CHAPTER 1

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1.1 The Context

The efficiency of an organisation, public or private is very important. It is one of the most widely discussed aspects of production analysis. Given the fact that the less developed countries (LDCs) are characterised by the severe resource constraints, the measurement and analysis of productivity changes and efficiency changes assume significance. Efficiency of a production unit refers to its performance in the utilisation of resources at its disposal. It is important to know how well the resources are being utilised and what possibility exists for improving the efficiency in the face of overall resource scarcity. In a developing country like India, this issue can be of vital importance since if indeed a set of production units is technically efficient, potential output improvements could be effected by working existing resources more efficiently rather than increasing the quantity of inputs.

1.1.1 The Service Sector\(^2\) and the Indian Economy

In the process of economic development services sector plays an important role. It has been recognised that the share of services sector in the national income rises as the economy develops\(^3\). Indian economy is not an exception. The services sector in India has grown over the years. Its share in GDP at factor cost increased from 28.5 per cent in 1950-51 to 36 per cent in 1980 and 41.5 per cent in 1994-95 at 1980-81 prices\(^4\).

The focus of attention in the conventional economics was on primary (agricultural) sector and the secondary sector especially manufacturing. In contrast, the tertiary sector was neglected and therefore, it has not received the considerable attention of the researchers. Inspite of the major contribution and fast growth of this sector, it remains an under-researched area as far as Indian economy is concerned. There is a need

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\(^1\) The technical efficiency is defined as the ratio of observed output to maximum potential output based on the best-observed performance in the sample. In other words, technical efficiency measures how close a production unit is to the production possibility frontier for a given quantity of input (Farrell, 1957). For more details, see Chapter Seven of our study.

\(^2\) We take services sector and tertiary sector are synonymous as defined by Colin Clark (1957). However, Kuznets (1979) prefers to put transportation and communication in the industrial sector.

\(^3\) For more details on this refer to Stigler (1956), Gemmel (1986).

to measure the performance of this sector because of its growing importance particularly after the 1991 economic liberalisation.

1.1.2 Appraisal of Performance in the Regulated Service Sector

Performance of an activity, under perfect competition, can generally be judged in terms of profitability. It is customary to gauge the performance of any business undertaking by the yardstick of net profits. However, for many activities particularly when they are regulated by the government, profitability is not an important criterion to measure the performance of those activities. Performance of those activities can better be measured in terms of productivity and/or technical efficiency. To avoid wastage of resources, the central objective of production units, whether public or private, should be to produce the maximum possible output from a given set of inputs and technology. Maximum possible output is achieved, when a production unit follows the best practice techniques of the chosen technology.

In recent years, there has been an upsurge of interest in productivity and efficiency measurement and analysis. However, most of those studies in India are limited to the areas of agricultural and manufacturing sector. The efficiency studies in the services sector are very limited in India. Because of the greater importance given to the agricultural and manufacturing sector, no comprehensive efficiency studies appear to have undertaken in the service sector so far. Apart from this, there are problems in the conceptualisation and the measurement of activities of the services sector. The concepts of output and inputs are difficult to define and measure, because the nature of activities is services. Moreover, there is problem of insufficient data in most of the developing countries, which is more acute in the case of regulated services sector.

1.1.3 Banking Industry as a Case Study

Trade, transport, communication, banking, insurance, construction, public administration, etc. are included in the services sector. From this, we have taken banking industry as a case study of the efficiency of the services sector.

The Indian banking industry provides a suitable testing ground for several reasons. First, it is recognized that a country needs sound dynamic and efficient banking system to achieve its objectives. Therefore, we need to assess the efficiency of the banking industry. Secondly, Indian banking industry is characterised by the existence of public sector and private sector banks and in the private sector, there are foreign banks and domestic

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private sector banks. Therefore, banking industry can provide a valuable insight into the ownership performance relationship particularly where the privatisation has become an important policy issue. Thirdly, the Indian banking industry gives the opportunity to test the efficiency differential among the public sector, domestic private sector and foreign banks and a comparison across different organisations in the banking industry can help us to find out the different factors responsible for efficiency differential. Fourthly, like the other developing countries, a major aim of programme of banking and financial reform was the improvement in bank efficiency that may result from exposing domestic institutions and markets to greater competition. After 1991, a series of measures have been introduced in the Indian banking system to increase the competition and efficiency. So the banking industry may help us to investigate whether different financial liberalisation measures along with the operational flexibility, functional autonomy, different innovative production on the banking system, technological upgradation like computerisation, changed customer service, etc. have some thing to do with the efficiency, productivity of the banking industry in India. After 1991, a series of measures have been introduced in line with the Narashimham Committee (1991) recommendations in the Indian banking system. The structure, scope of freedom of operation and regulations of banking sector have been changed to enable the effective use of monetary policy, to promote saving and its financialisation, and to ensure the most efficient deployment of financial resources. Fifthly, both theoretically and empirically, the impact of liberalisation on productivity and efficiency is far from satisfactory and inconclusive (Nishimizu and Robinson, 1984; Berger and Humphrey, 1997). Therefore, there is a need for investigating the impact of liberalisation/deregulation on productivity and efficiency.

1.2 Objectives and the Scope of the Study

Deregulation is typically undertaken to improve the performance of the industry being regulated. As a result of the implementation of the several recommendations of Narashimham Committee, the Indian banking system has been undergoing a lot of changes with an emphasis on transparency and efficiency. Given that a primary goal of deregulation has been to improve efficiency, what is the impact of that on the Indian banking system? Has the Indian banking system been able to achieve efficiency and productivity? Alternatively, is it still continuing with some of its earlier problems?
The study proposes to cover the period from 1985 to 1995-96. It aims to find out the results of the banking industry’s efficiency and productivity during pre liberalization era (1985 to 1991-92) and post-liberalization era (1992-93 to 1995-96).

1.2.1 Ratio Analysis
This study focuses on the summery measures of single factor productivity, that is partial productivity of capital and labour with respect to three variants of output, descriptive analysis of capital-labour ratio, return on assets ratio, factor intensity, etc. It also intends to find out spread ratio, burden ratio and the profitability ratio in the pre and post liberalisation eras for the banking industry.

1.2.2 Estimates of Production Function and Returns to Scale
Our study estimates both Cobb-Douglas and Translog production functions. It finds out the estimates of returns to scale from the four inputs, namely capital, fund, officer, and ‘other employees’, that is, clerks and sub-staff by using the Cobb-Douglas production function, as the Translog production function does not satisfy the regularity conditions.

1.2.3 Productivity Growth
Our study attempts to address the relationship between deregulation and productivity growth of Indian banking industry using the panel data set. We find out the econometric estimates of productivity by using the production function during 1985 to 1995-96. We also make a comparison between pre and post liberalisation periods. The analysis is conducted at the industry as well as individual ownership levels. Here, we focus on measuring productivity and changes in the average productivity growth rate in the pre and post liberalisation periods and the acceleration/deceleration in total factor productivity growth over time for the banking industry by using the micro level data. We construct an index of year-wise productivity performance for the banking industry. We find out the productivity and its growth by using the three alternative types of output.

1.2.4 Technical Efficiency
An attempt has been made to examine whether Indian banking industry enjoys efficiency or not. Is there any scope for improving the efficiency of the banking industry? It proposes to find out the technical efficiency of the banking industry (public sector commercial banks, foreign-owned banks and domestic private commercial banks) through econometric estimation of production function in the pre and post liberalisation periods and for the entire period. We focus on both time-variant and time-invariant technical efficiency. Therefore, the study also seeks to examine the differences, if any, between the
time-variant and time-invariant technical efficiency. The study examines whether efficiency has increased or not after the financial liberalisation. Are the foreign banks technically more efficient than the public sector or domestic private banks? For time-variant technical efficiency we compare the technical efficiency of the three types of organisation, namely, public sector, domestic private sector and foreign banks in the pre and post liberalisation periods and for the entire period. Here, it aims to find out the relative measure as it measures the technical efficiency of different banks relative to the "best practice" bank or a group of banks within the sample by using the three alternative variants of output. For obtaining the technical efficiency, an attempt has been made to employ both Cobb-Douglas and Translog production function. It also intends to examine the efficiency of each individual bank of our sample for each period from 1985 to 1995-96 and rank them. The study is also going to analyse whether there is any divergent findings of efficiency across various banks over time. It also seeks to check the sensitivity of the results with respect to three alternative measures of output, that is, our study compares the technical efficiency by three alternative variants of output.

1.2.5 Efficiency, Size, and Profitability

It tries to examine whether larger banks are more efficient or not, that is, we find out the relationship between technical efficiency corresponding to three different types of output and bank size. Assessment is also made on the recent deregulation of branching restrictions both on closure and expansion. We obtain the association between different measures of technical efficiency and profitability. The study aims to explore the different sources of efficiency. It will try to explain the inter-bank variation of relative technical efficiency by number of officers and, 'other employees', number of rural, semi-urban, urban and metropolitan branches, age, product diversity, etc. at the individual organisation level in a regression framework. It also investigates the sensitivity of the multiple regression model of determinants of technical efficiency to changes in alternative estimates of technical efficiency as some chosen variables can be expected to have policy implications.

1.2.6 Non-Performing Assets (NPAs)

The study also aims to explore some important aspects of non-performing assets in India. The relationship between non-performing assets of public sector banks and the technical efficiency obtained from three variants of output is also looked into. We also find out the technical efficiency of the public sector banks after incorporating the NPAs into the outputs.
1.3 Plan of the Study

In the next chapter, we discuss the role and growth of the banking system and its impact on economic development in India. It provides the background for the study. Historical perspective on the policy framework within which India's banking system worked is presented here. The development of Indian banking sector before and after the nationalisation, problems faced by the banking Industry, Narashimham Committee recommendations, deregulation measures so far taken by India are highlighted.

The chapter Three deals with the database and the measurement of variables -- output and inputs. Here, the sample for the present study, different sources of data and the advantages of panel data for our study are mentioned. The different issues and problems regarding conceptualisation, identification, specification and quantification of output in a regulated services industry like banks are discussed. Measurement and specification of inputs like capital, fund, officer and ‘other employees’ are also carried out.

The next chapter presents the descriptive statistics, focusing on partial productivity and growth, profitability, factor intensity etc. The averages and standard deviations of other important variables before and after the liberalisation for the whole industry and the public sector, domestic private sector and foreign banks are also presented. The trends of the three important ratios, viz, spread ratio, burden ratio and profitability ratio are analyzed.

Empirical estimates of production function and returns to scale are provided in chapter Five. Here, the choice of functional form in the production analysis, concepts of returns to scale, etc. are presented. Estimates of both Cobb-Douglas and Translog production functions are attempted.

Chapter Six provides the relation among liberalisation, productivity and technical efficiency. The estimates of productivity based on the production function, changes in productivity growth after 1991-92 over the period from 1985 to 1991-92 are also given. Acceleration/deceleration of total factor productivity growth are measured here. An index of year-wise productivity performance has also been constructed.

Chapter Seven focuses on the estimates of time-invarying and time-varying technical efficiency of the banking industry in India over the period 1985 through 1995-96. This is sought to be accomplished through the estimation of frontier production function with panel data by using three alternative measures of output. A comparison and analysis of technical efficiency have also been made in the post 1991-92 periods relative
to the pre liberalisation period. This chapter also compares and analyses the level of technical efficiency with respect to three organisation groups, namely public sector banks, domestic private banks and foreign-owned banks.

Determinants of efficiency, size-efficiency relationship, association between technical efficiency and profitability are found out in the chapter Eight.

Chapter Nine finds out the technical efficiency of the public sector banks after incorporating the NPAs into the outputs.

The summary and conclusions are stated in the last chapter.