

A STUDY OF PERCEPTIVE AND PRODUCTIVITY OF HEALTH INSURANCE BUSINESS IN INDIA WITH REFERENCE TO KEY DETERMINANTS

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ABSTRACT

The present study is an effort to examine the perceptive of health insurance; to examine the productivity as well as change in productivity of health insurance business; and to identify the various derives behind such change. A period of 8 years from 2002-03 to 2009-2010 is considered and the public sector companies are mainly taken as key area of investigation. Beside this, it is primarily based upon the use of secondary data. Further, for the accomplishment of objectives, the use of Data Envelopment Analysis (DEA), a mathematical programming approach is made and two key determinants of input and one determinant of output is considered. The results of DEA provided that TFPC, which comprises of EC, TC, PTEC and SEC has followed diverse path during the period under consideration. It has deteriorated in two companies namely, Oriental Insurance and New India Assurance Company limited, whereas improved in United India and National Insurance Company Limited. At the same time results provided that in almost all the year the TFPC lies between first two categories i.e. either less than 1 or 1-2, except for the year 2004-05 to 2005-06 as during this year the TFPC lies in third category i.e. it was even more than 2.

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INTRODUCTION

Human beings as social animals always sought security. This quest for security is an important motivating force in the earliest formations of families, clans, tribes and other groups. In other words, groups are primary source of both emotional and physical security, since the beginning of human kind. Human beings today continue their quest to achieve security and reduce uncertainties and for this they rely on groups for financial stability. The group may be our employer, the government or an insurance company, but the concept is same. The function of insurance is to safeguard against such misfortune by having contribution of many pay for the losses of the unfortunate few. This is the essence of insurance - the sharing of losses and, in the process, the substitution of certain, small "loss" called the premium for an uncertain, large loss. Nowadays the insurance industry comprises of various types of insurance but the focused area of it is health insurance, which is a judicial mix of voluntary health insurance, community health insurance as well as social health insurance. 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 losing 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 an individual. It is also called disability insurance or medical expense insurance or health care insurance or sickness insurance.

REVIEW OF LITERATURE

Various studies related directly or indirectly to the objectives of the present study have been reviewed. **Grace and Timme (1992)** analyzed the U.S. life insurance industry and provided with the estimation of both overall and product specific scale economies, as well as, pair-wise cost complementarities for a wide variety of products. In contrast, previous studies only provide a single point estimate of industry cost characteristics using the sample mean output vector. This study, therefore, provides a more complete representation of the industry's cost characteristic. **Cummins, Turchetti and Weiss (1996)** examined the efficiency and productivity under the new European regulatory regime and indicated that technical efficiency in the Italian insurance

industry ranged from 70 to 78 percent during the sample period. However, productivity declined significantly over the sample period, with a cumulative decline of about 25 percent. **Fukuyama (1997)** investigated the productive efficiency and productive changes of Japanese life insurance companies and reveals mutual and stock companies possess identical technologies, but the productive efficiency and productive performance changes from time to time in the case of stock and mutual under different economic conditions. **Cummins and Zi (1998)** provided that alternative methodologies give significantly different estimates of efficiency and productivity for the insurers. Moreover the efficiency rankings are quite well-preserved among the econometric methodologies; but the rank correlations are lower between the econometric and mathematical programming categories and between alternative mathematical programming methodologies. **Cummins and Misas (2001)** analyzed the causes and effects of consolidation in Spanish insurance industry and showed that many small, inefficient, and financially under-performing firms were eliminated from the market due to insolvency or liquidation and those acquirers in the mergers and acquisitions market prefer relatively efficient target firms. **Boonyasai, Grace and Skipper (2002)** examined the impact of liberalization and deregulation of four life insurance markets and found that liberalization and deregulation of the Korean and Philippine life insurance industries seem to have stimulated increases and improvements in productivity whereas liberalization of the Taiwanese and Thai life insurance industries seems to have had little effect on increases and improvements in productivity. **Cummins, Weiss and Zi (2003)** provided the evidence for the existence of weak economies of scope in the U.S. insurance industry and also that strategic focus appears to be a better strategy. **Eling and Luhn (2008)** analyzed and provided new empirical evidence on frontier efficiency measurement in the insurance industry and found that a steady technical and cost efficiency growth in international insurance markets from 2002 to 2006, with large differences across countries. **Yuan and Phillips (2008)** examined the efficiency and productivity effect from the possible economies of scope across two formally separate sectors by estimating multi-product costs, revenue, and profit function and suggested that a significant number of cost scope diseconomies, revenue scope economies, and weak profit scope economies exist in the post-GLB U.S. integrated banking and insurance sectors. **Owusu, Dontwi, Seidu, Abudulai, and Sebil (2010)** evaluated the performance, efficiency and productivity of Ghanaian general insurance companies from the year

2002 to 2007 and 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%.

Having in-depth review of related studies has provided that there is huge importance of DEA in evaluation of productivity of the insurance industry. Keeping into mind such an importance of DEA model in evaluation of an entity, we have used the same in the present study in order to achieve the following objectives:

- ✓ *To examine the perceptive of health insurance in India.*
- ✓ *To examine the productivity as well as change in productivity of health insurance business and identify the various derives behind such change.*

DATA BASE AND RESEARCH METHODOLOGY

The present study is covering a period of 8 years from 2002-03 to 2009-2010 and the Public Sector Companies are mainly taken as key area of investigation for the examination of productivity of health insurance business. Accordingly, the companies under the scope of study include: United India Insurance Company limited; Oriental Insurance Company Limited; New India Assurance Company Limited; and National Insurance Company Limited. The study is entirely based upon secondary data, which is mainly drawn from the annual reports of the insurance companies under consideration and various studies conducted in this area are also considered. In order to accomplish the objectives of study, the use of Data Envelopment Analysis (DEA), a mathematical programming approach to investigate the productivity as well as change in the productivity of health insurance business of general insurance companies in India. DEA helps in measuring productivity by using Malmquist index summary. This summary provided with Efficiency Change (EC), Technological Change (TC), Pure Technical Efficiency Change (PTEC), Scale Efficiency Change (SEC) and Total Factor Productivity Change (TFPCH). Overall it provided with TFPC which comprises of EC, TC, PTEC and SECE. Thereby an effort is made to calculate the Total Factor Productivity Change (TFPC) by using the Malmquist index provided by DEA (Coelli, 1996).

For the application of DEA, accurate identification and selection of variable of inputs and outputs is necessary. Finally we have selected two indicator of input as capital and cost to the insurers; one indicator of output as premium, which is also in accordance with the assumption of DEA, that number of DMUs should be three time of number of inputs and outputs.

EMPIRICAL RESULTS, ITS ANALYSIS AND INTERPRETATION

I. Health Insurance - International and National Perspective

The credit for the origination of concept of health insurance goes to *Hugh the Elder Chamberlen* from the *Peter Chamberlen Family*, who proposed it for the first time in the year 1694. In the late 19th century, “Accidental Insurance” began which operated much like modern “Disability Insurance”. It was firstly offered by Franklin Health Assurance Company of United State (US), which was founded in 1850. It provides coverage for the accident arising from rail, road and steamboat accident. This payment model continued until the start of 20th century in some jurisdictions (like California), where all laws regulating health insurance actually referred to disability insurance. During the middle to late 20th century, traditional health insurance evolved into modern health insurance. Hospital and Medical expenses policies were introduced during the first half of 20th century. During 1920s, individual hospitals began offering services to individuals on a pre-paid basis, eventually leading to the development of blue cross organizations. The predecessor of today’s Health Maintenance Organization (HMOs) were originated beginning in 1929, through the 1930s and on during World War II.

(Source: http://en.wikipedia.org/wiki/Health_insurance assessed on 19th July, 2009).

As far as health insurance in India is concerned, it is stated both with reference to before privatization and after privatization

Phase I- Before Privatization: The enactment of Employee State Insurance (ESI) Act, in 1948 ushered health insurance in India. In 1952, the legislation has introduced a mandatory social insurance scheme for employees in the formal sector known as Employee State Insurance Scheme (ESIS). Since its introduction, it is exclusively managed by Employee State Insurance Corporation (ESIC) of India, a wholly owned enterprise which provides for cash benefits, medical benefits, preventive as well as promotive care, and health education too. It is mainly financed with the contribution of employers, employees and government and is a sort of compulsory social security benefit for workers (including their dependents).

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 mediclaim 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.

Phase II- After Privatization: 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.

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.

As far as the current market scenario health insurance in India is concerned, this is still at embryonic stage. As the people of India are not much aware about it and very few part of the population is taking advantages of it. Moreover, those who are aware about it, do not actively participating for one reason or another and thereby making it difficult to bring it to the stage of expansion. Beside this, very few insurers are actively venturing in it and thereby making it difficult to construct inroads for health insurance in India. But there is terrible need of health insurance in India as according to World Bank Report (WBR), various studies reveals that 85% of the working populations in India do not have Rs. 5,00,000 as instant cash; 14% have Rs. 5,00,000 instantly but will subsequently will face a financial crunch; Only 1% can afford to spend Rs. 5,00,000 instantly and easily; and 99% of Indians will face financial crunch in case of any critical illness. Hence the need for health insurance in India cannot be overlooked.

(Source: http://www.healthinsuranceindia.org/need_of_health_insurance.asp assessed as 15th March, 2010).

Analysis of Direction of Productivity, its Change and Malmquist Index Summary

Productivity change and Malmquist index was investigated in order to measure the productivity of health insurance business of public sector general insurance companies in India as well as change in it. All this done with the help of Malmquist Total Factor Productivity Analysis (MTFPA), which provide information about standing of companies in relation to productivity as well as change in productivity, so as to come out with conclusive findings with regards to whether productivity change exists or not. Further if change exist, whether it is positive change

or negative change. This change in the productivity has been analyzed and interpreted in two ways: A. company wise productivity change and Malmquist index summary and B. Year wise productivity change and Malmquist index summary.

A. Company Wise Analysis of Productivity Change and Malmquist Index Summary: Here an effort is made to find out individually which of the company has improved its productivity or vice versa.

Table 1

Company Wise Productivity Change and Malmquist Index Summary

United India Insurance Company Limited							
Indicators	2002-03 to 2003- 04	2003-04 to 2004- 05	2004-05 to 2005- 06	2005-06 to 2006- 07	2006-07 to 2007- 08	2007-08 to 2008- 09	2008-09 to 2009- 10
EC	0.635	1.525	0.837	0.834	0.091	2.311	1.130
TC	0.974	0.685	1.297	1.082	1.434	1.115	1.110
PTEC	0.635	1.575	0.927	0.752	0.089	2.334	1.111
SEC	1.000	0.968	0.904	1.110	1.016	0.900	1.017
TFPC	0.618	1.045	1.086	0.903	0.130	13.730	1.255
Oriental Insurance Company Limited							
Indicators	2002-03 to 2003- 04	2003-04 to 2004- 05	2004-05 to 2005- 06	2005-06 to 2006- 07	2006-07 to 2007- 08	2007-08 to 2008- 09	2008-09 to 2009- 10
EC	0.924	1.744	0.909	1.133	0.845	1.198	1.000
TC	1.596	0.619	1.298	1.088	1.390	1.102	1.115
PTEC	0.924	1.802	1.009	1.000	1.000	1.000	1.000
SEC	1.000	0.968	0.901	1.133	0.845	1.198	1.000
TFPC	1.474	1.080	1.181	1.233	1.175	1.319	1.115
New India Assurance Company Limited							
Indicators	2002-03 to 2003- 04	2003-04 to 2004- 05	2004-05 to 2005- 06	2005-06 to 2006- 07	2006-07 to 2007- 08	2007-08 to 2008- 09	2008-09 to 2009- 10

EC	1.000	1.000	1.000	1.000	1.000	0.843	1.045
TC	1.309	0.452	2.100	0.671	1.576	0.873	1.088
PTEC	1.000	1.000	1.000	1.000	1.000	1.000	1.000
SEC	1.000	1.000	1.000	1.000	1.000	0.843	1.045
TFPC	1.309	0.452	2.100	0.671	1.576	0.737	1.136
National Insurance Company Limited							
Indicators	2002-03 to 2003- 04	2003-04 to 2004- 05	2004-05 to 2005- 06	2005-06 to 2006- 07	2006-07 to 2007- 08	2007-08 to 2008- 09	2008-09 to 2009- 10
EC	1.019	1.000	1.000	1.000	1.000	1.000	1.000
TC	1.285	0.503	1.099	1.130	1.384	1.178	1.318
PTEC	1.019	1.000	1.000	1.000	1.000	1.000	1.000
SEC	1.000	1.000	1.000	1.000	1.000	1.000	1.000
TFPC	1.310	0.503	1.099	1.130	1.384	1.178	1.318

The table 1 reveals Total Factor Productivity Change (TFPC), which comprises of EC, TC, PTEC and SEC has followed diverse path during the period under consideration. The TFPC which is the results of EC, TC, PTEC and SE has deteriorated in two companies namely, Oriental Insurance and New India Assurance Company limited as initially the TFPC was 1.474 and 1.309 which decreased to 1.115 and 1.136. Alternatively, TFPC has improved in two companies namely United India and National Insurance Company Limited as initially it was 0.618 and 1.310 which increased to 1.255 and 1.318. This can attributable to the fact that United India and National Insurance Company Limited are taking the advantages of Technological Change (TC), Efficiency Change (EC), Pure Technical Efficiency Change (PTEC) and Scale Efficiency Change (SEC).

B. Year Wise Analysis of Productivity Change and Malmquist Index Summary: This was done in order to find out the year wise Total Factor Productivity Change (TFPC), which is the result of Efficiency Change (EC), Technological Change (TC), Pure Technical Efficiency Change (PTEC) and Scale Efficiency Change (SEC) of various companies under consideration i.e. an effort was made to find out the year in which maximum TFPC occurred in the companies under consideration.

Table 2

Year Wise Productivity Change and Malmquist Index Summary

Year	Companies	EC	TC	PTEC	SEC	TFPC
2002-03 to 2003-04	United	0.635	0.974	0.635	1.000	0.618
	Oriental	0.924	1.596	0.924	1.000	1.474
	New India	1.000	1.309	1.000	1.000	1.309
	National	1.019	1.285	1.019	1.000	1.310
2003-04 to 2004-05	United	1.525	0.685	1.575	0.968	1.045
	Oriental	1.744	0.619	1.802	0.968	1.080
	New India	1.000	0.452	1.000	1.000	0.452
	National	1.000	0.503	1.000	1.000	0.503
2004-05 to 2005-06	United	0.837	1.297	0.927	0.904	1.086
	Oriental	0.909	1.298	1.009	0.901	1.181
	New India	1.000	2.100	1.000	1.000	2.100
	National	1.000	1.099	1.000	1.000	1.099
2005-06 to 2006-07	United	0.834	1.082	0.752	1.110	0.903
	Oriental	1.133	1.088	1.000	1.133	1.233
	New India	1.000	0.671	1.000	1.000	0.671
	National	1.000	1.130	1.000	1.000	1.130
2006-07 to 2007-08	United	0.091	1.434	0.089	1.016	0.130
	Oriental	0.845	1.390	1.000	0.845	1.175
	New India	1.000	1.576	1.000	1.000	1.576
	National	1.000	1.384	1.000	1.000	1.384
2007-08 to 2008-09	United	2.311	1.115	2.334	0.990	1.730
	Oriental	1.198	1.102	1.000	1.198	1.319
	New India	0.843	0.873	1.000	0.843	0.737
	National	1.000	1.178	1.000	1.000	1.178
2008-09 to 2009-10	United	1.130	1.110	1.111	1.017	1.225
	Oriental	1.000	1.115	1.000	1.000	1.115
	New India	1.045	1.088	1.045	1.045	1.136
	National	1.000	1.318	1.000	1.000	1.318

For the purpose of year wise analysis, three categories of Total Factor Productivity Change (TFPC) was made as: less than 1 TFPC, 1-2 TFPC and more than 2 TFPC. Thereafter from the table 2 it was observed that in almost all the year the TFPC was lies between first two categories i.e. either less than 1 or 1-2, except for the year 2004-05 to 2005-06 as during this year the TFPC lies in third category i.e. the TFPC was even more than 2.

III. Analysis of Drivers behind Productivity Change and Malmquist Index Summary

After the investigation of productivity change and malmquist index Summary, an effort was also made to examine and explore the various drivers behind this change. This change in the productivity and malmquist index summary can be attributable to change in technical efficiency or technical progress/technology change. These drivers behind the productivity change and malmquist index summary analyzed and interpreted as:

Company Wise Analysis of Drivers behind Productivity Change and Malmquist Index Summary: This has been done in order to drive the results for each of the company for the period under consideration i.e. an effort was made to identify and explore the various drivers behind such change and malmquist index for each of the company for all the year under consideration.

Table 3

Company Wise Analysis of Drivers behind Productivity Change and Malmquist Index Summary

United India Insurance Company Limited							
Indicators	2002-03 to 2003- 04	2003-04 to 2004- 05	2004-05 to 2005- 06	2005-06 to 2006- 07	2006-07 to 2007- 08	2007-08 to 2008- 09	2008-09 to 2009- 10
Technical Efficiency	X	X				X	X
Technical Progress	X		X	X	X	X	X
Oriental Insurance Company Limited							
Indicators	2002-03 to 2003- 04	2003-04 to 2004- 05	2004-05 to 2005- 06	2005-06 to 2006- 07	2006-07 to 2007- 08	2007-08 to 2008- 09	2008-09 to 2009- 10

Technical Efficiency		X		X		X	
Technical Progress	X		X	X	X	X	X
New India Assurance Company Limited							
Indicators	2002-03 to 2003-04	2003-04 to 2004-05	2004-05 to 2005-06	2005-06 to 2006-07	2006-07 to 2007-08	2007-08 to 2008-09	2008-09 to 2009-10
Technical Efficiency						X	X
Technical Progress	X	X	X	X	X	X	X
National Insurance Company Limited							
Indicators	2002-03 to 2003-04	2003-04 to 2004-05	2004-05 to 2005-06	2005-06 to 2006-07	2006-07 to 2007-08	2007-08 to 2008-09	2008-09 to 2009-10
Technical Efficiency	X						
Technical Progress	X	X	X	X	X	X	X

The table 3 shows the drivers behind the productivity change and malmquist index summary, which can be attributable to change in technical efficiency or technical progress/technology change. The presence of sign (X) shows the applicability of particular driver behind such change. Moreover, the results have provided with the fact that the productivity change in the companies under consideration was basically derived either by technical efficiency or technology change. Whereas in very few cases the change in productivity was attributable of both technical efficiency and technology change.

CONCLUSION

The insurance industry is comprised of various types of insurance but the focused area of it is health insurance and as far as the current market scenario health insurance in India is concerned,

this is still at embryonic stage. As the people of India are not much aware about it and very few part of the population is taking advantages of it. Moreover, those who are aware about it do not actively participate for one reason or another and thereby making it difficult to bring it to the stage of expansion. Beside this, very few insurers are actively venturing in it and thereby making it difficult to construct inroads for health insurance in India. Further the results of DEA provided that Total Factor Productivity Change (TFPC), which comprises of EC, TC, PTEC and SEC has followed diverse path during the period under consideration. It has deteriorated in two companies namely, Oriental Insurance and New India Assurance Company limited and similarly improved in two companies namely United India and National Insurance Company Limited This can attributable to the fact that United India and National Insurance Company Limited are taking the advantages of Technological Change (TC), Efficiency Change (EC), Pure Technical Efficiency Change (PTEC) and Scale Efficiency Change (SEC). At the same time year wise analysis provided that in almost all the year the TFPC was lies between first two categories i.e. either less than 1 or 1-2, except for the year 2004-05 to 2005-06 as during this year the TFPC lies in third category i.e. it was even more than 2. Moreover, the results has provided with the fact that the productivity change in the companies under consideration is basically derived either by technical efficiency or technology change. Whereas in very few cases the change in productivity was attributable of both technical efficiency and technology change.

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