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Evaluating the efficiency of leading Indian life insurance companies

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Abstract

Objectives: This study is to assess efficiency of leading Indian life insurers using data envelopment analysis (DEA).
Methods/Statistical analysis: This study aims to analyze the efficiency performance of top ten Indian life insurers from 2012-2013 to 2016-2017 using data envelopment analysis based on secondary data collected from Insurance Regulatory and Development Authority Annual Reports.
Findings: Findings indicate that the state life insurer i.e. Life Insurance Corporation (LIC) has been efficient throughout the study period. Private life insurers are comparatively new in life insurance sector and are of different sizes therefore exhibited variations in their performance levels. Some private life insurers operated efficiently during the study period.
Application/Improvements: The study brings into light the operating characteristics and efficiencies of the Indian life insurers during the period 2013-2017 and therefore holds important insights for policy makers, practitioners and the decision makers.
Keywords: Non-parametric analysis, Data envelopment analysis, Efficiency analysis, Life insurers, India.

1. Introduction

Life insurance companies have been operating in India since pre-independence era. From the year 1928, life assurance company act started collecting business information of all the insurance companies. To safeguard policyholder's interest, this act was further strengthened and replaced by the Insurance Act. There was fierce competition and malpractices before nationalization of insurance sector. Government of India merged all 154 Indian life insurers, 16 foreign life insurers and 75 provident societies to form Life Insurance Corporation of India (LIC). LIC served the nation and enjoyed monopoly till 1999 [1]. But this measure by the government could not increase insurance penetration and density in India as expected. Therefore, life insurance sector was once again opened for the private life insurers in the year 2000. The life insurance sector is a big one having total twenty four companies and is growing by leaps and bounds [2].

India is second most populous country in the world that means it has one of the largest insurable prospects in the world. India is ranked 10^{th} among 88 countries for which data is being published. However India's share in world insurance market was only 2.36% in 2016. This raises questions on the efficiency of this sector. According to an industry report, India's life insurance premium is expected to grow in the coming years arising mainly from improved efficiency, expanding business in small towns and villages, and overall growth in income per capita [3]. It is expected that the firms will focus more on reducing expenses and policy lapses and increase productivity. Deregulation has created an even playing field for both domestic and foreign affiliated firms in terms of transfer of technology, product development, competitive pricing and services, and professional management. The issue of firm efficiency has a major role in a highly competitive deregulated insurance industry in India. Therefore, the study to evaluate the efficiency of Indian life insurance sector becomes vital to know which life insurers are pulling the sector down and which life insurers are pulling this sector up.

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2. Significance

1. There is a need to bring into light the operating characteristics and efficiencies of the Indian life insurers.
2. Efficiency analysis holds important insights for policymakers, managers and for other stake holders.

3. Objectives

To analyze the efficiency of top Indian life insurance companies.

4. Literature survey

In [4], evaluated efficiency of fifteen Indian life insurers for the period 2006-12 using a dynamic slack based data envelopment model and found significant fluctuation in the mean total efficiencies. In [5], evaluated efficiency and productivity of fourteen life insurers during the period of 2005-09 using DEA and Malmquist index. They found that the growth in overall productivity is because of efficiency improvement. Life insurers were found away from the optimal scale as they found higher pure technical efficiency and lower scale efficiency. In [6], evaluated the efficiency of thirteen life insurers for the period 2003-07 using a two output one input framework. They found that there exists a big gap between the efficiencies of Life Insurance Corporation of India (LIC) and private insurers. LIC is ahead of them. They also observed an upward trend in the mean efficiency scores of private insurers while a reverse trend was noticed for LIC.

In another study on Indian insurance companies, in [7] studied efficiency of 14 life insurers over the period 2004–09 and evaluated efficiency scores by applying Data Envelopment Analysis and also calculated the scale efficiency. They found that over the period, the average technical efficiency (in both the assumptions of CRS and VRS) increased but scale efficiency decreased. High competition in the life insurance market increased the technical efficiency of the life insurers as a whole, but contemporarily the firms got away from their optimal scale of operation (most ideal is CRS). The number of firms exhibiting DRS has increased fivefold in 2008–09 as compared to 2004–05. In [8] evaluated the performance of LIC for the period of 1983-2001 using data envelopment analysis. They found a decline in performance after 1994-95 because of huge cost incurred by LIC in the modernization of its operations. Modernization improved efficiency of LIC from year 2000-01 onwards.

5. Research methodology

1. Sample and Data collection

We have collected data for this study from the annual reports of insurance regulatory and development authority of India for last five years i.e., 2013-2017. At present, 24 life insurers are operating in India, our panel data consist of top 10 life insurers (9 private companies and 1 state life insurer), which accounts for about 80% of the life insurance market.

2. Measures

Data envelopment analysis technique is used widely for the evaluation of business units [9]. We have used data envelopment analysis software 'DEAP' in this study for calculating the efficiency estimates of all the life insurance companies.

6. Data analysis

1. Input and Output for the study

Top ten life insurers on the basis of gross premium have been considered for this study. Table 1 is showing the input and output data.

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Table 1. Descriptive statistics of the variables used in DEA (Values are in Lakhs of rupees: 1 Lakh = ₹100,000; No. of firms = 10, Total Obs. =50)

Variables		2012-13	2013-14	2014-15	2015-16	2016-17
Outputs (Lakhs of ₹)						
Benefits Paid	Mean	777906	874923	840011	806975	936467
	Maximum	13628964	15951924	14602550	14365725	16762428
	Minimum	178455	186036	179400	183594	230801
Income from investment	Mean	586857	744218	981695	698497	1032943
	Maximum	11745288	14296713	16778606	15699686	19182291
	Minimum	96106	104987	263935	51594	239188
Inputs (Lakh of ₹)						
Equity Capital	Mean	53745	53462	53364	53994	54038
	Maximum	201288	201288	201288	201288	201288
	Minimum	10000	10000	10000	10000	10000
Debt Capital	Mean	7466723	8431331	9824781	10659893	12471583
	Maximum	152254465	172391765	199151597	217022486	252854018
	Minimum	997588	1100517	1390316	1518443	1897582
Commission	Mean	76776	83341	77564	80680	87695
	Maximum	1476798	1668129	1509210	1547717	1659007
	Minimum	10354	9205	9228	14949	14644
Operating Exp	Mean	115291	139768	135809	140972	171675
	Maximum	1670766	2376070	2239545	2269183	2895206
	Minimum	57328	43455	49889	48028	73543

2. Estimates of technical efficiency (TE) under CRS

Using data envelopment analysis software, we have calculated the efficiency estimates of life insurers under constant return to scale (CRS) from year 2012-13 to 2016-17 as shown in Table 2.

Table 2. Estimates of Technical Efficiency (TE) under CRS

S. no.	Name of Life Insurer	2012-13	2013-14	2014-15	2015-16	2016-17	Mean	Std.Dev.
1	Bajaj Allianz	0.939	1.000	1.000	1.000	1.000	0.9878	0.02728
2	Birla Sunlife	0.639	0.725	0.879	0.858	0.985	0.8172	0.13592
3	HDFC Standard	0.541	0.799	0.934	0.839	0.954	0.8134	0.165361
4	ICICI Prudential	0.885	1.000	1.000	1.000	1.000	0.977	0.05143
5	Kotak Mahindra	0.686	0.646	0.918	0.704	0.931	0.777	0.136352
6	Max Life	0.270	0.673	0.697	0.611	0.750	0.6002	0.191219
7	Reliance	0.511	1.000	1.000	1.000	1.000	0.9022	0.218687
8	SBI Life	0.962	1.000	0.94	0.976	0.912	0.958	0.033705
9	TATA AIA	1.000	1.000	1.000	0.984	0.887	0.9742	0.049236
10	LIC	1.000	1.000	1.000	1.000	1.000	1.000	0
	Mean (Industry)	0.621	0.796	0.796	0.809	0.874	0.7792	0.094163

Using the stated inputs and outputs, we have calculated values of technical efficiency under constant returns to scale (CRS) for the period 2013-17. The result indicates that efficiency of the life insurance sector was 62.10% in year 2012-13 which increased to 79.60% in 2013 and 2014 then increased further to 80.90% in 2016 and 87.40% in 2017. Taking average efficiency into consideration, the CRS scale predicts that only life insurance Corporation of India (LIC) has operated efficiently throughout the study period i.e. 2013-17. Previous studies also found LIC efficient in their respective studies (2004-5 to 2011-12).

Private life insurers ICICI prudential life, Bajaj Allianz life and Reliance Nippon life insurance Company limited consistently improved their technical efficiency and are found fully efficient in 4 out of 5 study years. Interestingly, all these three insurers are operating in both the insurance sectors viz. general and life insurance. Previous study also found the similar results conducted on 14 life insurance companies during the period 2005-09. It is found that life insurer Max New-York life insurance Company limited has minimum mean technical efficiency of 60.02% for the period 2013-17.

7. Conclusion and Managerial implications

This study has evaluated the efficiency of top 10 life insurers (on the basis of gross premium) for the last five years (2012-13 to 2016-17). This study is first of its kind which has considered the top life insurers for efficiency investigation using data envelopment analysis. The efficiency values for the most recent year (2016-17) has indicated that Indian life insurance industry is 87.40% efficient (CRS) as compare to 62.1% in 2012-13; this is because of significant variation in efficiency levels among life insurers. It is also observed that life insurers have tried to operate on an optimum level but there is room for improvement. Some insurers have invested excessive capital and are found far from the optimum operating level. Life insurance Corporation of India (LIC) has consistently operated efficiently for the period 2013-17 and is found fully efficient (1.000). These results are important for the decision makers of the life insurance companies as they can increase their efficiency. Similarly, results are important for academicians who are working in the similar area. They can do further research on this topic. We have included only 10 life insurers for this study although there are 24 life insurers that are operating in India. We have calculated efficiency on constant return to scale (CRS) ignoring variable return to scale. We have collected data for this study from the handbook and annual reports of insurance regulatory and development authority. Life insurance companies submit data of their business to IRDA in compliance hence accuracy of data depends on individual company's submission.

8. References

1. T. Sinha. An analysis of the evolution of insurance in India. International insurance markets. University of Nottingham, U.K. 2005.
2. Insurance Regulatory and Development Authority Handbook.www.irdai.gov.in. Date accessed: 12/04/2018.
3. Swiss Re Institute (2017), Annual Report Sigma No. 03/ 2017. www.swissre.com. Date accessed: 12/04/2018.
4. R. P. Sinha. A dynamic DEA model for Indian life insurance companies. *Global Business Review.* 2015; 16(2), 1-12.
5. K. Chakraborty, A. Dutta, P. P. Sengupta. Efficiency and Productivity of Indian life insurance industry. *Asia-Pacific Journal of Risk and Insurance.* 2013; 7(1), 1-28.
6. R. P. Sinha, B. Chatterjee. Technical efficiency behavior of life insurance companies. *The Indian Economic Journal.* 2011; 59, 146-161.
7. Dutta, P. P. Sengupta. Efficiency measurement of Indian Life Insurance Industry in post reforms era. *Global Business Review*. 2011; 12, 415-430.
8. K. Tone, B. K. Sahoo. Evaluating cost efficiency and returns to scale in the Life Insurance Corporation of India using data envelopment analysis. *Socio-Economic Planning Sciences.* 2005; 39, 261-285.
9. Charnes, W.W. Cooper, E. Rhodes. Measuring the efficiency of decision making units. *European Journal of Operational Research*. 1978; 2, 429-444.
10. Insurance Handbook (2016-17). www.irdai.gov.in. Date accessed: 12/04/2018.

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