Chapter - I

Introduction

1.1: Role of Banks

The importance of financial systems for economic development of a country is well recognized world wide [e.g., Levine and Zervos[1] (1998), Levine[2] (1997), Rajan and Zingales[3] (1998), King and Levine[4] (1993)] as well as in India [RBI[5] (2000); Bhattacharya and Sivasubramanian[6] (2003)]. A well-functioning financial sector facilitates efficient intermediation of financial resources. The more efficient a financial system is in resource generation and in its allocation, the greater is its contribution to economic growth[7]. Banks are the backbone of financial systems and play an important role in economic development of the countries including India. Banks are financial institutions that accept deposit and provide loans. They act as intermediaries in channelising funds from surplus units to deficit units. They also play a role in payment and settlement system and conduct of monetary policy. These financial activities are important in ensuring that the financial system and economy run smoothly and efficiently. An efficient system of financial intermediation also contributes to the risk mitigation process in the economy. Banks are the highest financial intermediaries in our economy and therefore they deserve careful study.

1.2: Competition and Indian Banking Drives

Over the years, the banking systems all over the world have witnessed a significant transformation underpinned by various factors – deregulation, globalization, technology innovation[8]. The Indian banking industry has witnessed radial changes and has experienced different degrees of repressive policies in the transformational regulatory requirements regime after the introduction of financial sector reform in 1991. With these initiations laid through the first and second generation reforms, there has been substantial improvement in efficiency and performances of the Indian scheduled commercial banks of our country (R Mohan[9] 2006, Reddy[10] 2002). This development has resulted in increased competitive pressure among the banks in India. Indian banks are now facing competition from inside and outside the country from foreign entities and non-banking institution also. Banks now compete on price of their input (deposit) and output (loan). Banks, therefore, have been introducing innovative products, seeking new source of income, diversifying into non-traditional activities and economizing on capital[11]. Banks are constantly seeking new ways to add value to their services. In this very completive market, the question "What drives performance?" is at the top of the minds of managers and policy makers alike.

1.3: Public Banks vs. Private Banks

As per Phase II of roadmap started from April 2009, foreign banks may be permitted to have overall investment of 74 per cent (maximum) in the equity of private banks of India. So we have now gradually moved into a market driven competitive system. Three trends are found in this regard – consolidation through merger and acquisitions, globalization of operations, and universalisation of banking. The expected deregulation in the financial service landscape after April,2009, the high valuation in the capital markets and high growth rates in retail financing and product distribution have attracted a number of new players both global and domestic. The new entrants/players with redefined business model based on advanced technology are likely to shape the future of the financial services and banking. Foreign Banks and old and new Private Sector Banks in India, have progressed well in the areas of technology up-gradation in operations, extending the business hours, introduction of new products and services like "Any Where Banking", "Any Time Money", "Electronic Fund Transfer", "Electronic Clearing", "Tele-Banking" etc. These new tools enabled them to improve the quality of service and introduce Value Added Products[12]. Foreign banks have proved that they are more profitable than their counterpart domestic banks. PSBs are least active in FDI and FII areas and foreign banks are attracting huge foreign investment coming to India. In retail, Private Banks have developed leadership. The market share of PSBs in terms of total assets was 75.6 per cent in 2003, which reduced to 70.5 per cent in 2007. However, private banks, which had a share of 17.5 per cent in terms of total assets, stood at 21.5 per cent in 2007 and foreign banks which was 6.9 per cent in 2003 which increased to 8 percent in 2007. Public sector banks in the country are losing around one per cent market share per annum on an average for over 15 years to the private sector, as per credit rating agency, Moody's[13]. On the other side public banks have extended the banking services to the people of rural areas. Yet reach to the rural India still remain a challenge for private and foreign banks, though public banks has addressed the issue through financial inclusion. PSBs with their vast client base and unparallel treasury of trust are also evolving their own way to retain and attract new costumers. 94.6% of the branches public banks have already been fully computerized. Out of 94.6 %, 67.7% branches are under CBS (as on 31.03.08, RBI). The recent developments in public sector such as advancement of technology and its use in almost all the sector of banks, reduction of employees through VRS scheme, securitization bill and professional attitude towards banking has greatly reduced costs, and NPA level, thereby increasing efficiency among public banks. The RBI noted that "Development after 1996 indicate that the majority of the public banks have been able to progress considerably towards the direction of passing the acid test of achieving competitive efficiency"[14] They are not far ahead so far as modern banking approaches such as net banking, mobile banking etc. Public Sector Banks are aiming to divide customers into different segments on the basis of the type of service they would like to render and also trying to segregate their servicing counters in their respective branches to enable customer to have easy access to a particular transaction[15].

Over time Indian banking has attained to a fair amount of maturity in terms of services provided, products offered. Today's banking structure is transformed with the help of securitization and derivatives trading. Securitization has decreased the risk involved in the banking sector.

1.4: Future Challenges

Indian banking has to face some challenges also. A few major challenges facing the Indian banks now are: threats of risks from globalization, implementation of Basel II; improvement of risk management systems; implementation of new accounting standards; enhancement of transparency and disclosures; enhancement of customer service; and application of technology. Besides the market is observing discontinuous growth driven by new products and services that include opportunities in credit cards, consumer finance and wealth management on the retail side, and in fee-based income and investment banking on the wholesale banking side requiring new skills in sales & marketing, credit and operations. The cost of intermediation remains high and bank penetration is limited to only a few customer segments and geographies. While bank lending has been a significant driver of GDP growth and employment, periodic instances of the "failure" of some weak banks have often threatened the stability of the system. Structural weaknesses such as a fragmented industry structure, lack of institutional support infrastructure, restrictive labour laws, weak corporate governance and ineffective regulations beyond Scheduled Commercial Banks (SCBs), unless addressed, could seriously weaken the health of the sector and also affect future banking performance[16].

1.5: Banking Efficiency Issue

The resultant competitive forces, coupled with future challenges faced and more stringent regulatory framework, have created pressure on the Indian banks to perform efficiently. Efficiency, therefore, has become critical for banks' survival and growth. It has been empirically found that banks receiving high efficiency scores are much more likely to survive than banks which have relatively low scores[17]. Another study has validated a negative and significant relation between cost efficiency and the risk of a bank failure[18]. The assessment of efficiency and productivity of banking, thus, assumes high importance. Enhanced efficiency in banking can result in greater and more appropriate innovations, improved profitability as well as greater safety and soundness when the improvement in productivity is channeled towards strengthening capital buffers that absorb risk[19]. Moreover, banking efficiency or productivity measures could act as leading indicators for evolving strengths or weaknesses of the banking system and could enable pre-emptive steps by the regulator when necessary. Therefore, investigation and measurement of efficiency in the banking sector have always been the areas of interest of researchers, academicians, policy-makers and banks managers and customers.

1.6: Objectives

In Indian context, there are a lot of studies regarding banking performance and efficiency analysis especially from 1970s. But most of the studies have used accounting measures for estimating efficiency levels of the banks [e.g. Ram Mohan[20] (2002), Rakesh Mohan[21] (2006), Reddy[22] (2002), C Rangarajan[23] (1998) Mohan and Ray[24] (2004), Shanmugam and Das[25] (2004), Ataullah et al.[26] (2004), Reddy[27] (2004), Das et al.[28] (2005), Kumbhakar and Sarkar[29] (2003), Sensarma[30] (2005), Das and Ghosh[31] (2006)]. Number of studies on banking efficiency in India using Data Envelopment Analysis (DEA) technique is not so high. Some notable studies using this approach have been made by the researchers to analyze the efficiency of the Indian banking sector [e.g. Bhattacharya et al.[32] (1997), Das (1997[33], 1999[34], 2000[35]), Sathye (2001[36], 2003[37]), Das et al.[38] (2004), Omprakash et al.[39] (2008), Debasish[40] (2006), Kumar and Gulati[41] (2008), Mohan and Ray[42] (2003), Noulas and Ketkar[43] (1996), Saha and Ravishankar[44] (2000), Ray[45] (2007), Mukherjee et al.[46] (2002)]. Most of them have used data for a single time period which makes it difficult to compare the efficiency over the time. While some studies concentrate on the efficiency of only public sector banks, others look at the relationship between ownership group and efficiency. Main focus of their studies is to show the impact of reform measures on the efficiency at aggregate level i.e. comparing the efficiency level among the different ownership groups. Few studies have taken into consideration the bank size, income diversification as factors of efficiency variation. Majority studies have considered maximum 2 or 3 common inputs and outputs. Thus multidimensional nature of the recent banking operations have not been reflected in their studies. The impact of technology use, capitalization from owned fund, bank size, profitability, cost-revenue management ability, capital adequacy, non-performing assets(NPA) on bank performance has not been the main focus of their research. So, there is hardly any comprehensive study on measuring and examining the efficiency of Indian banks.

Therefore, some issues have to be addressed over the time as the reform process is entrenched further. With this background, present study adopts multiple measures of DEA efficiencies: overall technical efficiency, pure technical efficiency, scale efficiency and super-efficiency of the selected individual Indian banks for in-depth efficiency analysis in the more recent period spanning 2004-05 to 2007-08. This study differs from other studies in at least three ways: (i) the time period (2005-08) taken in the analysis and (ii) the DEA models used to measure the efficiency scores, (iii) the input-output variables specification in the DEA model.

Therefore, the present study will be able to throw further light on the existing banking literature in Indian in the following way -

First, the fact that despite the substantial structural changes and importance of the Indian banking sector, the sector has remained under research using DEA methodology compared to studies in other countries. The present study tries to fill this gap in the existing banking literature in India.

Second, this study critically measures and examines the technical efficiency of a sample of 36 major Indian domestic commercial banks during the period 2005-2008 using CCR and BCC model of data envelopment analysis. Present study provides the efficiency scores -- overall technical efficiency and pure technical efficiency on individual bank wise of each year and for the study period as a whole. This is contrary to the results of existing studies that reported the results at highly aggregated levels such as public versus private banks and with other groups.

Third, the study categorizes the banks under evaluation into two groups- efficient and inefficient.

Fourth, the study provides bank wise main source of technical inefficiency

Fifth, the study also provides bank wise nature of returns to scale.

Sixth, the study categorizes the efficient banks and inefficient banks separately from various angels to trace out the important features of the efficiency of Indian banks.

Seventh, the study also indicates inefficient bank wise input output improvement plan in order to convert inputs into outputs in an efficient way.

Eighth, present study investigates efficiency in terms of ownership group and bank size separately.

Ninth, the study also explores a new set of bank specific factors in addition to ownership pattern and bank size affecting efficiency variation among the banks.

Lastly, the study also ranks the Indian banks based on the super efficiency score using Andersen and Petersens'[47] (1993) super-efficiency DEA model. Various financial performances parameters are also taken into consideration for overall rankings. No attempt has yet been made so far in this way for such a comprehensive ranking of the Indian banks.

In short, the broad objective of this study:

1. To estimate and examine the relative technical efficiency of Indian scheduled commercial domestic banks for a period from 2004-05 to 2007-08.

2. To provide strict ranking to the selected banks under study.

3. To categorize banks of different efficiency status.

References

1. Levin, R. and S. Zervos, (1998), *"Stock Market, Banks, and Economic Growth"*, American Economic Review, Vol. 88, No. 3, pp. 537-558.

2. Levine, R., (1997), *"Financial Development and Economic Growth: Views and Agenda"*, Journal of Economic Literature, Vol. 35, No. 2, pp. 688-726.

3. Rajan, R.G. and L. Zingales, (1998), *"Financial Development and Growth"*, American Economic Review, Vol. 88, No. 3, pp. 537-558.

4. King, R.G. and R. Levine, (1993), *"Finance and Growth: Schumpeter Might Be Right"*, Quarterly Journal of Economic, Vol. 108, No. 3, pp. 513-542.

5. Reserve Bank of India, (2000), *"Report on Currency and Finance"*, Reserve Bank of India, Mumbai.

6. Bhattacharya, P.C. and M.N. Sivasubramanian, (2003), *"Financial Development and Economic Growth in India: 1970-71 to 1998-1999"*, Applied Financial economics, Vol. 13, No. 12, pp. 905-909.

7. Mohan, R., (2005), *"Financial Sector Reforms in India: policies and performance analysis"*, March, 19, Economic and Political Weekly, pp. 1106-1121.

8. Reserve Bank of India, (2008), *"Efficiency, productivity and soundness of the banking sector"*, Report Currency Finance, Vol. 2, pp. 393–446.

9. Mohan, R., (2006), *"Reforms, Productivity and Efficiency in Banking: The Indian Experience"*, March- 2006, Reserve Bank of India Bulletin.

10. Reddy, Y.V., (2002), *"Public Sector Banks and the Governance Challenge: Indian Experience"*, Paper presented at the World Bank, International Monetary Fund, and Brookings Institution Conference on Financial Sector Governance: The Role of Public and Private Sectors on April 18, 2002 at New York.

11. Reserve Bank of India, (2008), op.cit.

12. Saraf, W.S., (1997), *"PUSHPA System"*, Vol. XIX, No. 4, April, pp. 8-9.

13. The Economic Times dated 8th June, 2008.

14. Reserve Bank of India, (2001), *"Financial Sector Efficiency Analysis"*, Mumbai.

15. Srinivasa Rao, K.S. and U. Rama Rao, (1998), *"A Note on the PUSHPA System"*, SANKALPA, Jan-June, Vol. VI, No. 1, pp. 115-117.

16. Mc Kinsey & Company, (2005), *"Indian Banking Sector 2010 towards a High Performer Sector"*, Mc Kinsey & Company, Mumbai. Available at http://www.scribd.com/doc/17200115/India-Banking-2010.

17. Barr, R., and T. Siems, (1996), *"Bank Failure Prediction using DEA to Measure Management Quality"*, Federal Reserve Bank of Dallas Working Paper.

18. Podpiera, A., and J. Podpiera, (2005), *"Deteriorating Cost Efficiency in Commercial Banks Signals an Increasing Risk of Failure"*, CNB Working Paper Series, December.

19. Casu, B., C. Girardone and P. Molyneux, (2002), *"Productivity Change in European Banking: A Comparison of Parametric and Non-Parametric Approaches"*, Journal of Banking and Finance, Vol. 25, No. 2, pp. 196-219.

20. Ram Mohan, T. T., (2002), *"Deregulation and performance of public sector banks"*, Economic and Political Weekly, Vol. 37, No. 5, pp. 393-397.

21. Mohan, R., (2006), op.cit.

22. Reddy, (2002), op.cit.

23. Rangarajan, C., (1998), *"Banking Sector Reforms: Rational and Relevance"*, SICOM Silver Jubilee Memorial Lecture, Mumbai.

24. Ram Mohan, T.T. and S.C. Ray, (2004), *"Comparing Performance of Public and Private Sector Banks: A Revenue Maximization Efficiency Approach"*, Economic and Political Weekly, Vol. 39, No. 12, pp. 1271-1276.

25. Shanmugam, K.R. and A. Das, (2004), *"Efficiency of Indian commercial banks during the reform period"*, Applied Financial Economics, Vol. 14, pp. 681–686.

26. Ataullah A, T. Cockerill, and H. Le, (2004), *"Financial liberalization and bank efficiency: a comparative analysis of India and Pakistan"*, Applied Financial Economics, Vol. 36, pp. 1915–1924.

27. Reddy, A.A., (2004), *"Banking sector liberalization and efficiency of Indian banks"*, ICFAI Journal of Banking and Management, Vol. 3, pp. 37–53.

28. Das A, A. Nag, and S. C. Ray, (2005), *"Liberalization, ownership and efficiency in Indian banking: a nonparametric analysis"*, Economic and Political Weekly, Vol. 40, pp. 1190–1197.

29. Kumbhakar S.C., and S. Sarkar, (2003), *"Deregulation, ownership and productivity growth in the banking industry: evidence from India"*, Journal of Money, Credit and Banking, Vol. 35, pp. 403–424.

30. Sensarma, R., (2005), *"Cost and profit efficiency of Indian banks during 1986–2003: a stochastic frontier analysis"*. Economic Political Weekly, Vol. 40, pp. 1198–1208.

31. Das A, and S. Ghosh, (2006), *"Financial deregulation and efficiency: an empirical analysis of Indian banks during post-reforms period"*, Review of Financial Economics, Vol. 15, pp. 193–221.

32. Bhattacharyya, A., C.A.K. Lovell and P. Sahay, (1997), *"The Impact of liberalization on the productive efficiency of Indian commercial banks"*, European Journal of Operational Research, Vol. 98, pp. 332-345.

33. Das, A., (1997), *"Technical, Allocative and Scale Efficiency of Public Sector Banks in India"*, Reserve Bank of India Occasional Papers, Vol. 18, No. 2-3, pp. 279-301.

34. Das, A., (1999), *"Profitability of the Public sector Banks: A Decomposition Model"*, RBI Occasional Papers, Vol. 20, No. 1.

35. Das, A., (2000), *"Efficiency of Public Sector Banks: An Application of Data Envelopment Analysis Model"*, Prajnan, Journal of Social and Management Sciences, Vol. 28, No. 1, pp. 119-131.

36. Sathye, M., (2001), *"X-efficiency in Australian Banking: an Empirical Investigation"*, Journal of Banking and Finance, Vol. 25, pp. 613-630.

37. Sathye, M., (2003), *"Efficiency of banks in a developing economy: The case of India"*, European Journal of Operational Research, Vol. 148, No. 3, pp. 662-971.

38. Das A., A. Nag, and S. Ray, (2004), *"Liberalization, Ownership, and Efficiency in Indian Banking: A Nonparametric Approach"*, Department of Economics Working Paper Series, University of Connecticut, October, 2004.

39. Gupta, O.K., Y. Doshit, and A. Chinubhai, (2008), *"Dynamics of Productive Efficiency of Indian Banks"*, International Journal of Operations Research, Vol. 5, No. 2, pp. 78-90.

40. Debasish, S.S., (2006), *"Efficiency Performance in Indian Banking: Use of Data Envelopment Analysis"*, Global Business Review, Vol. 7, No. 2, pp. 325 -333.

41. Kumar, S. and R. Gulati, (2008), *"An Examination of Technical, Pure Technical, and Scale Efficiencies in Indian Public Sector Banks using Data Envelopment Analysis"*, Eurasian Journal of Business and Economics, Vol. 1, No. 2, pp. 33-69.

42. Ram Mohan, T.T., (2003), *"Long-run performance of public and private sector bank stocks"*, Economic and Political Weekly, Vol. 38 No. 8, pp. 785-788.

43. Noulas, A.G. and K.W. Ketkar, (1996), *"Technical and scale efficiency in the Indian banking sector"*, International Journal of Development Banking, Vol. 14, No. 1, pp. 19-27.

44. Saha, A. and T.S. Ravishankar, (2000), *"Rating of Indian commercial banks: A DEA approach"*, European Journal of Operational Research, Vol. 124, pp.187-203.

45. Ray, S., (2007), *"Are Some Indian Banks too Large? An Examination of Size Efficiency in Indian Banking"*, Journal of Productivity Analysis, Vol. 27, No. 1, pp. 41-56.

46. Mukherjee, A., P. Nath and M.N. Pal, (2002), *"Performance Benchmarking and Strategic Homogeneity of Indian Banks"*, International Journal of Bank Marketing, Vol. 20, No. 3, pp. 122-139.

47. Andersen, P. and N.C. Petersen, (1993), *"A procedure for ranking efficient units in data envelopment analysis"*. Management Science, Vol. 39, No. 10, pp. 1261-1264.