CHAPTER V

COMPETITION

This chapter studies the degree of competition among the banking firms. The chapter is divided into four sections. The first section states the role and importance of competition in the functioning of banks. Section two deals with the impact of competition on banking variables. Section three measures the degree of competition among the banks using various banking parameters. Section four gives the empirical results and discussions. Section five concludes with summary of main findings.

5.1 Introduction:

Enhancing competition in the banking sector has been an important objective of financial sector reform so as to achieve the overall efficiency and stability of the financial system. Competition is an essential ingredient of financial sector development strategy. The degree of competition is an important aspect of financial sector functioning and economic growth (Stijin Claessens and Luc Laeven, 2001). After the initiation of financial sector reforms, competition among banks, non- banks and other financial institutions has increased in India. Its impact has been felt in terms of competitive pricing of services, narrower spreads, and improvement in quality of services. Competition among commercial banks has also increased with the entry of new private sector banks and the permission granted to foreign banks to increase their number of branches in the nineties. As for the domestic PSBs, competition has increased with the relaxation of many guidelines and principles, which allow them to shift their portfolios for optimizing the ultimate objectives. Increased bank competition raises the level of income and reduces the severity of business cycles (R. Todd Smith, 1998). Competition does not mean the physical presence of banks but simply that they are able to handle the entire market freely. Competition does not necessarily require many financial institutions because a concentrated system can be competitive if it is contestable (Stijin Claessens and Daniela Klingebiel, 2001). Market concentration is a standard yardstick or indicator of revealing competitiveness and efficiency of the firms in the industry. In the recent years, competition in the banking sector tends to rise and consequently it appears the sector to be oligopolistic. In other words, the number of arger, but the dominance still lies in the hands of a few large public sector banks. Such banks occupied a large share of deposits and advances, leading the entire market system. Price based or non-price based factors underlie the degree of competition among the firms. In later category, technology is regarded as one of the most important factors that pushed up competition amongst banks. For example, use of ATMs, internet and mobile banking are by-products of technology. Banks, therefore, have been introducing innovative products, seeking for newer sources of income, diversifying into non traditional activities, and economizing on capital. Banks can now spread their coverage to different income earners with different type of business of home, car and consumer loans. To gain the competitive strength, size also matters in order to reap the benefits of economies of scale. So, it is often cited that M&As that taken place in accelerated pace across the globe are also driven by competitive pressures among firms. The competition would thus depend on the degree of concentration, the degree of entry barriers, the heterogeneity of products, price differentiation allowed, the effects of branch network and the uptake of technological advancements.

5.2 Trends in the number of Branches and Total Advances by each Bank group

The impact of competition among the banks means to see the number of branches set up by the banks as a part of structural change. In many studies of bank competition, the branching variable is taken as one of the determinants of competition. The output of the banks is also another important factor that reflects the competitive level of the banks. Following intermediation approach to total output, the number of loans produced is chosen as an output variable. **Table 5-1** and **Table 5-2** showed the number of branches and quantity of loans produced by each bank group and all banks together in some benchmark years.

From the **Table 5-1**, it is observed that branch expansion by all the banks is very marginal and remains more or less stagnant over the entire time period. That is to say, there were 12392 bank branches for the SBI and its associated bank group in 1991-92. The number of banks increased marginally to 13003 in 1995-96, despite the financial sector reforms in the early part of the 90s. The number of branches increased marginally to 13681 in the year 2002-03. The number of branches of eached 14030 in the financial year 2006-07. No major changes are observed in terms of the number of branches set up by the banks after reforms.

Similar trend is discernible for the other PSBs group. There were 31423 bank branches in the financial year 1991-92. The number of branches increased marginally to 31973 in the financial year 1995-96, after a gap of four years. In the financial year 2006-07, the number of branches of other 19 public sector banks reached marginally to 35203. In other words, one reason for negligible growth in branch expansion was that banks embarked on consolidation rather than expansion.

Table 5-1

Bank group-wise number of Branches *(in nos.)*

Year	SBI & its Associates	Other PSBs	All Banks
	Number of Branches		
1991-92	12392	31423	43815
1995-96	13003	31973	44976
1999-00	13469	33686	47155
2002-03	13681	33995	47676
2006-07	14030	35203	49233

Source: Appendix I

Table 5-2

Bank group-wise Total Advances *(Rs. Crores)*

Year	SBI & its Associates	Other PSBs	All Banks
	Total Advances (Loans)		
1991-92	53911	89126	143037
1995-96	78126	129414	207540
1999-00	129034	223076	352110
2002-03	189204	360147	549351
2006-07	482426	895406	1377832

Source: Appendix D.

vances of the banks increased very fast over the period. y the SBI and its associated bank group were Rs. 53911 crore in 1991-92 and increased to Rs. 78126 crore in the financial year 1995-96. In the financial year 2006-07, total advances reached to Rs. 482426 crore, more than eight times in the financial year 1991-92. The growth performance of loan of other PSBs group is also notable after reforms. The total advances by this bank group were Rs. 89126 crore in 1991-92 and increased to Rs 223076 crore in the financial year 2002-03. In the financial year 2006-07, total advances of the other PSBs group was ten times in the financial year 1991-92, i.e. Rs 895406 crore. From the available data on the number of branches and the output of the banks, increase in branch competition of banks is very marginal as banks opted for size through mergers and amalgamation. And regarding the growth of loans of the banks was substantial over the entire period.

A detailed analysis of the competition and concentration of the banks during the period 1991-92 to 2006-07 will be carried out in the next section based on five banking parameters - total income, total assets, net worth, total advances and total deposits. A determination of competitive levels in all these parameters will indicate the degree of competition faced by the firms.

5.3 Data and Methodology:

So far as measurement of the degree of competition is concerned, different researchers devised different economic models, statistical tools and methodologies. Various methods have been devised to measure degree of concentration based on various theoretical foundations (Bikker, 2004). The present study is based on the structural models (formal) as it can capture the structure of the markets and the degree of competition among firms. For measuring the degree of concentration and competition among the firms in the industry, the k-Concentration ratios {CR (n)} and Herfindahl-Hirschman Index (HHI) will be employed. These estimates are based on certain performance variables such as total assets, total deposits, total income, total advances and the total net worth of the banks chosen for the study.

ation ratio is a discrete measure of concentration index, which is simple and can be calculated even the entire data set is not available. The importance of concentration ratios arises from their ability to capture structural features of a market. It is a measure of the total output produced in an industry by a given number of firms in an industry. Concentration ratio is calculated from the market shares of the firms in the industry. The most common concentration ratios are the CR_4 (four largest firm) and the CR_5 (five largest firm). The concentration ratio is defined as the percentage of market share held by the largest firms (m) in an industry.

It takes the form:

$$CR_m = \sum_{i=1}^{m} Si ,$$

Therefore it can be expressed as:

$$\mathbf{CR_m} = s_1 + s_2 + s_3 + \ldots\ldots\ldots\ldots + s_m \quad ,$$

where s_i is the market share and m defines the i^{th} firm

Concentration ratios range from a low of 0 percent to a high of 100 percent. At the low end, a 0 percent concentration ratio indicates an extremely competitive market. At the high end, a 100 percent concentration ratio means an extremely concentrated oligopoly or even monopoly. Between these two extremes, concentration ratios can fall into low (0 to 50 percent), medium (50 to 80 percent), and high concentration (80 to 100 percent). Concentration indices are useful in that they give an easily computable and interpretable indication of how competitive the industry is.

In the present study CR_1 and CR_4 will be used in order to analyze concentration and hence level of competition of the banks. CR_1 will be meaningful for making out the bank with largest market share and the CR_4 for four firms having largest market shares.

(ii) Herfindahl-Hirschman Index (HHI):

The Herfindahl-Hirschman Index (HHI) is the second most popular summary measure of market concentration. The Herfindahl-Hirschman Index (HHI) measures the size of firms in relation to the industry and indicates the degree of competition among them. It is a commonly accepted measure of market concentration. In the United States, in the enforcement process of anti-trust laws in banking 1982, the US Department of Justice has based its merger guidelines on the HHI.

The HHI is calculated by squaring the market share of each firm competing in the market, and then summing the resulting numbers (where the market shares are expressed in fractions). Increases in the Herfindal Index generally indicate a decrease in competition and an increase of market power, whereas decreases indicate the opposite.

The HHI is expressed as:

$$H = \sum_{i=1}^{N} s_i^2$$

Alternatively, HHI = s_1 ^ 2+ s_2 ^ 2+ s_3 ^ 2+……..+ s_n ^ 2.

where,

s_i is the market share of firm ***i*** in the market and **N** is the number of firms with the cap (^) symbolizes square of the variable.

The index of HHI ranges from1.0 (when market share in fractional form) in the case of monopoly to close zero (0) when there are large numbers of firms with no one firm having substantial market share. Between these two extreme indices lies medium or low competition. In other words, the Herfindahl-Hirschman Index (*HHI*) ranges from 1/*N* to one, where *N* is the number of firms in the market. Equivalently, if percent is used as whole numbers, the index can range up to 100^2, or 10,000. Thus the HHI number can range from close to zero to 10, 000.

5.4. EMPIRICAL RESULTS AND ANALYSIS:

5.4.1 The results of k-concentration ratios:

Table 5-3 depicted the one-bank and four-bank concentration ratios for major banking parameters – total assets, total deposits, total income, total advances and net worth. [**Table 5-3**] a is the firm having highest market share throughout the r firms that are having large shares are Bank of Baroda, Bank of India, Punjab National Bank and Canara Bank. On the basis of the total assets, CR_4, which was 51 per cent in 1990-91 increased to a few extent to the level of 53 per cent in 1991-92. Thereafter, the CR_4 fluctuated around 49 per cent and 50 per cent till 2000-01. From the financial year 2001-02, the CR_4 declined gradually and reached the level of 44 per cent in 2006-07. A similar trend was discernible in case of CR_1. With respect to total deposits, the CR_4 somewhat increased from 46 per cent in 1990-91 to 49 per cent in 1991-92. It remained more or less stagnant till 2004-05 and declined to the level of 46 per cent in 2004-05 and gradually declined to the level of 43 per cent in the financial year 2006-07. A similar trend was discernible in the case of CR_1. The concentration ratios of the other banking parameters - total advances and total income followed a same trend as that of total assets and total deposits over the period.

On the basis of net worth, the CR_4 was 50 per cent in 1990-91. It declined to 46 per cent in the financial year 1991-92 and further to the level of 39 per cent in 1995-96. However, from the financial year 1996-97, CR_4 hovered around the value of 46 per cent to 48 per cent over the period. Similar movement was also found in the case of CR_1.

In short, it indicated that the Indian banks are oligopolistic in nature as around 50 per cent of the market share was being handled by the four large firms. However, the market share of these large four firms declined gradually over the period, showing an increase in competition among them. The decrease in the concentration ratios indicated that firms tend towards competition for their services. In other words, the evidence of declining trend of concentration indicated growing competitive pressures among the firms. Mean of CR_1 and CR_4 in all variables is lower than those of initial values, indicating a decline in market power and rise in competition.

Table 5-3

Concentration ratios of one largest firm (CR_1) and four largest firms (CR_4) for various banking parameters

(in Per cent)

Year	Total Assets		Total Deposits		Total Income		Total Advances		Net worth	
	C_1	C_4	C_1	C_4	C_1	C_4	C_1	C_4	C_1	C_4
1990-91	31	52	24	46	---	---	31	52	22	50
1991-92	32	53	26	49	32	53	31	53	20	46
1992-93	30	50	25	47	31	52	31	53	18	44
1993-94	29	49	25	47	29	50	28	51	22	46
1994-95	28	49	24	46	29	50	27	49	18	41
1995-96	29	49	25	46	29	50	29	50	19	39
1996-97	28	48	25	46	29	49	28	51	24	43
1997-98	28	49	25	47	28	48	29	51	24	44
1998-99	29	49	27	47	28	49	28	50	25	45
1999-00	29	48	27	47	28	48	28	49	26	45
2000-01	31	50	28	48	29	48	27	49	27	45
2001-02	30	49	28	48	29	48	25	47	26	46
2002-03	29	48	27	47	29	48	25	48	26	47
2003-04	28	48	26	46	28	47	25	47	26	46
2004-05	27	47	26	46	28	47	25	47	26	48
2005-06	26	46	24	45	28	47	25	46	25	47
2006-07	24	44	22	43	25	45	24	45	25	48
Average (per cent)	**29**	**49**	**26**	**47**	**29**	**49**	**27**	**49**	**24**	**45**

Source: Based on Appendix A to Appendix E & own calculation based on the formula.

5. 4. 2 Results of Herfindhal-Hirschman Index:

The findings based on the Herfindahl index of major banking variables were depicted on **Table 5-4**. The HHI value for total assets declined from 0.13 in the year 1990-91 to 0.09 during 2006-07. On the basis of the size of the total deposits, the value of HHI declined marginally from 0.09 in 1990-91 to 0.08 in 2006-07. A declining trend of he total income and total advances. However, for the net l stagnant at 0.09 even though there were fluctuations in the values during the period. [**Table 5-4**]

Table 5-4

The HHI values of various banking parameters during the period from (1990-91 to 2006-07)

(Per cent)

Year	Total Assets	Total Deposits	Total Income	Total Advances	Net worth
1990-91	0.13	0.09	---	0.13	0.09
1991-92	0.13	0.10	0.13	0.13	0.08
1992-93	0.12	0.10	0.13	0.13	0.08
1993-94	0.12	0.10	0.11	0.11	0.09
1994-95	0.11	0.09	0.11	0.11	0.08
1995-96	0.11	0.09	0.11	0.11	0.07
1996-97	0.11	0.09	0.11	0.11	0.09
1997-98	0.11	0.09	0.11	0.11	0.09
1998-99	0.11	0.10	0.11	0.11	0.10
1999-00	0.11	0.10	0.11	0.11	0.10
2000-01	0.12	0.11	0.11	0.11	0.10
2001-02	0.12	0.11	0.11	0.10	0.10
2002-03	0.11	0.10	0.11	0.10	0.10
2003-04	0.10	0.10	0.10	0.09	0.10
2004-05	0.10	0.10	0.11	0.09	0.10
2005-06	0.10	0.09	0.11	0.09	0.10
2006-07	0.09	0.08	0.09	0.09	0.09
Average	**0.11**	**0.10**	**0.11**	**0.11**	**0.09**

Source: Based on **Table 5-3** & Own calculation using the formula given in Section 5.3.

In the lower part of the **Table 5-4**, the average HHI values of all the variables are given. The mean HHI value of total assets over the entire study period 1991-92 to 2006-07 was found to be 0.11. The mean HHI value of total assets shows low competition. The mean HHI value of total deposits was 0.10, again showing low competition index. And me and total advances, the HHI values were same with a HI for the total income and total advances were similar to the results of total assets and total deposits, showing low competition index. Lastly, the result of the net worth also gave the same index range of low competition, a HHI value of 0.09.

From the mean HHI values of each variable it is observed that firms are not competitive, but while looking at the trend from 1990s onwards, there is slightly declining trend in the HHI values except for net worth over the period. In other words, the HHI trend indicates that over time there is competition among the firms though the degree of competitive is not very high (low competition index). The above conclusion of CR_1 and CR_4 is supported by estimates of HHI. It means that the oligopolistic behavior of the firms is well supported by the trend of HHI values.

5.5 Main Points:

Based on five banking parameters, the degree of competition among the 27 public sector banks is evaluated. The k-concentration ratio and the HHI index were used to measure the degree of competition for certain banking parameters. From the results of the concentration ratios, it is observed that 29 per cent to 30 per cent of the market share is held by the largest bank namely, the SBI for all the five parameters. About 49 per cent to above 50 per cent of the market share is held by the largest four firms in the banking industry. Over the entire study period, the mean concentration ratios for each of the parameter fell under the range of 24 per cent to 29 per cent for the SBI, largest firm and 45 per cent to 49 per cent for the largest four firms in the market. On average, the average concentration ratio worked in the range of 0 to 50, i.e. a range of low competition among the firms as the industry is dominated by four largest firms in the market. It depicted the oligopolistic behavior of the banks in the market. However, the trend of the market share of the firms is declining over the period.

From the estimates of the mean HHI values of each variable it is observed that the HHI index is low, indicating low competition, but the trend of HHI depicted slight declining trend over the period. In other words, it shows rising competition among the firms even though it is not highly competitive. The evidence of oligopolistic behavior of rted by the trend of HHI values. The results of k-firm lues are in conformity with the earlier studies carried out by Sharma and Bal (2010), giving evidence of greater degree of bank competition over the study period (which is revealed by the declining trend in k-firm concentration ratios and HHI values).