THEORETICAL FRAMEWORK OF COMPETITION AS APPLIED TO BANKING INDUSTRY

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Abstract

Concepts evolve through time and over time they assume different meanings. The concept of competition is no exception. This paper discusses the evolution of the concept of competition in general with a view to derive a theoretical framework for analyzing competition in banking industry. Starting from the classical notions of competition it proceeds to some of the latest approaches (Northcott (2004), Neuberger (1998), Toolsema (2003), Bolt and Tieman (2001)). The ordinary Structure-Conduct-Performance approach does not involve any analysis of market dynamics. Our approach introduces various aspects of industry dynamics and growth. It provides a methodology to arrive at the market form in banking industry through an analysis of all the aspects of basic conditions, structure, conduct and performance.

It is argued that sustained growth and dynamics of the industry is not price led. *Growth arises out of changing basic conditions and dynamics arises out of sharing the new market created by basic conditions.* Hence the prime mover of competition is rivalry among firms to control market share and to internalize externalities rather than adjustments brought about by the price mechanism.

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I.0 INTRODUCTION

The present authors have noticed, in the industrial organization literature, a tendency to conceptualizes and measures competition by resorting to a simplistic framework. In recent literature, at one end of the spectrum, there are studies like Demstez (19995) that virtually rules out conceptualization and measurement of concept. And at the other end of the spectrum, there are certain studies that seek the convenient position of equating concentration with competition.

Concepts evolve through time and over time they assume different meanings. The concept of competition is no exception. This paper discusses the evolution of the concept of competition in general with a view to derive a theoretical framework for analyzing competition in banking industry. Starting from classical notions of competition it proceeds to some of the latest approaches (Northcott (2004), Neuberger (1998), Toolsema (2003), Bolt and Tieman (2001)). The extant approaches to competition in industry in general and banking industry in particular invoke the industrial organisation paradigm with two arguments. The first is based on price cost margins, (Gerosky (1989), Mueller (1986), Shaffer, (1993)) while the second takes recourse to oligopoly (Molnar-Marton and Horvath, 2007, Uchida and Tsutsui, 2004, Capie and Billings, 2004).

There are various approaches to study competition in general and banking in particular. The ordinary Structure-Conduct-Performance approach does not involve

any analysis of market dynamics. Our approach introduces various aspects of industry dynamics and growth. It provides a methodology to arrive at the market form in banking industry through an analysis of all the aspects of basic conditions, structure, conduct and performance.

The paper is divided into the following sections. Section II.0 analyses the evolution of the notion of competition. Section III.0 points out the characteristics of banking firm and industry. Section IV.0 looks at different approaches to analysing banking industry. Section V.0 explains Industrial organisation approach to banking. A critical review of the extant literature is provided in section VI.0. Section VII.0 highlights the special features of our approach to analyse competition in banking industry. Section VIII.0 provides the summary and conclusions of the study.

II.0 EVOLUTION OF THE CONCEPT OF COMPETITION

In the following section we have undertaken a study of the process of evolution of the concept of competition. Such a study would obviously be very vast and cannot be completed in a single paper. Therefore, we have restricted ourselves to gleaning out a notion of competition that is appropriate in the context banking. The following review of the concept seeks to bring out the major elements in the process of evolution of the concept, which deserve a detailed consideration. The literature on competition is vast and so the review had to be selective. It covers the major contributions to the concepts of competition due to Smith (1976), Chamberlain (1933), Schumpeter (1934), Hayek (1948) and Stigler (1995). It also covers some old and new commentaries on the concept including McNulty (1968) and Richardson (1975) on the one hand and Vickers (1995) on the other. A number of attempts have been made since then to develop the concept. However, lack of clarity remains.

But during the process of evolution, the concept got mixed with other entities, and any attempt to understand the true essence of competition has been rendered difficult. There exists a voluminous literature in the area, but the concept remains surrounded by ambiguities and confusions in a large measure. A few reviews of the concept remained confined to only selected interpretations of competition. Some of them also cut across each other. To substantiate the above point an example is cited below.

According to McNulty (1968), there exist two fundamentally distinct interpretations of the concept of competition, which have led to the ambiguity and confusion surrounding the concept of competition.

- In one interpretation, competition is conceived as a descriptive term characterized by an idealized market structure.
- In the second interpretation, it has been identified with a force, which through equating prices with marginal costs assures allocative efficiency in the system.

According to the first interpretation, competition is a seemingly tranquil equilibrium state in which informed agents treat price parametrically. This is the concept of perfect competition, which is compared to the idea of a perfect vacuum. In the second form, it has been identified with a force, which through equating prices with marginal costs assures allocative efficiency in the system. Through competition resources gravitate towards their most productive use and price is forced to the lowest level to be sustained over the long run. This standpoint views competition as assuring order and stability in the economic world as does the gravitation to the physical world. As opposed to the earlier interpretation, the second interpretation looks at competition as a rivalry with respect to prices.

As opposed to McNulty, Vickers argued that the concepts or competition as an idealized market structure in which price is parametrically given and as a rivalry with respect to prices are not two distinct concepts of competition. He analyzed Cournot and Edgeworth models to show that the notion of perfect competition has its roots in the broad concept of competition as rivalry.

We now set out for a review of the concept of competition. It is clear that the current review cannot but begin with Adam Smith's concept of competition. While Smith's contribution holds a pride of place in any discussion of competition, there are conflicting interpretations of his notion of competition. These interpretations are analyzed in order to understand the true substance of the concept of competition, as understood by Smith.

The former commentator has reduced Smith's notion of competition to a process of price competition alone. It is this view of competition as an ordering force, which dominated the classical economics. Adam Smith referred to competition in connection with the forcing of market price to its natural level and lowering of profits to a minimum. The classical view of competition looks at competition as a process for allocating resources to their optimal use through the instrument of price mechanism. When price mechanism functions properly, equilibrium emerges with prices equal to marginal social costs of production. When it does not function properly, equilibrium exists with price above marginal cost. In such a situation, the society suffers a welfare loss from the under consumption of these goods. Such malfunctions are immediately attributed to an insufficient number of buyers or sellers. Monopoly is seen as an antithesis of competition. This view sees competition as a process for determining prices and quantities, the allocation of resources for a given set of tastes and technological opportunities. Competition produces an equilibrium set of prices that induce a Pareto optimal allocation of economy's goods and services. Such equilibrium

is anticipated so long as monopolistic elements are absent. There was no systematic association between the idea of competition and market structure in classical economics, which viewed competition as a price determining force operating in market.

The private business firm and the market are the two primary institutions through which resources are organized, transformed and channeled for ultimate consumption as goods and services. Economic goods and services broadly possess two characteristics: quality and price. Firm and market correspond to the two characteristics possessed by economic goods. While quality is related to production and takes place within the business firm, exchange i.e. the determination of economic value, which in is in turn price, arises in the various markets in which the firm operates. But the concept of competition has been usually associated only with exchange, even when economic activity consists of both production and exchange. It is argued that despite according competition a pride of place in economic theory, Adam Smith contributed nothing to its precise economic meaning. The concept of competition, which he incorporated in his Wealth of Nations, was already developed in the then literature by a number of scholars like Cantillon, Turgot, Hume, and Stuart etc. A reviewer expressed surprise how the mercantilist's overwhelming concern with price continued to be main subject matter with Smith, who was aware of the importance of the dynamic changes in productive techniques and industrial organization within the business enterprise in the era of English industrial revolution.

While first commentator argued that Adam Smith's concept of competition mainly related to price mechanism alone, the second pointed out that Adam Smith's vision of competition goes beyond price determination within markets. In order to support his viewpoint, he quoted from Wealth of Nations referring to means like new

division of labor, new improvements in art, which would have been never thought of in absence of competition among producers. However, the later reviewer apparently agreed with the former when he argues that Adam Smith and other classical economist's related competition more to the issues of resource allocation and theory of value than to productive efficiency.

Richardson (1975) argues that the concept of competition in the Wealth of Nations relates to two distinct phenomena.

- The first meaning related to balancing of supply and demand in particular markets.
- Evolution of structural and technological forces is the second interpretation.

Smith offers a theory of economic equilibrium on the one hand and a theory of economic evolution on the other in Wealth of Nations. Competition has a role to play in both of them. Let us elaborate.

Smith describes how actual prices tend to gravitate to their natural or cost determined level. Competition is shown to be necessary to the process. It is pointed out monopoly by raising prices and reducing supply would "derange more or less the natural distribution of the stock of money". Smith identifies the tendency towards equilibrium and implies the resulting allocation of resources is optimal from society's point of view.

In his theory of economic evolution, Smith has advanced a disequilibrium theory in which he views the economy as in a state of constant and internally generated change. Perpetual motion results from the fact that division of labor is both a cause and effect of economic progress. Smith discusses how division of labor

increases wealth on the one hand and widens market on the other. Widening of the market would lead to increased wealth, which in turn would lead division of labor be carried forward. The dynamic character of the interaction may not be fully appreciated till one recognizes the extent of market also depends on wealth, which in turn is created by division of labor (Young, 1928). Thus in the Wealth of Nations, competition apart from equating demands and supplies within the context of a given industrial structure and a given technology, has also to adapt both structure and technology to the fresh opportunities created by expanding markets.

While there are two distinct interpretations of competition in Wealth of nations, problems arose later. It is because of the fact theorists succeeding Smith (except Marshall) attended things that could be easily handled. They focused on that interpretation of competition, which is easier between the two. The equilibrating and allocative functions of competition are discussed exclusively reducing technical progress to an exogenous variable and ignoring structural evolution. Later writers, concerned with more analytical rigor, developed the theory of equilibrium in a way, which is clearly very different from that implicit in Smith's theory of evolution. Existence of Smith's theory of economic evolution went unnoticed, and so the notion of competition contained therein.

While the classical economists viewed competition as a market process, the emergence of the concept of competition as a market structure is a distinctive contribution of the neoclassical economics. The groundwork for this development was laid by Cournot followed by attempts by Jevons and Edgeworth at marrying the concepts of competition and market. Such an attempt finally led to the current concept of perfect competition, after refinements by Clark and Knight. Stigler viewed

this marriage as unfortunate as each deserved a separate treatment. Interestingly, the concept of competition has been accorded a subsidiary status to the concept of market.

Hayek argues that the theory of perfect competition has little claim to be called competition. He stresses that perfect knowledge and foresight would create a paralyzing influencing effect on all action. It is not possible to argue that perfect competition is a model of competition because it is only through competition that knowledge will be discovered. The real basis for comparison with existing competition is not perfect competition; Perfect competition would exist if competition in the Smithian sense were prevented from operating.

The classical view regards competition as the antithesis of monopoly. Thus competition was viewed as absence of monopoly power is. It was left to Chamberlain to reconcile economic theory with the fact that it is not possible for a firm to compete without monopolizing and hence much of the business world is a mixture of competition and monopoly. Every act of competition on the part of a businessman is evidence of some degree of monopoly power in economic theory. Thus while he recognized that most markets are to some extent both controlled and controlling, it has limited relevance as a guide in implementing policies in order to be meaningful for economic policy seeking to restrain monopoly and promote competition. While the traditional distinction between competition and monopoly is a non-starter, the merging of these two concepts in a theory of monopolistic competition avoided defining a concept of competition.

Chamberlin's concept of monopolistic competition as a market structure characterised by large numbers with free entry and product differentiation but without recognition of interdependence is now regarded as being only trivially different from

perfect competition and may be as rare as perfect competition. Product differentiation takes place typically in a market environment of competition among the few. Chamberlin's contribution in section 4 of chapter 3 of his book relating to "mutual dependence recognized" is not a core part of his contribution and constitutes original contribution to theory of oligopoly.

The root of the ambiguity of the meaning of the term competition is attributed to the failure to distinguish between the idea of competition and the idea of market structure. The common feature of perfect competition and monopoly is that both rule out the possibility of any competitive behavior. In monopoly, there is no one to compete. Perfect competition, ironically is a state of passive adjustment. Neither is there any competition through quality, because products are homogenous, nor is there any price competition because there can be no price-cutting. Also there can be no non-price competition, because there is no product differentiation. So the only form of competition can be cost reducing competition. What is insufficiently emphasized is that perfect competition is a state of affairs totally incompatible with the idea of any and all competition. All other forms of competition except perfect competition are an admixture of monopoly and competition.

Both perfect competition and monopoly mean absence of competition but reasons are distinct in each case. Monopoly is a market situation in which intra-industry competition has been done away with by means of identifying the firm as the industry. Perfect competition, on the other hand is a market situation, which as a result of free entry of a large number of formerly competing firms has evolved to the point of equilibrium where no further competition within the industry is possible.

*S*chumpeter's notion of competition views of competition sees it less as a process for allocating given stock of resources and reduction in prices for an existing set of products and in the form of new and improved ideas, new products, new production processes, new marketing techniques, new organizational structures etc. Such competition strikes at the foundations of the life of the existing firms and not merely at their outputs and profits. Twentieth century competition apparently resembles Schumpeter's notion of competition as price competition between firms has given way to competition on the basis of product improvements and cost advantages generated by developments in methods of production and organization. In this view, innovation is the major mechanism by which firms compete. According to Schumpeter, there are three stages in the process of change.

The first stage is invention: It relates to the generation of a new idea and its subsequent development to a point where the conceptual and practical difficulties of its implementation have been overcome.

The second stage is innovation, which occurs when entrepreneur believes that it is worthwhile to commercialize the invention. He distinguishes among five types of innovations. There is a tendency to narrowly focus on introduction of new products, and processes, which incorporate technological change. His broader definition of innovation covers more of the ways in which use of resource may be improved. This includes improvement in the quality of existing products, development of a new market, exploitation of new source of supply and adoption of improved organizational routines.

The entrepreneur cannot know in advance whether his innovation will succeed or not. If expectations are correct, then the innovation generates abnormal profits, as a

result of either increasing revenue or reducing costs and leads to creation of temporary monopolistic advantages over competitors. But successful innovation creating transitory monopolies create pockets of profits which in turn provide the incentive for the imitators to step forward and thereby drive these profits to zero. This is Schumpeter's third stage: diffusion. As a result of widespread imitation, the innovation becomes established as the basis for future invention and innovation.

Schumpeter's notion of competition is a process of creative destruction. Innovation creating monopoly, monopoly creating profits, profits creating imitators until a state of normalcy returns only to be followed by new innovations and repeat of a cycle. Thus, whereas the first view sees monopoly as antithesis of competition, the second views monopoly as an integral part of dynamically competitive process and a passing stage in industry's evolution. Competition displaces existing products and methods of production by new ones. Hence from day to day there are winners and losers. This representation of competitive process owes its origin to Joseph Schumpeter.

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The ideas of the Austrian school originate in Karl Menger and proponents include Mises and Hayek. Economic freedom is the hallmark of competition and is deemed to be limited only in so far as the rights of other people are not infringed. Hayek argued that individual freedom gives rise to spontaneous order which as not been deliberately designed by any one. The spontaneity of individual behavior gives rise to an open ended process the outcome of which can not predicted. While economic freedom is the best suited for safeguarding the individual welfare, welfare maximum cannot be identified in advance. As opposed to a static market structure of perfect competition, Austrians see of competition as a process of discovery by which economic agents seek to enhance their welfare and thus attempt to reach an optimum over time in an uncertain and changing world. Most efficient techniques and products appealing most to the consumers cannot be anticipated with certainty without putting unknown and untried techniques and novel products to the test of the market. The price of a successful product commands may exceed average costs. Success is thus rewarded by profitability, which in turn provides incentives for further innovations. A deficient state of knowledge is thus overcome by competition as a process of discovery.

Within the new institutional economics, the Austrian and evolutionary approaches have more in common with each other than with neoclassical economics.

In both approaches competition is characterized by uncertainty and flux. Experiments must be conducted by firms to identify, which actions lead to improved performance and must judge for example, whether to imitate the other firms or innovate in more fundamental ways. Uncertainty thus prevails not only with the strategy of the firms but also the result of adoption of any particular strategy.

A significant difference prevails between these two notions of competitive process. In Austrian economics, whatever the firm's financial performance, the entrepreneur actively seeks improvement. In the evolutionary approach, firms are less aware and less proactive. If the firm's current performance is acceptable (that is if covers the opportunity cost of the resources deployed) no change will be initiated. They react to the environment and seek improvement only when survival is threatened. Truly speaking, the Austrian notion of the world is more desirable where the firms always seek improvement despite their financial performance and thus competition in Austrian notion of competition is also a self-propelled process, which is not quite consistent with observations. In Austrian world there is no X-inefficiency.

A definition of competition has been provided by Stigler (1987) Competition is rivalry between two individuals (or groups or nations) and it arises whenever two or more parties strive for something that all cannot obtain. Vickers (1995) points out the following characteristics of this definition.

- The breadth of the definition encompasses all forms, instruments and objects of rivalry.
- It is a behavioural definition of competition as opposed to the analytical concept of perfect competition.

- Identification of competition with rivalry does not mean more competition is an end in itself.

III.0 CHARACTERISTICS OF BANKING FIRM AND INDUSTRY

Financial institutions may be defined as economic agents specializing in the activities of buying and selling at the same time financial contracts and securities. Banks may be seen as a subset of the financial institutions, which are retailers of financial securities: they buy the securities issued by borrowers and they sell them to lenders. In view of varied and complex operations of a bank, an operational definition of a bank may be provided as follows. A bank is an institution whose current operations consist in granting loans and receiving deposits from the public. Definition of “Banking” as per the Banking Regulation Act, 1949 says-”banking” means the accepting, for the purpose of lending or investment, of deposits of money from the public, repayable on demand or otherwise, and withdrawable by cheque, draft, order or otherwise”. The Act defined the functions that a commercial bank can undertake and restricted their sphere of activities.

Banking theories provide us with insights into why banks exist in the economy. If these theories are correct, banks exist because they perform certain special functions that no other financial services firms can replicate. Thus, no matter what course financial modernization takes in the future, we can count on certain defining characteristics in banking to be preserved. Financial innovation has greatly changed the business of banking. Instead of just accepting deposits and making loans the old-fashioned way, banks nowadays are increasingly active in lending without

putting loans on their balance sheets, through either securitization of their asset portfolio or outright loan sales (bonds/debts). Banks also are shifting from interest-based revenues towards fee-based activities, including lines of credit and many types of credit guarantees.

Economists have been asking the question "what's different about banks" for ages. In his famous article, Corrigan (1982) argued that banks are special because: (1) they provide transaction services and administer the nation's payments system; (2) they provide backup liquidity to the economy; and (3) they are transmitters of monetary policy. Based on this argument, what makes banks special spans both the asset side and the liability side of the bank's balance sheet: banks make loans in the course of providing liquidity, and they accept demand deposits in providing transaction services. Since only commercial banks have the unrestricted power to make commercial loans and accept demand deposits, it is their banking power that defines the distinctiveness of banks.

One can go deeper into the distinctiveness of banks and ask a more fundamental question: Why do banks make loans and provide deposit services? For decades, banking researchers have studied the question of why banks exist and have made considerable progress in developing banking theories to explain banks' central role in the economy. Although many of us may take the existence of banks for granted in a "perfect" world, where savers can channel their surplus funds to borrowers without friction, financial intermediaries like banks are not needed. As a corollary, banks' existence must be motivated by certain economic frictions, so that banks, as financial intermediaries, can provide some "value added" from transferring funds from savers to borrowers and providing liquidity.

An important value added provided by banks, according to several theories, is dealing with the information problems in lending and the incentive problems caused by the moral hazard behavior of borrowers. Because a lender must evaluate a borrower's creditworthiness, banks' investments in information technology allow them to achieve scale economies in information production, making them more efficient information producers than individual investors. Delegating the loan monitoring function to banks avoids the redundancy of monitoring by numerous individual depositors. Banks are credible monitors because their returns are more predictable due to the diversification effect of making a large number of loans (Diamond 1984). With credibility, banks can gather deposits at relatively low cost.

While information production represents a key function performed by banks, banks by no means have monopoly access to information production technology. Other non-bank lenders, such as finance companies, also engage in information production and loan monitoring. Moreover, non-bank lenders could enjoy certain advantages over banks because they are not subject to banking regulations. However, empirical evidence suggests that there is something "special" about bank loans. Specifically, research has found that bank loan approvals represent positive economic signals that can lift the borrowing firms' stock prices, while loan approval by non-bank lenders does not have the same economic effect (for example, see James 1987).

Since loan making by itself does not seem to make banks special, banking theorists also have focused on the role of liquidity provision in conjunction with loan making to explain the unique economic function performed by banks. Calomiris and Kahn (1991), Flannery (1994), and Diamond and Rajan (2001) showed that the fragile capital structure in banks and, hence, their vulnerability to deposit runs serve important economic functions. Deposit runs represent a powerful disciplining device

that limits banks' incentives for risk-taking and misallocation of resources. This provides some degree of quality assurance in banks' loan portfolios. Because non-bank lenders that cannot issue demand deposits do not have the "benefits" of a fragile capital structure, they are less credible in their loan portfolio quality commitment. This may explain why a loan approval by non-bank lenders does not carry the same "good news" weight, as does a loan approval by banks. The same is true for fee-based activities, where banks do not make loans but provide credit lines, credit enhancements, or credit guarantees. Banks can provide these fee-based services because of their credibility, which stems from their commitment to low-risk assets as dictated by their fragile capital structure.

Both securities underwriting and loan making involve pricing financial assets. In loan making, a bank underwrites a loan and then funds it by putting it on its book. In securities underwriting, a bank underwrites a security but quickly turns around and resells it to the public. Securities underwriting involves information production, an expertise that banks already have in making loans. Further, information produced during credit underwriting is potentially reusable for securities underwriting. Furthermore, to the extent that certain characteristics are unique to banks, such as gathering demand deposits in the course of providing payments services.

Unlike other enterprises, a commercial bank cannot afford to have a single objective namely profitability. It is equally important for a commercial bank to maintain liquidity without which it may loose public confidence resulting in a run on the bank Thus unlike an ordinary firm; a banking firm always has to negotiate a dual objective function including both profitability as well as liquidity.

A bank is also distinguished from an ordinary firm by virtue of nature of risks it faces. While it is true that existence an intermediary like bank has a net cost advantage relative to direct lending and borrowing, banks face a double-edged risk, one from the side of the lender and other one from the side of the borrower. This is because the equity base of a bank is typically small relative to the liability. A substantial component of liability of a bank consists of its deposits. Apart from current and savings deposits, even term deposits can be subject to premature withdrawal. It faces a withdrawal or liquidity risk when creditors are unwilling to extend or renew their credit to the bank, or they are willing to renew at different terms alone. A default risk arises when the debtors of the bank are not able or willing to meet their obligations to the bank at the agreed upon time. Thus existence of both liquidity and default risk for a bank differentiates it from an ordinary firm.

Unlike a firm, a bank provides a public good in terms of liquidity and means of payment. This implies that the externalities of a bank failure are far greater those emerging from a failure of a firm. Failure of a firm creates hardship for the labour force employed in the firm, not for public in general. The economic and political costs of failure of a large bank may be substantial forcing the governments to bail them out. A recent event related to the Global Trust Bank provides such an example in India.

While there are differences between a bank and a firm there is basic similarity. Just like a firm, a bank also produces value added. Banks borrow money from depositors and lend them to the borrowers, it may be argued that, a production process consisting of a transformation process of inputs into outputs, has not taken place. But it may be pointed out that money lying with the depositors at their homes is not the same as money ready to be used by the borrowers. The process of mobilising deposits and consequent channelising them to the borrowers is production in the technical sense of

the word. Hence 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 shape of advances to deficit spenders. Thus, a bank produces a value added similarly to a firm. Nevertheless, apart from transferring money from surplus spenders to deficit spenders, a bank provides other kinds of services as well. Financial innovation has greatly changed the business of banking. Instead of just accepting deposits and making loans the old-fashioned way, banks nowadays are increasingly active in lending without putting loans on their balance sheets, through either securitisation of their asset portfolio or outright loan sales (bonds/debts). Banks also are shifting from interest-based revenues towards fee-based activities, under-writing, including lines of credit and many types of credit guarantees.

There is a basic contradiction between deregulation and competition in the case of banking industry. The above contradiction may be established from certain basic characteristics of banking industry as well. As far as the functions of the central bank are concerned, a distinction is made between general monetary policy and specific measures directed to banks. This dual role forms the basis of quantitative and qualitative credit control by central banks. While quantitative credit control regulates the supply of credit, selective credit control, amongst other things, regulates demand for credit. If rate of interest in banking industry may be compared with price in the context of industry, then control on bank rate by central bank is akin to price control. In a very broad sense, therefore, banks would be reduced to price takers. Thus, in all the three aspects of credit market, captured by supply, demand and price determination, the link between credit control and control of competition is manifested.

A certain amount of control appears to be necessary to ensure that no unwarranted exit takes place in banking industry. Unlike any other enterprise, which

can exist with a central control, a bank cannot. There has to be a central bank in order to closely monitor the operations of banks in trouble, provide guidance, and even to bail them out by acting as a lender of the last resort. Exploration of nature of a banking firm establishes that existence of commercial bank is possible only with presence of a central bank. It is important to understand the content of deregulation in banking industry despite the existence of a central bank. It appears that deregulation in the context of banking industry does not tantamount to ushering of unfettered competition. An interpretation of deregulation in banking as pure competition or laissez faire would result in an anarchic situation.

Narasimham Committee which was the main policy document for ushering in de-regulation in banking industry in India recommendations of do not question the basic function of central bank, more particularly, the function of lender of the last resort. On the other hand, it is sometimes being felt that even this basic function can be dispensed with, in favor of capital adequacy norm. The issue at hand is as to whether complete deregulation in banking is justified to the extent that the basic role of central bank is done away with.

An analysis of the banks must be preceded by a clarification of certain basic concepts, like a banking market, so as to provide out the contours of the study. Gibson's (1984) survey of literature on bank market structure and competition highlighted the significance of defining a banking market. According to Haslem (1985), specification of banking products i.e. services and definition of geographic pattern of banking markets are the two basic problems in defining a banking market. He goes on to argue that existence of one single market for banking services, or different markets for various banking services, depends on whether, financial services provided by bank, are complementary to one another, or each banking service constitute a distinct

product. The relevant clue to the problem is whether consumers consider non-identical financial services substitutes for one another or complementary services consumed together. Haslem argued that the determination of geographic markets is a function of the specification of financial services. In the present context, the importance of the aspect of geographical spread of the market is diluted with emergence of telephone banking, Internet banking and ATMs, which enable countrywide access to banking services.

Haslem did not elaborate all aspects of a banking market. Apparently, three factors are relevant in understanding the concept of a banking market. They are a) nature of the products produced by a bank; b) size of bank; c) size of banking market. It may be argued that the volume of both its deposits and advances may capture size of a bank. Such a conceptualisation is derived from the basic functions of a bank and depicts the control of the bank over the market. Provision of advances justifies deposit mobilization, on the one hand, and deposits once mobilised are of no use, if advances are not made from these deposits. If deposits expand but advances do not, profitable operation of the bank will be adversely effected. In a reverse situation, where advances go on increasing but deposits do not, there would occur a situation where the bank will neither be able to sustain increased credit, nor maintain liquidity. In both the situation, the existence of a bank will be endangered. From the above argument, it is clear that deposits and advances are complements. As for the size of the bank, it would follow that it is the sum total of deposits and advances. By the same token, the size of the market is the sum of the respective sizes of the total number of banks operating in the market. Hereafter, in the rest of the thesis, bank's market structure relates to total deposits and advances.

In this context, it is important to sort out the similarities and differences between the two related concepts, market and industry. This will facilitate a meaningful use of

these two concepts throughout the study. Industry features production and is defined by the technology and the materials used in a particular product by the group of suppliers who make it. On the other hand, market features exchange and is defined by the products which compete for the business of a set of buyers. The market may be supplied by imports as well as the domestic industry. For example, Indian automobile market refers to domestic trade in new cars, regardless of where automobiles are produced. This is not so for a service industry like banking, where production and exchange take place simultaneously. Thus, banking market and banking industry will be used inter-changeably throughout the study.

IV.0 APPROACHES TO THE STUDY OF BANKING

The main approaches to the study of banking include

- Analysis of a bank as a financial institution, and its relationship to economic development.
- Study of a bank from the point of view of financial management.
- A monetary economics approach which basically focuses on the relationship between central and commercial bank.
- Industrial Organisation Approach

We shall now discuss the above approaches to find out their relevance fro study of competition in banking. The first approach is based on institutional economics and does not provide a framework for studying competition. The second approach relates to the internal management of finances in the case of the individual banking firm. Wherever, we have considered asset management, it is only in relation to industrial dynamics and not as an independent study of finance. The third approach relates to pure theory of fractional reserve banking which treats banks as mere passive entities leading to a mechanical modelling of their responses. Banks are assumed to acquiesce in supplying whatever

quantity of demand deposits is dictated by public's desire for demand deposits on the one hand and the monetary authority's reserve requirements on the other. Clearly, the micro foundations of banking theory were weak. Even the H theory of money supply, which apparently attributes an active role to commercial banks in the endogenous determination of money supply, does not present an explicit model of the banking firm. Gurley and Shaw (1960) and Tobin (1963) observed that the theory of money creation neglected the role of banks as firms[1]. However, early analysis of banks treated it as a mere rational investor operating in an environment characterised by risk or uncertainty and not primarily as a firm. Conceptual difficulties in drawing analogy between a bank and the typical firm in neoclassical analysis led researchers to concentrate on only one specific problem of a bank: allocation of bank's funds among competing stocks of assets This approach is grossly inadequate as it completely neglects the production and cost constraints under which banks operate and the role they play in determining the equilibrium output mix and scale size of a bank.

These three approaches may be to some extent overlapping. While there have been extant studies that are based on other approaches, there have been few detailed investigations into the area of banking in India using industrial organisation approach.

V.0 OUR APPROACH TO COMPETITION AND BANKING

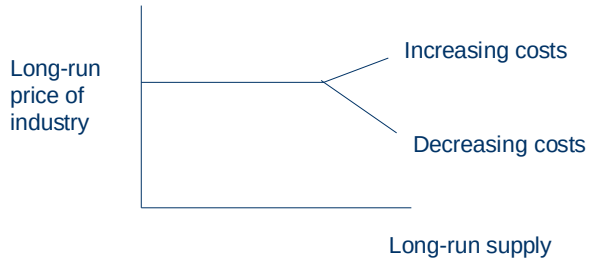
The extant approaches to competition in industry in general and banking industry in particular invoke the industrial organisation paradigm with two arguments. The first is based on price cost margins, (Gerosky (1989), Mueller (1986), Shaffer, (1993)) while the second takes recourse to oligopoly (Molnar-Marton and Horvath, 2007, Uchida and Tsutsui, 2004, Capie and Billings, 2004). In the long run, competitive forces

[1] Identification of banks as firms provides a natural rationale behind application of industrial organisation framework to banking.

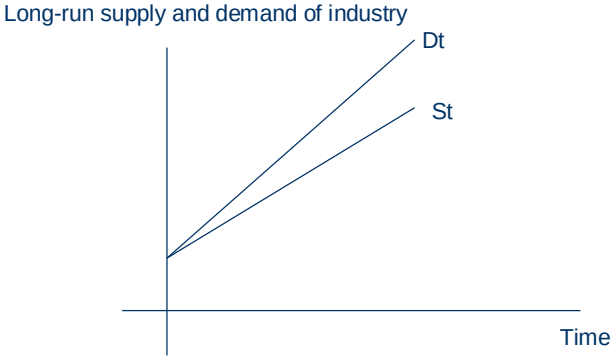
tend to wipe out the margin. In the short run, because of restrictions on entry, the scarcity price creates supernormal profits which act as an incentive for new producers to enter. In the long run, entry would ease out the supply. But once entry takes place and long run equilibrium is established in the industry, then price cost margin is wiped out and it no longer acts as a signal form entry. Therefore, further growth beyond long run industry equilibrium is independent of price. Under monopolistic competition, the further prognosis of industry is a mere dropping off of inefficient firms to be replaced by new firms. Such an understanding of industry and its growth in the dynamic context is faulted. This conservative approach can not explain the phenomenal growth of industry. It can not be price-led. Needless to say, the industrial organisation approach can not be restricted to short run analysis on the one hand and long run equilibrium on the other hand is incapable of explaining industrial dynamics and growth. Even the extended textbook approach of long run supply curve of industry does not explain the basis of further growth. All that it explains is the long run cost conditions which are usually expected to be a case of rising costs. Anomalously though, under such conditions, the long run supply gets re-linked to rising price.

The long run supply curve of industry is more likely to be facing declining cost rather than increasing cost. The implication is that in the dynamic context, price can not be instrumental in raising the supply in industry. Since basic conditions augment both supply and demand, and both the demand curve and supply curve are rising over time price no longer plays an equilibrating role

Long-run industry supply curve



Dynamic equilibrium



The problem with the second approach is still more straightforward. Firstly, the oligopolistic models are usually set in the short run. Therefore they are not aimed at explaining industrial growth and dynamics. The limited dynamics which is inferred related to current output and price. It eludes all issues of entry, which by nature is not

incumbent upon oligopolistic markets, and hence all questions of industrial growth. Since the main question of interest in understanding competition in banking industry relate to growth and dynamics arising out of entry, this second approach is not adequate for the purpose. The real question does not pivot on restrictive behaviour because the present study is set in at a time period which augurs for growth in industry rather than any trend towards restriction. The moot question then is as to which is the market form that promotes competition and what is the nature of competition that permits such growth? Which is the theoretical framework that allows such analysis? In as much as oligopolistic models do essentially concentrate on conduct on existing firms; such approaches are faulted in two ways. Firstly, a basic objection to this approach is that it presupposes oligopoly as the market form. Secondly, they do not arise out of a complete framework that spans all dimension of S-C-P.

We are therefore led to believe that the only complete framework that could help in understanding competition in general and in banking in particular is the Structure-Conduct-Performance paradigm. Even here, the three primary dimensions of the S-C-P paradigm are not sufficient to explain the phenomenon of competition and growth in banking industry. Unless the basic conditions argument is invoked, we can not explain the phenomenon nor can we reconcile it to the evolved and modern notion of competition.

Basic conditions clearly determine the growth in demand and supply. In the very long run, both demand and supply functions could be upward sloping. They are not equilibrated by price. Therefore, the very instrument of competition called price cost margin is no longer of any great relevance. On the other hand, independent of price, basic conditions create new demand and simultaneously augment supply. Amongst

other things, one of the most important basic conditions is technology. It is therefore clear that the long run supply curve of industry is more likely to be facing declining cost rather than increasing cost. The implication is that in the dynamic context, price can not be instrumental in raising the supply in industry. Since basic conditions augment both supply and demand, and both the demand curve and supply curve are rising over time price no longer plays an equilibrating role

The source of growth of industry (banking industry) lies in basic conditions. Basic conditions include technology, structure of the economy, institutions, availability of substitutes, availability of trained manpower, and public policy and rules. It influences growth of industry by creating new demand and attracting new resources. The change in basic conditions creates different types of externalities – technological and pecuniary. Therefore the sustained growth and dynamics of the industry is not price led. *Growth arises out of changing basic conditions and dynamics arises out of sharing the new market created by basic conditions.* Hence the prime mover of competition is rivalry among firms to control market share rather than adjustments brought about by the price mechanism.

There are two variants of S-C-P paradigm. One attributes larger market shares of firms to their monopoly power and the other relates it to efficiency. Price is considered to be the main instrument or mechanism for generating efficiency. While price represents static efficiency growth any dynamics are associated with changes in market share. If the market share and ranks change then firms would be under pressure and this would lead to efficiency. Similarly, changing basic conditions create externalities and lead to dynamics. There are differences in the rate, the manner and the efficiency with which firms internalize these externalities. The two versions of S-C-P paradigm could be reconciled in the following manner. Market dynamics

originates from two sources, namely, rivalry amongst firms for acquiring and retaining market, share on the one hand, and rivalry due to internalization of externalities created by change in basic conditions, on the other hand.

A caveat on the analysis of changing basic conditions relates to the Schumpeterian line of argument on evolutionary competition. While apparently Schumpeter also talks of technological progress and growth, it must be understood that his notion of innovation and growth is distinct from the present one. In Schumpeter we have endogenous technical progress generated from within the firm that is supported by monopoly and patents. Our concept of competition goes against monopoly.

In our framework technological progress arises outside the individual firms and is incorporated in the basic conditions such that it is available to all firms provided they have the willingness to internalize it. The more efficient and dynamic firms internalize faster and better and thereby can capture a greater market share. In as much as they do it at the cost of other firms this creates rivalry. Efficiency occurs on the rebound.

The impetus to change in industry arises from innovations from the basic conditions which could be due to public policy and the State but is not necessarily so. Such externalities are available to banks with minimal risk as compared to the risk-ridden process of ‘creative-destruction’.

Rivalry could arise due to three forces. One, it could be due to new entrants which relates to structure (Deb, 2004). And more often than not to price competition. Two, it

relates to conduct and is most often quoted in literature. Third, it arises out of externalities which are captured by basic conditions.

Nuberger (1998) has separated public policy from basic conditions and put it in a separate box. Aspects of public policy including restrictions on entry, size of investment and public monopoly (public sector banks) have mostly been dismantled. This led to a blurring of the box containing public policy in Neuberger's scheme of S-C-P paradigm. Whatever remains of public policy boils down to monetary and prudential controls. The monetary controls involve cash reserve ratio, bank rate, variable reserve ratio etc. While prudential regulations relate to asset classification and income recognition norms and norms related to NPA and capital adequacy ratio. All these may be subsumed under basic conditions which again affect all the three dimensions of S-C-P. Most of monetary controls are general and therefore they can be subsumed under basic conditions because rules are essentially part of basic conditions. Rules include regulations. By this count since most of the regulations would be subsumed under the basic conditions, what remains are specific regulations that relate to specific segment or specific market forms. For instance, antitrust regulations could be applicable only if the market form approached monopoly. The liberalisation of interest rate is across the board. Our point is how efficiently do firms internalise the liberalised policy regime. Efficient firms internalise these changes better and they are adding to efficiency. We have shown that efficiency in the dynamic context implies growth unlike the Austrian world. It is not governed by price which is responsible for static efficiency. However, it must be stated that in profitability alone can not be criterion of efficiency the case of banking. An equally important criterion is stability. Therefore in the dynamic context in banking,

efficiency can not be equated with Paretian efficiency which may suffice for any other ordinary market.

The way we envisage the process of competition is through the basic conditions influencing structure, conduct and performance. In fact the source of competition and efficiency arise out of dynamics of basic conditions. By keeping basic conditions constant, we will be constrained to observe only one aspect of competition. Our view of competition would be restricted to inter-firm rivalry. Such rivalry is often explained in extant studies through oligopoly models. The broader view of competition as we envisaged includes the right market structure and competitive conduct along with rivalry for internalising the externalities caused by basic conditions. Last but not the least any notion of competition especially if it is to address growth and dynamics must also account for stability. Some of the new approaches to competition are restricted to rivalry for deposits and loans while some of them touch upon risk. From the above discussion, it becomes clear that there is a need to have comprehensive framework which encompasses all the aspects enlisted above. There is none better than the S-C-P framework including feedbacks with changing basic conditions incorporated in it such that competition can be defined and understood as a process that unfolds from basic conditions up to performance. The market from that defines competition has be set in reference to and captured through the entire S-C-P framework.

As a caveat, it has to noted that this Smithian framework emphasises two notions of competition. The former equilibrates demand and supply, while the later is driven by technology and structure. Our notion veers to the latter. However, the re is a fundamental difference between the two notions. In the Smithian case, structure and technology lead to division of labour (which in turn lowers cost within the firm) and

is enabled by a growth in the market. In our case, the logic is precisely the converse. Structure and technology change and so do basic conditions. This enables growth in markets and hence creates the competitive conditions through dynamics. Another difference is that in the Smithian case, the impact of technology and structure influence productivity and allocative efficiency, whereas the change in basic conditions leads to technical efficiency.

Most of the extant literature takes a partial view. It either restricts the notion of competition to structure, concentration, entry and monopoly power or to conduct and oligopoly, where the market form is pre supposed. Our approach not only develops the S-C-P framework for establishing the appropriate notion of competition. It also modifies the S-C-P framework suit banking and finally develops the empirics that are necessary to analyse and estimate competition in banking so as to pronounce an overall market form.

Initially having questioned the role of price and price cost margin that acts as an incentive in the competitive market form as well as a barrier to entry under monopoly, we wish to state in finality that it is possible to reconcile the two positions. If in the dynamic context, long run price stabilises price cost margin could still emerge while basic conditions are dynamic and create declining costs. The role of competition and public policy is that it should be directed at allowing price cost margin to act as an incentive rather than a restriction to entry. This process would be successful if the approach to competition in general and banking in particular is promoted by the new concept of entry facilitators which we have identified.

There is a traditional notion that questions the desirability of competition in banking. We believe that their scepticism is misplaced. Entry is likely to jeopardise minimum

scale only if we assume a context market size. With a dynamically growing market surcharged by dynamic basic conditions and positive public policy, the new entrants would always find enough space in the banking market. At the margin however, if new banks that nevertheless start with a disadvantage edge on the existing banks, this is likely to lead to rivalry and competition, even if there is the fear of failure it has been proven in recent times that such banks choose to merge rather than exit. In fact the new rules that are incorporated in the changing basic conditions permit such merger.

VI.0 Critical Appraisal of S-C-P Approach

The theoretical framework of the study is provided by theory of industrial organisation. Within the broader industrial organization approach, there are three strands in literature:

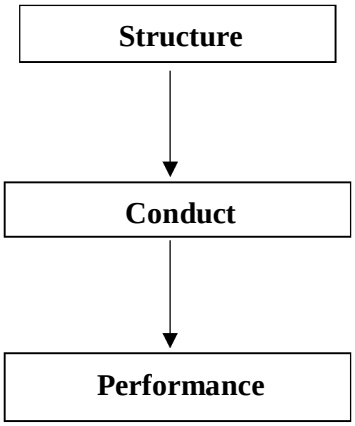
- The Structure –Conduct-Performance approach
- The information theoretic approach
- Strategic groups approach

While there are apparent differences between these strands, the focus of all these approaches is to theorize about industry. The broad approach in this thesis is based on S-C-P, while the information theoretic approach has not been broached at all. The information theoretic approach is relevant to certain issues arising out of the new policy recommendations, nevertheless. The issue of NPAs for instance merits such an approach. For such a treatment of NPAs, one may please refer to Biswas and Deb (2004). While information theoretic approach questions the informational efficiency of the market, S-C-P paradigm takes it for granted and analyses market forms. On the other hand, the present study revolves around market forms, because the policy

framework is directed towards change in the market form. It has introduced a host of measures ranging from interest rate deregulation to allowing entry to mould the market form so that competition and efficiency is generated. Hence the S-C-P paradigm naturally emerges as the theoretical framework of the study of competition.

Instead of simply considering the banking sector as a passive aggregate, as in the standard approach to monetary policy often found in macro textbooks, commercial banks need to be modelled as independent entities that optimally react to their environment. In Industrial economics, a bank, like a firm, is conceptualised as operating under a certain kind of market structure providing a service to its customers and in the process incurs costs in order to produce this service. In the process, it has to compete with other banks in the industry, using price and non-price instruments and earn a return enough to justify its existence in the industry. Industrial organization framework is a general expression of relationship between the attributes, which seem to characterize an industry. The unit of analysis is market or industry on the one hand or the firm on the other. The framework uses a technique of analysis called partial equilibrium, which is introduced by Marshall. The S-C-P paradigm assumes that certain attributes, designated as basic conditions, are given and a chain of causation logically determines all the other attributes as follows. The basic content of the paradigm is captured by the following few lines. The basic conditions are the primary determinants of the market or industry structure. In the next step, the structure of the industry influences the conduct by participants in the industry. Conduct, in turn influences performance.

Figure 1.I Schema of Traditional S-C-P Paradigm



VI.1 Basic conditions

In a discussion of S-C-P paradigm, the phenomenon of basic conditions does not ordinarily receive much attention (Hay and Morris, 1979; Ferguson and Ferguson, 1994). Basic conditions shape market irrespective of market forms. It is determined by the basic conditions of demand and supply. Demand side conditions include: direct and cross-elasticities of demand; market growth in its trend, cyclical and seasonal aspects; taste, requirement and purchasing habit of customers. Supply side conditions include: location and ownership of raw materials; technology; unionisation; product durability; industry history; and the legal, ethical and political framework within which business activity takes place. Gavin Reid (1987) pointed out that many treatments of S-C-P framework assimilate several of these basic determinants into market structure category. For example, Mason (1939) who first proposed and cogently argued the merits of S-C-P approach defines market structure to include all those considerations the seller takes into account in determining his business policies and practice. He would include demand conditions in his list of

elements of structure. Whatever, the usual attitude is to regard taste, technology and institutions as given and concentrate structure, conduct and performance.

VI.2 Structure

The structure of an industry or market is by far the most important, though not sole determinant of business conduct. Therefore an economic analyst cannot adequately describe or fully understand the conduct of a business firm without putting it into the context of the industry's structure. It is important to point out that perfectly contestable markets may also be used as a benchmark for analysis of industry structure. Such markets are open to entry by entrepreneurs who face no disadvantages vis-à-vis incumbent firms and who can exit without loss of any costs that entry requires to be sunk. There are no legal restrictions on market entry and exit and there are no special costs that must be borne by an entrant that do not fall on the incumbent firm as well. In such markets, competitive pressures from potential entrants exercise strong constraints on the conduct of incumbent firms. Hence in a perfectly contestable market, absence of features like sunk costs and entry barriers, structure of an industry is rendered inconsequential for the conduct and performance of the firms operating in that industry. It may be pointed out; contestable markets do not serve as a useful reference point for analysis of banking industry, which is apparently characterised by sunk cost and entry barriers.

VI.3 Conduct

Conduct is the term used in reference to the behavior of firms in the market. It refers to how firms react to the conditions imposed by market structure and interacts with rivals. In course of interaction with competitors, the firm has to take into account the dependence of other firm's actions on its behavior. Conduct includes a strategic

move, which is one that influences the other person's choice, in a manner available to one's self, by affecting other person's expectations on how oneself would behave. In principle, many types of conduct may be distinguished, some of which may be extended beyond the strictly economic. Under conduct, one conventionally looks at: how price is set; the way in which the volume, quality and range of products are determined; advertising and marketing strategy; research and development planning and implementation; and legal tactics.

VI.4 Performance

Performance is a judgement about the results of market behaviour (Burgess, 1988). The dimensions of market performance about which industrial organisation is concerned include efficiency, fairness and progress. Efficiency involves how well a market makes use of available resources. Fairness involves how equitably market distributes benefits of economic activity to the participants. Progress concerns how effectively the market nurtures and yields better products and production techniques.

VI.5 REVIEW OF LITERATURE

We provide a brief review of the extant studies in this section. There are three groups of studies to be covered by review of literature. The first group consist of a few theoretical works on the relationship between entry, number of firms and competition. They include, Shubik (1990) and Fama and Laffer (1962). The other group consist of few empirical studies. They include Bresnahan and Reiss (1991), which suggests that competitive conduct changes quickly as the number of incumbents increase. Another study due to Bikker and Half (2002) provided support for the conventional view that concentration impairs competitiveness. A number of studies apply S-C-P hypothesis particularly in the context of banking industry. Gilbert

(1984) provides a detailed survey of such studies. These studies attempt to test the hypothesis that degree of concentration influences the degree of competition. They estimate measures of bank performance as functions of concentration of deposits among banks in local market areas. The measures of performance used as indicators of the degree of competition among banks include bank profit rates, interest rates charged on loans and paid on deposits. However, results of the bank market structure do not consistently support or reject the hypothesis that market concentration influences bank performance. The third group examine the desirability of competition in banking. Neuberger (1998) reviews the industrial organisation research in commercial banking within the revised structure-conduct-performance paradigm. It considers basic conditions, variables of market structure, conduct and performance and public policy which are special to banking industry. The starting point of this approach is what constitutes the comparative advantage of a bank. It draws from Fama (1985) and Diamond(1984).

There are certain studies that seek the convenient position of equating concentration with competition. As an instance of the latter, we would like to draw the attention of those concerned about competition towards M.R.& S(2007) that argues in favour of an increase in the competition in cotton seed industry in India on the basis of a declining of Hirfindal's Index(H) . The main problem with Hirfindal's index or any other concentration ratio is that it is a static measure. Any single measure used at one point of time can not explain the process of competition and much less the market form. It only provides scope for a very shallow conceptualization of competition.

For measuring competition and to have consistency between the concept, form and the process of competition, it is necessary to conceptualize competition within the

bounds of credible finite space. It is therefore necessary to have a complete framework that conceptualizes competition and its process in such a manner that it is measurable and dynamic.

We first examine the limitations of Hirfindal's index for conceptualization and measurement of competition. Later we shall lay out a brief account of our alternative framework which to us is the answer for conceptualization and measurement of competition.

As pointed out, any pragmatic approach to understanding competition through H should be in the realm of credible finite space. It can be easily shown that if the market is equally divided amongst all firms, that is, if

X=size of the market

n= number of firms

x= share of an individual firm, then

H=1/n.

However, iff n => infinity, 1/n => 0 such that H =>0.

Similarly, iff

n= 1

H= 1.

Thus only in two cases does H identify with any market form. In the case of infinite space, when X => infinity, market share => 0 that the measure of H can be identifies with a particular market form and conceptualize the process of competition. Needless to say, this is the case of perfect competition, where the nature of competition is restricted to output competition only. (Demstez, 1995). In the other case it is in finite

space but is not credible because the dilution of the State such monopolies may not be found.

On the other hand it can be shown that the same H could be associated with different underlying distribution of market shares, ranging from imperfect competition to oligopoly.. Therefore, even as a static measure, H fails to reveal the process of competition. Demstez (1995) has eluded the dimensions of the process by equating process with intensity.

It could equally be shown by contrast that H can not represent any unequivocally definite market form. Neither can it explain the process of competition. Both of these can not be predicted from H.

In an analysis of competition, one would expect the following.

- A clarification of the concept of competition to be used, given the plethora of literature on competition.
- The theoretical framework underlying such a concept.
- Measurement of the phenomenon of competition using the concept.
- A model analyzing competition in the said industry going through deregulation.

VII.0 ADAPTATION OF INDUSTRIAL ORGAINISATION APPROACH TO BANKING

A number of modifications are made in the standard S-C-P paradigm to adapt it to banking. The adaptation is based on a critical review of different works (Burgess, 1988; Ferguson and Ferguson, 1994; Hay and Morris, 1991; Sawyer, 1981; Baldwin, 1987; Reid, 1987).

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. The current approach provides a more meaningful analysis by an exploration of the answer to the following question: Can each entry barrier proposed by Bain emanate from multiple sources, instead of single source? The approach develops a three-fold classification scheme in which four sources of barriers to entry are distinguished: basic conditions, structure, conduct and performance. It has enhanced our understanding of the sources of entry barriers. The approach established that a particular entry barrier may emanate from multiple sources, instead of only one source, as pointed out by Burgess (1988).

Secondly, the list of standard variables falling under the three categories of structure, conduct and performance is examined in order to develop an appropriate set of variables relevant to the banking industry. A subset of the variables in the original list is retained, while a few new variables, typical of the banking industry are included. Table I provides different variables in the category of basic conditions, structure, conduct and performance.

Table I Scheme of S-C-P Construct adapted to banking.

Basic Conditions	Structure	Conduct	Performance
History	Concentration	Branch network	Rate of return over asset.
Legal/statutory requirements: Minimum CAR, asset classification, etc.	Economies of scale	Spread	Rate of return over equity
Technology	Product differentiation	NPA	Stability
		Metro Branches	Profitability per branch
		Staff / Branch.	Productivity per staff
		New Technology	Productivity per branch
		Diversification	Allocative efficiency
		Advertising	Technical efficiency
		Financing	X efficiency
		Merger	
		Operating Expenditure	

Thirdly, while the role of basic conditions is recognized in S-C-P framework, it plays a limited role therein. Another contribution of the study is an analysis of basic conditions. It is shown that any change in basic condition in terms of technology may directly influence conduct of a firm, bypassing structure. This goes against even the modified S-C-P paradigm, which is characterised by existence of feedbacks.

Fourthly, the study has evolved to a new concept of "entry facilitator" as opposed to the concept of entry barrier, present in discussion of S-C-P framework. Traditionally, discussions of entry conditions consist of entry barriers alone, which operate in favour of old firms. However, entry conditions may not be completely described as entry barriers alone. The study points out there are certain factors, which favour new firms, while entering the market. Such factors are termed as "entry facilitators". According to traditional literature related to S-C-P framework, existing firms would possesses a natural advantage in terms of lower cost due to economies of scale, while new entrants could have a higher cost on account of a smaller scale. On the other hand, new firms may have the potential 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, apart from the cost of equipment and training. It could need some organizational reform and may lead to loss of efficiency. There exist certain disadvantages on the part of existing firms rather than to the advantages enjoyed by them, as purported in the traditional literature. On the other hand, the potential for new technology may act as a "facilitator to entry" for the new firms rather than a barrier to entry, protecting the existing firms from entry. It is also pointed out that this phenomenon is not arising out of structure, but out of basic conditions.

Fifthly, the study provides a more meaningful way of interpreting the concept of competition. In terms of the S-C-P paradigm, competition has been classified as a conduct variable. The traditional S-C-P does not take account of the influence of basic conditions, conduct and performance on competition. It is argued in the thesis that competition need not be reduced to conduct alone. It encompasses all the components of S-C-P paradigm: basic conditions, structure, conduct and performance. It is stated that competition is an overall state and describes a market form.

Sixthly, the concept of strategic groups incorporated in S-C-P paradigm. Conduct in the conventional S-C-P paradigm has been conceptualised in a narrow way. The dimension of strategic group needs to be included in S-C-P framework while conceptualizing a broader approach to conduct. In the new framework, conduct of a firm is influenced by its membership of a particular strategic group, apart from the market structure under which it operates. This point needs a detailed analysis.

There are two variants of S-C-P paradigm: industry oriented and firm oriented (Mueller, 1986). In the industry variant of the S-C-P paradigm, the focus is on industry. Boundaries are assumed to exist, separating one industry from the other. Barriers are assumed to exist along these boundaries, which impede entry, and may be even the exit, of firms. Within an industry, all firms are treated alike. A common technology is assumed to exist that leads to a unique average cost function for all firms in the industry[2]. The number of firms in an industry or level of concentration determines the degree of collusion in the industry and thereby average height of prices. Collusion is seen raising a common price umbrella over all firms in the

[2] This average cost function is assumed to be U-shaped or L shaped with first a negatively sloped section until some form of minimum efficient size, and then a horizontal section extending for a long, if not indefinite, range of firm sizes. All firms larger than the minimum efficient size are assumed to have the same average cost; smaller firms have higher average costs.

industry. Product differentiation is seen as a characteristic raising the barrier to entry of other firms that benefit all companies in the industry alike.

In contrast to this industry approach to market performance, one can envisage an alternative approach that makes the firm the centrepiece of analysis. Firms deliberately seek to mould industrial structure in their favour and influence the behaviour of rivals by their conduct. Firms differ in the products they sell, their organisational form, and internal efficiency. It is the drive to be different that locomotes dynamic competition of the Schumpetarian sort. Those companies successfully differentiating their products or lowering their costs outpace their rivals. In contrast to industry approach, product differentiation is seen as a characteristic that differentiates one firm with an industry from another and thereby leads to different prices and profit levels across firms within an industry. This firm approach to market performance reverses the casual link between size and efficiency. Under the industry approach, an industry's technology dictated scale economies and the size of the firm determines cost. It has low average costs only if it is big enough. Under the firm approach efficiency determines size. The more efficient companies with superior products grow to be large than other firms. The firm approach to market performance is consistent with the criticisms of the traditional SCP literature by Demstez (1973) and Peltzman (1977), which emphasize firm specific efficiency advantages and with Shepherd (1972), which stress market power advantages.

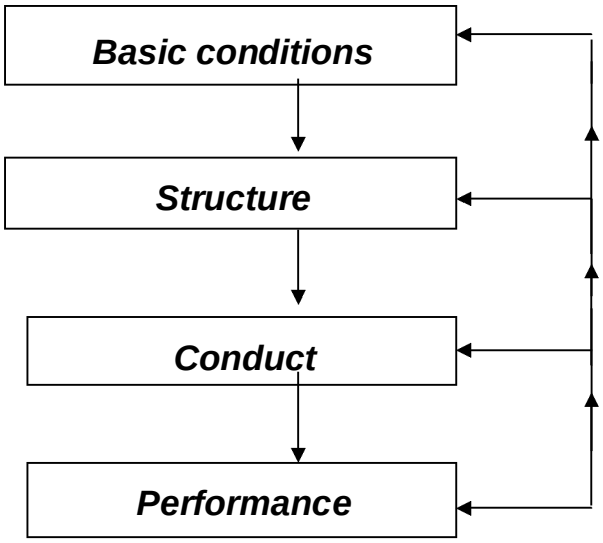
Our approach does not restrict itself to an industry oriented or to a firm-oriented approach, but adopts an overall approach. While the main focus is on the industry, the approach goes into all three levels: The Firm, The Group and The Industry. The strategic groups approach is usually portrayed as an alternative approach. It looks for strategic grouping of firms within an industry. A strategic group comprises firms,

which follow a similar strategy and hence possess similar advantages (Ferguson and Ferguson, 1994). It is argued that the typical cross section study of neoclassical economics becomes less appropriate if individual firms cannot be aggregated meaningfully to strategic groups. Newman (1978) argued that statistical analysis of structure-performance relationship in manufacturing industries invariably assumed that that firms belonging to an industry differ only in their market shares. This assumption is often incorrect. Firms competing in the same market need not choose identical corporate strategies even when they share a common goal of long run profit maximisation. The reasons provided by him include possession of heterogeneous and durable firm-specific asset acquired in a random fashion and heterogeneous buyers' preferences leading to significant differences in non-price attributes of the product produced by them. Later, Porter (1980) rationalises existence of strategic groups on the basis of a wide variety of reasons. They include firms' differing initial strengths and weaknesses, differing times of entry into the business and historical accidents. In the current study of conduct and performance, the strategic group approach has been incorporated into the S-C-P approach.

Seventhly, our approach provides a framework to analyse competition. Such a framework includes the following elements. Firstly, it is believed that competition is an overall state that describes the nature of the market form. Hence, it encompasses all the aspects of an industry, namely basic conditions, structure, conduct and performance. The figure 1 portrays the idea. Secondly, there is a phenomenon of entry facilitators as opposed to entry barriers. The basic approach to entry barrier does not look at basic conditions. Hence the conclusion that returns to scale constitutes a barrier to entry. Assuming that long run costs are a product of both internal and external economies of scale, it still does not take into account basic conditions. Our

understanding in this context is different from the traditional theory. Once basic conditions like technology are not treated as a parameter but are allowed to change, then it may be seen how it may act as an entry facilitator. It will lead to situation in which long run average cost of new firms will lie at a lower level than the old firms, which initially enjoyed a cost advantage over the new firms. Entry facilitators, along with the concept of strategic group, basic conditions and different elements of market structure are put together in figure.2, which along with figure.1 to provide an analytical framework to analyse competition.

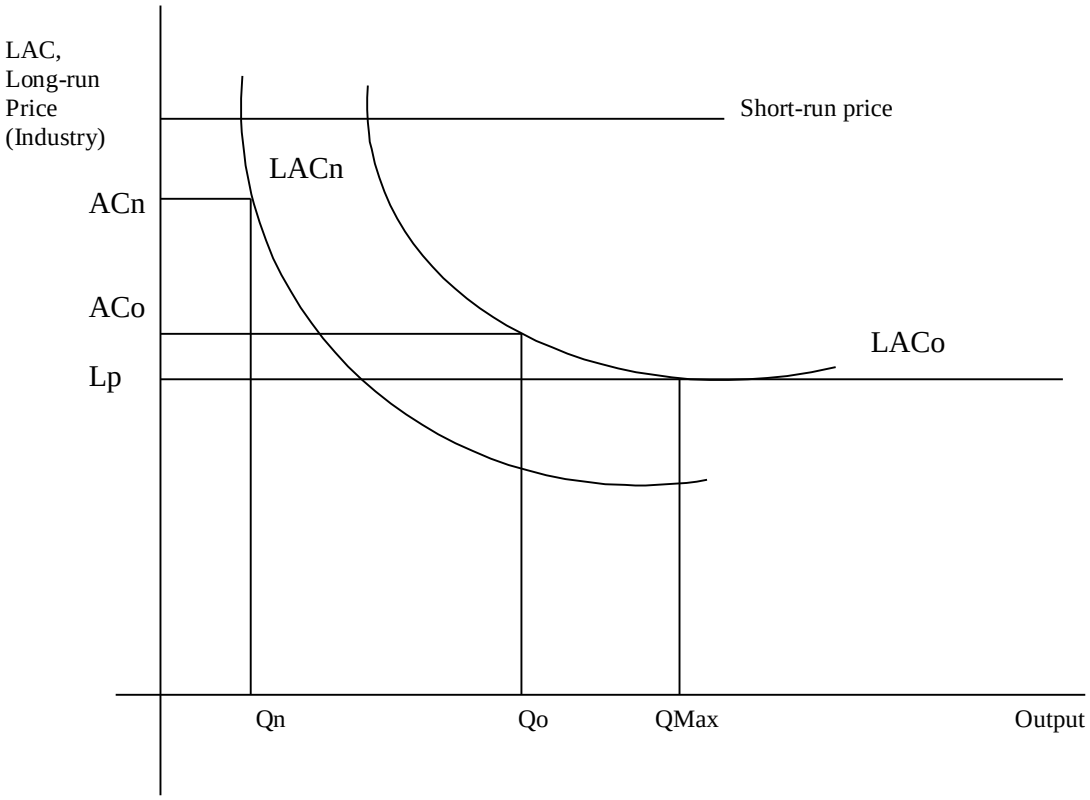
Figure 2 Nature of Competition



The following figure is developed in order to explain the dynamics of the market after entry. The figure attempts to synthesise the approaches of S-C-P and strategic groups. While, it includes traditional elements of S-C-P paradigm including entry, economies of scale, product differentiation and price cost margin, it also incorporates basic conditions and strategic groups to analyse the process of market dynamics in the industry. In the traditional S-C-P paradigm, it is structure, which influences entry. However, it has been observed that in case of banking, change in basic condition directly influences conduct by bypassing structure.

In the Figure 3, output and average cost are represented on the x and y-axes respectively. Let the discussion begin with the status of old banks on the eve of entry of new banks. They did not start with the provision of having to have an optimal scale in the beginning itself. In the absence of new banks, they got the benefit of serving a whole market and in the process, lowered cost through exploitation of economies of scale.

Figure 3: Entry and Market Dynamics



LEGEND

ACn = Long Run Average Cost of New Bank
ACn = Average Cost of New Bank
ACo = Average Cost of Old Bank
Lp = Long Run Price
LACo = Long Run Average Cost of New Bank
Qn = Output of new Bank
Qmax = Maximum size
Qo = Output of Old Bank

The entry barrier argument can well be granted in terms of internal economies arising in favour of old firms. These would arise out of indivisibilities and experience. However, internal economies are only likely to enhance the advantage the old banks may be experiencing, in addition to economies that they derive from external economies. External economies arises essentially an expansion of the industry.

In long run industry equilibrium, only efficient firms remained because they have achieved the optimal scale. In the regulated period, the old banks reached economies of scale when they were perhaps producing QMax level of output. Now the issue is how the new banks could enter and overtake the old banks, when the latter were enjoying the benefits of economies of scale.

To explain the scenario after entry with new banks with a better technology, two average cost curves are shown, one above the other. The upper curve represents average cost of the old banks and the lower one shows the cost situation of the new firms. This is because the new banks entered with a better technology, which resulted in lower cost of production. Clearly the new banks enjoyed a potential absolute cost advantage because the new banks at a lower cost can produce the same output. However, initially the new banks suffered from a relative cost advantage because of a lower volume of production in the initial period.

After entry of new banks, expansion of the industry benefited the old banks in the initial phase. It was natural for people to go to an established bank as opposed to a new bank, which was yet to establish its credibility. Substitution of an old bank with a new bank took place over time, when the new banks were perceived as provider of better services with the help of new technology. However, there was a caveat here. The amount of money needed to open an account with new banks is substantially higher than that of an old bank. Such difference in strategic behaviour limited the scope of substitution of old banks by the new banks. Thus, it is clear that, the new firms are not likely to have economies of scale during the period immediately after their entry. However, there was a latent demand for a variety of technology-based services emanating from affluent section of the population. In absence of supply of such services, such a section more readily joined the new banks. This caused an

expansion of industry in favour of new banks arising out of new technology thus while, technology and new services enabled differential advantage in favour of new banks, and such advantages however would unfold only over a period of time.

It was imperative for the new banks to expand production in order to realize the benefits of economies of scale. Their strategy was to target the well off segment of the population through provision of technology based services. With this end in view, they engaged in product differentiation and developed brand names and ultimately went in for merger. In such a situation, the only alternative for the old firms was to go for new technology, which also had its own compulsions. Use of new technology is meaningful only when their economy of scale is exploited. With recession affecting their clients, second rung corporates located in their traditional area of operations, they had no choice but to look for expanded markets in metros. It follows from the above discussion that market dynamics is shaped by three factors.

1. Entry of new banks consequent on deregulation, motivated by expectations of profits through use of new technology and strategic conduct.
2. The mechanism through which new banks could actually circumvent the advantages of old banks included new technology and strategic conduct.
3. Means adopted by the old banks to cope up with the new banks in the new scenario.

An analytical framework to understand competition is developed. Such a framework is based on the understanding that competition is an overall state describing the nature of the market form. Hence, it encompasses all the aspects of an industry, namely basic conditions, structure, conduct and performance. The framework is a product of synthesis of the approaches of S-C-P and strategic groups.

While, it includes traditional elements of S-C-P paradigm including entry, economies of scale, product differentiation and price cost margin, it also incorporates basic conditions and strategic groups to analyse the process through which evolution of competition takes place in the market.

The ordinary S-C-P approach does not involve any analysis of market dynamics. Our approach introduces various aspects of industry dynamics. In the extant approaches, wherever, wherever dynamics have been studied, the limitation is that in the case of oligopolistic or duopolistic market forms, firm dynamics coincides with industry dynamics. Therefore, there can not be different methods for studying dynamics at the industry level and the firm level.

Lastly, approaches which start with the assumption of an oligopolistic market structure can not provide a theoretical framework to identify the existing market form in an industry. Our approach provides a methodology to arrive the market form in banking industry through an analysis of the all aspects of basic conditions, structure, conduct and performance.

VIII.0 Conclusions

There are various approaches to study competition in general and banking in particular. The ordinary Structure-Conduct-Performance approach does not involve any analysis of market dynamics. Our approach introduces various aspects of industry dynamics and growth. It provides a methodology to arrive at the market form in banking industry through an analysis of all the aspects of basic conditions, structure, conduct and performance.

BIBLOGRAPHY

Amel, D. F. and Rhoades, S.A. (1988) Strategic Groups in Banking, *Review of Economics and Statistics*, 70(1), pp.685-9.

Bain, J. (1956) Barriers to New Competition. Mass: Harvard University Press.

Bain, J S. (1968) Industrial Organisation. New York: John Wiley and sons.

Baldwin, W. L. (1987) Market Power, Competition and Antitrust Policy. Illinois: Irwin.

Benston, G. and Smith, C.G. (1976) A Transaction Cost Approach to the Theory of Financial Intermediation, Journal of Finance, 31(2), pp. 215-231.

Biswas, P. K. and Deb, A.T. (2004) Determinants of NPAs in the Indian Public Sector Banks, The ICFAI Journal of Bank Management, 3(3), pp.15-45.

Bikker, J.A and Haaf, K. (2002) Competition, Concentration and Their Relationship: An Empirical Analysis of The banking Industry, Journal of Banking and Finance, 26(11), pp.2191-2214.

Bolt and Tieman (2001) *Banking Competition – Risk and Regulation.* DNB Staff Working Paper, Amsterdam.

Bhattacharya, Aditya, (2003) India's Competition Policy- An assessment." *Economic and Political Weekly, 38(34), pp 3561-3574.*

Bresnahan, T.F., and Reiss, P.C. (1991) Entry and Competition in Concentrated markets, Journal of Political Economy, 99(5), pp.977-1009.

Burgess, G. H. (1988) Industrial Organisation. New Jersey: Prentice Hall.

Calomiris, C.W., and Kahn, C.M.(1991) The Role of Demandable Debt in Structuring Optimal Banking Arrangements, American Economic Review, 81(3), pp. 497-513.

Chamberlin, E. H. (1933) A Theory of Monopolistic Competition. Cambridge, Mass: Harvard University Press.

Caves, R.E. and Porter, P. (1978) Market Structure, Oligopoly and Stability of market shares, Journal of Industrial Economics, 26(4), pp.289-313.

Corrigan, E.G. (1982) Are Banks Special? Annual Report, Federal Reserve Bank of Minneapolis, pp. 2-24.

Dastidar, K.G.(2004) On Stackelberg Games in a homogenous Product Market, European Economic Review, 48(3), pp. 549-562.

Davies, S. and Lyons, B. (1991) Economics of Industrial Organisation. New York: Longman.

De, Prithwis K. (2004) Technical efficiency, Ownership, and Reforms: An Econometric Study of Indian Banking Industry, Indian Economic Review, 39(1), pp. 261-294.

Deb, A.T. (2004) Market Structure and Entry: A Study of the Determinants of Market Concentration in Private Domestic Banking Industry in India, Paper presented in 6th annual conference on money and finance, Indira Gandhi Institute for Development Research, Mumbai.

Demstez, H. (1995) The Economics of Business Firms: Some Critical Commentaries. New York: Cambridge University Press.

Denizer, C. (1997) The Effect of Financial Liberalisation and New Bank Entry on Market Structure and Competition in Turkey, Research Policy Working Paper, WPS no 1839, World Bank, Washington DC.

Diamond, D. and Dybvig. P. (1983) Bank Runs, Deposit Insurance and Liquidity, Journal of Political Economy, 91(3), pp. 401-419.

Diamond, D.W. (1984) Financial Intermediation and Delegated Monitoring, Review of Economic Studies, 51(3), pp. 393-414.

Diamond, D.W., and Rajan, R.G. (2001) Liquidity Risk, Liquidity Creation and Financial Fragility: A Theory of Banking, Journal of Political Economy, 109(2), pp. 287-327.

Eatwell, J., Milgate, M. and Newman, P. (1988) The New Palgrave Dictionary of Economics, vol.1. London: Macmillan Press Ltd.

Fama, Eugene F. (1985) What's Different About Banks? Journal of Monetary Economics, 15, pp 29-39

Fama, E. and Laffer, A. (1972) The Number of firms and Competition, American Economic Review, 62(4), pp.670-674.

Ferguson, P. and Ferguson, G. (1994) Industrial Economics. London: Macmillan Press Ltd.

Flannery, M.J. (1994) Debt Maturity Structure and the Deadweight Cost of Leverage: Optimally Financing Banking Firms, American Economic Review, 84(1), pp. 320-331.

Forrest, Capie and Mark, Billing (2004) 'Evidence on Competition in English Commercial Banking – 1920-1970'. *Financial History Review.* V. 11, N.1, pp. 69-103.

Freixas, X. and Rotchet, J. (1997) Microeconomics of Banking. Massachusetts: The MIT Press.

Gerosky, P. A. (1990) Innovation, Technological Opportunity and Market Structure, Oxford Economic Papers, 42(3), pp.586-602.

Gerosky, P. A. (1989) Entry, Innovation and Productivity Growth, Review of Economics and Statistics, 71(4), pp.572-578.

Gibson, R. A. (1984) Bank Market Structure and Competition, Journal of Money, Credit and Banking, 16(4), pp.616-645.

Gort, M. (1963) Analysis of Stability and Change in Market Share, Journal of Political Economy, 71(1), pp.51-63.

Hannan, T. H. (1991) Foundations of the Structure-Conduct-Performance Paradigm in Banking, Journal of Money, Credit and Banking, 23(1), pp. 68-84.

Haslem, J. A. (1985) Commercial Bank Management. Virginia: Reston Publishing Co.

Hay, D. and Morris, D. (1991) Industrial Economics and Organization: Theory and Evidence. London: Oxford University Press.

Hayek, F.A. (1948) Individualism and Economic Order, Chicago: University of Chicago Press.

Hayes, S. Spence, A.M. and Marks, D.V.P. (1983) Competition in the Investment Banking Industry. Harvard University Press: Cambridge.

Hawtrey, R.G. (1943) Competition from Newcomers, Economica, 10(new series: 37-40), pp.219-222.

Heggestad, A. A. and Rhoades, S.A. (1976) Concentration and Firm Stability in Commercial Banking, *Review of Economics and Statistics*, 58(4), pp. 443-452.

Malgi, T. (1992) Private Sector Banks: Bright days ahead, Economic and Political Weekly, 27(6), pp.301-302.

Mann, M (1966) 'Seller concentration, Barrier to entry and Rates of return in Thirty Industries 1950-1960.' *Review of Economics and Statistics*, August

Mc Guckin, R. (1972) Entry, Concentration Change and Stability of Market Share, Southern Economic Journal, 38(3), pp.363-70.

McNulty, P.J. (1968) Economic Theory and The Meaning of Competition, Quarterly Journal of Economics, 82(4), pp.639-656.

Molnar-Marton, Jozself and Nagy-Csilla Horvath (2007), *A Structural Empirical Analysis of Retail Banking Competition: The Case of Hungary.* MNB Working Paper. N.1.

Muller, D. C. (1986) Profits in the long run. Cambrige: Cambridge University Press.

Murgkar, Ramasway and Shelar (2007) Competition and Monopoly in Indian Cotton Seed Market, *Economic and Political Weekly*, 52(37), pp 3781-3789.

Murthy, K V Bhanu and A. T. Deb (2007) Operationalizing and Measuring Competition: Determinants of Competition in Private Banking Industry in India. SSRN *Working Paper*.

Murthy, K V and A. T. Deb (2007) Theoretical Framework Of Competition As Applied To Banking Industry. SSRN *Working Paper*.

Nickell, S. J. (1996) Competition and Corporate Performance, Journal of Political Economy, 104(4), pp.724-746.

Neuberger, Doris (1998) *Structure, Conduct and Performance in Banking Markets.* Working Paper, University of Rostock, Faculty of Economics and Social Sciences.

Newman, H.H. (1978) Strategic Groups and the Structure- Performance Relationship, Review of Economics and Statistics, 60(1), pp.417-27.

Northcott, Carol Ann (2004) *Competition in Banking: A Review of the Literature*. Bank of Canada, Working Paper, N.24., Ottawa.

Rees, R. D. (1975) Advertising, Concentration and Competition: A comment and Further Results, Economic Journal, 85(337), pp.165-172.

Reid, G. (1987) Theories of Industrial Organization. Basil Blackwell: Oxford.

Richardson, G.B.(1975) Adam Smith on Competition and Increasing Returns in A. Skinner and T. Wilson ed. Essays in Smith, A. Skinner and T. Wilson. Clarendon Press: Oxford, pp. 350-360.

Santemoro, A. M. (1984) Modeling the Banking Firm, Journal of Money, Credit and Banking, 16(4), pp. 576-602.

Sarkar. J. (1999) India's banking sector: Current Status, Emerging challenges, and policy imperatives in globalized environment, in J. Hansen and S. Kathuria, eds. India: A financial sector for the twenty-first century. New Delhi: Oxford University Press, pp. 71-131.

Saving, T. (1970) Concentration Ratio and Degree of Monopoly, *International Economic Review*, 11(1), pp.139-146.

Sawyer, M. (1981) The Economics of Industries and Firms: Theory, evidence and Policy. London and Sydney: Croom Helm.

Schmalensee, R. (1989) Inter-Industry Studies of Structure and Performance in Schmalensee, R. and Willing, R. ed. Handbook of Industrial Organisation, volume North Holland, Amsterdam.

Schumpeter, J. (1934) The Theory of Economic Development, Cambridge, Mass: Harvard University Press.

Schumpeter, J. (1942) Capitalism, Socialism and Democracy. New York: Harper and Row.

Shepherd, W.G. (1972) The Elements of Market Structure, Review of Economics and Statistics, 54(1), pp. 25-37.

Siddharthan, N.S. and Pandit, B.L. (1992) Deregulations, Entry and industrial Performance: The Impact of Recent Indian Policy Changes, Working Paper No E/152/92, Institute of Economic Growth.

Simon, H. A. and Bonini, C.P. (1958) The Size Distribution of Business Firms, American Economic Review, 48, pp. 607-17.

Shaffer, Sherrill (1993) 'A Test of Competition in Canadian Banking'. *Journal of Money Credit and Banking.* V. 25, N. 1, Feb. pp. 49-61.

Shirai and Rajsekaran (2001) *Is India's Banking Sector Reform successful? From the perspective of the Governance of the Banking System.* Mimeo, Keio University.

Shubik, M (1976) A Non-coperative model of a Closed Economy With Many Traders and Two Banks, Zeitschrift fur Nationalokonomie, 36, pp.10-18.

Shubik, M. (1990) A Game Theoretic Approach to the Theory of Money and Financial Institutions, in B.H. Friedman, and F.H. Hahn eds., Handbook of Monetary Economics, vol.1.Oxford: Elsevier Science Publishers B.V., pp.172-218

Shy, O. (1996) Industrial Organisation: Theory and Applications. Cambridge: The MIT Press.

Smith, A. (1976) The Wealth of Nations. Oxford: Clarendon.

Stigler, G.J. (1961) The Economics of Information, Journal of Political Economy, 69(3), pp.213-25.

Sumalatha, B.S. (2008) State of Competition among Mutual Funds in India: An exploratory Analysis. Paper Presented to 44th Indian Econometrics Conference, 3rd to 5th January, Hyderabad.

Sutton, C. J. (1974) Advertising, Concentration and Competition, Economic Journal, 84 (333), pp.56-69.

Telser, L.G. (1964) Advertising and Competition, Journal of political Economy, 72(6), pp.537-562.

Tobin, J. (1963) Commercial Banks as Creators of Money in Carson, D. ed. Banking and Monetary Statistics, Homewood, IL: Richard D, Irwin, Inc.

Toolsema (2003) *On Competition and Banking.* Thesis of RijksUniversitet, Groningen.

Young, Allan (1928) Increasing Returns and Economic Progress, Economic Journal, 38, pp.527-42.

Vickers, (1995) Concepts of competition, Oxford Economic Papers, 47(1), pp 1-23.

Waterson, M. (1984) Economic Theory of Industry. Cambridge: Cambridge University Press.

Winter, S. G. (1984) Schumpetarian competition in Alternative Technological regimes, Journal of Economic Behaviour and Organisation, 5(4), pp. 287-320.