Performance Benchmarking of Indian Life Insurers: A Hybrid Non-Parametric Approach

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ABSTRACT

In the last one decade, the life insurance companies operating in India have made significant progress in terms of business consolidation. In view of the same, it is of interest to make an enquiry about the operating performance of these companies. The present paper compares fifteen life insurance companies operating in India for the period 2005-06 to 2009-10 using the Hybrid Efficiency Model (Tone, 2004). The Hybrid Model provides a unified framework for the estimation of technical efficiency integrating the radial and non-radial characterisation of inputs and outputs. The results from the study indicate that out of the fifteen in-sample life insurance companies, the number of technically efficient life insurers declined from 9 in 2005-06 to 4 in 2006-07 and further to 3 in 2007-08 and 2008-09. However, in 2009-10 the number increased to 5. The mean technical efficiency scores of the in-sample life insurers declined sharply between 2005-06 and 2006-07 and improved somewhat thereafter. However, it again declined in 2009-10 implying a greater divergence in performance.

Keywords: Data Envelopment Analysis, Efficiency Decomposition, Hybrid Model, Life Insurance Industry, Non-parametric Approach, Performance Benchmarking, Technical Efficiency

1. INTRODUCTION

Since 1956, life insurance business in India was a state monopoly as the state-owned Life Insurance Corporation of India had the sole right providing insurance coverage. However, economic reforms in India initiated in the early 1990s saw the liberalisation of insurance business become an integral part of the government’s policy agenda. In 1993, the Central Government constituted a Committee under the Chairmanship of Shri R.N. Malhotra to suggest the roadmap for insurance sector reform. The Committee submitted its report in 1994 in which it favoured a gradual liberalisation of insurance business in India, segregation of non-life and life business and the introduction of prudential solvency based regulation of the insurance sector. In 1999 an Insurance Regulatory Authority Act was promulgated for creating the necessary regulatory framework. The new regulator, Insurance Regulatory and Development Authority (IRDA) took office at the same time to oversee and regulate the market. Following the opening up of the in-

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surance sector, the sector has had significant expansion which is evidenced by the fact that the total premium collected by the sector grew from Rs 1058760 million in 2005-06 to Rs 2654500 million in 2009-10. Between 2005 and 2010, life insurance penetration (measured as per cent of premium to country’s Gross Domestic Product) in India increased from 2.53 to 4.4. During the same period, life insurance density (measured as ratio of premium in US dollar to total population) in India increased from 18.3 to 55.7.

In the post-deregulation phase, several research studies including Tone and Sahoo (2005) and Sinha (2012) attempted to measure the performance of the life insurance companies operating in India. However, all of the extant research studies followed a radial model of performance evaluation. In contrast, the present paper compares the performance of fifteen life insurance companies operating in India for the period 2005-06 to 2009-10 using a non-parametric approach that applies a unified framework for the estimation of technical efficiency of the life insurance companies operating in India. With this objective, the paper proceeds as follows. Section 2 discusses the methodological issues relating to the measurement of efficiency. Section 3 discusses the received literature on the efficiency studies relating to the life insurance sector. Section 4 discusses the approach of the paper and states the results available from the present study. Finally, section 5 provides the summary of the findings.

2. COMPARISON OF PERFORMANCE: THE METHODOLOGICAL ISSUES

Productive efficiency of a productive unit can be measured by comparing its performance with the best practice unit in the industry following the same technology. Technical efficiency is typically measured in terms of its proximity to the production frontier which is comprised of the best performing points. There are, however, two major alternative approaches towards defining technical efficiency: the Pareto-Koopmans approach and the Debreu-Farrell approach. These two approaches are now described in brief.

2.1. The Pareto-Koopmans Approach

As per Koopmans (1951), a producing firm is technically efficient if an increase in any output necessitates a reduction in at least one other output or an increase in at least one input, and if a reduction in any input necessitates an increase in at least one other input or a reduction in at least one output. This approach is called Pareto-Koopmans approach because of its Paretian implication. Pareto efficiency or Pareto optimality refers to an economic state in which it is impossible to make an individual better off without making at least another individual worse off.

2.2. The Debreu-Farrell Approach

This approach provides a radial measure of efficiency. This approach has developed due to two seminal papers by Debreu (1951) and Farrell (1957) For output maximisation, the Debreu-Farrell measure is defined as $1 - q$, where $q$ is the maximum equi-proportionate expansion in all outputs with given input. For input minimisation, the Debreu-Farrell measure is $1 - c$ where $c$ is the maximum equi-proportionate reduction in all inputs. A score less than unity (i.e. $1 - q < 1$ or $1 - c < 1$) implies that the firm is technically inefficient.
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