduled Commercial Banks in India, 2006.

Table - 4
Credit Deposit Ratio by Commercial Banks (Scheduled)

Year	In %
2000-01	53.51
2001-02	53.84
2002-03	56.90
2003-04	56.12
2004-05	64.88
2005-06	72.00
2006-07	NA

Source : Computed by an Author

Table - 5
Summary of Calculation

Year (X)	C D Ratio (Y)	(X ²)	(XY)
2001	53.51	1	53.51
2002	53.84	4	107.68
2003	56.90	9	170.07
2004	56.12	16	224.48
2005	64.88	25	324.04
2006	72.00	36	432.00
Σ X : 21	Σ Y : 357.25	Σ X² = 91	Σ XY = 1311.78

$$\bar{X} = \frac{\Sigma X}{N} = \frac{21}{6} = 3.5$$

$$\bar{Y} = \frac{\Sigma Y}{N} = \frac{357.25}{6} = 59.54$$

$$b = \frac{\Sigma XY - n \bar{X} \bar{Y}}{\Sigma X^2 - n \bar{X}^2}$$

$$b = \frac{1311.78 - 6 \times 3.5 \times 59.54}{91 - 73.5} = \frac{61.44}{17.5}$$

$$b = 3.51$$

$$a = \bar{Y} - b \bar{X}$$

$$a = 59.54 - 3.51 \times 3.5$$

$$a = 59.54 - 12.28$$

$$a = 47.26$$

$$\therefore Y = a + bX$$

$$= 47.26 + 3.51 (1)$$

$$= 47.26 + 3.51 (50.77)$$

$$3.51 (2) \dots$$

Table - 6
Summary of Calculation

Y_1	Y	$(Y_1 - \bar{Y})^2$	$(Y - \bar{Y})^2$	$(Y_1 - Y)^2$
53.51	50.77	36.36	76.91	07.50
53.84	54.28	32.49	27.66	00.19
56.90	57.79	06.96	03.06	00.79
56.12	61.03	11.69	02.22	24.10
64.88	64.81	28.51	27.77	00.00
72.00	68.32	155.25	77.08	13.54
		SST 271.26	SSR 214.70	SSE 46.12

Source : Computed by an Author using SPSS.

Table - 7
ANOVA Summary

Sources of Variation	Sum of Squares	Degrees of Freedom	Mean Sum of Squares	F Ratio
Due to Regression	214.70	1	214.70	15.183
Due to Error	56.56	4	14.14	
Total	271.26	5		

Source : Computed by an Author using SPSS.

Table - 8
Yearwise Nim of Commercial Banks in India

YEAR	NIM (% of Gross Assets)		
	PUBLIC SECTOR BANKS (X)	PRIVATE SECTOR BANKS (Y)	OLD PRIVATE SECTOR BANKS (Z)
2000-2001	2.86	2.33	2.51
2001-2002	2.73	1.58	2.39
2002-2003	2.91	1.97	2.47
2003-2004	2.98	2.21	2.60
2004-2005	2.91	2.34	2.70
2005-2006	2.85	2.40	2.75
2006-2007	2.65	2.45	2.83

Source: RBI Report on Trend and Progress in Banking, 2007.

Bar-Diagram 2
NIM of Three Sectors of Banks

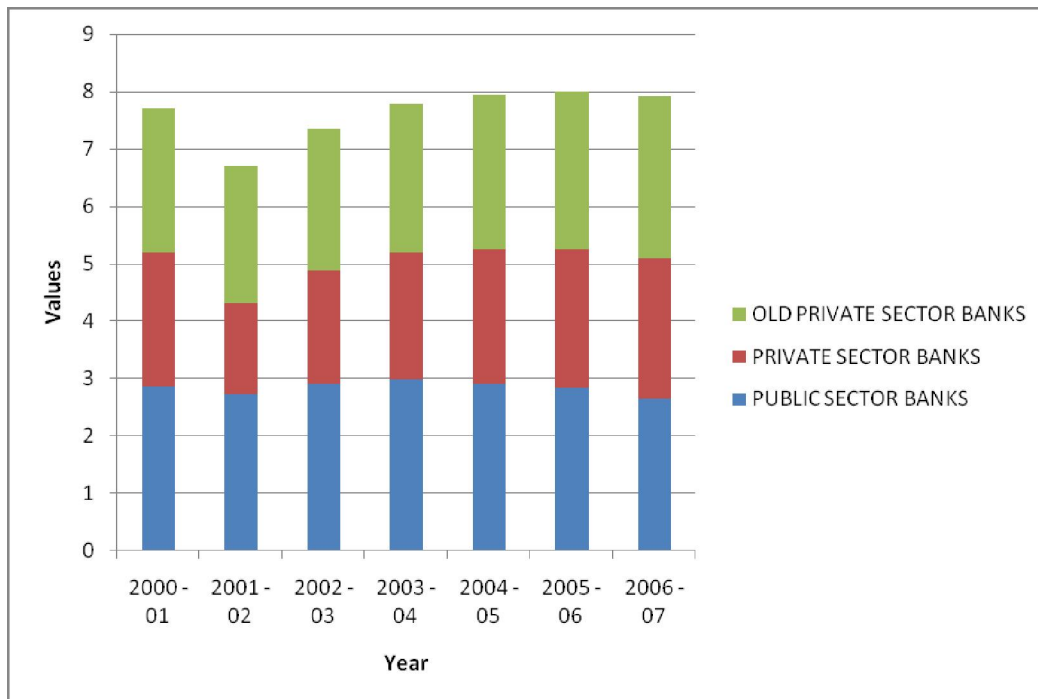


Table - 9
NIM of Public Sector Banks(X) and NIM of Private Sector Banks(Y)

Year	X	Y
2000-2001	2.86	2.33
2001-2002	2.73	1.58
2002-2003	2.91	1.97
2003-2004	2.98	2.21
2004-2005	2.91	2.34
2005-2006	2.85	2.40
2006-2007	2.65	2.45
Average	2.84	2.18
Standard Deviation	0.10	0.28
C.V. (%)	3.52	12.84

Since C.V. of Public Sector Banks is less than the C.V. of Private Sector Banks, Public Sector Banks are more consistent (i.e., private sector banks experienced more variation).

Table - 10
NIM of Public Sector Banks(X) and NIM of Old Private Sector Banks (Z)

YEAR	X	Z
2000-2001	2.86	2.51
2001-2002	2.73	2.39
2002-2003	2.91	2.47
2003-2004	2.98	2.60
2004-2005	2.91	2.70
2005-2006	2.85	2.75
2006-2007	2.65	2.83
Average	2.84	2.60
Standard Deviation	0.10	0.14
C.V. (%)	3.52	5.38

Since C.V. of Public Sector Banks is less than the C.V. of Old Private Sector Banks, Public Sector Banks are more consistent (i.e., old private sector banks experienced more variation).

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