Market Structure of Indian Banking Industry: A Comparative Analysis

K. V. Bhanu Murthy*
Renu Gupta**
Ashis Taru Deb***

Abstract

The Indian domestic banking industry was constituted of three banking segments basically: SBI and its associates, nationalised banks and old private banks before the liberalisation of Indian economy in 1991. In pursuance of the first report of the Narasimham Committee, new private banks were allowed to enter the Indian banking industry subject to licensing in 1993. The main thirst of the step taken was to increase competition for the existing banks so that they can improve their efficiency. Hence, this paper aims at understanding whether the new private banks have been able to mark their existence in terms of examining changes in structural characteristics of Indian banking industry, that is, market concentration and relative market share with the help of Fixed Effects Panel Regression Model. For this purpose, balance panel has been constructed for the four banking segments understudy for the period ranging 1995-96 to 2009-10.

Keywords:

Indian Banking, Liberalisation, Competition, Market Structure, Concentration, Relative Market Share.

1. Introduction

The characteristics and composition of the markets and industries in an economy can be understood with the help of their market structure. Structure reveals the relative importance of broadly defined sectors of the economy at its most aggregated level. Structure also refers to the number and size distribution of firms in the economy as a whole. Moreover, structure relates to the importance and characteristics of individual markets within the economy. The term "structure" "within the S-C-P approach means the environment within which firms in a particular market operate.

Identification of structure can be made by considering the number and size distribution of buyers and sellers (market concentration), the extent to which products are differentiated, how easy it is for other firms to enter the market, and the extent to which firms are integrated or diversified. These are just the principal structural characteristics; McKie (1970) cites more than twenty factors. This paper is focused on a comparison of the trends in four major banking segments: SBI group, nationalised banks, old private banks and new private banks of India, the emphasis is on judging the impact of banking reforms took place in the country since the adoption of liberalisation policy in 1991to know whether the new private banks have been able to mark their existence in terms of structural characteristics, that is, market concentration and relative market share.

After this introductory Section, remaining paper has been divided into seven Sections. Conceptual framework has been presented in Section II. Section III

* *Professor of Economics, Department of Commerce, Delhi School of Economics, University of Delhi. Email: bhanumurthykv@yahoo.com*
** *Assistant Professor, Department of Commerce, SGGSCC, University of Delhi. Email: renuguptadu@gmail.com*
*** *Associate Professor, Department of Economics, College of Vocational Studies, University Of Delhi. Email : tarudebashis@gmail.com*

discusses the concept of Market Structure in relation to Industrial Organisation. Section IV mentions the variables selected for the purpose of the study. Hypotheses have been given in Section V. Data and Methodology is expounded in Section VI. Section VII provides empirical analysis including primary data analysis and panel regression analysis. Finally, conclusion has been stated in Section VIII.

2. Conceptual Framework

Present paper is based on industrial organisation approach that lays down the foundation of the competitive industry. Hence, this work uses the Structure-Conduct-Performance approach, developed by Mason and Bain (1939). In Accordance with them, there are some basic conditions which are given. These basic conditions determine the structure of a market or industry; market structure influences conduct and finally, conduct impacts performance.

Although, this study is based on modified S-C-P developed by Murthy and Deb (2008) which is a better concept to understand firm dynamics and industry dynamics in comparison of traditional S-C-P. As per modified S-C-P, basic conditions influence conduct by passing structure and there is a new concept of entry facilitators as opposed to entry barriers. This approach incorporates strategic groups in conduct as against structure as suggested by traditional S-C-P. Moreover, modified S-C-P states that competition is the overall state that influences structure, conduct and performance. These are some of the most important contributions of modified S-C-P on the basis of which the present work is carried out.

There are several hypotheses under S-C-P paradigm, i.e., S-C-P/S-P hypothesis, ESH, MES hypothesis and HET hypothesis. Gupta (2014) has developed the ECH "efficient conduct hypothesis" within S-C-P approach which states that efficient conduct directly leads to performance or profitability. Furthermore, efficiency is the part of conduct. As conduct also includes better decision making and better management. To measure and evaluate the impact of banking reforms in infusing competition in Indian banking industry. The theoretical framework adopted for the purpose of the present analysis includes modified S-C-P along with other hypotheses under S-C-P paradigm. The present paper analyses four structure variables namely, market share, market size, concentration and economies of scale (proxied by relative market share) to study the changes taken place in market structure of banking industry in India after adoption of liberalisation policy and allowing entry to new private banks.

3. Market Structure in terms of Industrial Organisation

In accordance with Bain; a market may be easily defined as "a closely inter-related group of sellers and buyers". On the contrary, the pattern in which constituent parts of a complex thing are put together or organized can be termed as structure. Hence, market structure indicates the organisational features of a market and practically, to those features which then ascertain the relations of sellers with one another in the market, relation of buyers in the market with one another, relations of sellers to buyers and lastly relation of sellers established in the market to potential new firms which might enter it. All these characteristics of market structure differ from market to market. Hence, Aspects emerging of market structure include: relationship amongst sellers, relationship amongst buyers, product differentiation, entry barriers and barriers to exit.

The traditional premise that market structure is exogenously determined has been found unsound. Performance and more specifically conduct affect structure. For example, mergers directly affect the number and size distribution of firms in the market, innovation and advertising may increase entry barriers, predatory pricing could force competitors out of the market. If market structure gives rise to conduct which raises prices and enhances profits, then this may attract entry, modifying the structure of the market. Furthermore, the various structural elements are unlikely to be independent so that, for example, market concentration is likely to bear some relationship to the extent of the entry barriers. Koch (1980) recognised these complications and modified the definition of structure as"the relatively permanent strategic elements of the environment of a firm that influence, and are influenced by, the conduct and performance of the firm in the market in which it operates."

To understand market structure, it becomes important to understand its components in detail. Amongst aforesaid constituents of market structure, relationship amongst buyers and relationship amongst sellers can be attributed to concentration and in accordance with Bain; barriers to entry are comprised of economies of scale, absolute cost and product differentiation. Thus, market structure can broadly be classified in terms of barriers to entry and concentration which have been discussed in detail in proceeding Sections.

3.1 Entry Barriers

In the traditional literature on S-C-P, barriers to entry are attributed to four factors. They are absolute cost disadvantage for entrant, relative cost disadvantage, product differentiation, and large capital requirements for entry. Bain also added the category of high fixed cost to those of absolute and relative cost advantages. Burgess (1988) proposed a scheme of classification of sources of entry barriers. According to Burgess, there are three sources of entry barriers. They arise from natural factors, strategic behaviour and performance. Apparently, a more meaningful analysis may be possible if one explores sources of different entry barriers proposed by Bain.

Types of Entry Barriers by Bain

Bain (1956) pioneered the concept of entry barriers. He defined a barrier to entry as anything which places potential entrants at a competitive disadvantage compared with established firms, so that established firms are able to earn abnormal profits over the long run. The magnitude of such long-run profits is determined by height of the entry barrier. Bain recognised three main types of barrier: absolute cost, economies of scale and product differentiation. Patents, access to superior resources, or lower-cost finance are sources of absolute cost advantage. Even where cost functions are similar, economies of scale may give the established firm an advantage. Firstly, the new entrant may operate at a scale which is too small to realise fully potential cost savings. Secondly, an entrant which is able to operate at sufficient scale to realise such economies may find that the consequent increase in market output (assuming established firms maintain their pre-entry output levels) depresses the market price below average cost., Thus, the advantage of the established firm will rely upon the height of the entry barriers and the extent to which they convince a potential entrant that its extra output will have a large effect on price. Bain's third barrier, product differentiation arises from the existing firms having established products which have built up consumer goodwill. Though new entrants may be capable of producing functionally identical products at similar cost, they will be at a disadvantage because they must either spend more on promotion, or reduce their price to gain customer.

Concept of First Mover Advantages

Stigler (1968) contended that entry barriers are generally less formidable. This follows from his alternative definition of entry barrier given as "a cost of producing which must be borne by a firm which seeks to enter an industry but is not borne by firms already in the industry". This indicates that product differentiation, for example, is unlikely to act as a barrier because firms already in the market must, themselves, have previously incurred the costs of establishing goodwill. Likewise, economies of scale accruing to an established firm are the consequence of being first in the field. Many of the barriers stated by Bain just reveal the time of entry of a firm. Thus, Bain's barriers are more specifically termed as first-mover advantages.

Conduct of the Incumbent Firms

Incumbent firms may take steps to raise entry barriers (conduct impinging on structure). Incumbent firms realise that a potential entrant has to believe abnormal profits will be earned for entry to occur. Incumbents may reduce the entrant's potential to earn abnormal profits by lowering price to the limit-price. Limit-price has been defined by Bain (1968) as "the extent to which, in the long run, established firms can elevate their selling prices above the minimal average costs without inducing potential entrants to enter an industry." The higher the entry barriers, the higher the limit-price. However, incumbents have to sacrifice some profits by limit-pricing.

On the contrary, to estimate the market price post entry, a potential entrant is required to judge the likely response of established firms. The post-entry price will fall if incumbents maintain their existing output levels; it will fall even more if they expand their output levels. However, established firms will find it more profitable to accommodate the entrant by cutting production. Dixit (1982) suggests that, if established firms choose capital intensive production methods (which involve large sunk costs) whose profitability depends on high rates of capacity utilisation, they are making a commitment that will give credibility to threats to deter entry. Likewise Spence (1977) argues that credibility can be enhanced by building excess capacity. Firstly, this may generate less favourable expectations of profitable entry. Secondly, it may strengthen the established firms' ability to engage in a price war.

The extent to which any of these factors acts a barrier to entry depends on the nature of the entrant. Bain's work implicitly assumes that those seeking to enter a market will typically be new, small firms building their own facilities. However, access to a market may prove easier for a newly formed firm if it takes over the facilities of an incumbent. In opposition to Bain, Andrews (1964) argued that entry is much more likely to come from established multi-product firms (probably already in the same industry) which decide

to add an extra product to their range by entering a new market. The entry barriers facing such firms will be much lower. Such a firm's prospects may still vary according to the way in which it chooses to enter the market (by altering the product mix of its existing plant, by building new plant or by takeover). These different entry routes are also open to foreign firms, who have the additional option of serving the market by exporting from their home base.

Strategic Groups

Furthermore, the identification of strategic groups has implications for the treatment of entry. A strategic group comprises firms which follow a similar strategy and hence possess similar differential advantages. For instance, Amel and Rhoades (1988) identified six strategic groups within the US banking industry on the basis of portfolio specialisation (whether they concentrate on real estate loans, time deposits or US securities etc.). Porter (1980) argues that "Strategic groups are present for a wide variety of reasons, such as firms' differing initial strengths and weaknesses, differing times of entry into the business, and historical accidents.

Concept of Entry Facilitators developed by Murthy and Deb (2008)

The present study derives its concept from Murthy and Deb (2008); it is better to understand how Murthy and Deb (2008) extended the discussion of entry barriers pioneered by Bain further. Authors attempted to examine the various sources of entry barriers proposed by Bain as they are of the opinion that Bain's entry barriers can be emanated by multiple sources instead of one single source. Moreover, as against concept of entry barriers, the authors have developed the concept of entry facilitators. In accordance with them, traditional discussions of entry conditions comprise of entry barriers alone. Entry barriers operate in favour of old firms though entry conditions may not be totally described as entry barriers only. Hence, it becomes important to analyse whether there are some factors, which are supportive to new firms, while entering the market. Such factors are known as "entry facilitators".

The traditional theory of industrial organization talks about entry barriers but it does not consider one disadvantage that an existing firm may face, in the shape of technology obsolescence. The capacity of the existing firm has built up on the basis of old technology. And economies of scale developed by them based on old technology may cease to become an entry barrier due to passage of time. New firms may avoid such an entry barrier by incurring lower cost due to new technology. New firms could exploit economies of scale and leverage the price cost margin through product differentiation and thereby can compete favourably the incumbent firms. In this light, dominance of existing banks would not be long lasting. Hence, this provides elements of a theory of entry facilitator. If new firms are found to be overtaking existing firms in the study, evidence in favour of such a theory is produced.

On the basis of entry barriers, traditional theory of industrial economics purports an advantage to the existing banks. The implication of the traditional theory for our study is that it may be expected that the market dynamics favour existing banks in face of entry. In other words, they maintain their dominance despite entry of new firms. Still, it may be pointed out that while existing banks had certain advantages, the new banks could circumvent those advantages by developing other sources and this explains the pattern of market dynamics.

There exist certain disadvantages on the part of existing firms along with the advantages enjoyed by them. It is expected that the existing firms would possess a natural advantage as regards to lower cost because of economies of scale, while new entrants could have a higher cost due to a smaller scale. On the contrary, new firms may have the capability to enter with new cost saving technologies, while old firms have sunk their investment in old high cost technologies. It would involve a very heavy financial cost to forego the existing technology, other than the cost of equipment and training. The potential for new technology thereby acts as a "facilitator" to entry" rather than a barrier to entry. Incidentally, this reverse advantage cannot act as a barrier for the existing firms since they already have found the place in the industry. Secondly, this phenomenon has not emerged out of structure, but out of basic conditions.

3.2 Market Concentration

The market structure can be depicted by considering the number of firms, product differentiation, entry conditions, and the degree to which firms are vertically integrated (either jointly or separately). Market concentration is the most frequently used measure. It reveals the extent to which production of a specific good or service is restricted to a few large firms. The fewer the number of firms, the more concentrated will be the market. In other words, the more disparate the sizes of the firms, the less competitive will be the market.

Measures of Concentration

Information on buyer concentration is readily available as compared to seller concentration. Accordingly,

concentration ratios are easy to measure. On the other hand, concentration ratio is related to monopoly power and has a great theoretical appeal. This has led to emergence of concentration as the single most important feature of market structure within the context of S-C-P approach. According to Baldwin (1987), it is important to understand various measures of concentration and evolution of pattern of concentration over time. Both Bain (1956) and Mann (1966) agreed that seller concentration alone is not an adequate indicator of monopoly power. They maintained that entry conditions are a crucial additional aspect of market structure.

A concentration curve provides information on the structural characteristics of a market. Firms are ranked in order of their size from the largest to the smallest and then plotted against their cumulative output. Measures of market concentration attempt to convert the information on the number and size distribution of firms presented by the concentration curve into a single value. They differ in sophistication. Some of them are absolute measures which unite the number of firms present and their size disparities. The concentration ratios are the only exception which considers all the firms in a market that is they are summary measures. In contrast, relative concentration measures focus on the disparities in the sizes of firms operating in a particular market, and effectively avoid differences in the number of firms present. It is to be emphasised that the more unequal the size distribution of firms, the more concentrated and less competitive the market. There are four main absolute measures:

1. CH Concentration ratio
2. Herfindahl-Hirschman index (HHI) (Hirschman, 1964)
3. Hannah and Kay index (Hannah and Kay, 1977)
4. Entropy index (Jacquemin and de Jong, 1977)

Furthermore, Gini coefficient and Lorenz curve are also used as the measures of market concentration. The variance of the logarithms of firm size has also been used extensively in the analysis of aggregate industrial concentration over time. There are therefore quite a number of alternative measures of concentration, and it may matter which is used in any given study. Given some of the drawbacks of concentration ratios, the Herfindahl is for most purposes probably the best compromise, but a theoretical justification for the relative importance of fewness and inequality can be given. As the present paper uses Hirschman-Herfindahl index (HHI); it has been explained as under:

The Hirschman-Herfindahl index (HHI) is a generalized measure of concentration which precise the information on the number and size distribution of firms into a single value. It is the sum of squares of relative sizes or market shares of the firms in the market, where relative sizes are proportions of the total size of the market. Mathematically, it can be given as:

$$HHI = \sum_{i=1}^{n} (S_i)^2$$

HHI = Hirschman-Herfindahl index

S_i = Percentage market share of the i^{th} firm

n = Total number of firms in the market

This index would be nearly zero when there are a large number of equal-sized firms; and 1 under monopoly. The Herfindahl-Hirschman index can be expressed as a number equivalent measure of concentration. For example, suppose the HHI gives a value of 0.2 and if the reciprocal of 0.2 is taken, it reveals that this value would obtain if the market were made up of five equal-sized firms.

The H-H index takes account of all the firms in the market or industry. Moreover, the shares of the firms are weighted by their own share itself. Therefore, larger the firm more will be its share weight in the index. The maximum value of the index is one when only one firm exists in the market. That is the case of monopoly. The index has the minimum value when all the firms are equal in terms of share in the market or industry. And this value will be equal to 1/n where n is number of firms.

It can also be demonstrated that HHI will not necessarily fall as a result of entry. HHI may be expressed as , whereas CV represents the coefficient of variation of size of firms and n represents the number of firms. The behaviour of HHI consequent on rise on n will depend on the behaviour of coefficient of variation. Movement in coefficient of variation may impact HHI in different ways as compared to rise in n. Impact of a rise in n on HHI may be counterbalanced by a rise in CV. One can distinguish among the following situations.

- n rises and CV falls: HHI falls.
- n rises and CV remains same: HHI falls.
- n rises and CV rises. If CV rises at the same or faster rate as n, HHI will rise.

Moreover, price-cost margins are positively related to the" Herfindahl-Hirschman index of market concentration. Similarly, Stigler (1964) shows that the higher the Herfindahl-Hirschman index, the greater are the opportunities for operating a cartel effectively. It is because of the fact that members will find it easier to detect secret price-cutting. The Herfindahl-Hirschman index (HHI) is theoretically elegant. It includes all the firms of the market, and squaring their respective market shares gives greater weight to large firms. Because of these reasons and relative ease of its calculation, the HHI is extensively used. But ambiguity is still there over the interpretation of HHI. The number equivalent measures do not correspond to a unique size distribution of firms. It is simply the value that would obtain if the market were comprised of that number of equal-sized firms. In practice, many different size distributions (and hence markets with very differing levels of competitiveness) could give the same value for the HHI. Therefore, to overcome this limitation of Herfindahl index, the present study also takes into account the concept of relative market share which is capable to judge the efficiency of a specific firm in terms of capturing market share in proportion to its asset share along with HHI.

4. Selection of Variables

Hay and Morris (1991) summarised the primary characteristics of market structure as concentration (whether behaviour is collusive or non-collusive), scale (and notably scale in relation to industry), and product differentiation. However, it is also clarified that, even if concentration is a necessary condition for higher profitability, it is probably not sufficient. If there are few or no barriers to entry, then supernormal profits to be competed away by new entrants. Profitability therefore becomes dependent on those elements of market structure which affect entry into an industry.

In relation to structure of Indian banking industry, one can divide it into Public Sector Banks including SBI group and nationalised banks and private banks including old private banks and new private banks other than foreign banks[1]. Till the deregulation of the Indian banking industry in 1991 by way of banking reforms as a result of liberalization policy, there existed three domestic banking segments: SBI group, nationalised banks and old private banks. No new private bank was allowed to enter the banking industry of India by that time. Narasimham Committee Report 1 was of the view that allowing entry to new private banks subject to procurement of a license from RBI would help in ushering competition amongst existing banking segments and hence would lead to improve their efficiency. The recommendations were operationalised and 10 new private banks had entered Indian banking industry till the end of financial year 1995-96 that constitutes the beginning period of the present study.

While the most important entry barrier remains a license to operate, other entry barriers also need to be negotiated by an entrant. In fact, whether entry takes place or not depends on the perception of the height of entry barriers by the potential entrants. It is only when they expect that they can strategise their conduct, so that they can earn profits despite competition from existing firms in the industry, they apply for a license to operate. It is interesting to analyse how the new entrants in the industry in question negotiated entry barriers. However, since 1991, ppolicy is providing free playing level field; therefore, we can say that there are no such special barriers to entry. All banking segments are at par as conditions are same for all banking segments. There is no barrier to entry excepting the minimum amount[2] has to be paid for starting a bank. Now, when policy of RBI is to provide licenses on fulfilling some conditions, the one of such conditions is minimum amount. Now, licensing is opened. There is no such quota. Licensing cannot be treated as barrier to entry as policy is in favour of providing licenses for banking. It was a barrier till 1991 when opening of new bank was totally banned. Since liberalisation, there is deregulation, the policy is opened for the entry of new banks and there is only one entry barrier that is of minimum capital required to be brought in.

Other than entry barriers, one should pay attention to concept of entry facilitators developed by Murthy and Deb (2008). Entry facilitator is the inverse of entry barrier. As new banks have come with new technology. So, they have been able to displace labour, and increase the revenues because through ATM and computerization, operations become faster. ATM means that there is no need of labour. It is totally automated; machine driven and no labour is used. This means that they can add revenue

1. *Foreign banks are outside the purview of the present study.*
2. *It was 100 crore in 1993, 200 crore in 2001 and as per latest guidelines of RBI dated 22 Feb, 2013, NOFHC shall initially hold 40% of minimum voting paid-up capital of bank that is 5 billion. It means 2 billion or 200 crore shall be the initial contribution of NOFHC. For FHC, one can refer, Gopinath (2011).*

without adding any labour input. So, the wage cost is reduced. Therefore, new banks are coming with new technology, new culture and employees who are trained and are efficient and have an acceptance for technology. Therefore, ATM, computerization, new technology are all creating an advantage in favour of new banks. This paper aims at determining changes in the structure of the banking industry of India caused by entry of new private banks. For this purpose, the aforesaid characteristics of the market structure in terms of Indian banks have been analysed with the help of variables discussed in the proceeding paragraphs.

Hirschman Herfindahl Index (HHI)

Change in growth rate of concentration of Indian banking industry has been attempted to be judged with the help of Hirschman Herfindahl Index[3]. Other measures of concentration have not been considered as they are helpful in determining income distribution basically. Concentration of Indian banking industry has been examined in terms of assets size of banks. Thereby, Herfindahl based on assets size has been calculated in log form. As it is already said that degree of concentration in a particular market or industry with respect to income, expenses, assets or any other criterion is measured by HHI. Herfindahl based on asset size determines the concentration in the income generating capacity as assets generate income. Especially in case of banking industry where the income of a bank is generated through its assets. A non performing asset does not generate income. On the other hand, the income of a firm comes through all other productive factors as well. But in case of a bank the assets are the main input which generates income. Thus, it becomes important to contrast the four banking segments understudy with the help of Herfindahl based on assets size to evaluate if any significant growth has taken place in the earning capacity of banks by the passage of time after the entry of new private banks.

Relative Market Share as a Proxy to Economies of Scale

There are different studies that analyse economies of scale in banking industry of India (Agarwal, 1991; De 2004). Two similarities in these studies are that the studies were related to public sector banks in the first place. Secondly, they have used a production function approach. Such an approach to analyse economies of scale in the face of banking appears mechanical, as it is not based on an appreciation of certain typical features of banks, which make them different from firms. These differences between bank and a firm need attention, as they create hurdles in use of production function in the area of banking.

A bank, unlike a firm, faces a dual objective function: profitability and liquidity. Therefore, a production function approach to bank cannot capture the very distinctive nature of a banking entity at the first place. Secondly, the process of credit creation, a basic feature of banks, creates two problems: (a) output automatically augments input and (b) it is cash reserve ratio, a policy variable, which is the single most important determinant of the input and output relationship. This needs to be contrasted with technology, which is the most important determinant of input output relationship, in case of a firm. Rigorous treatment of scale economies desires that rigor relating to production and cost studies be maintained. This deserves a complete independent approach. While there are some shortcut measures of productivities and economies of scale in banking. Thus, the issue of economies of scale has been dealt with the help of relative market share, a proxy to economies of scale in the analysis of market structure in this paper.

In general, economies of scale are basically the ratio of the scale of output to scale of input. If output is growing more than proportionately to input, then it is increasing returns to scale, if less than input, it is decreasing return to scale and if it is equal to input, then it is constant returns to scale. The idea is that in case of bank, the output is in the nature of returns which a bank is getting on its own investments. Its own investments are its own assets. Therefore, we can say that the capability of a bank to generate returns will be constrained by its assets. However market size is advances plus deposits. The market share represents the market size of a bank out of total advances and deposits of the industry. If we take market share by asset share, it will show how efficient the bank is. If the bank is able to get market share more than proportionate to its asset share or greater than asset share, then we can say that the bank is reaping some kind of economies of scale. This is because the size of the asset base that is asset share represents the input. Hence, relative market share is a proxy variable to economies of scale. The basic idea is that a firm or a bank yields a certain output out of given input. The primary objective of banking is to give loans and advances and to

3 *It has already been discussed in detail in earlier Section of this Chapter.*

receive deposits. The sum total of both is the indicator of the output of the banking entity. This output cannot be generated without assets and hence, assets form the base. These assets are in the nature of input. If the asset share is less than proportionate to market share that means the inputs are smaller than the output being generated, then, we treat this relative market share as the measure of scale efficiency.

The notion behind relative market share is that it arises out of very functions of banking. A bank extends loans and advances and receives deposits. The sum total of loans and advances given and deposits received constitutes banking market. If a bank gathers larger market share then it is considered that it is performing its functions better as this is the most basic definition of efficiency. Market share is a variable capable of representing efficiency, in so far as more efficient firms gain market share relative to less efficient firms. However, in accordance with Berger (1995) the market share may capture effects not related to efficiency and therefore, Should not be interpreted as a direct measure of productive efficiency. But that is the case when some restriction exists on entry or there is an element of monopoly. On the other hand, Demsetz (1973) suggested that high profits may be an indicator not of market power but of efficiency. As in any market, the firm with the lowest costs will tend to increase in size and market share over time, there will be a tendency for market concentration to increase but, at the same time, there will be pressure on all firms to be efficient.

Market share for the purpose of this study is the proportion of market size that is sum total of advances and deposits captured by a bank in comparison to total market size of the banking segment to which it belongs or proportion of market size of a banking segment to market size of the banking industry[4] as a whole. As relative market share can be determined bank wise or group wise. All the studies which have compared efficient structure hypothesis with S-C-P are limited in a sense that efficiency has only been measured on the basis of the market share. The size of the market or market share that is captured by a bank should be related to its assets base. This study adopts the concept of relative market share. It is possible for a small firm to perform better and why it should be considered that only large firms can do better though even a smaller firm can be proved to be more efficient and that is precisely what better asset management does. If a bank is present and if it is operating with a smaller asset base relative to its market share then we should take the market share and divided by its assets share. So, despite having a narrower asset base, it is able to acquire higher market share that means it is functioning more efficiently than other banks.

Similar attempt can be made to determine the relative market share of an individual banking segment or group in terms of the whole banking industry. Market shares and asset shares of individual banking segments are secured by getting the proportions of market sizes of the banking segments to the market size of the total banking industry and proportions of the total assets of the individual banking segments to the total assets of the banking industry respectively. Finally, relative market shares of the banking segments can be obtained by dividing the market shares of the banking segments with their corresponding asset shares. The present study has used the relative market shares of the banking segments in terms of the banking industry as a whole and relative market share has been evaluated in log form. Mathematically, relative market share of a banking segment can be given as follows:

where,

Market Share = Market Size of the Banking Segment/ Market Size of the Banking Industry

Assets Share = Total Assets of the Banking Segment/ Total Assets of the Banking Industry

To summarise, Herfindahl based on assets size for measuring degree of concentration and relative market share as a proxy to economies of scale have been specifically examined in relation to the banking segments understudy other than examining market share and market size as a part of preliminary data analysis. [5]

5. Hypotheses

In view of the discussion in earlier sections and keeping the main thirst of this paper in mind to observe the changes in the market structure of Indian banking industry as a result of entry of new private banks; the following hypotheses are framed and tested in the present paper.

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4 *Here banking industry is comprised of SBI group, nationalised banks, old private banks and new private banks.*

5 *Results related to product differentiation and selling cost have not been shown in this paper. As this paper has been drawn from unpublished thesis (Gupta, 2014); product differentiation remained insignificant to differentiate the four banking segments understudy. And results relating to selling cost have already been published (Murthy and Gupta, 2014).*

1. H_{01}: There is no significant difference in the growth of market shares of the four banking segments understudy.
2. H_{02}: There is no significant difference in the growth of market size for the four banking segments.
3. H_{03}: There is no significant difference in the growth that has taken place in market concentration of assets size (as measured by HHI) of the banking segments understudy.
4. H_{04}: Banking segments are similar to one another as regards to increase in relative market share (in growth terms).

6. Data and Methodology

Data has been collected basically from published sources of RBI, i.e., Statistical Tables Related to Banks and Reports and Trend in Banking for the period ranging between 1995-96 to 2009-10. .In this paper, after preliminary data analysis, analysis of structural variables as selected for the purpose of the study has been made. Thereby, methodology has been divided into two parts:

1. For preliminary data analysis, overall growth equations or semi-log equations have been used to distinguish the four banking segments in terms of market size and market shares with the help of Growth Rates. Thus, eight semi-log equations have been formed in all in respect of both market size and market share for each of the four banking segments of following type.

   $Log\ y = a+bt+ui$

   where

   Y = Dependent variable

   a = Constant term

   b = Slope or beta coefficient for the time variable representing GROWTH RATE

   t = Time variable

   = Random error component

2. All the variables discussed in Section III have been interpreted with the help of panel regressions. As the objective of this paper is to analyze the market structure of the four banking segments understudy and make comparisons; balanced panel (for the period ranging 1995-96 to 2009-10) has been constructed. The panel regression is based on Least Square Dummy Variable model and difference dummies have been used to derive regression results. This is a fixed – effects model since we wish to capture the individual banking segments effect. And out of the four banking segments, SBI group has been taken as base so as to facilitate comparisons with nationalised banks, old private banks and new private banks. To facilitate better understanding, the panel regression model used in this paper has been explained as under:

A common panel data regression model looks like

$$Yit = a + bXit + Uit$$

where y is the dependent variable, X is the independent variable, a and b are coefficients, i and t are indices for individuals and time. The error Uit is very important in this analysis. Assumptions about the error term determine whether we speak of fixed effects or random effects. In a fixed effects model, Uit is assumed to vary non-stochastically over i or t making the fixed effects model analogous to a dummy variable model in one dimension. In a random effects model, uit is assumed to vary stochastically over i or t requiring special treatment of the error variance matrix.

The Fixed Effects Model (Least Squares Dummy Variable Model)

The models which capture the individual effects are called fixed effects models. Random effects models, on the other hand capture the generalized effects. One kind of the fixed effects panel model would have constant slopes of the independent variables but intercepts would differ according to the cross-sectional (group) unit— in our case, the banking segment. In such cases although there are no significant temporal effects, there are significant differences among banking segments in this type of model, which is what we would normally expect if we were to analyze the behavior of competition in banking. While the intercept is cross-section (banking segment) specific and in this case differs from one segment to another, it may or may not differ over time if the effects of competition are common. However, in further analysis we will be studying the presence of 'Strategic Groups' in banking industry. These groups correspond to our four banking segments, namely, SBI group, Nationalized Banks, Old Private Banks and New Private Banks. If these banking segments have inter-banking segment competition and rivalry, there would be some dynamic effects of competition. As our interest is in capturing the dynamic effect competition such a model will not suffice where only intercepts differ.

Another type of fixed effects model has differential intercepts and slopes. This kind of model has intercepts and slopes that both vary according to the banking segment and over time. To formulate this model, we would include not only banking segment dummies, but also their interactions with the time-varying covariates. The one big advantage of the fixed effects model is that the error terms may be correlated with the individual effects. Therefore, the individual effects can be captured.

In our case we are interested in knowing the 'individual effects' is two ways. Firstly, we wish to know the effect of the presence of a banking segment effect. Secondly, we wish to know the effect over time. Therefore, we need to design the panel model so as to capture two effects. The first effect is due to the banking segment at a point of time. The second effect is due the change in the independent variable overtime. If the independent variable is time then it represents the exogenous factors or policy effect over time. In the first case the difference dummy is with respect to the base segment – SBI group. The intercept, therefore, shows the difference between SBI and other banking segments to begin with. Thereafter, over a period of time the effect would be captured by the interactive dummy which is a product of the time variable and the individual banking segment dummy that is in difference form.

After we discuss types of fixed effects models, we proceed to show how to test for the presence of statistically significant group and/or time effects. Because i-1 dummy variables are used to designate the particular banking segment, this same model is sometimes called the Least Squares Dummy Variable model. The general form of the fixed effects model is:

where,

= Structure variable

Time = Exogenous variable

= Intercept of base segment (SBI group)

= Difference dummy of Segment (2...4) with respect to SBI group

= Slope with respect to time

= Slope dummy of Segment (2...4) with respect to time

In this model, the intercepts and slopes vary with the banking segment. The intercept for banking segment1 (base segment) would be a_1. The intercept for banking segment2 would also include an additional intercept, a_2, so the intercept for banking segment 2 would be and so on. The intercept for banking segment3 would include an additional intercept. Hence, its intercept would be . The slope for banking segment2 would be , while the slope for $Segment_3$ would be . In this way, the intercepts and slopes vary with the segment.

Thus, in the empirical Tables presented in this paper; the intercept indicate the initial level and year represents the beta coefficient or slope of the SBI group. d_2, d_3 and d_4 represent the differential intercept dummies of the nationalised banks, old private banks and new private banks respectively. Similarly d_2t, d_3t and d_4t indicate the differential slope dummies of the three banking segments, respectively. To find out their intercepts and slopes, their respective coefficients pertaining to intercept dummies: d_2, d_3 and d_4 are added to the intercept of SBI group along with sign and similar exercise has been done in case of the coefficients reflecting slope dummies and hence, coefficients of d_2t, d_3t and d_4t have been added to the beta coefficient of SBI group that is indicated by year in all the empirical results. This has been done by estimating semi-log regression equations in all the cases.

7. Empirical Analysis

As banks borrow money from depositors and lend them to the borrowers, it may be argued that a production process involving transformation of input into output has not taken place. But, on the contrary, the money lying with the depositors at their homes is not the same as the money ready to be used by the borrowers. The process of mobilizing deposits and channelising them to the borrowers is production actually. Thus, there is value added even in the case of the single product bank, which is only collecting deposits from surplus spenders and transferring them in the form of advances to deficit spenders. Therefore, a bank produces a "value added" similarly like a firm. Moreover, other than transferring money from surplus spenders to deficit spenders, a bank provides various types of services also.

In case of an ordinary business firm, market size or total market can be determined by getting the estimates of its turnover, volume of sales or number of customer served if it is a service providing firm. In context of banking, the two terms," market size" and "total market" are used interchangeably. Moreover, banks are known for their two basic functions: receiving deposits and making loans and advances. There is no single product in which the banks deal. Banks actually provide certain services to

the customers and both of its basic functions of receiving deposits and extending loans lie on the similar side of the equation and there is a notional price for both of these services. Hence, for the purpose of the present paper, market size or total market of a bank is determined as sum of its deposits and advances in contradiction to earlier studies[6] which consider the amount of deposits as the only constituent of market size of a bank. Mathematically, total market of a bank or its market size can be given as:

Market Size of a Bank = Deposits Received + Advances Given

As present paper takes into account the analysis entailing comparison of four banking segments, market size of the individual banking segment is derived by summing the total of deposits received and total of advances given by the banks comprising the banking segment. Moreover, market share has also been determined for the four banking segments in this study with the help of aforesaid definition of market size or total market. Thereby, market share is the proportion of the market size of the individual banking segment divided by the total market or market size of the Indian banking industry, that is, total of market size of the four banking segments understudy. Before moving on to the panel regression analysis; preliminary data analysis has been conducted in terms of market size and market share of the four banking segments with the help of growth rate for the time period ranging 1996-2010 as depicted in Table 1. as follows:

Table 1: Market Size and Market Share: Growth Rate

Banking Segments	Market Size		Market Share	
	GROWTH RATE	P-Value	GROWTH RATE	P-value
SBI Group	0.160056	2.59E-16	-0.017	3.19E-07
Nationalised Banks	0.16847	2.93E-14	-0.00858	0.000339
Old Private Banks	0.164243	1.18E-21	-0.01281	0.000905
New Private Banks	0.316187	8.29E-13	0.139136	2.26E-07

Table 1 states that market sizes of all the four banking segments are growing significantly and positively as suggested by their respective p-values which are lower than 0.5 significance level in all the cases. But the market size of new private banks is growing approximately at double the rate of growth as shown by incumbents in terms of market size. Relatively, the growth rate of incumbents remained the same to one another to the tune of 16% per annum, that is, 16%, 16.85% and 16.42% respectively for SBI group, nationalised banks and old private banks as compared to new entrants wherein total market is rising at the pace of approximately 32% (31.62 per cent) per annum.

The result of this significant difference in the growth rates of the total markets of incumbents and new private banks is clearly manifested in the market shares of the four banking segments. Though the market sizes of the incumbents namely SBI group, nationalised banks and old private banks are growing positively and significantly; their market shares are declining at the rate of 1.7%, .085% and 1.28% respectively and these declines in the market shares are significant declines as represented by their corresponding p-values which are sufficiently lesser than .05 significance level. On the contrary, the market share of new private banks is growing tremendously at the rate of 13.91% per annum that is highly significant as shown by extremely low p-value.

Thus, SBI group remained the biggest loser in terms of market share followed by old private banks and nationalised banks. While new private banks have marked their presence in relation to both market size and market share. This preliminary data analysis in terms of market size and market share is needed to be justified in light of more rigorous analysis and variables other than market size and market share as conducted in proceeding Sections.

7.1 Panel Regression Analysis

We have estimated two panel regressions in terms of variables selected as already discussed. The ANOVA results and Summary outputs have been discussed with the help of Table 2 and Table 3 as follows.

Table 2: ANOVA Panel Regression Results

Variables	P-values
1. Herfindahl Based on Asset Size	$7.7e^{-52}$
2. Relative Market Share	$8.28e^{-47}$

6 *Evanoff and Fortier (1988) and others*

A glance on the Table 2 reveals that P-values of both of the variables empirically examined in this paper using panel regression are much less than alpha that is .05 which leads to rejection of the null hypothesis. Hence, it is to be concluded that change in both the variables is highly associated with time in loop of dummies constructed in case of all the four banking segments understudy. There is a joint influence of Time, which is an exogenous variable that captures growth rate and the intercept and slope dummies against the time variable.

Table 3: Summary Output: Panel Regression Statistics

Variables	Multiple R	R Square	Adjusted R Square	Standard Error	Observations
1. Herfindahl Based on Asset Size	0.995873	0.991764	0.990655	0.086794	60
2. Relative Market Share	0.993546437	0.987134522	0.985402631	0.138073662	60

It is manifested in Table 3 that Multiple R, R Square and Adjusted R Square in case of Herfindahl based on assets size and relative market share are very high (about 90 percent or more than 90 percent). It indicates that change in these variables is not only highly associated with time but most of the change is taking place because of time and the intercept and slope dummies of other three banking segments.

7.2 Analysis of the Selected Variables for Structure

(A) ***Concentration***

i. *Herfindahl Based on Assets Size:* In this context, the panel regression results have been shown with the help of Table 4 and following semi-log equation has been designed.

where,

HAS = Herfindahl based on Asset Size for SBI Group, Nationalised Banks, Old Private Banks and New Private Banks

a = Intercept for SBI group

b_1, b_2, b_3 and b_4 = Beta coefficients for the SBI Group, Nationalised Banks, Old Private Banks and New Private Banks respectively

t = Time variable

= Random error component

d_2, d_3 and d_4 = Differential intercept dummies for Nationalised Banks, Old Private Banks and New Private Banks respectively

d_2t, d_3t and d_4t = Variables indicating differential slope dummies for Nationalised Banks, Old Private Banks and New private Banks respectively.

Table 4: Herfindahl Based on Assets Size: Panel Regression Results

Regression Results	Coefficients	Standard Error	t Stat	P-value
Intercept	25.32286	10.38947	2.437358	0.018252
Year	-0.01289	0.005187	-2.48562	0.016185
d_2	-15.5172	14.69293	-1.0561	0.295803
d_3	-27.2253	14.69293	-1.85295	0.069568
d_4	-99.7524	14.69293	-6.78915	1.07E-08
d_2t	0.006634	0.007335	0.904407	0.369951
d_3t	0.012743	0.007335	1.737151	0.088281
d_4t	0.049513	0.007335	6.749825	1.24E-08

The abovementioned panel regression results for Herfindahl based on assets size as per Table 4 have been analysed as under:

a. SBI Group: As per Table 4, intercept and respective P-value have been stated as 25.3229 and 0.0182 respectively and significant also as P-value is lower than 0.05. Hence, it is specified that SBI group was concentrated in terms of asset size from the beginning of the study period. Moreover, slope or beta coefficient as depicted by year in the Table 4 stands at (-) 0.0129 and its P-value is 0.0161 that is lesser than 0.05 and is significant. Therefore, it is revealed that concentration in the SBI group as regards to its assets size is declining at the rate of 1.29% approximately per year. It can be attributed to entry of new private banks.

b. Nationalised Banks: The coefficient of d_2 that represents difference in intercepts of nationalized banks and SBI group is shown as (-) 15.5172 by Table 4 and corresponding P-value is 0.2958 much higher than 0.05 and hence insignificant. Thus, it has not been found significantly different from that of SBI group. On the other hand, the coefficient of d_2t manifesting difference in slopes of nationalized banks and SBI group is given as 0.0066 and its P-value is 0.3699 which is greater than 0.05. It shows that there is no much difference in the SBI group and nationalized banks in terms of concentration with regard to assets size. Thereby, the concentration of nationalised banks as regards to assets size is declining at the rate of 1.29% per annum as in case of SBI group.

c. Old Private Banks: In case of old private banks, coefficient of d_3 is given as (-) 27.2253 and its P-value is 0.0696 which is higher than significance level 0.05 but lower than 0.1 significance level. It states that the concentration of old private banks in terms of their assets is different from that of SBI group in the very beginning of the study period. Summing coefficient of d_3 to intercept of SBI group, we obtain (-)1.9024. This depicts that concentration of old private banks was initially lower in terms of assets as against SBI group or PSBs. Furthermore, coefficient of d_3t is given in the Table I.3b as 0.0127 and its corresponding P-value is 0.0882 that is higher than significance level 0.05 and hence insignificant. But finding it lower than 0.1 significance level, we add d_3t and slope of SBI group, we get (-)0.00015. It reveals that concentration of old private banks is not declining as in case of SBI group in relation to its assets. Again, new private banks might be the possible reason but here, mergers between OPBs and NPBs might have led to such a negligible decline in the concentration of OPBs as against PSBs.

d. New Private Banks: The coefficient of d_4 has been given in the Table 4 as -99.7524. Its P-value is $1.07e^{-08}$ much lower than significance level 0.05. Adding coefficient of d_4 and intercept of SBI group provides (-)74.4296 which shows that new private banks were least concentrated in terms of their assets as compared to not only SBI group but in comparison to nationalized banks and old private banks as well in the very beginning of the study period. It might because of the fact that new private banks were just in the process of establishing themselves during that time. Furthermore, the coefficient of d_4t is given as 0.0495 and its P-value is $1.24e^{-08}$ which is very less than significance level 0.05. Thus, it is highly significant and aggregating the coefficient of d_4t and slope or beta coefficient of SBI group results in 0.0366. Thereby, it can be concluded that concentration in new private banks in terms of their assets size is increasing at the rate of 3.67% approximately per year. Although, all the entry was in new private banks and still, the concentration increased. This could be partially due to mergers.

Thus, Herfindahl based on assets size is declining (at the rate of 1.3%) in the case of PSBs, that is, SBI group and nationalised banks though they were relatively more concentrated in the beginning of the study period. However, concentration in terms of assets is growing (at 3.7%) in case of new private banks and they were not concentrated as compared to public sector banks especially NPBs were least concentrated in this respect and have shown highest growth. Though old private banks remained indifferent as neither they have shown any significant increase or decrease nor they were concentrated in the beginning. On the one hand, decrease in concentration in total assets of PSBs may be attributed to the entry of new private banks while on the other hand, increase in the concentration of the assets size of the new private banks may be partially attributed to mergers of existing old private banks and new private banks and within NPBs as well. It again highlights the significance of the concept of entry facilitators for new banks. It also reflects convergence taking place in PSBs and NPBs.

(B) Economies of Scale

ii. *Relative Market Share: In this respect,* Table 5 manifests the panel regression results of the four banking

segments since 1995-96 to 2009-10. We set up a panel regression making comparisons amongst the four banking segments understudy with respect to growth in relative market share and form semi-log equation presented as follows:

where,

RMSh	=	Relative Market Share for SBI Group, Nationalised Banks, Old Private Banks and New Private Banks
a	=	Intercept for SBI group
b_1, b_2, b_3 and b_4	=	Beta coefficients for the SBI Group, Nationalised Banks, Old Private Banks and New Private Banks respectively
t	=	Time variable
	=	Random error component
d_2, d_3 and d_4	=	Differential intercept dummies for Nationalised Banks, Old Private Banks and New Private Banks respectively
d_2t, d_3t and d_4t	=	Variables indicating differential slope dummies for Nationalised Banks, Old Private Banks and New private Banks respectively.

Table 5: Relative Market Share: Panel Regression Results

Regression Results	Coefficients	Standard Error	t Stat	P-value
Intercept	-10.48082615	4.451931494	-2.354219997	0.02237399
Year	0.005210607	0.002222627	2.344346609	0.022915227
d_2	9.605397047	6.295981898	1.525639241	0.133159468
d_3	19.30966515	6.295981898	3.066982318	0.003427884
d_4	34.26561122	6.295981898	5.442457074	1.43922E-06
d_2t	-0.004754892	0.003143269	-1.512722131	0.136404644
d_3t	-0.009589446	0.003143269	-3.050787901	0.003588201
d_4t	-0.017123075	0.003143269	-5.447537693	1.41332E-06

The panel regression results with respect to relative market share as depicted in Table 5 have been analysed as under:

a. SBI Group: Intercept which reflects the initial level of the relative market share of the SBI group in the Table 5 has been shown as (-)10.4808 approximately and its corresponding P-value is 0.0223 which is smaller than alpha 0.05 and thus very significant. Moreover, beta coefficient or slope represented by year in the Table 5 is 0.0052 and its P-value is mentioned as 0.0229 which is again found to be lesser than significance level 0.05 specifies that growth rate of the relative market share is also significant throughout the period of the study[7]. Thus, RMSh is growing at the rate of .5% per annum in case of SBI group.

b. Nationalised Banks: The coefficient of d_2 is given as 9.6054 and its corresponding P-value is 0.1331 which states that there is no significant difference between the initial levels of SBI group and nationalised banks on account of their relative market share. Similarly, coefficient of d_2t is found to be 0.0048 and its P-value is 0.1364 proves that there is no much difference between the growth rates of SBI group and nationalised banks in terms of their relative market shares and growth rate in case of both of the banking segments is 0.5% per annum.

c. Old Private Banks: Coefficient of d_3 is 19.3097 as per Table 5 and its P-value is 0.0034 which depicts that there is significant difference between initial levels of both SBI group and old private banks in terms of initial values of relative market share. Adding

7 *Insignificance of intercept and slope suggests no change in relative market share or improvement is zero.*

coefficient of d_3 and intercept representing initial value of SBI group, we get 8.8288 indicating positive and significant initial value for OPBs. On the other hand, coefficient of d_3t has been mentioned as (-)0.0096 and its P-value is 0.0036 that is much lower than 0.05 significance level. It suggests that there is significant difference in the growth rates of old private banks and SBI group or PSBs in terms of their relative market share. Adding coefficient of d3t and slope of SBI group, we get (-)0.0044 approximately. Hence, growth of relative market share is declining at the rate of 0.44% per annum for OPBs.

d. New Private Banks: In Table 5, the coefficient of d_4 that represents the difference in the intercepts of new private banks and SBI group is shown as 34.2656 and its respective P-value is $1.44e^{-06}$ approximately which depicts that it is highly significant. Initial level in terms of growth of relative market share was highest in their case. On the other hand, coefficient of d_4t reflecting difference in the slopes of new private banks and SBI group is given as (-)0.0171 and its P-value is $1.41e^{-06}$ much lower than significance level 0.05 as per Table 5 and thus, highly significant. Adding coefficient of d_4t to slope of SBI group, we get (-)0.0119. It depicts that the relative market share of NPBs is declining at the rate of 1.1% per annum.

It can be concluded that relative market share was initially low in case of PSBs and is rising (at the rate .5%). On the other hand, the same was positively high for private banks and is declining sufficiently in their case especially for NPBs. Thus, concentration is rising in case of NPBs but relative market share is declining putting a questionmark on their own efficiency. However, PSBs are exhibiting growth in RMSh though their concentration is declining both in terms of assets size and market size[8]. On the contrary, old private banks are losing both in terms of concentration and relative market share though negligible. It also specifies convergence between PSBs and private banks.

In brief, it can be stated that new private banks have remained successful in accelerating their market size that is almost twice of the growth of market size of incumbents which has ensued in form of decline in the market shares of the incumbents and tremendous rise in the market share of new private banks. Furthermore, as a result of entry of new private banks, the concentration of existing banking segments in terms of their assets size has declined. However, concentration in new private banks has increased not only in terms of assets size but also in terms of market size[9] despite of the fact all the entry took place in new private banks. It may be partially attributed to the mergers of nationalised banks and old private banks into new private banks and mergers of new private banks amongst themselves. However, private banks have not performed well in terms of growth in relative market share as compared to public sector banks especially new private banks which have been proved to be big looser in this respect. Moreover, product differentiation has not played any significant role in differentiating the four banking segments in terms of ratio of other income to total income though other income as a part of total income is growing the most in NPBs as compared to incumbents but not significantly. Selling cost remained successful in contrasting four banking segments as all the banking segments have raised their advertisement expenses significantly. But advertisement expenditure is declining as a proportion of total expenditure in case of new private banks though it was initially very high and just opposite has been found in case of existing banking segments. It indicates that NPBs took help of advertisement to establish them and other banking segments adopted advertisement to meet competition posed by NPBs (Murthy and Gupta, 2014). Other than this, convergence is noticed in terms of market concentration, relative market share and other income in between PSBs and NPBs especially.

8. Conclusions

It is proved that new private banks have marked their existence in terms of almost double growth rate in market size as compared to incumbents. Moreover, new private banks have exhibited tremendous growth in their market share while that of incumbents is declining. However, new private banks along with old private banks lacked in structural efficiency in terms of relative market share. Eventhough, their concentration has been increasing in terms of both assets size while that of PSBs is deflating and OPBs remained indifferent in this respect. These results have two implications. First, competition is rising in Indian banking industry as a result of deregulation or entry of new banks. Second, there are some other factors for the rising market size and market share of the new private banks other than structural characteristics as

8 *See (Gupta, 2014) where Herfindahl based on market size has also been examined.*

9 *See Gupta, 2014 where Herfindahl based on Market size has been examined separately.*

relative market share has not helped these new banks in increasing their growth. These may be other strategies adopted by NPBs like advertisement.

These results acknowledge the ushering of competition in the Indian banking industry due to the entry of new private banks as expected by Narasimham Committee Report I. Though other income signifying product differentiation remained unsuccessful to highlight this important finding. However, cost incurred on advertisement taken as a proxy to selling cost remained helpful in differentiating the four banking segments.

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