PERFORMANCE OF INDIAN BANKS AFTER GLOBAL FINANCIAL CRISIS OF 2008

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ABSTRACT

This paper explored the impact of one of the greatest global financial crises of recent times on the performance of the Indian banks. Performance of banks in this paper had been measured by their Pareto-Koopmans technical efficiency scores estimated using the Data Envelopment Analysis (DEA). The study period spanned from 2005 to 2016. It had been found that overall, Indian banks performed steadily well throughout the study period indicating that the crisis had either little or no effect on Indian banks or the policies measures to combat crisis situation worked well for them to have a stable performance while performance of the banks of many other countries suffered gravely during this crisis period. Bank group-wise analysis revealed that the foreign banks operating in India were the most efficient banks in India followed by the public sector banks but they were more prone to be the adversely affected by the crisis than the public sector and domestic private sector banks. Further assessments showed that the gaps in the performance levels of these bank groups have declined in the post crisis period. The three bank groups of India had a trend of convergence in terms of their performance throughout the study period.

KEYWORDS: *Commercial Banks, Data Envelopment Analysis, Efficiency*

INTRODUCTION

Financial intermediaries have played a crucial role in the long run growth of the real sector in terms of capital accumulation, investment augmentation and income generation. If the financial system performs the task of intermediation efficiently, cost of loanable funds reduces and that encourages rise in investment expenditure in the economy resulting into potential increase in the rate of economic growth. Economists find strong positive relationship between financial development and economic growth of a country [Goldsmith (1958), Shaw and Leet (1973), Levine (1993)]. Some recently developed growth models suggest that by improving information on firms, managers and economic conditions, financial intermediaries can accelerate economic growth [Greenwood and Jovanovic (1990)]. Another stream of growth models advocates that the functions performed by the financial system affect steady state growth by altering the rate of technological innovation [Romer (1990)].

Even if the health of the financial system of an economy is a significant determining factor for the economic growth of any country, it plays a more crucial role for the developing economies as they need markedly high rate of capital accumulation to foster economic development. Weak financial intermediation coupled with fragile financial market and low rate saving may fail to achieve the goal of long term economic growth of those countries.

Moreover, role of banks in developing economies is a bit different and vaster than the developed nations. Banks in these economies have to encourage habits of savings in the country and to channelize it to the industries. In most of the developing nations like India, banks are the most significant player in the financial system since the other financial markets are either absent or underdeveloped, a large part of the economy is highly monetized and people in these countries generally have lower income and lower level of financial literacy. It has been unanimously acknowledged by the financial researchers that more bank-oriented countries have experienced higher growth rates (Frexias and Rochet 1997). The focus of the financial institutions in developing countries is supposed to be not only on profit accumulation but also on social priorities. With this objective, during the pre liberalized regime in India, the policy makers deliberately endeavored to allocate the flow of bank credit for development purpose instead of the market driven process. The commercial banks of those days successfully achieved the objective of deposit mobilization by expanding branch networks in all parts of the country. Policy makers formulated the guidelines for credit rationing based on production requirements of the economy. They tried to adopt measures to address the problem of discrimination against small industries and farmers in the share of scarce credit resource to fulfill the objective of development with equity. Interest rates on deposits and advances were highly regulated.

However, in the early 1990s, the scenario changed and financial sector reforms became inevitable in India to cope with the ongoing reforms of real sector coupled with the deterioration of the health of the banking sector and introduction of BIS capital adequacy norms. The reform measures primarily aimed at strengthening prudential norms relating to income recognition, asset classification, provisioning for bad and doubtful debts and capital adequacy for the banking system. The spectrum and activity areas of commercial banking have been undergoing a massive transformation in the last three decades due to emergence of innovative and sophisticated marketable financial instruments, strong competition in the domestic as well as global markets and emergence of new risk elements in the business. Traditional banking theory of expanding branch network to get increased customer volume is no longer relevant. On the contrary, in this newly emerged competitive market, banks are now trying to squeeze down their branches to cut cost of services. Instead, to earn more revenue they are concentrating in diversifying non-traditional banking activities like mutual funds, pension schemes, insurance, asset management and investment banking. Nevertheless despite all the liberalization policies and factors, the structure of Indian banking has remained more or less the same, with the public sector banks predominating in the industry in terms of branches, deposits, assets, borrowings and business while Indian private and foreign banks coexist mainly as niche players. During past years, transparency and accountability in banking transaction process have also been improved. It requires the management system of a bank to be more efficient and attentive. These form the ground for corporate governance in banking. In the past few decades, Indian banking sector has been rapidly and intensely integrated to the global financial sector.

In very recent past, the world underwent to one of the most severe worldwide banking crisis of our time. Almost all central banks and government, macroeconomic management or policy makers of the world were engaged in taking monetary and fiscal measures to get out of this world-spread banking and economic crisis in 2008. Needless to say, during this period, macroeconomic policy making and implementation has become challenging. Several fundamental assumptions and believes were shaken by this world-wide financial crisis. Along with the other countries of the world, India also had to withstand the adverse impact of this crisis on its financial as well as real sector.

The RBI came up with some conventional and unconventional policy measures to mitigate these adverse effects on the banking sector. These policy initiatives primarily focused on providing a liquidity cushion to the banking sector and restraining the flow of credit to certain sectors to safeguard the finan- cial stability. However, the success of the policy initiatives would be measured in terms of the performance of the financial institutions in terms of efficiency, productivity and stability. Some of the earlier studies have indicated that the global financial crisis of 2008 had mixed impact on the performance of the Indian banking sector [Eichengreen and Gupta (2012), Dalaien (2016)]. This paper attempts to measure the impact of the world-wide financial crisis on theperformance of the Indian bank- ing sector, especially the commercial banking sector. In section 2, we describe the methodology used in this paper, section 3 exhibits the findings of our paper and section 4 concludes.

METHODOLOGY AND DATA

The performance of banks in this study has been measured in terms of their technical efficiency. Technical efficien-cies of banks have been estimated using Data Envelopment Analysis (DEA), which is a non-parametric, linear programming-based deterministic technique used to construct empirical production frontiers based on empirical data on chosen inputs and outputs to provide a comprehensive evaluation of homogeneous organizations or Decision Making Units (DMUs) i.e. com-mercial banks in our study. Farrell (1957) was the first to develop the theoretical background for DEA. Afterwards, the first 'formal' by Charnes, Cooper and Rhodes (1978) built the formal DEA model for the first time. It was called the CCR model. But their modelwas applicable only to constant returns to scale technology of production. In 1984, Banker, Charnes and Cooper (BCC) extended the CCR model to accommodate technologies that exhibit variable returns to scale. However, one major problem of both these models is that efficiencies estimated in these models allow inputs and outputs to contract or expand only proportionately. As a result, they fail to reflect all identifiable potential for increasing outputs or reducing inputs, as the case may be. These models are called radial DEA models. In other words, in either of these two models of DEA, efficiency scores do not meet the criterion of Pareto optimality and therefore should not be treated as efficient in that sense. In fact, both input and output slack values may exist in these models. To solve the problem of input or output slacks, we have to use non-radial models to estimate technical efficiency. The non-radial DEA models allow increase in individ-ual outputs or reduction in individual inputs at different rates. Fare and Lovell (1978) introduced a non-radial measure of technical efficiency which they called the Russel measure. From the input-oriented and output-oriented Russel measures, a non-radial 'Pareto-Koopmans' can be computed [Ray (2004)], which was proposed by Pastor et al. (1999). In our study, we have actually estimated this "Pareto-Koopmans" efficiency of banks. We solved the linear programming problem using Excel Solver 2007 and VB macro following the methods described by Zhu (2008).

In efficiency analysis, choice of inputs and outputs is of extreme importance as estimated efficiency scores get significantly affected by the choice of variables.   As there has been an ongoing debate and complications and regarding the selection of bank inputs and outputs, weselected our inputs and outputs considering the nature of banking activities in India. The primary and crucial role of the commercial banks in India is that of financial intermediaries. They collect savings from the households and other surplus units of the economy and utilize the collected fund to meet the investment needs of production firms and consumption needs of individuals through various channels.

Furthermore, the choice of the approach in variable selection should depend on the aim of the study, the circumstances of the banking industry and last but not the least, availability of data [Deb and Datta (2013)]. In our study, we adopted the intermediation approach to select input- output set. Three inputs and three outputs have been selected to reflect the traditional 'lending activities' as well as 'non-lending activities' of commercial banks in India. The selected input and output set is: Inputs: i) number of employees, ii) equity capital (core capital + reserves & surpluses), iii) deposits; Outputs: i) advances, ii) investments, iii) non-interest income. The first two inputs represent labour and capital inputs of production. As we consider commercial banks as financial intermediaries, its deposits have been treated as an input. As far as the outputs are concerned, the first two outputs reflect traditional lending activities of banks or two obvious outputs of bank's financial intermediation. In this study, non-interest income has been used as a proxy for non- lending banking activities following some previous studies [Drake (2001), Tortosa-Ausina (2003), Pasiouras (2008)]. To capture the impact of global financial crisis of2008, we have chosen our study period to span from 2005 to 2016. All relevant data for efficiency estimation has been collected from the official website of the Reserve Bank of India.We considered the entire commercial banking industry in a particular financial year comprising of public sector banks, domestic private sector banks and foreign owned banks. However, the number of banks in the sample may vary year to year because of several entries of new banks, closure of existing banks; take-overs, acquisitions, amalgamations and mergers during this twelve year time span of our investigation. Some banks have also been excluded due to missing values for the required input or output variable.

EMPIRICAL FINDINGS

We attempt to assess the performance of the Indian commercial banks as a whole during the study period, in addition to banks of different ownership group separately. Therefore, we proceed our analysis by dividing the entire Indian commercial banking sector (ALL) into three subgroups according to their ownership pattern – public sector banks (PUB), domestic private sector banks (PVT) and foreign owned banks (FRN). In table 1, we present the performance of Indian commercial banks, as measured in terms of Pareto-Koopmans technical efficiency scores, during our study period.

Table 1: Performance (Technical efficiency) of the Indian commercial banks

Year	No. of banks	Mean Efficiency	Std dev	No. of banks on the frontier
2005	88	0.596	0.316	26 (29.55)*
2006	85	0.548	0.317	22 (25.88)
2007	82	0.616	0.315	27 (32.93)'
2008	79	0.643	0.287	25 (31.65)
2009	80	0.608	0.306	22 (27.5)
2010	81	0.657	0.299	28 (34.57)
2011	81	0.660	0.318	32 (39.51)
2012	87	0.682	0.320	36 (41.38)
2013	89	0.684	0.306	35 (39.33)
2014	90	0.677	0.318	38 (42.22)
2015	91	0.678	0.308	36 (39.56)
2016	93	0.664	0.287	30 (32.26)

* % of banks on the frontier is in brackets

Source: Author's calculation

From Table 1, we observe certain points. Firstly, during our study period, there have been minor ups and downs, but on an aggregate we can fairly agree that the performance of Indian commercial banking sector as a whole, estimated through mean technical efficiencies, have been more or less steady even after the crisis. Even though it was at a lower level in the preceding years of 2008, over time, the Indian banks have been successful to overcome the adverse impacts of the crisis, if there were any, and have shown an upward trend. Secondly, the percentage of banks lying on the frontier (with efficiency score varies from 25 to 42. Over time, this percentage has increased which implies comparatively more banks are now efficient than the previous years. The standard deviation of their efficiency scores is a good estimator of the variation of performance of the banks or dispersion existing in the efficiency of the banking sector. If this score increases, we may infer that the difference of performances between the efficient banks and the inefficient banks increased or the inefficient banks are situated far from the efficiency frontier. Again there has been ups and downs in the standard deviations of performance indicators, but recently, variations in performance in the Indian banking industry has reduced.

Now we come to bank-group-wise analysis of perfromance during 2005-2016. Table 2 below depicts the inferences of our estimation.

Table 2: Bank Group-Wise Analysis of Performance (Technical Efficiency) of the Indian Commercial Banks (2005-2016)

YEAR	MEAN			STANDARD DEVIATION			NO. OF BANKS		
	PUB	PVT	FRN	PUB	PVT	FRN	PUB	PVT	FRN
2005	0.608	0.473	0.708	0.274	0.277	0.346	28	29	31
2006	0.568	0.480	0.591	0.292	0.274	0.363	28	28	29
2007	0.557	0.484	0.787	0.285	0.272	0.302	28	25	29
2008	0.600	0.548	0.764	0.242	0.243	0.320	28	23	28
2009	0.618	0.498	0.684	0.267	0.251	0.352	27	22	31
2010	0.627	0.554	0.758	0.244	0.240	0.347	27	22	32
2011	0.595	0.560	0.779	0.287	0.266	0.347	26	21	34
2012	0.630	0.620	0.756	0.283	0.262	0.370	26	20	41
2013	0.681	0.655	0.702	0.266	0.246	0.369	26	20	43
2014	0.668	0.640	0.701	0.262	0.257	0.372	27	20	43
2015	0.651	0.665	0.702	0.256	0.230	0.364	27	20	44
2016	0.661	0.619	0.688	0.252	0.259	0.317	27	21	45

Source: Author's calculation, ALL- All commercial banks of India, PUB- Public sector banks
PVT - Domestic private sector banks, FRN - Foreign owned banks
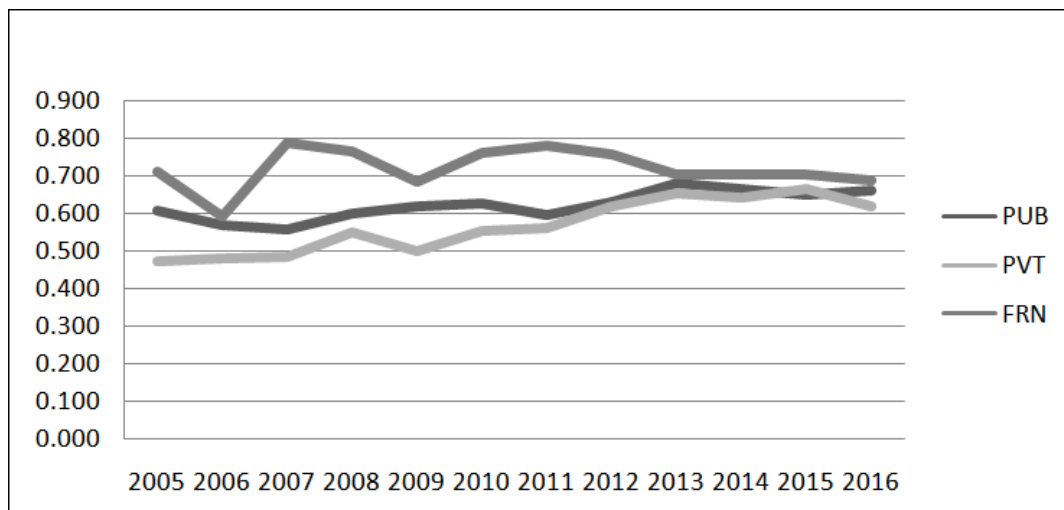
Figure 1: Bank Group-Wise Mean Efficiency Scores 2005-2016

Our observations from Table 2 and Diagram 1 can be compiled as follows. Firstly, during our entire study period foreign banks in India have been the best performing banks, followed by the public sector banks, according to our efficiency analysis. The private sector banks are the most poorly performing banks. However, over time, the performance indicators or the mean efficiency scores of the public sector banks have improved significantly. Secondly, even if the foreign banks are the most efficient banks, there have been vast ups and downs in their performances over time. On the other hand, the performance levels of the public sector banks are more or less steady during the study period.

This fact is reinforced from the mean efficiency scores as well as the standard deviation scores of the two banks groups. Thirdly, it is clearly observed that even though the global financial crisis of 2008 has little or no impact on the efficiency level of the public sector banks, it had affected the foreign banks more adversely as indicated by the sharp decline of the efficiency score of the foreign banks in 2009. This observation is not unexpected as the foreign banks are supposed to be more exposed to the international financial scenario and less affected by the monetary policy initiatives taken by apex bank of India in order to combat the crisis situation. Fourthly, this is most interesting to observe that the number of foreign banks operating in India has increased greatly during our study period or during the post crisis period, whereas that of the domestic private banks had declined. It seems that during the post-crisis period, India has been proved to be alluring with business opportunities to the global financial players. Fifthly, from diagram 1, it is clear that even if there were gaps among performances of the three bank groups, over the years, the differences have decreased and there is a tendency of convergence among the performances of different bank groups.

CONCLUDING REMARKS

From the above analysis of our study we can conclude that the Indian banking sector, especially the public sector banks have performed well even in the face of the world-wide crisis of 2008. This happened because either the inherent characteristics of the Indian banking sector has been successful to build a "protective wall" against global financial crises or the measures and initiatives taken by the policy-makers to save this sector from the crisis have actually worked successfully. As a result this sector has been little or not affected by the global financial crisis of 2008. However, a bank-group wise analysis reveals that the foreign banks operating in India are more prone to suffer from global crises than their Indian counterpart and has shown a downward inclination after 2008. Regarding the relative overall performance of these three groups, our assessment is, the foreign banks are the most efficient banks followed by the public sector banks in the early years. But at the end of the study period, the gap between the performance levels of public sector and foreign banks has declined. All the bank groups are gradually converging in terms of their performances over the years following the crisis. The Indian banks now are on level-playing field with their foreign counterparts as there is a rapid and growing integration of the Indian banking sector with the global economy.

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