Chapter 2- Literature Review

2.1 Introduction

Keeping in view research issues on performance of the banking sector in the presence of competition in India introduced in the preceding chapter, this chapter reviews the findings of studies in the specified areas. Section 2.2 reviews studies that have assessed competition using the Structure-Conduct-Performance (SCP) paradigm. Section 2.3 highlights studies that have reviewed the effects of competition on banking and methods adopted for doing so. Section 2.4 highlights results that have focused on the effects of competition, specifically induced through entry of foreign banks in emerging market economies (EMEs). The subsequent Section 2.5 presents findings of studies related to effects of competition on specifically diversification, profitability and costs of banks. A review of studies that have analysed the impact of competition on efficiency of banks specifically using Data Envelopment Analysis (DEA) is presented in Section 2.6. Finally, Section 2.7 delineates the gaps existing in the studies for further research to a satisfactory resolution of the problem.

2.2 Studies Reviewing the Structure-Conduct-Performance (SCP) Paradigm

The Structure-Conduct-Performance (SCP) framework uses concentration as a proxy for market structure. The SCP model implicitly presumes that all banks benefit equally from a high level of concentration. (Bikker, 2004) presents two theoretical models based on the Cournot framework which link performance (i.e. the price-cost margin) to the Herfindahl-Hirschman index and the five-bank concentration ratio, thereby providing theoretical underpinning of the SCP model.

Two alternative theories suggest that market concentration need not reduce competition between banks. The contestability theory states that a concentrated
banking market can still behave competitively, as long as the entry barriers for potential newcomers are limited (Baumol, 1982; Baumol et al. 1982). The efficiency hypothesis postulates that the most efficient banks gain market share at the cost of less efficient banks (Demsetz, 1974). According to this theory, bank efficiency is the driving force behind market concentration, resulting in lower prices. (Bikker et al. 2007)

Furthermore, competition in the banking industry could be affected by the response of banks to business cycle dynamics. The expected direction of this response is ambiguous. In the model of Rotemberg and Saloner (1986) collusion markups are countercyclical. They model the response of colluding oligopolies to fluctuations in the demand for their products. Such oligopolies behave more competitively in periods of high demand. In such periods the benefit to a single firm from undercutting the price that maximizes joint profits is relatively large, since a firm can capture the entire industry profits by lowering its price only slightly. The threat that a member firm deviates is sufficiently large to induce cooperation by all firms. Hence, during periods of high demand price reductions are needed to maintain implicit collusion. By contrast, according to Green and Porter (1984) collusion markups are procyclical. They study the behavior of colluding oligopolies that maximize joint profits. For member firms in the cartel it turns out optimal to behave monopolistically when demand is high, but to switch temporarily to Cournot behavior when demand drops.

The empirical evidence in favor of the positive SCP relation between bank concentration and profits is impressive (Weiss, 1974), but weakens when other market structure variables besides concentration are added. Some papers report a negative impact of concentration on profits when market shares are taken into account (Martin, 1983; Gilbert, 1984; Salinger, 1990). The SCP approach is criticized in Bresnahan (1989), Schmalensee (1989) and Bos (2002, 2004). Several studies focus on the relation between concentration and competition. For
various European countries, Fernandez de Guevara et al. (2005, 2006) do not establish a significant relation between the Herfindahl-Hirschman index and competition. By contrast, Bikker and Haaf (2002) find a significantly positive effect of various concentration ratios on market power.

Several studies provide indirect evidence for the impact of contestability on banking competition. Claessens et al. (2001) analyze how foreign entry affects domestic banking markets in 80 countries and show that increased presence of foreign banks makes domestic banks more competitive by reducing their profitability and net interest margins. Barth et al. (2004) they assess the impact of barriers to foreign bank entry on banking sector outcomes and show that tighter entry restrictions negatively impact bank efficiency and increase bank fragility.

Some studies suggest that in developed countries the advantages of foreign ownership outweigh the disadvantages of operating from a long distance and that the reverse is true in developing countries (DeYoung and Nolle, 1996; Berger et al. 2000; Claessens et al. 2001). Various studies on interest rate margins and other performance indicators in Latin America and Eastern Europe report that foreign bank entry significantly reduces interest rate spreads and profit rates, indicating that foreign bank participation increases competition. By contrast, increasing bank concentration boosts the interest rate spread and the profit rate, suggesting that concentration impairs competition (Clarke et al. 2003; Martinez Peria and Mody, 2004; Wong, 2004).

All in all, there is both theoretical and empirical evidence that various factors related to market structure affect the competitive climate in the banking sector, such as regulation, foreign entry, contestability, institutional framework, and macro-economic stability.
2.3 Studies Reviewing the General Effects of Competition in Banking

A number of papers have investigated competitive conditions in banking systems. The focus of these papers has been varied. Some try to document only the degree of competition or lack thereof, others try to identify structural and institutional factors which help explain variation in effective competition across banks, countries or over time. Some others go further and try to establish the impact of competition or lack thereof on bank efficiency and access to financing.

As a first-order effect, one would expect increased competition in the financial sector to lead to lower costs and enhanced efficiency, even allowing for the fact that financial products are heterogeneous. In a theoretical model, Besanko and Thakor (1992), for example, analyze the allocation consequences of a relaxing of entry barriers and find that equilibrium loan rates decline and deposit interest rates increase, even when allowing for differentiated competition. As more recent research has highlighted, the relationships between competition and banking system performance, access to financing, stability and growth are, however, more complex. Market power in banking, may up to a degree be beneficial for access to financing. The view that competition policy is unambiguously good in banking is more naive than in other industries and vigorous rivalry may not be the first best for financial sector performance. Neither does necessarily technological progress, lowering production or distribution costs for financial services providers, lead to more or better access to external financing (Claessens and Laeven 2003).

In a dynamic world, a bank and a borrower establish relationships to overcome information problems. The higher its market power, the more likely that a bank will invest in information gathering about firms, and the more likely it provides credit (Rajan, 1992). More competition can then undermine the incentives of banks to invest in a relationship. The incumbent bank has more information about the borrower than its competitors. This increases the switching costs for the
borrower, especially for better quality borrowers since they will face adverse conditions when trying to look for financing from another bank, as they will be perceived as poor creditors. Borrowers will be less willing to enter a relationship with a bank when the market for external financing is more competitive. The net effect of these problems can vary with the overall competitive environment.

Boot and Thakor (2000), show that increased interbank competition may induce banks to make not less, but more relationship loans. Dell’Ariccia, Friedman and Marquez (1999) show that the presence of information asymmetries in lending relationships can become a barrier to entry in the banking system. Technological progress lowering costs can also affect the competitive structure of markets and thereby affect the access to and terms of external financing.

Much of the literature that has or has not tested a specific structural model has been concerned with the US and a few developed countries. The focus has also been on the diversification, costs, profitability and efficiency with which banks operate, as it relates to factors such as the competitive structure of the market, the degree of domestic deregulation, the effects of merger and acquisitions, and the degree of consolidation in the industry. Berger (1995) explores also the relationship between market power and profit. He finds limited evidence for any specific theory of bank profits, including the structure-conduct-performance hypothesis. Berger and Hannan (1989) investigate the commonly observed relationship between market concentration and profitability. They try to separate the effects of non-competitive price behavior and of greater efficiency of firms with larger market shares. Using data for US banks during the period 1983-85, they find that non-competitive price behavior could explain the relationship. Petersen and Rajan (1995) offer empirical evidence for the U.S. that firms are less credit constrained and face cheaper credit, the more concentrated the credit market is. Angelini and Cetorelli (2000) analyze the evolution of competitive conditions in the Italian banking industry using firm-level balance sheet data for
the period 1983-1997. They find some evidence of a substantial increase in competitive conditions in the banking market after the introduction of the European Single Banking License, with a decrease in markups. Berger, Klapper and Udell (2001) investigate the effects of bank size, foreign ownership, and distress on lending banks for Argentina. Their results suggest that large and foreign-owned banks may have difficulty extending relationship loans to small firms.

Claessens, Demirgüç-Kunt and Huizinga (2001) investigate the role of foreign banks in a cross-country study and show that entry by foreign banks makes domestic banking systems more efficient by reducing their margins. Using data for 107 countries, Barth, Caprio and Levine (2002) analyze empirically, among others, the cost and benefits of regulatory restrictions. They find that tighter entry requirements are negatively linked with bank efficiency, leading to higher interest rate margins and overhead expenditures, while restricting foreign bank participation tends to increase bank fragility. These results are consistent with the view that tighter entry restrictions tend to limit competition. Using bank level data for 77 countries, Demirgüç-Kunt, Laeven, and Levine (2003) investigate the impact of bank concentration and regulations on bank efficiency. They find that bank concentration has a negative and significant effect on the efficiency of the banking system except in rich countries with developed financial systems and more economic freedoms. Furthermore, they find bank-level based support that regulatory restrictions on entry of the new banks, particularly concerning foreign banks, and implicit and explicit restrictions on bank activities, are associated with lower levels of bank efficiency. Beck, Demirgüç-Kunt and Maksimovic (2002) investigate the effects of bank competition on firm financing constraints and access to credit, also using a cross-country approach with now firm-level data. They find that bank concentration increases financing constraints and decreases the likelihood of receiving bank finance for small and medium-size firms, but not
for large firms. The relation of bank concentration and financing constraints is reduced in countries with an efficient legal system, good property rights protection, less corruption, better developed credit registries and a larger market share of foreign banks, while public bank ownership exacerbates the relation. Further, less contestability and restrictions on banks’ activities exacerbate the relation, while high entry and capital requirements alleviate it.

2.4 Studies Reviewing the Effects of Entry of Foreign Banks in Emerging Market Economies (EMEs)

Empirical research on the factors that compel foreign banks to enter a country indicate that the degree of economic integration between a foreign bank’s home country and the host country which it enters, the market opportunities available in the host country, and entry restrictions and other regulations, including tax treatment, all affect the pattern and timing of foreign entry. (Clarke et al. 2002)

Claessens, Demirguc-Kunt, and Huizinga (2000) model foreign presence across 80 countries from 1988-95, and find that foreign banks are attracted to markets with low taxes and a high per capita income. Focarelli and Pozzolo (2000) employ a richer set of variables to control for host market profit opportunities. They model the location choices of 143 banks that had at least one shareholding abroad across 28 countries. In addition to controls for the degree of economic integration between countries (non-financial FDI, bilateral trade, and geographical distance) and regulatory restrictions on bank entry, they include variables that measure the prospects for economic growth and the competitiveness of the banking sectors of the potential host countries. They find greater entry where the expected rate of economic growth is higher and the banking system is on average less efficient. With respect to growth prospects, they find that host-country initial GDP per capita and inflation are negatively associated. The authors interpret their
results to mean that foreign banks are more likely to enter host countries with better prospects for growth.

Although most of the 28 host countries in the Focarelli-Pozzolo study are developed, the study does include several developing countries. The indications to date are that foreign banks enter developing countries for somewhat different reasons than they enter developed ones. In particular, the 'follow the customer' motivation seems less important for developing countries than for developed ones, which suggests that foreign banks are genuinely interested in exploiting opportunities in the host country. Provided this does not leave some market segments, such as small businesses, with less access to financial services, this type of entry should bring substantial benefits to the host country. More research on what motivates entry into developing countries is needed. It is, perhaps, unlikely that the Focarelli/Pozzolo results on local market opportunities would fully apply to the most underdeveloped countries, where profitability prospects are generally bleak. Cultural connections might also affect the ability of entrants to take advantage of local opportunities.

Several papers have found a positive correlation between the size of banks and performance. Grosse and Goldberg (1991) use data on the average characteristics of the home country banking sector and find that size was positively linked to foreign bank presence in the U.S. from 1980 to 1988.

There are two types of evidence on efficiency, one comparing the efficiency of foreign entrants with domestic competitors and the other showing that, within the subset of banks that expand abroad, those with the highest degree of internationalization are relatively more efficient. With respect to efficiency comparisons, several studies have found that foreign-owned banks are, on average, less efficient than domestic banks in developed host nations. Hasan and Hunter (1996) find that Japanese multinational banks in the U.S. are, on average,
less efficient than U.S. multinational banks. However, some studies, in particular those that have not used the U.S. as the host nation in the analysis, have found that foreign institutions have nearly the same average efficiency as domestic institutions (Vander Vennet, 1996, Hasan and Lozano-Vivas, 1998).

Efficiency comparisons between foreign and domestic banks in developing countries yield very different results. Claessens, Demirgii-Kunt, and Huizinga (2000) find that foreign banks have lower interest margins, overhead expenses, and profitability than domestic banks in developed countries, while the opposite is true in developing countries. They interpret their results to imply that the reasons for foreign entry, as well as the competitive and regulatory conditions found abroad, differ significantly between developed and developing countries.

Barajas, Steiner, and Salazar (2000) compare the performance of foreign owned versus domestic banks in Colombia from 1985 to 1998. They find that foreign owned banks, regardless of whether they were originally owned by nationals or not, have fewer non-performing loans, lower reserve requirements, and are more productive. Clarke et al. (2000) find similar performance advantages for foreign banks operating in Argentina in the late 1990s. Bhattacharya, Lovell, and Sahay (1997) find that foreign banks are slightly more efficient than domestic ones in India.

The second type of evidence, which models foreign entry as a function of efficiency and other factors comes again from Focarelli and Pozzolo (2000). They find that a bank's return on assets is positively correlated with the degree to which it expands abroad. They also find that banks with a higher share of non-interest income are more likely to have a foreign presence. Their interpretation is that more innovative banks look for new profit opportunities and, therefore, have both a larger share of revenues from non-traditional activities and a greater propensity to expand abroad. For developing countries, such entrants would appear to bring many benefits, depending on the services they choose to provide.
In the context of the Philippines banking sector, Unite and Sullivan (2002) found that foreign bank entry was associated with a reduction in interest rate spreads and bank profits, but only for those domestic banks that were affiliated to a family business group. Foreign entry, in general, led to improvements in operating efficiencies. A comparison of the performance of foreign and domestic banks in select Latin American countries revealed that while foreign banks differed little from their domestic counterparts in overall financial condition, they showed more robust loan growth, a more aggressive response to asset quality deterioration, and a greater ability to absorb losses that could help to strengthen the financial systems of their host countries (Goldberg, Crystal and Dages, 2002). Uiboupin (2004) estimates empirically the short term effects of foreign banks entry on bank performance in the Central and Eastern European (CEE) Countries. A sample of 219 banks from ten CEE countries is used in the analysis. The research results show that foreign banks’ entry negatively affects domestic banks’ revenues from interest-earning assets, non-interest income, and profitability. Foreign banks entry can also raise the overhead costs of the local banks in the short term. The general conclusion is that foreign banks entry is likely to increase competition in the host country.

In contrast to above studies, Haber and Musacchio, 2005 study the case of Mexico and argue that foreign bank participation did not lead to increase in competition and efficiency, and instead, led to a retrenchment in lending. In the case of China, Huang et al. (2008) argued that it was difficult to be conclusive on whether the foreign banks entry had enhanced the competitiveness of Chinese domestic banks. Examining the increased consolidation and foreign bank penetration in 11 Latin American countries, Yildirim and Philippatos (2007) found that there was a decline in competition for Brazil, Chile, and Venezuela in the late 1990s, which could be attributed to increased consolidation. However, they observed that deregulation and opening up of the financial markets for foreign
participation served as an important catalyst to increase the competitiveness of banking markets.

Literature also suggests that impact of foreign banks’ entry on domestic banks is not uniform across developed and developing countries. Based on a sample of 7900 banks from 80 countries, Claessens et al. (2001) found that although entry of foreign banks led to reduction in profitability and margins for domestic banks, foreign banks had higher profits than domestic banks in developing countries, while the opposite was true in developed countries. They concluded that the result might be due to home ground advantage of domestic banks such as organizational arrangement, better knowledge of local customers and difference of language and culture. Consequently, foreign banks in developed countries were unable to exert any influence on interest margins, operating expenditure and profitability etc., of domestic banks.

Thus, the empirical evidence on the benefits and costs of foreign banks’ entry has been mixed.

2.5 Studies Assessing the Effects of Competition on Banks’ Incomes, Profits and Costs

A whole new trend about structural effects on bank profitability started with the application of the Market-Power (MP) and the Efficient-Structure (ES) hypotheses. The MP hypothesis, which is sometimes also referred to as the Structure-Conduct-Performance (SCP) hypothesis, asserts that increased market power yields monopoly profits. In highly concentrated markets, banks set prices that are less favorable to consumers, as a result of imperfectly competitive markets. In concentrated markets, a bank can impose higher interest spreads, by setting higher lending rates and lower deposit rates. A special case of the MP hypothesis is the Relative-Market-Power (RMP) hypothesis, which suggests that only firms with large market shares and well differentiated products are able to exercise
market power and earn non-competitive profits (Berger, 1995). Banks with well-differentiated products can exercise their market power in pricing products, thus earning supernormal profits. The X-efficiency version of the ES (ESX) hypothesis suggests that increased managerial and scale efficiency leads to higher concentration and, hence, higher profits. (Athanasoglou, Brissimis and Delis, 2005)

A positive statistical relationship between measures of market structure and profitability has been reported by many banking studies (Molyneux and Thornton, 1992; Berger, 1995). A positive relationship between concentration and profitability has been reported by Short (1979) for Canada, Western Europe and Japan, by Molyneux and Thornton (1992) for Europe and by Bourke (1989) for Europe, North America, and Australia. Demirguc-Kunt and Huizinga (1999) measure the effects on profitability of a variety of bank and market characteristics, such as taxation, the structure of financial systems, and financial regulations. Using commercial bank-level data from 80 developed and developing countries over the period 1988-1995, they find that banks with larger assets and/or lower concentration ratios to be more profitable. They also report that in developing countries, domestic banks earn smaller profits than foreign ones, while the converse applies in developed countries. Furthermore, their results show that banks with higher non-interest-earning assets tend to be less profitable; inflation and interest rate have a positive impact on profitability, particularly in developing countries. In an extension of their work, Demirguc-Kunt and Huizinga (2000) conclude that “greater bank development brings about tougher competition, higher efficiency and lower profits”. By contrast, Smirlock (1985) reports that concentration does not explain bank profit rates for 2700 state banks operating in the USA. Also Goldberg and Rai (1996) fail to find a positive relationship between concentration and profitability for a sample of large banks located in 11 European countries for the period 1988–1991.
Barajas, Salazar and Steiner (2000) carry out a similar analysis focusing on the Colombian banking system by using individual bank accounting data for the 1985-1998 period. Their study shows that foreign bank presence generally increases competition in the domestic banking system as evidenced by reduced intermediation spreads. Moreover, administrative costs of domestic banks rise, possibly due to the fact that these banks have to upgrade their activities because of increased competitive pressure. Thus, in general foreign bank presence seems to be associated with an increase of costs for the domestic banking system of Colombia.

Denizer (2000) analyses the effects foreign bank presence has on domestic banks in Turkey for the period 1970-1997. His results show that returns on assets (ROA) and overhead expenses/operating costs of domestic banks decrease after foreign banks enter the market. These findings support the idea that foreign banks put competitive pressure on domestic banks, despite the fact that these foreign banks have a very low market share between 3.5 and 5 per cent.

Claessens et al (2001) use a data set containing individual bank accounting information of domestic banks in 80 countries for the period 1988-1995. They show that increased presence of foreign banks is associated with reductions of profitability and overall expenses of domestic banks. Lensink and Hermes (2003) focus on the short-term effects of foreign bank presence on domestic bank performance using data for 990 banks for the period 1990-1996. They show that at lower levels of economic development, foreign bank entry is generally associated with higher costs for domestic banks. At higher levels of economic development the effects appear to be less clear. Foreign bank entry is either associated with a fall of costs and profits of domestic banks, or is not associated with changes in these domestic bank variables.
Uiboupin (2004) studies the rationale of foreign banks’ entry affecting domestic banks’ performance in the short run. He finds that a bank’s profits depend on its costs and incomes. If domestic banks react to foreign entry, then their profit component for the current period differs from the previous period because banks change their cost structure and prices to be competitive and maximize their profits. It is also assumed that the difference between two periods is long enough, so that domestic banks are able to react to foreign entry if they find it beneficial.

Athanasoglou et al (2005) examined the effects of bank-specific, industry-specific and macroeconomic determinants of bank profitability, using an empirical framework that incorporates the traditional Structure-Conduct-Performance (SCP) hypothesis. Their study covers the period 1985-2001. The estimation results show that profitability persists to a moderate extent, indicating that departures from perfectly competitive market structures may not be that large. All bank-specific determinants, with the exception of size, affect bank profitability significantly in the anticipated way. However, no evidence is found in support of the SCP hypothesis. Finally, the business cycle has a positive, albeit an asymmetric effect on bank profitability, being significant only in the upper phase of the cycle.

Kosmidou et al (2005) analyse the UK commercial banking sector over the period 1995-2002. They note that macroeconomic factors such as inflation and GDP growth and variables used as proxies of the relative development of the banking industry and the stock market are positively associated with bank profitability. Using data from seven south eastern European countries over the period 1998-2002, Athanasoglou et al. (2006) report statistically significant relationships between profitability and determinants as capital, inflation, operating expenses, size, ownership status, and concentration, whereas they find no evidence to support the influence of liquidity risk and GDP per capita.
Pasiouras and Kosmidou (2007) measure the effects of ten internal and external variables on profitability, including the capital ratio, cost to income ratio, loans to customers and short term funding, bank size, inflation, GDP growth, concentration, and three determinants reflecting the development of banking and stock markets on bank returns for 584 domestic and foreign commercial banks in 15 developed EU countries over the period 1995-2001. The effects of all variables are found to be significant, regardless of bank ownership status, except for the concentration ratio.

A majority of empirical studies conclude that greater foreign presence has either negative or insignificant impact on non-interest income (Claessens et al, 2001; Zajc, 2003; Uiboupin, 2004; Kalluru and Bhat, 2009). Hermes and Lensik (2004) however find a positive effect on non-interest income resulting from greater foreign banks entry in less developed countries.

Studies, such as those by Smirlock (1985), Berger and Hannan (1989) and Berger (1995), investigated the profit-structure relationship in banking, providing tests of the aforementioned two hypotheses. To some extent the RMP hypothesis is verified, since there is evidence that superior management and increased market share, especially in the case of small-to medium-sized banks, raise profits. In contrast, weak evidence is found for the ESX hypothesis. According to Berger (1995), managerial efficiency not only raises profits, but may lead to market share gains and, hence, increased concentration, so that the finding of a positive relationship between concentration and profits may be a spurious result due to correlations with other variables. Thus, controlling for the other factors, the role of concentration should be negligible. Other researchers argue instead that increased concentration is not the result of managerial efficiency, but rather reflects increasing deviations from competitive market structures, which lead to monopolistic profits. Consequently, concentration should be positively (and
significantly) related to bank profitability. Bourke (1989), and Molyneux and Thornton (1992), among others, support this view.

A rather interesting issue is whether the ownership status of a bank is related to its profitability. However, little evidence is found to support the theory that privately-owned institutions will return relatively higher economic profits. Short (1979) is one of the few studies offering cross-country evidence of a strong negative relationship between government ownership and bank profitability. In their recent work, Barth et al. (2004) claim that government ownership of banks is indeed negatively correlated with bank efficiency. In contrast, Bourke (1989) and Molyneux and Thornton (1992) report that ownership status is irrelevant for explaining profitability.

The last group of profitability determinants deals with macroeconomic control variables. The variables normally used are the inflation rate, the long-term interest rate and/or the growth rate of money supply. Revell (1979) introduces the issue of the relationship between bank profitability and inflation. He notes that the effect of inflation on bank profitability depends on whether banks’ wages and other operating expenses increase at a faster rate than inflation. The question is how mature an economy is so that future inflation can be accurately forecasted and thus banks can accordingly manage their operating costs. In this vein, Perry (1992) states that the extent to which inflation affects bank profitability depends on whether inflation expectations are fully anticipated. An inflation rate fully anticipated by the bank’s management implies that banks can appropriately adjust interest rates in order to increase their revenues faster than their costs and thus acquire higher economic profits. Most studies (including those by Bourke (1989) and Molyneux and Thornton (1992)) have shown a positive relationship between either inflation or long-term interest rate and profitability.
Demirguc-Kunt and Huizinga (2000) and Bikker and Hu (2002) attempted to identify possible cyclical movements in bank profitability - the extent to which bank profits are correlated with the business cycle. Their findings suggest that such correlation exists, although the variables used were not direct measures of the business cycle. Demirguc-Kunt and Huizinga (2000) used the annual growth rate of GDP and GNP per capita to identify such a relationship, while Bikker and Hu (2002) used a number of macroeconomic variables (such as GDP, unemployment rate and interest rate differential). (Athanasoglou, Brissimis and Delis, 2005)

In an important contribution, Eichengreen and Gibson (2001) analyze bank- and market-specific profitability determinants for the 1993-1998 period, using a panel not restricted to commercial banks. Their study represents one of the few attempts to account for profit persistence in banking, the empirical results suggesting that the Greek banking sector is imperfectly competitive. Market-specific variables such as concentration ratios and market shares were found to have a positive but insignificant effect on alternative measures of profitability. The effect of size is non-linear, with profitability initially increasing with size and then declining.

### 2.6 Studies on the Effects of Competition on Efficiency of Banks

It has been well documented in the literature that the efficiency of banking system is germane to the performance of the entire economy because only an efficient system guarantees the smooth functioning of nation’s payment system and effective implementation of the monetary policy. Rajan and Zingales (1998) asserted that a sound banking system serves as an important channel for achieving economic growth through the mobilization of financial savings, putting them to productive use, and transforming various risks. The efficiency of banking system also bears direct implications for social welfare. Society benefits when a
country’s banking system becomes more efficient, offering more services at a lower cost (Valverde et al., 2003). Owing to aforementioned socio-economic implications of banking efficiency, the analyses of relative efficiency of banks gained a lot of popularity among the policy makers, bank managers, bank investors and academicians. The information obtained from banking efficiency analyses can be used either: (i) to inform government policy by assessing the effects of deregulation, mergers, or market structure on efficiency; (ii) to address research issues by describing the efficiency of an industry, ranking its firms, or checking how measured efficiency may be related to the different efficiency techniques employed; or (iii) to improve managerial performance by identifying ‘best practices’ and ‘worst practices’ associated with high and low measured efficiency, respectively, and encouraging the former practices and while discouraging latter (Berger and Humphrey, 1997; Gulati, 2011).

Two hypotheses are put to test in the literature to explain the effect of competition on efficiency. Under the ‘Competition-Efficiency’ hypothesis, increases in competition precipitate increases in efficiency. The efficient structure hypothesis proposed by Demsetz (1973) indicates that an exogenous shock such as deregulation forces banks to minimize costs and to offer services at lower prices. At the same time it forces them to increase profits, through shifts in outputs. Such an interpretation also suggests that resources are more efficiently allocated to the benefit of society (Besanko and Thakor, 1993). Efficient banks with superior management and production technologies that translate into higher profits, will increase in size and market share at the expense of less efficient banks. Such a process is likely to lead to higher market concentration (Vander Vennet, 2002). In contrast, uncompetitive markets allow bank managers to enjoy a ‘quiet life’ whereby costs are not kept under control, leading to lower levels of efficiency (Pagano, 1993; Berger and Hannan, 1998).
The ‘Competition-Inefficiency’-Hypothesis is the alternative to the ‘competition-efficiency’ hypothesis. It suggests that competition leads to a decline in bank efficiency. There are several reasons for such an outcome. First, higher competition is likely to be associated with less stable, shorter relationships between customers and banks (Boot and Schmeits, 2005) as customers’ propensity to switch to other providers increases in more competitive environments. This phenomenon will amplify information asymmetries that require additional resources for screening and monitoring borrowers. Second, since banks can expect a shorter duration of relationships in a competitive environment, they are likely to reduce relationship-building activities which inhibit the reusability and value of information (Chan, Greenbaum, and Thakor, 1986). Taken together, these arguments suggest a reduction in the value of proprietary information held by banks, meaning that banks incur greater expenses in retaining old and attracting new customers through investments in ATMs, new information systems, and aggressive marketing efforts.

Although empirical studies hypothesise that banking deregulation enhances the efficiency of banks, evidence on such a proposition is mixed. Gilbert and Wilson (1998) investigate the effects of deregulation on the efficiency of Korean banks over the period 1980 to 1994. They find that most Korean banks experience efficiency gains during the period of deregulation when government controls are lifted and relaxed. Likewise, in Turkey (Zaim, 1995), Thailand (Leightner and Lovell, 1998), Portugal (Canhoto and Dermine, 2003) and Australia (Sturm and Williams, 2004), deregulation is found to have had a positive impact on the efficiency of the domestic banking sector.

However, many studies also find that deregulation appears to lead to deterioration or at least, no significant improvement in efficiency levels. The empirical evidence for the U.S. shows that measured efficiency decreases following deregulation (Humprey 1993; Bauer et al. 1993; Humprey and Pulley,
1997; Wheelock and Wilson, 1999). The decline is mainly attributed to interest rate deregulation inducing a competitive scramble to pay higher interest rates on deposits (Berger and Humphrey, 1997).

Further, there are studies which investigate the relationship between domestic and foreign ownership and bank efficiency. Most studies are based on experiences in the U.S. banking sector and find that foreign-owned banks have significantly lower efficiency on average than domestic banks (DeYoung and Nolle, 1996; Hasan and Hunter, 1996; Mahajan et al, 1996; Chang et al, 1998). Berger et al. (2000) investigate the relative efficiency of foreign versus domestic banks in five home countries – France, Germany, Spain, UK and the US. They find that foreign banks in these countries exhibit both lower cost efficiency and lower profit efficiency in comparison to domestic banks. However, after disaggregating the results by nation of origin, they conclude that foreign banks from the United States are more efficient than their domestic counterparts.

In contrast, cross country evidence from transitional economies suggests that foreign owned banks are more efficient than domestic-owned banks (Weill 2003; Bonin et al., 2005a,b; Fries and Taci, 2005). In addition, some single-country studies analyse the relationship between ownership and banking efficiency. Isik and Hassan (2002a,b) on the Turkish banking industry, Sturm and Williams (2004) on the Australian banking sector and Kraft et al. (2006) on Croatia’s commercial banks generally find that foreign banks have substantially better efficiency scores than those of domestic ones.

Size has often been found to be an important factor that drives variations in efficiency across banks. Analysis of the relationship between size and bank efficiency provides useful information to regulators and allows bank managers to assess the optimal scale at which to conduct their operations. Larger banks may have more professional management teams which are more effective in cost
control, thereby resulting in higher profits (Evanoff and Israilevich, 1991). It is often argued that larger banks possess more flexibility in financial markets and are better able to diversify their credit risks (see, Cole and Gunther, 1995). Casu and Girardone (2006) also point out that larger banks may experience economies of scale and scope from growth and joint production opportunities. All these factors enable large banks to exploit their size advantages and achieve more efficient operating outcomes. On the other hand, larger banks are more complex and therefore more difficult to manage. Hence, bureaucratic problems may arise in large banks, and these can lead to less efficient operating outcomes for the affected banks (Delis and Papanikolaou, 2009).

From the discussion above, it is evident that there is no consensus among the studies about the relationship between bank size and banking efficiency. Berger et al (1993) use both the logarithm of total bank assets and the logarithm of the number of bank offices to proxy for bank size. They find a significant positive relationship between the two size measures and the level of banking efficiency, suggesting that larger U.S. banks tend to be more efficient. Other studies find similar results (Miller and Noulas, 1996; Hasan and Marton, 2003; Ataullah and Hang, 2006; Perera et al, 2007). Isik and Hassan (2003) divide Turkish banks into three size categories according to their total assets, namely, small banks, medium sized banks and large banks. Such a size classification allows for the testing of a potentially non-monotonic relationship between banks size and efficiency. They find that medium sized banks are more efficient than both small and large banks in terms of technical efficiency. Similarly, Aly et al (1990), Mester (1993), Pi and Timme (1993), Berger and Hannan (1998) and Havrylchyk (2006) do not report a significant relationship between size and banking efficiency. A number of other studies, however, find a significant negative relationship between size and banking efficiency and suggest that small banks may possess operational advantages that bring about higher efficiencies.
Studies using DEA to analyse bank efficiency have found divergent results. Berg, Forsund, and Jansen (1992) examine the efficiency of Norwegian banks before and after deregulation based on the value-added approach. Their analysis reveals that efficiency is low in the pre-deregulation years, mainly due to the emergence of idle capacity in anticipation of increased competition. Efficiency growth is, however, rapid post 1987, with significant convergence in efficiency levels, implying increased competition in the deregulated period. Fecher and Pestieau (1993) report average efficiency estimates of financial services for 11 OECD countries for the period 1971–86 to be 0.82 with a range of 0.67 (for Denmark) to 0.98 (for Japan). Elyasiani and Mehdian (1995) investigate the trends in technical efficiency and technological change for small and large US commercial banks during 1979–1986 based on the intermediation approach. Although the efficiency measures decline over this period, small banks emerge as more efficient in the deregulated regime. The gap, however, narrows considerably in the post-deregulation period. Zaim (1995) examines the effect of financial liberalisation on the technical efficiency of Turkish commercial banks using DEA. In the study the years 1981 and 1990 represent the pre and post financial liberalisation periods, respectively. He finds that the technical efficiency of Turkish banks improves by 10%, on average after the implementation of the liberalisation programme by the Turkish Government, thus creating a more competitive environment. The study further decomposes overall technical efficiency into pure technical efficiency and scale efficiency. It finds that most Turkish banks operate under constant returns to scale and that technical inefficiency is mainly attributable to low pure technical efficiency.

Using DEA on a cross-section of 427 banks in eight developed countries, the mean efficiency value is found to be 0.86 with a range of 0.55 for the UK to 0.95
for France (Pastor, Pérez, & Quesada, 1997). Shyu (1998) conducts a study of operating efficiency in Taiwan’s banking industry for the country’s pre- and post-deregulation periods covering 1986–1989 to 1992–1995. The author finds that improvements in overall efficiency with most banks close to being scale efficient. The major source of inefficiency identified is allocative in nature.

Maudos & Pastor (2001) study cost and profit efficiency for a sample of 14 countries of the European Union, as well as Japan and the US. Their study reveals wide inequalities of profitability between countries, which can be considerably reduced if inefficiency is eliminated. However, cross-country comparisons are often fraught with difficulties of interpretation, not only because of the different regulatory and economic regimes encountered by financial entities, but also owing to the differential quality of services associated with deposits and loans in different countries.

Ataullah et al. (2004) provide a comparative analysis of the efficiency of commercial banks in India and Pakistan for the period 1988 -1998. They employ two alternative DEA specifications (loan-based and income-based models) to measure technical efficiency. They find that the overall technical efficiency of both Indian and Pakistani banks improves gradually over the sample period. In the case of Indian banks, the improvement is attributed to both increases in pure technical and scale efficiency. For Pakistani banks, however, the increased overall technical efficiency is primarily attributed to an improvement in scale efficiency. Moreover, comparing the results of the loan-based and income-based models, they find that banks are relatively more efficient in generating earning assets than in generating income.

Kyj and Isik (2008) investigate scale efficiency of commercial banks in Ukraine over the period 1998 – 2003. They estimate both a common efficiency frontier for all banks and separate efficiency frontiers for each bank according to size group
comprising small, medium and large. They find that efficiency scores are significantly correlated between the common and separate frontier results. Their results also show that the average technical efficiency is only 47% and that the dominant source of inefficiency is driven by poor management decisions i.e., pure technical efficiency rather than there being any scale inefficiencies. They also examine the impact of size and ownership location factors and report that large banks tend to be more pure technically efficient but less scale efficient than small ones. Moreover, the results suggest that joint venture banks with majority foreign ownership appear to be the most efficient and that a bank’s geographic location is an important determinant of its relative efficiency.

Though relatively few in number, there have been efficiency studies, especially of the public sector banks in India. These studies can broadly be classified into three groups: (i) Studies based on comparison of financial and operational performance, (ii) studies that have compared and ranked banks on the basis of efficiency determined using techniques like factor analysis, and (iii) more recent studies that use parametric or non-parametric techniques.

Keshari and Paul (1994) applied the frontier approach to one year cross sectional data to determine the technical efficiency of foreign and domestic banks. The total of advances plus deposits was taken as a measure of output, and labour, capital and materials were considered inputs. Their conclusion was that the efficiency of foreign banks was slightly lower than that of domestic banks.

Noulas and Ketkar (1996) use the intermediation approach with three inputs and two outputs. They determined the technical and scale efficiency of public sector banks for 1993. They found that average technical inefficiency of 3.75 percent, of which two thirds was due to scale inefficiency. Hence they concluded that efficiency of banks in India could increase by increasing the scale.
Bhattacharya et al (1997) examined the efficiency of Indian banks using a two-step procedure. They first used the DEA technique to determine technical efficiency and then applied the stochastic frontier approach (SFA) to explain variations in calculated efficiency. They applied the intermediation approach using two inputs, viz., interest expenses and operating expenses and three outputs, viz., deposits, advances and investments for 70 banks, for the period 1986-1991. They constructed one grand frontier on the entire data set for DEA analysis and found that public sector banks were more efficient than foreign banks, which in turn were marginally more efficient than private sector banks. The average efficiency of the sector as a whole was found to be 80.35 percent, ranging from an average of 75.37 percent for private sector banks and 87.40 percent for public sector banks. They also found that 78 percent of banks operated with decreasing returns to scale while 16 percent showed increasing returns to scale. For the second stage regression analysis, they used a set of variables to account for time, ownership and regulatory policy. They concluded that public sector banks’ efficiency declined over time whereas that of foreign banks improved over time. The performance of private sector banks remained almost unchanged.

Das (1997) studied technical, allocative and scale efficiency of different public sector banks for the period 1990-96 using DEA. He used the intermediation approach with two inputs-labour and loanable funds and one output measure. Efficiencies were calculated for each year for all the banks. The study found a decline in overall efficiency over time and decline in technical efficiency with a slight improvement in allocative efficiency. Thus, changes in inefficiency were due to technical inefficiency rather allocative inefficiency. State Bank of India was found to be more efficient than other public sector banks.

Saha and Ravishankar (2000) analyzed the performance of Indian banks using the DEA approach. They examined the performance of 25 public sector banks over the period 1992-1995. The analysis was done in two stages. In the first
stage, efficiency was measured as a ratio of certain outputs to inputs. Number of branches, number of employees, establishment expenses and non-establishment expenses were taken as inputs. Deposits, advances, investments, spread, total income, interest income, non-interest income and working funds were taken as measures of outputs. The ratios were plotted and extreme points were joined to form a linear efficiency frontier. In the second stage, DEA was used on the same data to determine the efficiency frontier. Their findings indicated that efficiency of public sector banks improved over the sample time period.

Sathye (2003) measured the productive efficiency of 94 banks in India, including public sector and private sector banks and foreign banks, assuming VRS technology under DEA for 1996-97. In one model, he used interest expenses and non-interest expenses as inputs and interest income and non-interest income as outputs. A second DEA analysis was also run using deposits and staff members as inputs and loans and non-interest income as outputs. The study found that the average efficiency score of 0.83, and that the public sector banks were on average more efficient than foreign banks, which in turn were more efficient than private banks.

Kumbhakar and Sarkar (2003, 2004) used the parametric method to evaluate the efficiency of the Indian banking system using panel data for the period 1986-2000. Postulating a cost function and using stochastic frontier analysis, they determined changes in efficiency over time. Using dummy variables, they also found financial sector reforms and ownership differences contributed to changes in efficiency. They found the Indian banking system to be cost inefficient but the tendency for inefficiency to decline over time. They found private sector banks to be more cost efficient than public sector banks. They further concluded that deregulation had resulted in an increase in inefficiency and there was no significant difference in the impact of deregulation on private sector banks and public sector banks.
De (2004) used an econometric approach to determine the technical efficiency of Indian banks and the relationship between ownership, efficiency and impact of reforms on efficiency. Panel data for the years 1985 to 1995-96 were used in a stochastic frontier production function. Two alternative measures of output, gross income and total earning assets and four inputs, sum of deposits and borrowings, fixed capital, number of officers and number of other employees, were used for a Cobb-Douglas technology. The study concluded that the efficiency did not improve after liberalization, and foreign banks, as a group, had the highest efficiency.

Sathye (2005) used financial ratios to study the effect of privatization on the performance and efficiency of banks. Efficiency was defined in terms of net profit per employee and deposit and loans per employee. The study concluded that the financial performance of partially privatized banks were significantly better than that of the fully public sector banks. There was no significant difference in performance of partially privatized banks and fully private banks.

2.7 Conclusion

The comprehensive review undertaken above brings to light the fact that, so far, no systematic theoretical or empirical research has been undertaken to particularly analyze the issues of effects of competition, size and macroeconomic variables like the annual GDP growth rate or business cycles on diversification, profits, costs and efficiency of banks in the context of the Indian banking sector. Studies related to efficiency of Indian banks are very few and there is no consensus among the findings. Also, most of the studies on competition and performance have focused on developed countries such as the US, Japan and the EU. However, banking regulations and institutional settings differ widely between developed and developing countries, due to which there can be differences in the effects of competition and other control variables on the above mentioned
performance parameters in these countries. There has also been a long standing debate regarding which measure is the most appropriate to use for evaluating competition and concentration, thus leading to varying opinions.

In the light of these arguments, the present study attempts to understand the effects of competition, based on ownership variations, i.e., domestic and foreign on diversification, profits, costs and efficiency using the Indian banking sector as a case study. Apart from being within the institutional setting of an emerging market economy (EME), the Indian banking sector also allows for the testing of performance across the entire spectrum of bank ownership forms, i.e., domestic and foreign. Based on these considerations, the following chapter highlights the methodology and variables used to analyze the impact of competition and other control variables on performance of banks in India.