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PERFORMANCE OF HEALTH INSURANCE AMONG PUBLIC INSURANCE COMPANIES

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Abstract
"Health insurance is an insurance against loss by illness or bodily injury. It provides coverage for medicine, visit to doctor or emergency room, hospital stays and other medical expenses. Policies differ in respect what they cover, the size of deductible and/or co-payments, limit of coverage and the option for treatment available to policyholders."One of the broad and comprehensive definition is given by Insurance Regulatory and Development Authority (IRDA) "health insurance business or health cover means the effecting of contracts which provides sickness benefits or medical, surgical or hospital expense benefits whether in-patient or out-patient, on an indemnity, reimbursement, service, prepaid, hospital or other plans basis, including assured benefits and long term care". In the narrow sense, health insurance can be defined as an individual or group purchasing health care coverage in advance by paying a fee called premium. In India, there is a need to study the state of health insurance both in term of its performance. The reason is attributable to the facts that firstly; this is one of the recent origins in India and still it is at an embryonic stage, as the people of India are not much aware about it and very few part of the population is taking the advantages of it. Secondly; this is one of the growing businesses now days as it is expected that by 2015, health insurance premium will touch Rs 35000 crores and by 2025, it will be Rs. 4,00,000 crores.

INTRODUCTION

Health insurance is a type of insurance that pays for all or part of person's health care bills. It can be defined as "any form of insurance whose payment is contingent on insured incurring additional expenses or loosing income because of incapacity or loss of good health" (Phillip 2007). In the narrow sense, health insurance can be defined as an individual or group purchasing health care coverage in advance by paying a fee called premium. While in the broader sense, it can be defined as any arrangement that help to defer, delay, reduce or altogether avoid payment of health care incurred by individuals. It is also called disability insurance or medical expense insurance or health care insurance or sickness insurance.

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ENTRY OF HEALTH INSURANCE

In 1954, Central Government Health Scheme (CGHS) was introduced. It is basically a contributory health schemes, which provide for comprehensive medical Introduction care to the central government's employees (whether serving or retired) including their families; members of parliaments; judges of Supreme Court (SC) and High Court (HC); and certain other categories of beneficiaries (Nagpal, Devadasan and Jain 2008).

Thereafter, government took over the business of all operating companies through General Insurance (Emergency Provision) Act, 1971. This act provided for the appointment of custodians, who were empowered to exercise control over the companies subject to the directions of central government, at the time of nationalization of companies. Accordingly, the General Insurance Business (Nationalization) Act 1972, nationalized the general insurance business in India and with effect from 1 Jan, 1973, 107 general insurance companies were grouped in to 4 public sector companies namely, National Insurance Company Limited, New India Assurance Company Limited, Oriental Insurance Company Limited and United India Insurance Company Limited.

The government company started its first health insurance policy in the year 1986, which is known as Mediclaim. It has been revised from time to time, in order to make it an attractive product. When it was introduced the minimum and maximum age limits were 5 month and 70 years respectively. However this has been changed over a period of time and at present, a person between 3 months to 80 years of age can be granted med claim policy up to maximum coverage of Rs. 5 Lac against

accidental and sickness hospitalization, during the policy period. The first significant revision in this was made in April 1996, when the Government of India allowed tax benefit upto Rs 10,000 of premium paid as tax deductible expenses. Second significant revision in the policy was made, when all categories of policies was removed and individuals were allowed to get insurance for any sum insured. Now, the premium is calculated on the basis of sum insured as well on the basis of age of person intended to get himself insured.In 1996, public non life insurance company has started a health insurance policy, called 'Jan Arogya' for catering the need of low income people of India. It is a sort reimbursement policy, available to anybody in the age group of 5year to 80years and provides coverage to the family of four members (including husband, wife and two dependent children). Basically, it provides an assured sum of Rs 5000 per person per annum; the premium varies from Rs 70 to Rs 140 per person depending on the age.

In India, health insurance found the new track of success and growth in the year 1999, when reforms in the insurance sector was initiated with passage of IRDA Bill in Parliament in Dec 1999. The Insurance Regulatory and Development Authority (IRDA), since its incorporation in April, 2000 has fastidiously stuck to its schedule of framing regulations and opening up the insurance sector to private players as well as permitting Foreign Direct Investments (FDIs) in insurance sector. Accordingly, foreign companies were allowed ownership upto 26% in insurance market. In the year 2001, IRDA introduced several insurance regulations including provisions for Third Party Administrators (TPAs) system, in order to support the administration and management of health insurance product offered by insurance companies. So, during this period first private health insurance product integrated with TPAs service was introduced. In the year 2003, one new health insurance scheme was introduced called, Universal Health Insurance Scheme (UHIS), on the line of existing 'mediclaim' to carter the need of all section of the society and started by four public sector general insurance companies. The scheme remained far from universal, however played significant role because of the availability of subsidies from the union government, in order to make it an affordable health insurance product.

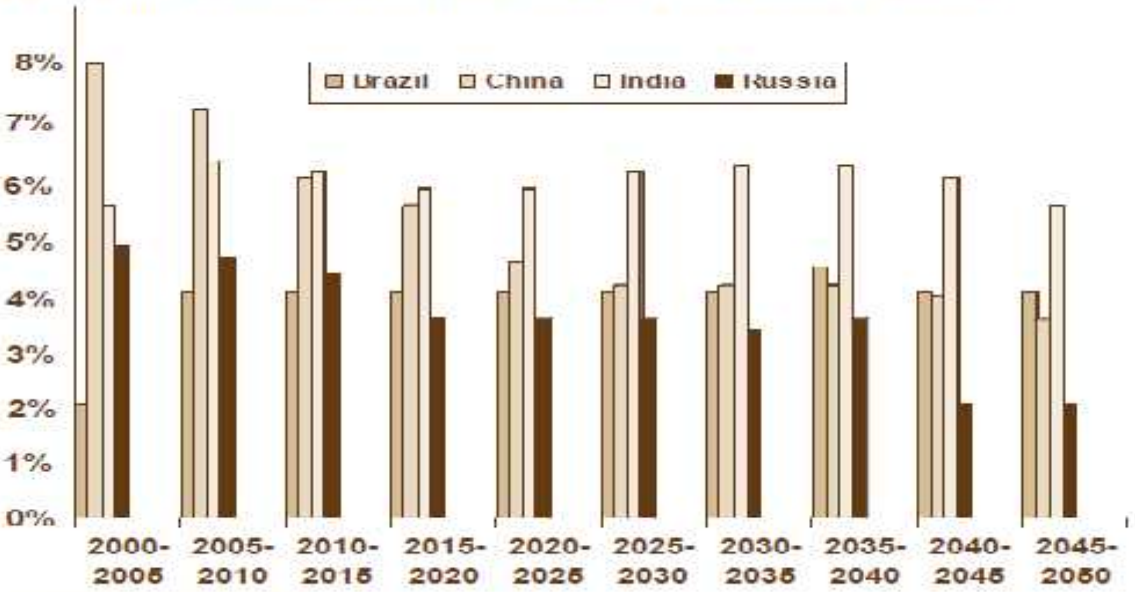
DIFFERENT SCHEMES OF HEALTH INSURANCE

Thereafter, IRDA moved a step ahead with the formation of a national health insurance working group in 2003, which provided a framework for various stakeholders of health insurance industry to work together and suggest solution to the relevant issues in this sector. One more scheme began in 2003-04 namely, Pandit Deendayal Upadhyaya Senior Citizen Health Insurance Scheme of Indore Municipal Corporation (IMC), which is a group health insurance scheme and is fully funded by the corporation and is made available at free of cost to the senior citizens.

In 2006, the Ministry of Health and Family Welfare (MHFW) published a framework for development of health insurance programs under the umbrella of National Rural Health Mission (NRHM), which provided that in addition to strengthening public health facilities, health insurance would also be used to remove financing barriers in health care and also to improve access to these, so as to achieve the ultimate objective of financial protection and to improve quality of health care services to the community. Rajasthan Swasthya Bima Yojana has recently introduced by the government of Rajasthan in the year 2007, which cover all Below Poverty Line (BPL) families in the five pilot district of Rajasthan. The premium amount is Rs 480, out of which (Rs 300) is paid by the government of India and rest by the government of Rajasthan. The insured person can go to either private or public providers to access hospital care. On the basis of implementation experience, the remaining districts were planned to be covered in a phased manner.

One of the recent health insurance schemes which were introduced by the government of India is Rashtriya Swasthya Bima Yojana (RSBY) in the year 2008-09, which cover all the Below Poverty Line (BPL) families in the country. In the beginning, it was just extended to 120 districts in 28 states and later on extended its coverage. The BPL families can enroll under this just with the payment of Rs 30 as registration fee and can get smart card with their photograph, family detail and thumb impression. The patients can avail facility after validating his identification through smart card. No doubt, the owner of scheme is the state government, but it is also financed by the central government because it shares the premium subsidy up to75%.

Figure 1: India is forecast to grow by at least 5% a year for the next 45 years



Source: Goldman Sachs

REVIEW OF LITERATURE

Bikker and Leuvensteijn (2008) examined the competitive nature of Dutch life insurance industry by investigating the several factors, which affect the competitive nature of the market. Beside this, the study attempted to analyze the relationship between the scale economies and X-inefficiencies, because the severe competition forces the firms to exploit scale economies and to reduce X-inefficiencies. The results of the study provided that limited competition exist in Dutch life insurance industry as compared to life insurance industry of Netherlands and thereby results in availability of less scale economies for the firms of Dutch life insurance industry.

Ansah et al. (2010) evaluated the performance or efficiency of Ghanaian general insurance companies from the year 2002 to 2007 and also tested the hypotheses relating to the roles played by dimension and market share in the efficiency of the Ghanaian general insurance companies. The study provided with the result that Ghanaian general insurers operated at an average overall efficiency of 68%, technical efficiency of 87% and scale efficiency of 78%. Besides this, result also provided with the fact that Ghanaian general insurers with higher dimension and market shares tend to have higher efficiencies; implying that general insurers could increase their efficiencies by trying to increase among other things their dimension and market shares.

Eling and Luhnen (2010) conducted a study to provide an overview on frontier efficiency measurement in the insurance industry. The study conducted was mainly review based and involves a comprehensive survey of 95 studies with a special emphasis on innovations and recent developments. Beside this, the study also involves the review of different econometric and mathematical programming approaches to efficiency measurement in insurance and discusses the choice of input and output factors. Furthermore, it categorized the 95 studies into 10 different areas of application and discusses selected results. The results of the study provided that there was a broad consensus with regard to the choice of methodology and input factors, the difference lies in case of in output measurement. The study concluded that there is significant need for future research with regard to analysis of organizational forms, market structure and risk
management, especially in the international context.

NEED OF THE STUDY

In India, there is a need to study the state of health insurance both in term of its performance. The reason is attributable to the facts that firstly; this is one of the recent origins in India and still it is at an embryonic stage, as the people of India are not much aware about it and very few part of the population is taking the advantages of it. Secondly; this is one of the growing businesses now days as it is expected that by 2015, health insurance premium will touch Rs 35000 crores and by 2025, it will be Rs. 4,00,000 crores. Thirdly; it is the need of hour, moreover, various studies provided that around 94 percent of the total

work force is in unorganized sector and one of the major problems among them is the frequent incidence of illness and need for medical care and hospitalization. One of the solutions to this is to take health insurance, which is widely recognized mechanism to finance health care needs of an individual because he/she has to just make gradual contribution as premium and can get rid of all health worries. Keeping into mind such an important role being played by it, the present study is an effort in area of health insurance to evaluate its state in India, both in term of its performance.

OBJECTIVES OF THE STUDY

- To evaluate the performance of health insurance business of general insurance companies in India

SOURCES OF DATA

Basically, for the purpose of present study of secondary data were collected and used. The study is mainly based upon the use of secondary data regarding health insurance. The objective of the study; each section aims at discussion of data base and research methodology applied for the achievement of particular objective. The objective deals with the data base and research methodology used to evaluate the performance of health insurance business of general insurance companies in India.

In order to achieve the above stated objective, the study was conducted with Indian general insurance companies and covered a period of 5 years from 2009-10 to 2013-14. Presently, four public sector insurance companies were selected on the basis of base year 2009 The basic reason behind the selection of base year as 2009 lies in the fact that, this is the exclusive year in which general insurance companies

RESEARCH METHODOLOGY

The data collected was analyzed with the help of followings:

- ✓ Data Envelopment Analysis (DEA)
- ✓ Malmquist Total Factor Productivity Analysis (MTFPA)

All this was done with the help of DEAP software package.

Data Envelopment Analysis (DEA): It is a mathematical programming approach which estimates the frontier by solving a series of linear programming problems. The efficiency of the each firm is measured with respect to distance from the frontier. Generally, the efficiency scores ranges from 0 to 1 and a firm having efficiency score equal to 1 referred as a fully efficient firm or a firm operating on the frontier and a firm having efficiency score less than 1 referred as inefficient firm or a firm operating away from the frontier. The firms or companies whose efficiency is measured with the help of DEA are called Decision Making Units (DMUs). DMUs efficiency is obtained by solving a set of linear programming problems which can be categorized.

(a) One-stage DEA which uses the following equation and calculate slack residually:

$$\begin{aligned} &min_{\theta,\lambda}\theta, \\ &st\ -y_i + Y\lambda \geq 0, \\ &\theta x_i - X\lambda \geq 0, \\ &\lambda \geq 0 \end{aligned} \qquad \text{..... (1)}$$

Where is a scalar and is a Nx1 vector of constants. This envelopment form involves fewer constraints than the multiplier form (K+M < N+1), and hence is generally preferred to solve. The value obtained will be the efficiency score for the i-th DMU. It will satisfy 0<1, with a value of 1 indicating a point on the frontier and hence a technical efficient DMU, according to Farrell (1957) definition. Moreover the linear programming problem must be solved N times, once for each DMU in the sample.

(b) Two-stage DEA which uses the following equation:

$$\begin{aligned} &min_{\theta,\lambda,OS,IS} -(M1'OS + K1'IS), \\ &St\quad -y_i + Y\lambda - OS = 0, \\ &\theta x_i - X\lambda - IS = 0, \\ &\lambda \geq 0, OS \geq 0, IS \geq 0, \end{aligned}$$

Where OS is an Mx1 vector of output slack, IS is a Kx1 vector of input slacks and M1 and K1 are Mx1 and Kx1 vector of ones, respectively. In this case, is not variable rather its value is taken from the first stage results. Moreover it is required to be solved for the each of the N DMU's involved. However there are two problems associated with this: firstly, sum of slack maximized rather than minimized. Secondly, it is not invariant to units of measurement. The alternative to get rid of these problems is the use of multistage DEA.

(c) Multi-stage DEA, where we conduct a sequence of radial LP's to indentify the efficient projected point. This method is computationally more demanding than the other two methods above specified due to the fact that it identifies efficient projected points which have input and output mixes which are as similar as possible to those of the inefficient points, and that it is also invariant to units of measurement *(Coehli, T.J. 1996).*Hence we have used multi-stage method over the other two alternatives. The above stated equations are used in DEA to evaluate the efficiencies of the DMUs. In our paper, efficiency is defined as technical efficiency. Further, only the measurement of technical efficiency is not enough, so we worked ahead and measured the technical efficiency both with Constant Return to Scale (CRS) as well as with Variable Return to Scale (VRS). The technical efficiency which is measured with VRS is also known as Pure Technical Efficiency. Besides this, scale efficiency has also been calculated for all the firms during the period under consideration.

Technical Efficiency: Technical efficiency can be regarded as the product of pure technical efficiency and scale efficiency. It reflect the ability of the firm to obtain the maximum output from a given set of input or the efficiency with which inputs are transformed into output or just the output/input ratio.

Pure Technical Efficiency: In pure technical efficiency, production line with variable return to scale is used. From the view point of economics, this will release the restrictions of scale. Therefore, the inefficiency only lies in the factors such as productivity, resource allocation and management.

Scale Efficiency: In contrary to the case of pure technical efficiency, only the factor of scale is effective here, while the factors of productivity, resource allocation and management are excluded.

Empirical Results of DEA, its Analysis and Interpretation

Analysis of Technical Efficiency (TE), Pure Technical Efficiency (PTE) and Scale Efficiency (SE): The results of DEA have provided Technical Efficiency (TE), Pure Technical Efficiency (PTE) and Scale Efficiency (SE) of health insurance business of general insurance companies in India. The analysis of various efficiencies obtained with the application of DEA has done by Company wise analysis. Company Wise Analysis of Technical Efficiency (TE), Pure Technical Efficiency (PTE) and Scale Efficiency (SE): This was made in order to arrive at conclusive findings of TE, PTE and SE of health insurance business of general insurance companies in India, during the period under consideration. In other words, an effort was made to find out individually, which company lie on the frontier and which are away from the frontier i.e. which does not lie on the frontier. The company wise analysis is depicted in table 1.

Table- 1,Company Wise Analysis of Technical Efficiency (TE), Pure Technical Efficiency (PTE) and Scale Efficiency (SE)

United India Insurance Company Limited

Indicators	2009-10	2010-11	2011-12	2012-13	2013-14
TE	0.563	0.676	0.061	0.755	0.811
PTE	0.912	0.777	0.667	0.796	1.000
SE	0.618	0.870	0.092	0.948	0.811

Oriental Insurance Company Limited

Indicators	2009-10	2010-11	2011-12	2012-13	2013-14
TE	0.711	0.988	0.835	1.000	0.872
PTE	1.000	1.000	1.000	1.000	1.000
SE	0.711	0.988	0.835	1.000	0.872

New India Assurance Company Limited

Indicators	2009-10	2010-11	2011-12	2012-13	2013-14
TE	0.587	1.000	1.000	0.843	1.000
PTE	1.000	1.000	1.000	1.000	1.000
SE	0.587	1.000	1.000	0.843	1.000

National Insurance Company Limited

Indicators	2009-10	2010-11	2011-12	2012-13	2013-14
TE	0.785	1.000	1.000	1.000	1.000
PTE	1.000	1.000	1.000	1.000	1.000
SE	0.785	1.000	1.000	1.000	1.000

United India General Insurance Company Limited: Out of various public sector companies, United India Insurance Company does not lie on the frontier in any year. As it is shown in the table 1 that its efficiency score was 0.563 in the year 2009-10 which increases over a period of time and became 0.968 in the year 2013-14.

Oriental General Insurance Company Limited: Its technical efficiency scores which are the products of PTE and SE shown the diverse trends during the period under consideration. Table 1 shows that its efficiency score ranges between 0.835 to 1 and the company was found to be fully efficient in the year 2009-10 with TE score of 1. Thereafter it increases to 1during the year 2013-14.

New India Assurance Company Limited: It was found good as compared to other insurance companies under consideration, because it lie on the frontier for maximum number of years i.e. for 3 years out 5 years of period under consideration. Irrespective of the fact that it was remain fully efficient as compared to other insurance companies, yet its technical efficiency scores shows decreasing trend after 2009-10 and increased to 1 in the year 2013-14, which might be because of the fact that it is becoming mature and due to competition the position is gradually acquired by private sector insurance company.

National Insurance Company Limited: Likewise, New India Assurance Company Limited, it was also found on the frontier for 3 out of 5 years of period under consideration. If we look at the two extreme point of the study i.e. the beginning year 2009-10 and ending year 2013-14, this company was far away from the frontier i.e. not lay on the frontier because of its efficiency score less than 1. But if we forward attention towards other years, then found that it was on the frontier for all those years with TE scores exactly equal to 1. The reason behind the decrease in its efficiency scores in 2009-10 can be attribute to same factors as in case of New India Assurance Company Limited i.e. it became mature or due to competition the position is gradually acquired by private sector insurance company.

Table-2,Overall Analysis of Mean of Technical Efficiency (TE), Pure Technical Efficiency (PTE) and Scale Efficiency (SE)

Year	Insurers	Mean of TE	Mean of PTE	Mean of SE
2009-2010	All Insurers	0.483	0.821	0.537
2010-2011	All Insurers	0.720	0.898	0.803
2011-2012	All Insurers	0.570	0.815	0.665
2012-2013	All Insurers	0.782	0.944	0.824
2013-2014	All Insurers	0.730	0.927	0.785

The table 2 shows overall analysis of mean of TE, PTE and SE. For the purpose of overall analysis we have classified the mean efficiency scores into 0-0.3, 0.3-0.6, 0.6- 0.9 and 0.9-1 and thereafter, the comparison of all the insurers have been made with respect to their efficiency scores in order to find out the range within which they fall. By following the same, we found that only in the year 2009-10 all insurers fall in the first category. Thereafter in subsequent years, all the insurers were

found in the higher interval of 0.3-0.6 and 0.6-0.9. This might be because of all the insurers were operating on increasing return to scale or it was contributed by PTE and SE. Moreover, it has shown in table 2 that the mean of TE of all the insurers has increased from 0.389 in the year 2009-10 to 0.730 in the 2013-14. By making comparison, it was found that all the insurers were also better at PTE, as that mean of PTE is more as compared with mean of TE in all the year. But this is also vanishing, if we make the comparison of mean of PTE of the year 2009-10, which was 0.965 with the mean of PTE of the year 2013-14, which was 0.927. This can be justified through scale economies, as most of the health insurers have strong increasing return to scale and also taking the advantages from the scale economies as it has increased from 0.390 in the year 2009-10 to 0.785 in the year 2013-14.

CONCLUSION

In India, two companies namely, New India Assurance Company Limited and National Insurance Company Limited are fully efficient companies during 3 out of 5 years of period under consideration. Their efficiency remains static upto 2009-10 or 2011-12. Thereafter, its efficiency score shows decreasing trend which might be attributable to the fact that they have achieved the level of maturity and due to competition their position is gradually acquired by public sector insurance company.

On the other hand study found that one is from the public sector, which does not lie on the frontier in any of years the under consideration. Similarly, out of public sector, United India insurance Company Limited is inefficient companies as their efficiency score were not equal to 1 in any of year under consideration. But cannot be regarded as good sign for the public sector general insurance companies, as due to competition their position is slowly and steadily taken over private sector general insurance company.

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