

A STUDY ON EFFICIENCY MEASUREMENT OF LIFE  
INSURANCE COMPANIES OF INDIA IN THE POST REFORM  
ERA

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## **Declaration**

I, Piyali Chandra Khan, do hereby declare that this thesis has not been previously submitted in this University or any other University for the award of any degree, diploma, fellowship or other similar titles of recognition.

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Piyali Chandra Khan

Date:

## **Supervisor's Certificate**

This is to certify that the work embodied in the accompanying thesis entitled “ ” has been carried out entirely by Mrs. Piyali Chandra Khan as a research scholar under my direct supervision and guidance and that the candidate has fulfilled the requirements of the regulations laid down for the Doctor of Philosophy (Commerce) Degree examination of the University of North Bengal.

Prof. Debabrata Mitra  
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## **Preface**

*The life insurance sector in India has gone enormous changes from its inception. The modern concept of insurance entered India with the advent of British rule in India. The foreign insurance company extended their business to India but only to insure the British lives which were not very gladly accepted by the common people. The Swadeshi Movement aggravated the situation and few prominent personalities like Raja Rammohun Roy, Sir Dwarkanath Tagore initiated major steps to insure Indian lives as well. Gradually, Kolkata then Calcutta and later Mumbai then Bombay experienced birth of many Indian companies. The insurance sector was not divided into life and non-life at that point of time. Due to various economic and demographic factors the insurance companies started dwindling. Many insurers turned into fraudulent practices due to lack of stringent norms. The British Government tried hard to extend justice to the victims but they failed to do so. Indian Independence brought a new dawn for the insurance sector. The sector was filled with serious lacunae at the time of independence. The sector was categorized into life and non-life. Life Insurance Corporation of India (LIC) was formed as the single insurance company by amalgamating all the life insurers and provident societies operating at that time. So, the insurance sector got nationalized in 1956 with the birth of LIC. LIC tried to fulfill every objective behind such nationalization. Most importantly it not only re-instated public confidence on insurance but also served as a major financial institution to mobilize fund. It is amongst one of the apex bodies in Indian economy. LIC enjoyed this monopoly upto the year 1999-2000. The liberalization drive affected insurance sector in the year 2000. As per the recommendation of the Malhotra Committee, the insurance sector was opened for the private players. A number of private companies in tie up with their foreign counterparts plunged the arena. The number of private companies in India has shot up to 25 in recent past. In this backdrop, the study attempted to understand such interesting phenomenon over the years, find out the financial performance of the individual life insurance companies and most importantly identify the efficiency of the insurers during the period of the study.*

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## **Chapter 1:Introduction**

1.1 Overview of the Study

1.2 Objectives of the Study

1.3. Research Methodology

1.4. Limitations of the Study

1.5. Plan of work

## 1.1 Overview Of The Study

The word insurance owes its origin to the word “insure”. It means to secure the payment of a sum of money in the event of loss or damage to either life or property as per the contract made thereof against a periodical contribution or premium. Insurance may be defined as “a social device for reducing risk by combining a sufficient number of exposure units to make their individual losses collectively predictable. The predictable loss is then shared proportionally by all those in the combination” (www.ezinarticles.com). Insurance is a form of risk management used to hedge against the risk of a contingent, uncertain loss. The term insurance is, however, popularly used in the context of a contract or a promise of compensation. As per www.investorwords.com, insurance is “a promise of compensation for specific potential future losses in exchange for a periodic payment.” Therefore, the term insurance maybe defined as a cooperative mechanism to spread the loss caused by a particular risk over a number of persons who are exposed to it and who agree to ensure themselves against the risk (E.Dharmaraj, 2008).

The concept of insurance dates back to the history of mankind. Insecurity can be considered as the father of insurance. The urge of security gave birth to the concept of what we now term as ‘insurance’. So, it is not something new. It was practiced by our ancestors and the ancient civilization. The religious scriptures like the *Hammurabi* and *Manu Smritis* mention the existence of insurance during those days. *Rig Veda*, the Hindu scripture mentions the term *Yogakshema* which points to the practice of some form of insurance by the Aryans. There are also evidences of insurance being practiced in the Mohenjodaro and Egyptian civilization. But, the risk mitigation practice during those days was in the form of non-life insurance involving insurance of ships, caravans etc. Thus, the development and existence of non-life insurance was prominent during the earlier years of the human civilization. The emergence of life insurance developed many years later. Life insurance in its present form was initially practiced in nations like US, Europe and England. However, due to the absence of mortality tables, the business took the form of a gamble. As a result, it was realized that a scientific approach was required to be developed which happened in the eighteenth century. A study into the history of development of life insurance industry in India shows that insurance in the form of business started way back in 1818 when it was introduced for the English Widows. Till the end of the nineteenth century, insurance companies in India were mainly the overseas companies investing in insurance

activities in India. A series of changes in the form of Acts were passed from time to time in the twentieth century in order to give a better shape to the industry through regulatory measures.

Major set of reforms took place in the life insurance industry in the post-independence period starting with the passage of the Life Insurance Corporation Act, 1956. It followed the establishment of the Life Insurance Corporation of India (LICI) in 1956 which operated as a monopoly for more than four decades. Another set of revolutionary changes were implemented in 1999 with the passage of the IRDA Act, 1999 following the recommendation of the Malhotra Committee in 1994. Since then competition has become tough with the increase in the number of private life insurers from 4 in 2000-01 to 24 in 2012-13 and 26 in 2017-18. It is also seen that there is an increase in the life insurance penetration and density levels during the first decade of the 21<sup>st</sup> century. Insurance penetration reached 3.4 percent in 2015-16 (IRDA Annual report 2016). Moreover, the industry growth rate has crossed a CAGR of 30% during the last decade. An interesting point is that the life insurance giant, Life Insurance Corporation of India, has retained 84.8% (at the end of 2016- 17) of market share for single premium even after emergence of 26 private life insurers ([www.statista.com](http://www.statista.com)).

The above mentioned development in the industry makes it immensely important to study the life insurance sector as a whole and also to focus on the individual players' performance during the last decade. With the increase in financial turmoil thought the globe like development of financial crisis in US in 2008 followed by the Eurozone crisis in 2011 and thorough changes in the financial sector of India especially opening insurance sector for private and foreign participants essentially called for an indepth study about the life insurers operating in India in terms of their financial strengths and weaknesses apart from their efficiency.

## **1.2 Objectives Of The Study**

The objectives of this study are mentioned below:

- (a) To study the development of the life insurance industry in India,
- (b) To measure financial performance of the public and private sector life insurers,
- (c) To compare performance of life insurance companies during the period under study.
- (d) To determine relative efficiency of all life insurers operating in India,
- (e) To measure efficiency on the basis of different parameters,

(f) To put forward suggestions and policy recommendations.

### **1.3. Research Methodology (In A Nutshell)**

For the purpose of our research, mainly secondary data has been used which are available from different sources. In this study, we considered all the 24 players (23 private players and 1 public sector company namely, Life Insurance Corporation of India) which are operating in the life insurance industry (as at the end of 2015-16) for analysis. The last four companies are just new entrants to the sector so not included in this study. The different data and facts that are mentioned in this study are based on extensive research on the information collected from different IRDA Annual Reports, monthly journals available from the IRDA website, Company annual reports and website of the Life Insurance Council. Apart from this, the other sources used for collecting secondary data included Life Assurance Annual reports of various years during British rule, books, journals and e-journals, e-newspapers, magazines, newspapers etc.

The study period for analysis of financial performance is from 2001-02 to 2015-16. In the preliminary part of the study, CARAMELS framework has been used to calculate different ratios. According to the CARAMELS framework, there are some important indicators which can be applied at both the macro-level and micro-level to understand the measure of financial soundness. The broad areas that are covered by the ratios are Capital Adequacy, Asset Quality, Reinsurance Issues, Actuarial Issues, Management Soundness, Earnings and Profitability, Liquidity and Sensitivity to Market Risk. Then, by giving equal weight to all the ratios, a cumulative average ranking for each insurer has been drawn on the basis of which the final ranking has been done.

The final analytical part of the research focused on the determination of efficiency scores of both private and public sector life using DEA. This helped to assess their relative position in respect of the efficiency levels. DEA is a tool which aims to determine the relative efficiency level of different decision-making units. It determines the best-practice firms against whom the efficiency level of other firms are determined. The unit which is found to be relatively most efficient secures a score of one and the others get values ranging from zero to less than one. In order to capture all aspects of efficiency, the overall efficiency is divided into three components: Pure Technical Efficiency (PTE), Scale Efficiency (SE) and Technical Efficiency (TE). The relationship between the three is as follows: Technical efficiency (using CCR model) = Pure Technical Efficiency (using BCC model) x Scale Efficiency.

There are two basic models of the DEA technique – (a) CCR model developed by Charnes, Cooper and Rhodes in 1978 and (b) the BCC model developed by Banker, Charnes and Cooper in 1984. The difference between these two models is with regard to the assumption about returns to scale. While the former considers constant returns to scale, the latter considers variable returns to scale. The result of these two models helps us to know the scale efficiency as a residual component. The three inputs that are used for our research are Owner's equity, Commission and Operating expenses, whereas the three outputs considered are net premium, Assets under management and benefits and death claims paid.

It is often seen that after the initial application of DEA, the result is such that two decision-making units or DMUs (here life insurers) attain the same relative score. This makes it difficult for the researcher to make a proper discrimination and identify the better one. In such a situation, in order to arrive at exclusive ranks for each DMU (instead of tied ranks), the super-efficiency model (proposed by Anderson and Peterson) is run to arrive at a proper ranking and also to eliminate the outlier, if any.

We have also used the dynamic DEA model for the purpose of our analysis. The softwares used for determining the efficiency results are DEA-Solver Pro and MS-Excel Solver (developed by Zhu in 2003).

#### **1.4. LIMITATIONS OF THE STUDY**

The study is very unique as it has extensively covered most of the key areas and covers a long period of time. Still there are some limitations of the study, which are as follows:

- (a) The CARMELS framework involves various aspects but the study could not cover the sensitivity aspect as the data was not available.
- (b) Recent techniques of DEA could not be applied.
- (c) Dearth of adequate Software was a great hindrance in the study.

#### **1.5. Plan Of Work**

The study has been divided into nine chapters which are as follows:

1. Introduction
2. Survey of Literature
3. Historical Development of Life Insurance Industry
4. Life Insurance Industry in India: Post Nationalisation

5. Life Insurance Industry in India: Post Deregulation
6. Assessment of Financial Performance of Life Insurers
7. Research Methodology
8. Analysis of Efficiency of Life Insurers operating in India
9. Findings, Observations and Policy Recommendations

*Chapter 1* of the research touches upon the introductory part of the research. The chapter deals with overview of the study and points out its importance and relevance. It discusses the broad objectives of our research work. Furthermore, it also throws light on the research methodology applied for this study. This section also draws the skeleton of this study i.e. the plan of work where it mentions the chapters pertinent to this research work.

*Chapter 2* mentions and discusses the main extract of the different literatures available on the aspect of insurance performance measurement. For better presentation of this section, the entire part is divided into three sections: (a) review of articles (b) review of books (c) review of reports and (d) review of Ph.D. Thesis. The understanding of the various literatures available helped us to identify the research gap and decide the direction of our research.

*Chapter 3* discusses the route taken by the life insurance industry in the course of its development. It starts with the commencement of the concept of insurance and elaborates the gradual development of insurance as a business. In the later part it elaborates the lacunae that the industry suffered at different phases of development.

*Chapter 4* discusses the development of insurance sector in India. The reforms brought about at different points in the post-independence period. The performance of the LIC in terms of its business, premium, life fund, rural business, investments etc. has also been touched upon by us. It also discusses the reforms in various sectors that took place in the last decade of the twentieth century resulting in the formation of IRDA. The chapter also elaborates the role of the regulator and measures taken by it for the growth and development of the sector.

*Chapter 5* describes the different aspects in the growth and development of the industry after its opening up to the private players. It also gives a brief profile of the life insurers operating in the industry. It also emphasizes on the opportunities and the challenges the life insurance sector in India has to combat with. It brings to light the main factors that are acting as growth factors in the industry. At the same time, it points out the main obstacles that are coming in the way of its

realizing the potential. In brief, the overall discussion helps us to identify the potential and concerns of the industry

*Chapter 6* focuses on the study of financial soundness of LIC and the private insurers. The analysis has been done by applying the CARAMELS framework which is analogous to the CAMELS model popularly applied to the banking industry. In the last section of the chapter, the insurers are ranked on the basis of different ratios that are analyzed for the purpose.

*Chapter 7* deals with DEA methodology as an efficiency measurement technique. The accounting measures of efficiency and economic measures of efficiency. The later part of the chapter explains importance of DEA as an efficiency measurement tool. The various models for efficiency measurement have been also mentioned in this chapter. Finally selection of Input and Output variables and selection of DMUs have been elaborated in this chapter.

*Chapter 8* deals with the application of the Data Envelopment Analysis to study the different aspects of insurers' efficiency. The efficiency is divided into three categories: technical efficiency, pure technical efficiency and scale efficiency. At first, all the private players and LIC are considered together. Then, by applying the super-efficiency approach, LIC is eliminated and relative position of only the private players is analyzed. A ranking following the DEA technique is finally done. The dynamic panel approach has also been applied to analyse the efficiency of the life insurers.

*Chapter 9* summarizes the findings and arrives at conclusion of the study followed by suggestions in the form of policy recommendations on the basis of results obtained.

## **Chapter 2: Survey of Literature**

### **2.1 Background**

2.2. Review of Articles

2.3. Review of Books

2.4. Review of Reports

2.5. Review of Ph.D. Thesis

2.6. Research Gap

## **Chapter 2**

### **LITERATURE REVIEW**

#### **2.1 BACKGROUND**

This chapter reviews different literatures which were available in respect of life insurance. Review of literature is an important part of any research work, which helps us to enhance our understanding of the research contents of different literatures, to identify the research gap and to decide the direction of our research work. For better presentation, the entire review has been divided into four sections: (a) review of articles (b) review of books (c) review of reports and (d) review of Ph.D. thesis. Finally the research gap has been identified.

## 2.2 REVIEW OF ARTICLES

The initial research papers on the efficiency of US Life Insurance, mostly focused on scale economies (e.g., **Grace and Time, 1992**, **Yuengert, 1993** and **Gardner and Grace, 1993**). These studies intend to find evidence of significant scale economies in the industry, although larger firms generally are found to exhibit decreasing returns to scale.

During the 1980s and 1990s, the US Life Insurance industry has experienced an unprecedented wave of mergers and acquisitions. Traditionally, the industry has been known for its high-cost distribution system and lack of price competition, but insurers increasingly faced with more intensive competition from non-traditional sources such as Banks, mutual funds and investment advisory firms. These non-traditional competitors have captured a major share of the market for asset accumulation products such as annuities and cash value life insurance. The increased competition has narrowed profit margins and motivated insurers to seek ways to reduce costs. The more stringent solvency standards implemented under the risk-based capital system adopted in 1993 had put pressure on insurers to strengthen their financial statements. Technological advances in sales, pricing, underwriting and policyholder services have forced insurers to become more innovative; and relatively high fixed costs of the new systems may have affected the minimum efficient scale in the industry.

**Abidin and Cabanda (2011):** The primary objective of the study was to determine the efficiency level of non-life insurers in Indonesia during the period 2005-07. Though the total number of companies was 88, the sample size for the research was only 23 comprising of 13 large and 10 medium-sized firms. They applied the output-oriented VRS model of DEA for arriving at efficiency results. Further, they used the Tobit regression model to determine the linkage between efficiency scores and financial performance, which included return on total assets (ROA), return on equity (ROE) and return on net premium (RNP). The data analysis showed that the average efficiency score remained in the range of 0.55 to 0.60. More specifically, in 2005, 2006 and 2007, the scores were 0.587, 0.599 and 0.579 respectively. At the end of 2005 and 2007, 7 and 5 firms respectively achieved 100% efficiency. An in-depth analysis showed that captive market, listed companies and government ownership did not affect efficiency results. The results of second part of the analysis pointed that ROE and RNP had positive association with the efficiency result, whereas the ROA was negatively related. Of the three independent variables, only RNP was found to be significant, that too at 10% level of significance.

**Afza and Jam-e-Kausar (2010):** This study focused on the non-life insurance companies of Pakistan. They applied DEA to estimate the technical efficiency of 27 companies (including one state-owned) during the period 2003- 2007. The results revealed an average technical

efficiency of 82.4%, pure technical efficiency of 91.4% and scale efficiency was 89.9%. Over the period of study, the average efficiency increased from 80% in 2004 to 86% in 2007. However, Pak General Insurance Company showed only 52.4% efficiency. To arrive at more specific results, the technical efficiency was decomposed into two components viz. pure technical efficiency and scale efficiency. The results of decomposition of technical efficiency showed that reason behind the inefficiency shifted from scale inefficiency to pure technical inefficiency. The study also tried to investigate the relationship between technical efficiency and size of the firm. The average technical efficiency for the large sized firms was found to be the highest (0.954) and the lowest was for the smaller sized firms (0.682). The dominating reason behind inefficiency in the case of large-sized, medium-sized and small-sized firms was scale inefficiency, purely technical inefficiency and scale inefficiency respectively. In addition, the analysis of scale economies in different size of non-life insurers suggested that most of the cases of increasing returns to scale were found in smaller non-life insurers.

**Al-Jarrah (2007):** The author used input-oriented DEA to measure the cost efficiency of the banking sector considering a sample size of 82 banks in four Arabian countries comprising of Jordan, Egypt, Saudi Arabia and Bahrain covering data for the period 1992-2000. The author divided the efficiencies into as many components as possible. First, he considered the relationship between cost efficiency, technical efficiency and allocative efficiency. Second, the researcher divided the technical efficiency into pure technical efficiency and scale efficiency and revealed that cost efficiency averaged 50% and 70% under CRS and VRS respectively. The author also reviewed the deviation in the efficiency scores on the basis of size and location. It was conferred that in terms of the former parameter, the largest banks were the most cost efficient, whereas with regard to the latter, therefore the Saudi banks and the Jordanian banks scored the maximum and the minimum respectively. The break-up of the cost efficiency scores reflected that on one hand, overall technical efficiency score showed no significant difference among the banks, whereas on the other, there was a significant difference in the allocative efficiency score based on size and geographical location. Comparing on the basis of the countries, the highest and lowest technical score was attained by the Bahraini and Jordanian banks. However, in terms of allocative efficiency, on the basis on location, the maximum and minimum score was attained by the Saudi Arabian and Egyptian banks. On the other hand in terms of size, the larger banks scored better. The scale efficiency result showed an insignificant difference across the different type of banks.

**Akimov, A. and Dollery. B.,** (2009), conducted a study on financial development policies of Uzbekistan analyzing its achievements and failures. This study provides a detailed analysis of

Uzbekistan's performance in liberalizing its financial system. Two major areas were considered in the paper. They reviewed financial development reform in Uzbekistan from independence until 2006, including the banking sectors, non-bank financial institutions and securities markets. The study also examined the policy achievements and failures of the Uzbekistan and sequence of reforms in each of these areas. The period covered was from 1991 to 2006. Three major phases in financial sector reform was distinguished, first stage of reform of the period 1991-1997, second stage which extended over the period 1998-2001 (little progress was achieved) and final stage which started in 2002 (reform had progressed but at an extremely slow pace and in an unsystematic manner. They studied the reforms in the Banking sectors, Non-banking financial institutions, Securities markets (Debt instruments, Equity markets) and compared the outcomes of financial reforms. Based on the identified problems a number of reformist policy measures were suggested in the study to overcome the situation.

**Akula, R. and Kanchu, T.,** (2011), conducted a study on Growth of ULIP Policies in Life Insurance Sector by Comparing Traditional and ULIP Policies. The study stressed on the importance of Insurance Industry in the economy. The objective of the study was –to study the evolution of ULIPs in India, the growth of ULIPs over Traditional Policies, risk factors involved in ULIPs over Traditional Policies, to suggest various measures to develop and stabilize the growth of ULIPs. The period from 2007 to 2009 has been considered for the study. The Primary Data was collected from the Insurance Companies at Warangal, Andhra Pradesh, India and the Policy Holders. The Secondary Data was collected from the IRDA Annual Reports, Insurance Companies Annual and Monthly Reports, Internet, Newspapers, Magazines, Journals and Books. A Comparative Study using Tables, taking the absolute figures and percentage changes was adopted in the study. The study found that the concept of ULIP was introduced in 1960. In 1971, Unit Trust of India (UTI) offered the Unit Linked Insurance Plan. ULIP investors have the option of investing across various schemes. Fundwise growth of Investments of ULIP over Traditional Policies – Growth Percentages of underlying assets of the Life Insurance Policies were found and individual business achieved by selected Life Insurance Companies in terms of sum assured were probed. It was found that there was remarkable growth in ULIP Policies compared to Traditional Policies as the new private entrants targeted ULIPs for market presentation. It was seen that in 2007, increase was about 159% more than the previous year, 95.48% in 2008 and 29.82% in 2009, which is much more than the Traditional Policies (Life Fund + Pension & General Annuity and Group Fund). The study considered 5 companies to compare Growth Percentages in assets under management of Life Insurers. The 5 companies selected were LIC, HDFC Standard Life, ICICI Prudential Life, SBI Life and Bazaz Allianz Life. The study revealed that growth in Pension and Group Fund was remarkable for SBI Life whereas, Bazaz Allianz did the best for ULIPs, all the companies reflected higher Growth

Rate for ULIPs except SBI Life. The study compared the number of Traditional Policies and ULIP Policies of the companies in Warangal District, Andhra Pradesh, India. ULIP Policies were more exposed to risk but they provide double benefit of covering risk and investing in Stock Markets. The basic charges for taking a ULIP Policy was also analyzed, which were-Premium Allocation Charges, Mortality Charges, Fund Management Charges, Policy Administration Charges, Surrender Charges, Fund Switching Charges. The study suggested a number of factors to be considered while taking ULIP Policies, were identified and suggested in the study, such as, to stay invested for long run, to be clear with the charges, to invest as per the risk profile. The study concluded with suggestion for procuring the ULIP Policies for its high achievement in short span of time and lucrative futures because of which policy holders preferred ULIP Policies for long-term returns, a number of suggestions for the Regulatory Authority (i.e. IRDA), the Life Insurance Companies and the Investors.

**Bala and Kumar (2011):** The researchers analyzed the efficiency of public sector banks (PSBs) in India. The results with respect to technical efficiency (TE) under CCR model showed an average of 0.87 for the 27 PSBs. Of the total sample, only one-third attained a score of one. The range for TE scores for the remaining banks is in the range of 0.553 to 0.999. Since, several banks attained a score of one, the super-efficiency model was run. The ultimate ranking showed that the top three banks in terms of efficiency were IDBI Bank, Corporation Bank and Indian Bank. Leading banks like the SBI, PNB and Canara Bank secured ranks of 10, 8 and 22 respectively.

**Barros, Barroso and Borges (2005):** The authors projected the change in total productivity of 27 insurance companies considering data for the period 1995-2001. They covered almost 100% of the Portuguese market. They used the Malmquist Index to capture the results. For better results, the total productivity change was again divided into two components: (a) due to technical efficiency change (broken further into pure efficient change and scale efficient change) and (b) due to technological efficiency change. Results revealed that almost 75% of the total sample experienced total productivity gains during period of the study. The mean score was 1.113. The results of technical efficiency change pointed that almost 50% attained a score of more than 1. Further break-up of the technical efficiency change showed that it was a case of mixed results. The performance was found to be highly encouraging from the viewpoint of technological efficiency change measurement because except one, all other insurers secured a score greater than 1. In the last part, the researchers identified the determinants of insurance efficiency. The analysis using the Tobit regression model showed that the efficiency scores were positively related with variables like foreign insurer, size factor, EU (denoting entry after 1994) on the one hand, whereas it was negatively related with the life insurance form of business.

**Barros, Barroso and Borges (2006):** The researchers in this study made an efficiency analysis of 14 life insurance companies by covering a period from 1995 to 2003. They tried to estimate Stochastic Frontier using the Cobb- Douglas cost function on the basis of observations and exogenous variables. The average technical efficiency scores for the Portuguese life insurers showed that the top three performers were Global Vida, Ocidental Vida and Fidelidade-Mundial respectively. The worst three were Victoria Seguros de Vida, BPI Vida and Barclays Viday Pensioners. Though the overall mean was 0.915 during the period, still one insurer positioned itself on “best-practice” frontier with a score of one. Their effort to identify the reasons behind efficiency differences revealed that foreign-owned insurers and those using bancassurance as an intermediary attained better scores than those who were not.

**Barros and Obijiaku (2007):** The authors investigated into the technical efficiency scores of 10 Nigerian insurance companies by analysing data for the period 2001 to 2005. The different methods applied for the analysis were DEA-CCR, DEA-BCC, Cross-Efficiency DEA and Super-Efficiency DEA. The relevant findings using the first two methods were that 80% of the insurers positioned themselves on the efficient frontier, all the insurers operated at a high pure technical efficiency level, scale inefficiency was the main factor in the overall inefficiency and all insurers positioned at the constant returns to scale except two insurers which operated under decreasing returns to scale. The overall mean of technical efficiency was 0.946. On applying the third method, it was found that the top three insurers were Prestige Assurance, Lasaco Assurance and Guinea Insurance. However, there was a slight change in the ranking using the last method and the top three insurers in descending order were as follows: Lasaco Assurance, Prestige Assurance and Law Union and Rock. In the last part of their study, they tested a few hypotheses, the results of which were that the larger-sized insurers were more efficient, bank-networked insurers attained higher efficiency scores and those with higher market share were found to more efficient.

**Bawa and Kaur (2011):** The authors studied efficiency of the Indian non-life insurance companies during the period 2002-03 to 2009-10 using DEA. The sample consisted of ten companies which consisted of four public sector insurers and the rest of all private insurers. The major aspects included examination of the three forms of efficiency, namely TE, PTE and SE along with the insurers’ operating returns to scale. Among the public sector players, it was noticed that none showed a definite trend in terms of returns to scale, which was quite similar to the trend in the private sector. Tata General Insurance and ICICI Lombard Insurance did not reveal CRS in any of the years. Bajaj General Insurance and ICICI General Insurance showed DRS during the recent years. However, the others reflected either CRS or IRS during the later part of the study period. In the sample, National Insurance Company was found to be the most efficient one, having operated

at the CRS during majority of the years. The other two leading players were Oriental Insurance and United General Insurance Company. Among the private insurers, the leading one were Reliance General Insurance followed by IFFCO Tokyo Insurance, Bajaj General Insurance and Royal General Insurance. The last part of the study revealed the sector-wise analysis in respect to all forms of efficiency. However, a fluctuating trend was noticed.

**Bawa and Ruchita (2011):** The authors studied the technical efficiency of general insurers engaged in health insurance business in India by applying DEA. They examined data of eight years from 2002-03 to 2009-10 for ten general insurers including four public sector insurers. The results were presented as company wise, year wise, sector wise and all insurers considered together. The findings of the study covered aspects like technical efficiency, pure technical efficiency, scale efficiency and returns to scale. Some of the key results were firstly, New India Assurance Company Limited and National Insurance Company Limited were the two fully efficient insurance companies, during the later years they showed an efficiency level of less than 1. Secondly, in most of the years, at least one or even two public sector players lay on the efficient frontier. During the later years of the study period, it was revealed that none of the public sector player achieved 100% relative efficiency which could be attributed to decreasing returns to scale because of the entry of private players. In the third part of analysis, results revealed that the mean technical efficiency of the private players was on the rise (from 0.062 in 2002-03 to 0.776 in 2009-10) in contrast to the falling trend observed in the case of the public sector players (from 0.878 in 2002-03 to 0.661 in 2009-10). The downfall may be attributed to falling pure technical efficiency (PTE) and scale efficiency (SE). At the end of their analysis, it was observed that the overall mean technical efficiency of all insurers increased from 0.389 in 2002-03 to 0.730 in 2009-10. In terms of returns to scale (RTS), decreasing returns to scale was observed for the public sector.

**Bedi and Singh (2011):** The authors studied the life insurance industry during the pre and post-deregulation period. They mentioned that though the sector has been growing at a rapid pace after the opening up, there still exists several opportunities to the entrants due to low insurance penetration and the increasing per capita income in the country. They specifically made a study on the LIC and came to a conclusion that the public sector player in particular was also growing fast but with a declining market share. The application of ANOVA technique showed that there was a significant difference in the performance of LIC and the private players during the period 2001-02 to 2007-08. They also studied the difference in the investment strategy of LIC during the last three decades which several earlier studies did not do. The application of the ANOVA technique and the t-test showed that there was a significant change in the investment strategy of the public

sector life insurer during the period 1980 to 2009. They also observed that ICICI Prudential Life Insurance posed severe challenge to LIC.

**Bhattacharya and Rane (2003):** The researchers elaborately discussed the historical development of the life and non-life insurance sector in India. A brief about the business during the pre-independence period and the early years of the post-independence period was depicted by the authors. They highlighted the circumstances that lead to the nationalization of life insurance business in 1956. Moreover, they made a detailed discussion about the performance of Indian life offices prior to 1956 and that of LIC during the period 1957-75. In order to assess the performance, the parameters that were considered included level of premium rate, lapse ratio, expense ratio, rate of interest and nature of investment policy.

**Bikker and Leuvensteijn (2008):** The authors examined the efficiency and competitive nature of the Dutch insurance industry. They studied some measures of competition (both direct and indirect) such as efficiency - scale efficiency (related to output volumes) and X-efficiency (related to managerial capability), average profit margins and Boone indicator. In the first part of their study, they used a translog cost function which is often considered to empirically determine efficiency, whereas for determining the X-efficiency, a stochastic cost frontier model was used. The data analysis showed that though on an average cost X-efficiency of the insurers was about 72% but the fluctuation was quite less. On further analysis it was revealed that efficiency on the basis of size showed that the efficiency for medium-sized firms was low but for both smaller and larger sized firms were high.

**Boonyasai, Grace and Skipper (2002):** The authors studied the impact of liberalization and deregulation in four life insurance markets viz. Korea, Philippines, Taiwan and Thailand. The objectives were to determine whether liberalization and deregulation was associated with: (1) increase in total efficiency of the life insurers (e.g., technical efficiency, pure technical efficiency, and scale efficiency), (2) growth in productivity changes (total factor productivity, technological change, technical efficiency change, purely technical efficiency change, and scale efficiency change) and (3) realizing a change in productivity. For the purpose, they studied different efficiencies using data of twenty years from 1978-1997 using the DEA technique. They also applied the Malmquist Index to understand productivity changes after deregulation and liberalization. Results reflected that productivity of Korea and Phillipines was better than Taiwan and Thailand. However, an increasing trend was visible for the insurers in general.

**Boyd, B.K., (1991):** conducted a study on strategic planning and financial performance of US companies using Meta-Analysis by taking 29 samples amongst 2496 organizations. 21 studies were

selected for study which used various performance measures such as change in sales over earnings, growth in revenue etc. and analyzed by statistical tools like *T-Test* and *Anova* published in different reputed journals between the years 1970 to 1988. The effect size were calculated using 'r' and cumulated for following nine performance measures (Earnings Growth, Deposit Growth, Earning per Share Growth, Sales Growth, Price-Earning Ratio, Profitability, Return on Assets, Return on Equity, Return on Investment). The magnitude and consistency of the effect size were estimated. The early studies recognized the benefit of Strategic Planning but later analysis was not conforming so. But the study failed to assure that there is no financial rewards of Strategic Planning due to the inherent limitations of the study. The study paved way for further research in this area.

**Bris, A., Koskinen, Y., Pons, V., (2004) :** They conducted a study on corporate financial policies and performance around currency crisis based on data from 17 countries to understand firm level leverage and performance measures before and after a currency crisis and 3 countries where currency crisis had minor or no effect. They obtained information about currency crisis that have occurred in the period 1985-2000. The data stream provides a Global Market Index which includes a varying number of firms per country. The accounting information regarding available firms for 5 years around the years of currency crisis. They judged exchange rate exposure, firm leverage through debt-to-value ratio, profitability (earnings before interest and taxes over total revenues and return on capital employed), financial fragility (current ratio, interest coverage ratio), investments (net investment as the ratio of changes in total assets). The study found that the firms in countries that suffered dramatic exchange rate depreciation in the last decade follow a similar pattern of financial policies prior to a currency crisis; there were significant differences across regions following currency depreciation. The results from the cross-section regression were – 1) For the total sample, profitability and size have negative and positive coefficients, respectively. 2) The market-to-book value ratio was never significant. 3) Consistently negative relationship between a firm's exposure to exchange rate movements and book leverage for the firms in crisis sample. The opposite held for the firms in control sample. 4) Some corporate governance variables explain leverage though not significant.

**Cagil and Karabay (2010):** The authors used CCR-based DEA to evaluate the efficiency of 25 non-life Turkish firms on the basis of input and output data. They covered a period from 2003 to 2008. On the basis of analysis, they concluded that the number of insurers having perfect efficiency varied from year to year. In 2003, it was 20, which reduced drastically to 14 in 2004, increased to 19 in 2005 and finally settled at 15 in the last three years of the study period. The average efficiency scores for the different years were as follows: 2003 – 0.97, 2004 – 0.93, 2005 – 0.98, 2006

– 0.97, 2007 and 2008 – 0.94. In terms of individual insurers, Birlik attained the best and Liberty attained the worst scores with an average score of 0.989 and 0.354 respectively.

**Carson and Ingves (2000):** This article comprises of seven chapters, where the researchers discussed in detail about the developments taking place across the globe through the initiatives of the IMF, World Bank and other national and international bodies. They recommended the need for macro-prudential surveillance and identification of macro-prudential indicators. The authors also pointed the importance of both micro and macro-prudential indicators for better financial sector surveillance. For better guidance in policy-making, they presented a summary of macro-prudential indicators which have been bifurcated into aggregated micro- prudential indicators and macro-economic indicators. In the later part of their research work, they highlighted certain issues relating to the information on the basis of which macro- prudential surveillance is carried out which include accuracy, timeliness and comparability of macro-prudential indicators across the countries.

**Chansorn (2008):** The author examined the relative efficiency level of 13 Commercial Banks in Thailand, including three that were included only in 2006, for the period 2003-06, using DEA. The analysis was made by categorizing banks on the basis of size (i.e. large, medium and small) and the nature of diversification in the business. They applied both the operating approach and intermediation approach to arrive at the results. On the basis of the operating approach, average efficiency score was in the range of 0.9106 and 0.9720. Amongst all the institutions, Kosikorn Bank, Siam Commercial Bank, Thanachart Bank and Standard Chartered Bank attained a score of 1.00 in all the years. The number of banks which scored 100% efficiency in various years was as follows: 2003 – four, 2004 – six, 2005 – seven and in 2006 – seven. The average efficiency score in various years was: 2003 – 0.9106, 2004 – 0.9561, 2005 – 0.9720 and in 2006 – 0.9354. The study revealed that on the basis of size and nature of business diversification all the DMUs attained 100% efficiency level. The results of the second approach showed that the average efficiency score had a higher range; from 0.3452 to 1.00. The average in different years reflected a declining trend from almost 0.87 in 2003 to 0.71 in 2006. Surprisingly, none of the banks attained 100% efficiency in all the years. In terms of individual banks, ACL Bank was found to be the most efficient followed by Siam City Bank and Bangkok Bank. The study on the basis of the different sized banks revealed that the smaller ones were the most efficient. In contrast to the result in the former approach, the new entrants scored lower than the incumbents who focused only on the banking business. However in all the approaches the average efficiency score was quite high in the industry.

**Chen, Chiu and Huang (2010):** The researchers conducted a study on efficiency analysis of 37 Taiwanese banks during the period 2004 to 2006. This study applied the DEA approach followed by Tobit regression. The study determined relative efficiency score of the banks using DEA and

identified those factors which affected efficiency results using Tobit Regression. They applied four different models of DEA, namely Super-BCC Model, Super-Threshold Model, the Modified Super-model and Super-SBM Model to check whether they gave similar results. They concluded that the ranking of banks changed with a change in the method. The following conclusions were drawn by them: (a) the third model gave higher estimates of maximum value compared to the others, (b) the fourth model gave lower estimates of the minimum value compared to the others, (c) in terms of average efficiency results, the fourth model assigned minimum score, whereas, the third method revealed maximum value and efficiency variance. From the nature of results, they interpreted that the fourth and third models were most preferable.

**Chen, Powers and Qiu (2007):** The researchers studied the Chinese life insurance industry and aimed to point out the effect of regulatory changes and entry of foreign insurers on the efficiency of the insurance players. They used the Banker et. al (1984) version of the DEA to determine the relative efficiency scores and the Malmquist Index to discriminate between changes in efficiency and technical progress. The examination of results revealed the fact that the average technical efficiency score tumbled down from 0.65 in 2001 to 0.505 in 2005. The study revealed that the overall market had more scope for improvement but the domestic players ranked high in terms of efficiency scores. They revealed that the foreign insurers scored low because of the non-performance of the new joint ventures that they entered into. A deeper look into the scores of the foreign insurers showed that the pure technical efficiency scores were better than that of scale efficiency. In terms of the operating returns, the researchers found that 72% of the life insurers exhibited increasing returns to scale (IRS) and 22% constant returns to scale (CRS) with only 6% operating at the decreasing returns to scale (DRS). Of the foreign insurers, around 12-20% of the players only operated at the CRS and the remaining at the IRS with no player operating at the DRS. In the aspect of Malmquist Index, they found that the overall trend was positive for the industry. The break-up of the results into the component factors showed that technical progress was an important factor in driving productivity of insurers. The study revealed that due to the changing environment of the insurance industry the market was getting restructured and that is the major factor in driving productivity of insurers.

**Chen, Powers and Qiu (2009):** The researchers analyzed the structural changes which the Chinese insurance market was going through. They considered the developments that were taking place in the country regarding increasing demand for insurance and increase in the number of foreign insurers participation in the industry. The study revealed that the entry of foreign insurers into the market did not bring any improvement in efficiency levels of the industry which was dominated

by the domestic insurers. However the authors concluded that there was an overall sign of technical progress and potential improvement.

**Cummins, Tennyson and Weiss, (1998):** They examined the relationship between mergers and acquisitions efficiency and scale economies in the US Life Insurance industry. They estimated cost and revenue efficiency over the period 19088-1995 using DEA.

**Cummins and Zi, (1998):** They presented a comparative analysis of frontier cost-efficiency methodologies by applying a wide range of econometric and mathematical programming techniques to a dataset consisting of 445 Life Insurers over the period 1988-1992. The alternative methodologies gave significantly different estimates of efficiency for the insurers included in the sample. The efficiency rankings were quite well-preserved among the econometric methodologies; but the rank correlations were found to be lower between the econometric and mathematical programming categories and between alternative mathematical programming methodologies. Thus the choice of methodology had a significant effect on the results. Most of the Insurers in the sample display either increasing or decreasing returns to scale, and stock and mutual insurers were found to be equally efficient after controlling for firm size. The *Malmquist Methodology* is used to measure changes in efficiency over time. They found that acquired firms achieve greater efficiency gains than firms that have not been involved in mergers or acquisitions. Firms operating with non-decreasing returns to scale and financially vulnerable firms were found to be acquisition targets. Overall, mergers and acquisitions in the Life Insurance Industry was found to have a beneficial effect on efficiency.

**Cummins, Tennyson and Weiss (1999):** The researchers investigated the efficiency improvement of life insurers in U.S as a result of mergers and acquisitions. They considered several types of efficiency in the U.S. life insurance industry over the period 1988-1995 using Data Envelopment Analysis (DEA). Malmquist Indices were computed to measure changes in efficiency and productivity over time. They also compared the efficiency of targets of mergers and acquisitions with firms that have not been targets of consolidation activity. They revealed the results relating to relationship between mergers and acquisitions and efficiency in the life insurance industry. Regression analysis was done to test for changes in efficiency while calculating for the characteristics of the target and non-merged firms. The analysis of the results showed that the proportion of target firms operating with Non-decreasing returns to scale was 73.3% which was significantly higher than for non-merged firms (60.3%) and targets on average showed significantly higher scale efficiencies than non-targets (93% versus 89%). Target firms also showed significantly higher technical, pure technical, and scale efficiency than non-merged firms. The Malmquist Indices showed that target firms experienced significantly larger gains in technical efficiency and in total factor productivity over the sample period than the non-merged

firms, thereby concluding that acquisitions lead to efficiency gains. The regression analysis revealed that the Malmquist indices of technical change and total factor productivity change were significantly larger for target firms than for non M&A firms. They revealed that target firms experienced significantly larger gains in both cost and revenue efficiency than did non-M&A firms, with the cost efficiency gains attributed primarily to gains in technical rather than allocative efficiency. The control variables in the regressions revealed that larger firms experienced significantly lower efficiency changes than smaller firms.

**Das (2012):** The author looked into status of life insurance industry in North- Eastern India. The researcher revealed that though the private players were growing at a fast pace, the years ahead would not be easy for them; the success in the coming days will depend on how they adopt strategies with respect to customer retention strategy, operational efficiency / effectiveness, regulatory developments and innovations. He cited the comments of Rastogi and Sarkar (2007) to justify the privatisation of the sector. According to the two authors whose comments have been mentioned in the article, the government of our country had applied different models before to ensure its development. The models already tested before were those of privatisation with negligible regulations (which was before 1956) followed by the nationalisation of the industry leading to the formation of LIC in 1956. This scenario existed for 44 years before another set of reforms were brought about in 2000. He mentioned that the opening up of the sector opened the scope of offering large number of products to the huge untapped population. The author also concluded that the industry grew at a fast pace of 22.49% CAGR in terms of insurance premium between 2001 and 2010. LIC grew at the rate of 18% in comparison to 156% growth reflected by the private sector. Some of factors that supported the growth were the burgeoning middle class segment, rising disposable income, increasing insurance awareness, huge investments and infrastructure spending. The author further observed that though there were a number of improvements in the industry with respect to products and spread of insurance, the insurance business did not grow uniformly; instead they centred around a few selected areas. With this revelation in the background, the main focus area of the article was to analyze the performance of LIC and to assess the market share in that region. Also, the author revealed the challenges that the public sector insurer is facing and the marketing strategies it is adopting to combat the same. The author mentioned that after the liberalization, privatization and globalization (LPG) process in India, the North-Eastern region has been receiving increasing interest from both LIC and the private sector. It was worthy to note that LIC which had only two to four divisional offices to cater to the entire region has been expanding its marketing base after the private players entered the industry. The researcher also observed that the trend in respect of individual new business policies in the region was better

than that of the country. The researcher further opined that the insurance sector reform in 1999 benefitted the entire region. From 2006-07 to 2009-10, Assam has been contributing maximum business to both the sectors in the life insurance business.

**Delhausse, Fetcher, Perelman and Pestieau (1995):** The authors made a comparison of the non-life insurers of two European countries, Belgium and France in terms of technical and scale efficiency. The non-parametric DEA and stochastic frontier methods (parametric maximum likelihood procedure) were used to analyze the data for the period 1984-88. In the latter case, a translog functional form was adopted to estimate efficiencies of the individual insurers. The total number of insurers analyzed was 434 (191 from Belgium and 243 from France). The firm-specific results showed that the efficiency level in both the countries was quite low and there existed enough scope for improvement. In the cross-country comparison, it was clear that France was better placed than Belgium in terms of efficiency and non-profit companies were better placed compared to the profit-making companies. Furthermore, in the later part, a multiple regression analysis was run keeping efficiency score as the dependent variable and the institutional form, distribution ratio, reinsurance ratio, claims ratio, car ratio, scale and country concerned as the independent variables. The analysis showed that efficiency was related to the variables in the following way: positively related with size, claims ratio and reinsurance ratio (except in the case of France) and negatively related with higher specialization in car insurance but both-way related to distribution ratio. In the last part, the authors examined the relationship between firm size and elasticity of scale which gave a positive result. An inter-country comparison revealed that the average scale elasticity in France (0.935) was more than that of Belgium (0.917).

**Diacon, Starkey and O' Brien (2002):** The authors analysed the relative performance of 454 life insurers covering 15 European countries for the period 1996-99. The nations covered in the study were Austria, Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, Switzerland and UK. The efficiencies that were analysed were pure technical efficiency, scale efficiency and mix efficiency. The empirical study looked into the country-wide difference in the efficiency and also the variables that impacted the efficiency levels. The overall score showed that the average PTE fell for the entire period in contrast to the other two where it increased till 1998 but drastically fell in 1999. In terms of disparity among countries, UK, Spain, Sweden and Denmark showed the highest level of TE. However, UK insurers displayed low levels of both SE and ME. Moreover, mutual companies scored higher average TE than the stock insurers but a lower ME. In the tobit regression analysis, the independent variables used were size, gearing ratio, liquidity, profitability, reliance on re-insurance and solvency. Some of the observations from their study were: (a) PTE and SE were strongly related with size (b)

ME was linearly related with size (c) large companies scored well in both PTE and ME, but had low scores in ME (d) solvency was positively related with TE (e) Liquidity had no effect on efficiency (f) profitability had a positive influence on scale, but a negative influence on ME (g) increase amount of re-insurance done was associated with lower ME.

**Diboky and Ubl (2007):** The authors analyzed 73 mutual insurers, 263 stock insurers and 20 public insurers to demarcate between different ownership forms during the period 2002-05. In terms of the corporate structure of the respective holding companies, the 263 stock firms were split into 156 stock insurers owned by a stock holding company ("pure" stock insurers), 82 stock insurers owned by a mutual holding ("mutual" stock insurers) and 25 stock insurers owned by a public holding ("public" stock insurers). In this study, they investigated not only the efficiency of different ownership forms at the firm level but also the influence of corporate structure of holding companies on their life insurance subsidiaries. They assumed constant returns to scale while applying the DEA technique as well as the bootstrapping method to arrive at technical, cost and allocative efficiency scores. Their analysis showed that there was no significant difference in the result obtained under public and private ownership structure. However, results under stock ownership were found to be superior to the mutual and public structure with smaller stock insurers being more dominant. A further analysis was made to understand the effect of organizational form of a holding company on the efficiency of its subsidiaries which showed that a uniform structure was dominant over the hybrid form structure.

**Eckles and Saardchom (2007):** The researchers analyzed the technical and scale efficiency results in the Thai Non-Life insurance industry. The analysis of data for the period 1997 to 2003 showed that technical efficiency ranged from 0.691 to 0.791. A noticeable point was that those insurers which attained a score of one were not necessarily the largest firms in the industry. With regard to the returns to scale, they pointed out that 41.7% of the firms operated under CRS, 25.1% under DRS and the remaining under IRS.

**Eling and Luhnen (2008):** The researchers thoroughly reviewed large number of studies to understand the different methods applied to measure efficiency. They also compared efficiency of 3555 insurers from 34 countries. Different methodologies, organizational forms, countries, lines of business and company sizes were compared. The analysis reflected technical and cost efficiency growth in international markets from 2002 to 2006, but with marked difference between the countries. The average technical efficiency in life and non-life insurance was found to be 0.86 and 0.72 respectively. In terms of position, Denmark and Japan held the highest rank whereas Philippines occupied the lowest rank with an average technical efficiency of 0.52 in non-life insurance. The average score of the developed countries in Asia and Europe was found to be more

than those of the emerging economies. However, the largest economies occupied the middle position. It was observed that there existed a statistical difference between the scores of not only stocks and mutuals but also between different lines of business. Technical efficiency scores also showed that diversifying into varied businesses was not always the best strategy for businesses. It was also found that the average efficiency decreased with lower size of organizations. On the other hand, in terms of cost efficiency they found that the score was on an average lower than technical efficiency. The cost efficiency results were very similar to the technical efficiency results. The highest and lowest values were obtained by Denmark and Philippines respectively. Furthermore, they observed the following (a) mutuals were more cost efficient than stock companies (b) companies operating in one line were not too different from multi-line firms in terms of performance and (c) large companies were more efficient than small ones, especially in life insurance. In the later part of their study, technical efficiency and cost efficiency scores were calculated using Stochastic Frontier Approach (SFA). The extent of variation across different frontier efficiency methodologies scores was found to be minimal. With regard to position of countries, Denmark and Japan were among the most efficient ones in terms of cost-efficiency. Portugal and Singapore were, however, found to be most efficient in life and non-life business respectively.

**Eling and Luhn (2009):** The researcher compared the efficiency of 6462 insurers comprising of life and non-life from 36 countries. This study considered five main aspects: methodologies, countries, organizational forms, lines of business and company size. The application of DEA for analysis showed that the average score of technical efficiency in life and non-life insurance was 0.71 and 0.50 respectively. Thus the scores indicated relative poor efficiency score for the non-life sector. In the life insurance business, the top three countries were Denmark, Luxembourg and Norway, whereas, in the non-life space, the highest scorers were Japan, Denmark and Switzerland. It was revealed that the average efficiency scores for Asian and European countries were more than those of the emerging countries. It was also seen that there existed a steady technical and cost efficiency growth in international insurance markets from 2002 to 2006 with remarkable differences among countries. The second area of focus was to test the Expense Preference Hypothesis and Managerial Discretion Hypothesis. Their results showed that the average technical efficiency values of stock companies (0.49 in non-life and 0.70 in life) were lower than those of mutual insurers (0.55 in non-life and 0.80 in life) which therefore goes against the expense preference hypothesis. In fact, the Wilcoxon test was used to test the difference between the two scores which showed that they were statistically significant at 1% for both life and non-life insurance. In life insurance, multi-line firms were more efficient than specialized firms. The test of efficiency based on company size showed that the efficiency of large-sized life insurers was higher than those of the small-sized

companies. Average efficiency score was 0.77 for large-sized companies, 0.72 for medium-sized companies, and 0.65 for small-sized companies. In non-life business, the efficiency for small (0.49) and medium (0.49) insurers was less than those of large-sized insurers (0.54). An additional analysis on returns to scale showed that many small insurers exhibited increasing returns to scale, whereas most large insurers operated under decreasing returns to scale. Results also showed that in life insurance, 65.60% of the small insurers operated under increasing returns to scale and 7.09% under decreasing returns to scale. Only 0.05% of the large firms operated under increasing returns to scale and 68.18% under decreasing returns to scale. On the other hand, the study of cost efficiency showed that the cost efficiency score was on an average lower than technical efficiency, with a value of 0.38 in non-life and 0.59 in life insurance. The cost efficiency results were very similar to the technical efficiency results. In life insurance, large companies (0.70) were more efficient than small ones (0.51). Further analysis showed that the increase in cost efficiency was more than that of technical efficiency thereby pointing that insurers had increased allocative efficiencies during the period 2002-06. In order to get a better view about the factors affecting efficiency the Conditional Mean Analysis was applied, the results of which confirmed the efficiency differences found under DEA and SFA. Further results showed that there was a positive relationship between capitalization and efficiency. Legal systems were not found to be the main drivers of efficiency in the insurance industry.

**Eling and Huang (2011):** The researchers used the multi-stage DEA model to estimate technical efficiency score of non-life insurers in the BRIC countries by using data from 2000 to 2008. In order to determine the inefficiency due to managerial incompetence and exogenous factors, they used a model that incorporated both controllable and uncontrollable variables in the four countries, namely Brazil, Russia, India and China. The frontier methodology was applied to arrive at the efficiency scores. Two basic steps were applied to arrive at their objectives: Firstly, by using DEA, the efficiency scores were obtained after which, in the second step, the slack variables were regressed against uncontrollable variables. On the basis of the basic model, Brazil was found to exhibit maximum efficiency. When the input slacks were regressed on certain environmental factors, mixed results were obtained. Some factors like change in GDP, per capita GDP, consumer price index, deposit interest rate, shareholders' equity to assets ratio had a negative influence on firms, whereas vehicles per thousand and insurance density had a favorable influence on input slacks. In the final stage, when the model was modified to incorporate the effect of environmental variables, the result showed that the country-wise efficiency was in the following descending order: Brazil, Russia, China and India. Furthermore, the Malmquist Productivity Index results showed that there was a progress in terms of both technological change and technical efficiency

change. Finally, in order to detect the factors that influenced efficiency, they employed the regression analysis using certain firm-specific variables like size, profitability, steadiness, and solvency. The tobit regression results showed that: (a) size did not affect efficiency, (b) return on equity had a positive relationship with efficiency scores but (c) steadiness and solvency were negatively related.

**Frimpong (2010):** The author investigated into the relative efficiency of the Ghanaian Banks in 2007 by applying the input-oriented model. The sample used for the study included 3 state-owned sector banks, 8 private domestic banks and 11 foreign banks. Hence, the efficiency analysis has been done on a total of 22 banks. The researcher calculated the technical efficiency score for the industry which showed that only 18% of the insurers attained a score of one with the overall average being 74%. In the later part of the study, the relationship between technical efficiency scores and profitability (denoted by return on equity) was studied by plotting the ROE against the efficiency scores on a two-dimensional space.

**Gowland, D., and Aiken, M., (2005):** They studied the changes to Financial Management Performance Measures, Accountability Factors and Accounting Information Systems of Privatized Companies in Australia. They examined use of performance measurement and accountability factors and the related changes to accounting systems after organizations were privatized in Australia. The outcome had been determined by prior literature review and by undertaking a survey of organizations privatized in Australia between 1990 and 1998. A *Test of Validity and Reliability* of the survey instrument was performed on a smaller sample of organizations in order to modify to the survey instrument after the preliminary results were discussed with colleagues and representatives from industry. The *sample size* consisted of all organizations privatized in Australia between 1990 and 1998, which were 45 in number. But, a number of those organizations (7 Nos.) were unsuitable for acceptance of the information due to four factors - i) Four organizations absorbed into existing private sector firms. Therefore, the management structures and culture was already in ii) One company indicated that staff turnover had occurred to such an extent that there were no officers remaining who could answer the survey questions; iii) One company had changed ownership more than once and it was difficult for executives to complete the questionnaire; iv) One company had been privatized but were not operating the assets. So, 38 companies were in a position to complete the survey. The response rate of the selected companies was 28, i.e. 62% of the total sample of 45. Two specific industry groups (aviation and electricity) were identified within the total of the companies that completed the survey. A split of the returns enabled the analysis to be divided into specific industry groups (Electricity-10 returns, Aviation-05 returns, Other Industries-13 returns). The responses of the company's senior executives were gathered with the tested questionnaire which consisted of thirteen questions relating to performance measurement, seventeen questions relating to

accountability factors and seven questions relating to information systems. Unless a response to a question indicates 'no change', then, they acknowledged that some change had occurred. However to determine whether those changes had been major, an average of 3 in the *Likert Scale* (where, the range was 0 to 5) was considered to be a medium change and an average of 4 or above, a significant change. Tests were produced for the responses to the questions and for the summed total of the five parts of the questionnaire. This was done at the 95% confidence level. The returned questionnaire for each respondent has been analyzed to determine whether any specific bias was evident. All respondents gave a range of ratings for questions asked in each of the five parts of the questionnaire and, therefore, it is not evident that a specific bias occurred in any of the answers. The outcome of the survey had indicated that with respect to privatized organizations there is evidence to suggest that there has only been a low level of change to Financial Management Performance Measurement, Accountability, Executive Information System Development. The study thereby concluded that there have been changes in performance measurement and accountability and that this has required some adjustment to accounting information systems, but not to the extent expected.

**Gulati (2011):** The researcher studied the different efficiency aspects of 51 Indian banks using DEA. Both CCR and BCC models were used for finding efficiency scores. The analysis of results showed that only 9 banks were technically efficient. Moreover, of these nine, five were private banks which were established after 1996. The technical efficiency results showed that the average score was 0.792 with a deviation of 15.5%. In terms of frequency distribution, around 50% of the banks had a score of less than 0.8. The second aspect relating to pure technical efficiency showed the average to be 0.834 with a deviation of 15.5%. Of the total sample, 14 banks attained perfect efficiency under VRS assumption. Moreover, of these 14, there were 9 banks which were also efficient under CRS assumption, thereby denoting 100% scale efficiency. The overall scale efficiency result showed an average score of 0.951 with a standard deviation of 0.066. The results, therefore, showed that scale inefficiency had a low contribution in the overall inefficiency. Since, there were several banks with the same technical efficiency score the researchers applied the super-efficiency model, which showed that the top three banks were ICICI Bank, Yes Bank and HDFC Bank. In the later part of the study, four tests were applied to determine whether there was any significant difference in the efficiency levels between the private and public sector banks. It was found that in all the cases, there was an insignificant difference in the mean levels of TE, PTE and SE between the two sectors. Furthermore, the tobit regression model showed that the return on assets and off- balance sheet activities were the most important factors affecting efficiency.

**Hardwick, P., and Guirguis, M., (2004):** They studied the structure and performance of UK insurance industry using data envelopment analysis by taking a sample of 50 life and 50 general UK

insurance companies over the period 1990-2003. The study suggested that UK life insurers produced their chosen outputs with an average only 57% efficiency while general insurer produced their chosen output with only 66% efficiency.

**Hsiao (2006):** The study was made to look into the performance measurement of investment for 25 life insurers of Taiwan during the period 1998-2002. The entire sample was divided into domestic and foreign insurers in order to understand the difference in their performance. With the application of efficiency analysis using DEA, it was found that only two insurers, viz. Nan Shan and Hontai Life were both 100% overall and scale efficient. In terms of PTE, other than the above two players, only Cathay, American and Manulife were 100% efficient. The overall range for the three forms of efficiency were as follows: for overall efficiency – 0.177 to 1.00, for PTE – 0.194 to 1.00 and SE – 0.354 to 1.00. The result in terms of returns to scale showed that the majority operated under DRS. In the later part of this study, the Malmquist Index was applied which revealed the average score of the five components: efficiency change – 1.344, technical efficiency change – 0.842, pure technical efficiency change – 1.123, scale efficiency change – 1.193 and total factor productivity change – 1.108. The author also applied certain statistical tests for testing a few hypotheses. The Mann-Whitney test revealed that there was no significant difference in the rank of overall efficiency and pure technical efficiency between foreign and domestic players. However, there was a significant difference in the rank of overall efficiency during 1998-99, 2000-01 and 2001-02. In the last part of the study, it was found that deposits and loans contributed the maximum to the investment return rate.

**Hopkins, Willie, E. and Shirley, A., (1997):** They studied the impact of strategic planning intensity on financial performance. The study proposed that the intensity with which managers engage in strategic planning depends on managerial, environmental and organizational factor, The study used LISREL caused modeling to analyze the mediating effects of strategic planning intensity between certain factors (i.e. managerial, environmental, organizational ) and banks financial performance. The study explained the nature of the planning performance relationship in banks. They used an integrative model of relationships among managerial, environmental, and organizational factors, strategic planning intensity and financial performance and applied the model on data from 112 banks. Test-retest reliability was quite high in the study. Three measures were used for the financial performance *Latent Variables* –

- i) Profits for Income, ii) Return on Equity (net income divided by shareholder's Equity),
- iii) Deposit Growth (percentage change in consumer demand deposits for each bank), LISREL was designed as linear structural equation model for latent variables. The two components of LISREL

are measured – Latent Variables and Structural (Test of causality and hypothesis). LISREL-8 computer program was used to solve the structural equations and generalized least square method was used to derive parameter estimator for the initial and modifies models. The study suggested that the intensity with which banks engage in the strategic planning process has direct, positive effect on banks' financial performance and mediates the effects of managerial and organizational factors on bank performance and a reciprocal relationship between strategic planning intensity and performance. Therefore, the study stated that strategic planning intensity causes better performance, and vice versa. Thus, the study paved the way for similar implications for other financial services institutions subject to similar conditions regarding operations of the institutions.

**Hsiao, Pai, Shi and Su (2011):** They studied the cost efficiency in the Taiwanese life insurance industry during the period 1997 to 2007. The inferences from the study were as follows: (a) the translog cost function reflected that the interpretability was 93% with labour costs and claim costs having a severe impact on costs; (b) the economy-of-scale analysis showed the mean value to be 1.1928. Of the total sample chosen for the study, almost 72% reflected values exceeding 1. Moreover, the results showed that with variation in the “scales” and “patterns”, the value changed; (c) the cost efficiency analysis pointed that the value remained in the range of 55-80%, with an average score of 67%; (d) the efficiency varied with change in scale, and (d) the tobit truncated regression analysis conferred that operating profit percentage, total assets turnover, fixed assets turnover and liquidity ratio were positively related with cost efficiency, whereas benefits payment as a ratio of net premium was negatively related.

**Hwang and Kao (2006):** The researchers utilized the two-stage DEA technique to study twenty four non-life insurance companies of Taiwan. The first stage measured the marketability aspect whereas the second stage measured the profitability aspect. An interesting finding was that the companies that had efficiency in the traditional one stage could never achieve efficiency in both the stages. There was no significant difference between the efficiency level of domestic and foreign insurers and also on the basis of different sizes.

**Huang (2007):** The researcher predicted the profit and cost efficiency in the Chinese insurance industry applying Stochastic Frontier Approach (SFA). Sample for the study included those insurance firms which represented over 90% of commercial insurance firms assets. The data period was 1999-2004. The results showed that in cost efficiency, the non-state owned companies and the foreign companies were better placed than the state owned and domestic companies. But in the case of profit efficiency reverse results were retrieved.

**Ibiwoye (2010):** They identified the reason behind increasing popularity of the frontier methods in performance assessment of decision-making units (DMUs). The authors mentioned that ratio analysis and index numbers failed in the case of multiple input-multiple output case, but there were no problem with the application of frontier methods. The author explained the advantages of the frontier methods over the other two methods. They used data of ten Nigerian insurance companies to show how efficiency analysis could be done by making computations of technical and scale efficiency scores. The results reflected that high level of technical efficiency existed under both constant returns to scale and variable returns to scale. However, in both the cases there exist scale inefficiency, thereby concluding that size made a difference and may lead to decreasing returns to scale.

**Jose and Georgiou (year not found from the website):** The researchers highlighted the financial turmoil which took place in the late 1990s that gave rise to the increasing importance of macro-prudential analysis. They mentioned about responsiveness of the international financial institution like the IMF in working closely with national bodies across the world to develop financial soundness indicators. The paper covered important areas relating to the development of the FSI methodology, results of the compilation exercise taken by the IMF together with the other countries, a study of data requirement for FSI development and implementation of the FSI model in all the IMF member countries

**Jain and Goyal (2012):** The authors made a study to determine whether there is any relationship between policyholders' rights and duties with the demographic factors. The results of the analysis revealed that there was a significant impact of age, income, and gender on policyholders' rights. Another interesting observation was that both the insured and the uninsured were aware of the rights. With regard to duties, it was found that age as a factor partially affected the duties. However, on the one hand, income fully affected the duties of the policyholder, whereas on the other hand, there was no significant relationship between gender and duty awareness. However, there was a significant relationship of insured on duty awareness of policyholders.

**Kasman and Turgutlu (2007):** The authors investigated the technical efficiency of 28 life insurance firms of Turkey by studying data that covered a period from 1999- 2005. They estimated the efficiency results of firms by applying econometric and mathematical approaches. The paper was different in the sense that it applied three different techniques viz. Data Envelopment Analysis (DEA), Chance- Constrained DEA (CCDEA) and the Stochastic Frontier Approach (SFA) to understand the efficiency level of the Turkish life insurers. They examined the relationship in the efficiency level by comparing (a) domestic and foreign insurers and (b) insurers on the basis of their size. It also examined the consistency in the results obtained under the three approaches.

Finally, the authors tested whether the mean efficiency scores from the three approaches were significantly different. The results showed that there existed a high level of inefficiency in the industry. Moreover, their efficiency results showed that domestic firms were relatively more efficient than foreign insurers and larger-sized firms were better performing than the smaller firms. The pair-wise Spearman's rank correlation results showed that not only the rank-order correlation between parametric and non-parametric tests was found to be highly consistent but also the two non-parametric tests showed high consistency. However, the Mann-Whitney-Wilcoxon test showed that difference in the mean efficiency scores of parametric and non-parametric tests showed significant difference.

**Kumar (1996):** The researcher studied on the development of the life insurance industry in India. The researcher highlighted the regulatory developments that took place from time to time. Moreover, the researcher mentioned about the circumstances that lead to the nationalization of life insurance sector in India. While elaborating on the economic reforms that generated in the country since 1991, the author cited certain issues like product development, technological progress, skill development in the insurance sector and discussed the role of insurance industry in a country's development. The author also highlighted the prospect of industry growth and the removal of inefficiencies was elaborated by the author.

**Kulkarni and Sagar (2011):** The researchers focused on the position of LIC in terms of its market share. Moreover, they discussed the marketing strategies being adopted by the public giant to improve its competitive strength and dominance in the market. The authors pointed out the market share of the individual players as at the end of 2008-09; LIC had a share of 70.92% whereas the private insurers taken together had a share of 29.08% dominated by ICICI Prudential Life, Bajaj Allianz Life and SBI Life Insurance.. They mentioned that there was a 800% increase in the premium volume in the industry in 2008-09 with respect to 1999-2000. In the later part of their article, they elaborated the strategies adopted by LIC to fight the increasing competition which included innovative product development, launch of health insurance related products, widening the distribution network, inclusion of micro-insurance agents for the micro-insurance business, bancassurance and opening up of foreign branches.

**Lee and Kim (2008):** The researchers pointed towards the changes in the Korean life insurance industry in terms of changing market structure, distribution channels and increasing competition. They measured, analyzed and decomposed the relative efficiency of the Korean life insurers.

The data covered 22 registered insurers for the year 2006 only. They employed DEA (both BCC and CCR methods), Slack-based measure and the Super-efficiency models to analyze the data by applying the input-oriented model on the DEA-SOLVER software to arrive at their results. They found that the average BCC, CCR and SBM efficiency scores were 0.988, 0.961 and 0.892 respectively, thereby, pointing towards high efficiency level. The reason behind such high average score was that of the total insurers, 81%, 54% and 54% were found to be perfectly efficient under BCC, CCR and SBM approach respectively. In terms of returns to scale, the number of companies under increasing, decreasing and constant returns to scale was three, seven and twelve respectively. On further analysis of the efficiency results showed that 12 efficient insurers were both technically and scale efficient. The super-efficiency model was further applied because there were many companies having the same score of 1.

**Lin, Lee and Shih (2010):** The researchers used DEA technique to analyze the business efficiency of the life insurers in Taiwan based on the data for the period 2005-09. The average technical efficiency level was found to be 0.65. A further break-up of technical efficiency into pure technical and scale efficiency showed that the scores were 0.774 and 0.847 respectively. The Malmquist Index results showed that the average growth of productivity of the life insurers was 4.1%. On further analysis it was revealed that the growth in technical efficiency changes and technological changes were 3.3% and 1.7% respectively.

**Mahesh, H. P. and Bhide, S. (2008):** The researchers studied the effect of India's financial sector reforms, introduced in 1992, on the efficiency level of Indian commercial banks. The period of the study covered some pre-reform and post-reform years i.e. from 1985 to 2004. They used three different measures of efficiency - *Cost Efficiency*, *Profit Efficiency* and *Loan Advance Efficiency*. They have adopted *Battese and Coelli (1995) Approach* for estimation. The panel dataset of 94 banks for 20 years was obtained from the Performance Highlights of Banks, Annual Accounts of Scheduled Commercial Banks, and balance sheet and expenditure statements of respective banks. *Stochastic Frontier Analysis* was employed to study the impact of reforms and it gave unambiguous results by showing that financial reforms had a significant impact on the all three types of efficiency measures. The study found that the loan advance efficiency had declined marginally for the entire industry in the period under consideration, cost efficiency had improved and profit efficiency reflected a varying trend. The study contradicted with the wide held perception that public sector banks are inefficient. By analyzing they found that public sector banks ranked first in two out of the three efficiency measures, thus indicating that those banks did not lag their private counterparts in terms of efficiency. It also revealed that competition had a significant impact on the efficiency levels of commercial banks across all the three measures. Therefore, this study categorically suggests that the financial

sector reforms brought changes in the banking sector and these changes influenced the efficiency level of the services provided by the banking sector. The study is very relevant at the present juncture when a decade or almost two have passed by and also contributes in guiding the finance related policy makers as it suggested that the rapid changes in the financial sector that are underway will keep influencing the performance of the banking sector.

**Mansor and Radam (2000):** This study focused on the analysis of productivity growth in the life insurance industry in Malaysia for the period 1975 to 1997. In the initial part, they discussed about the Malaysian insurance market and its growth pattern. In the empirical part of the study, they applied the Malmquist Productivity Index to understand not only the growth, but also the contribution of technical and technological change. In order to understand the average efficiency in the industry, they computed the mean technical efficiency of each of the firms. The results reflected that the top three most efficient insurers were Malaysia National Insurance Company, Malaysia Co-operative Insurance Society and Overseas Assurance Corporation Ltd. with the overall industry mean to be reasonably good at 72%. In terms of growth in productivity, the insurers which showed maximum technical efficiency growth included Asia Life (156%) and Great Eastern (128%). For the technical change, the maximum progress were observed in the case of United Malaysian Insurance Company (240%) and Malaysian Assurance Alliance (193%). In terms of overall growth, denoted by the Malmquist Index, most of the insurers performed well and showed overall growth. The best performance was seen in the case of MAA and UMI with scores of 387% and 229% respectively. Only three insurers namely, MCIS, Safety and AIA revealed an overall negative growth during the time period. But overall productivity growth results showed wide disparity between insurers. On an average, the technical change technical efficiency, and productivity growth were 30%, 46%, and 48% respectively.

**Martinez and Estrada (2009):** The author enquired mainly into the developments in the Colombian insurance market in terms of improvement in cost efficiency and total factor productivity growth by studying all the life and non-life insurers during the period 1998-2007. In order to compute efficiency levels, they applied the input-oriented measure. They revealed that the insurers recovered a lot towards the end of the sample period and projected rapid improvements.

**Owusu-Ansah, Dontwi, Seidu, Abudulai and Sebil (2010):** The researchers used DEA approach under the constant returns to scale assumption to determine the efficiency levels of Ghanaian general insurers. The insurers operated at an average overall efficiency of 68%, technical efficiency of 87% and scale efficiency of 78%. The Mann-Whitney U-test revealed that larger insurance companies as those with higher market share attained greater efficiency levels.

**Parera (2001):** The researcher highlighted the main reasons for deregulation of the insurance sector which included less insurance spread in the country, to increase competitiveness within the industry, to have better supervision on the industry etc. They mentioned that lacunae in terms of low insurance penetration and density, and lack of social security could be removed by proper insurance sector reforms. It was pointed out that immense opportunity existed in the sector in terms of low share that the country has in the global insurance market. The researchers also highlighted some areas like health insurance, pension policies, insurance awareness building etc. which required a major boost. The article also pointed about the dearth of trained agents and brokers as major challenges to the industry.

**Paul, Joseph and Barnabas (2010):** The researchers carried out a survey to understand the level of awareness among the respondents and the reasons behind it. The study collected responses from more than 1600 respondents from Trichy who revealed that the overall awareness level was low. This study also revealed that the growth in insurance business would take place only when consumers realize its necessity and not just think insurance as another investment for saving tax. They also applied the chi-square test to find out the relationship between different variables like knowledge about policy and purpose of policy with income, education, occupation etc. Some of the major findings were:(a) there existed a strong relationship between educational qualification and knowledge of various Policies and schemes, (b) there was a strong relationship between age and knowledge of various Policies and Schemes, (d) there also existed a strong relationship between purpose of policy taken and knowledge of various Policies and Schemes. Moreover, by applying the binary logistic regression, they found the existence of a strong relationship between the two independent variables - educational qualification and age and the dependent variable - knowledge of various policies and schemes, (e) a strong relationship existed between occupation and the purpose of policy, (f) there was a strong relationship between monthly income and the purpose behind purchasing a policy, (g) there also existed a strong relationship between educational qualification and type of policy taken by respondents.

**Qiu and Chen (2006):** The researchers applied the DEA approach to determine the efficiency level of the Chinese life insurers. The data period considered for the study was from 2000 to 2003. They computed scores relating to technical efficiency (TE), pure technical efficiency (PTE) and scale efficiency (SE). The mean scores of all Chinese insurers in all these efficiencies showed a continuous decline. It ranged from 0.49 to 0.64. By comparing the results of the Chinese and international insurers, they inferred that the latter showed very poor performance in terms of technical efficiency. The cause behind inefficiency of the Chinese insurers was both PTE and SE, but for the international insurers PTE did not play a severe down-

pulling effect. The authors also analyzed the scale economies of the insurers to find out their scale size of production. The Malmquist index was also calculated to find out the reason behind productivity growth.

**Rao (1999):** The researcher looked into the performance of the Life Insurance Corporation of India. The main thrust area was to understand the growth pattern of insurance business in India. The other areas that were covered in the study included parameters like new business, business in force, financial inflow and cash flow. The author also related the performance parameters with the different macro-economic variables.

**Rajendran and Natarajan (2009):** The researcher studied the process of insurance sector reforms in India. Specifically the study was on LIC's business in India and outside. The preliminary part of the study mentioned about the rapid growth pace of the industry after the sector was liberalized in the year 2000. One of the main reasons cited by the authors was that due to competitive pressure on the players, both LIC and the private players resorted to advertisement campaigns which led to an increase in the general awareness level. The authors fitted a trend equation using the linear equation to project the business in India, outside India and the total business for the year 2012. Furthermore, they also highlighted the challenges that LIC was facing in the changed business scenario which included factors like low literacy levels, low savings rate and per capita income along with less number of employment opportunities.

**Ranade and Ahuja (1999):** The researchers made a study on the development of life insurance industry in India. They highlighted the importance of this sector in terms of economic growth of the country. They also mentioned that the contribution of life insurance to the total financial assets was showing an increase; in 1980-81 it was 10% which increased to 14% in 1995-96. According to them, with a huge corpus of funds, large employee strength and a widespread network of branches, LIC played a positive role in the country's growth. The concluding part of their article touched upon the emerging areas in the sector which included faster product development, pension reforms, wider spread of the distribution network and role of IT in the sector among others.

**Rahman (2012):** The researcher computed the relative efficiency scores of 42 Commercial Banks of Bangladesh as at the end of 2008. He used two-stage DEA method. The break-up of the samples included 4 Nationalized Commercial Banks, 30 Private Commercial Banks and 4 Foreign Commercial Banks. The results after the first and second stage showed that the number of firms obtaining 100% relative efficiency score were 6 and 7 respectively, with only one foreign bank scoring 100% in both the stages. In the first stage under the intermediation method, the nationalised banks outperformed the other two categories of banks. The composite score for

efficiency pointed that the overall average was maximum for FCBs (0.616) which is followed by PCBs (0.423) and NCBs (0.363). Further analysis showed a negative correlation between the scores of the first and second stage. Another interesting finding of the study was that in the first stage, with increase in asset size, the intermediation efficiency improved which was, however, not the case with regard to technical efficiency. The researcher revealed that the foreign banks had overall best performance.

**Rastogi and Sarkar (2007):** The authors studied the development of the life insurance industry in India. They studied in detail the evolution of the industry followed by the reforms in 2000. The main stress of the paper was to understand the emerging scenario in the life insurance sector and the trends that were developing. They pointed out the market-driven factors and the regulatory factors that contributed to the vibrant insurance sector in the post-reform period. They also mentioned about the basic intentions of the government when the sector was opened up to the private players. The main objectives as cited by them were: encourage competition and improve insurance penetration, product innovation, improve service standards, efficient allocation of resources and changing the customer outlook. They provided data to show how the players were doing with respect to meeting rural and social obligations as mandated by the IRDA. They used certain ratios and applied them to only five insurers considering data of only 2000-01 and 2004-05.

**Saad and Idris (2011):** This research paper made a comparative analysis of efficiency of life insurance companies of Malaysia and Brunei by evaluating the data set consisting of 11 companies – 9 from Malaysia and 2 from Brunei. The authors used DEA to identify the contribution of technical and efficiency change to the productivity growth by applying the Malmquist Index for the period 2002-05. This study utilized a two-input two-output case. The two inputs considered were commission and management expenses whereas the outputs were premium and net investment income. The results of efficiency were arrived at using both variable returns to scale (VRS) and constant returns to scale (CRS) assumptions. There were only three insurers who obtained a score of one in both the cases. In terms of the industry average, it found that efficiency performance in the life insurance industry was relatively higher based on VRS than CRS. The trend in movement of the efficiency average differed under the two assumptions. In the former case, there was an increase from 2000 to 2002 which then declined during 2003-04 but the trend again reversed. On the other hand, in the case of VRS, there was no definite trend between 2000 and 2003 after which it showed an increase. The results revealed that the total factor productivity was due to both efficiency and technical changes, where scale efficiency and not pure efficiency played a dominant

role. During the entire period of study, there was an improvement in relative efficiency with a slight deterioration at a negative 12.3 percent in the period 2002-2003.

**Saeidy and Kazemipour (2011):** The authors investigated into the relative efficiency scores of public and private life insurers of Iran. They studied data for the period 1983 to 1987. A non-parametric method like the input-oriented DEA with VRS technology was applied. Moreover, they studied whether there was any significant difference in the efficiency score of the public and private sector. The analysis of the input and output variables revealed that the performance of the public sector companies was significantly much better than their private counterparts.

**Saad (2012):** The author in the initial part analyzed the efficiency of 28 insurance companies of Malaysia, covering the period 2007 to 2009, using DEA. The results revealed that Hong Leong Tokio Marine Takaful Bhd, Progressive and Prudential were consistent under both CRS and VRS. Kurnia was consistently efficient under VRS, whereas Prudential BSN Takaful Bhd was the worst performer in both the cases. Commerce, MAA and Pan Global were the insurers showing consistent improvement of performance under both CRS and VRS. The efficiency of insurers was far better compared to those of the Takaful companies. However, the trend was different in the case of VRS assumption; the geometric mean of the efficiency scores of the industry showed an increase from 0.728 in 2007 to 0.787 in 2008, but reduced to 0.756 in 2009. In the second part of the study, the Malmquist Index was calculated which showed that Pan Global, Commerce and MAA showed the highest growth during the period. In terms of the industry, the total factor productivity did not show growth. Of the entire sample, only ING, Pan Global, Progressive and Prudential experienced technical progress while others faced both progress and regress.

**Simpson, J. L.,(2009):** The author studied the warning signals in the period prior to the 2008 Global Financial Crisis. The study commenced with the specification of a basic liner market model. Based on Granger (1988) findings that financial and economic time series may contain unit roots and in the development of the theory of non-stationary time series analysis, the unlagged regression model was re-specified into a model to implement VAR based tests for both co-integration and causality in optionally lagged data. Daily time series banking price index data were collected for each country /region as well as a world banking price index from Data Stream covering the period 31 December, 1999 to 20 September, 2004. Level and first difference data were analyzed using the **Eviews-4** statistical package. Preliminary analysis of the various time series was undertaken in the study. *Jarque-Bera Test* statistics indicated that there were problems with *skewness* and *kurtosis*, with each of the level and first differenced series for each country region. In a nutshell, regression, correlation,

co-integration, causality and variance decomposition analysis was applied to daily bank price index data indicating that bank systems had achieved a high level of global integration, exemplifying the global involvement in the US sub-prime mortgage market. The Study suggested refocusing by banks on a culture of portfolio diversification of investments and borrowings, greater involvement by a global banking regulatory authority, like BIS, monitor undiversified systematic interdependence which may be inevitable.

**Sinha (2005):** The researcher studied the evolutionary phases in the growth of the insurance industry in the country. The preliminary part of the study discussed about insurance practice in the colonial era. This study also highlighted the different Acts and Regulations that were passed from time to time to ensure a healthier development and growth of the industry. The later part of the discussion focused on the evolution of insurance during the nationalized period, i.e. from 1956-2000. The article highlighted the circumstances that lead to the nationalization of life insurance business in the country. The researcher also cited data to throw light on the progress of business after 1956. The extent of rural business was also discussed in detail. The author further discussed the growth of the general insurance business in the country and specifically stressed on the investment regime before and after nationalization of the life and non-life business. The relationship between national savings and life insurance premium was also cited by the researcher in the form of a graph which clearly showed the existence of a non-linear relationship between the two variables. In the last part of the article, a brief discussion was made on the key features of the Insurance Regulatory and Development Act, 1999, developments in the industry after its deregulation and future scenario of the industry.

**Sinha and Chatterjee (2007):** The authors in the initial part of their article highlighted the growth of the Indian insurance industry. In the later part of the study, they analyzed the cost efficiencies of the life insurers which included LIC and the private players. The analysis of data for the period 2002-03 to 2006-07 suggested an inconsistency in the trend of cost efficiency. In the initial four years, there was an upward trend after which it reversed.

**Sinha (2007):** The author highlighted the poor level of penetration of general insurance in our country. In the analytical part of the study, the article discussed the efficiency level of the different non-life insurers by applying a three input-three output DEA model using data for the years 2003-04 and 2004-05. The results showed that in the case of constant returns to scale, the public sector players dominated in terms of mean technical efficiency but it changed when variable returns to scale was assumed.

**Sinha and Chatterjee,(2009):** The researchers estimated cost-efficiency of the Life Insurance companies operating in India for the period 2002-03 to 2006-07 making use of the new cost efficiency approach advanced by Tone (2002). The results suggest an upward trend in cost- efficiency of the observed life insurance between 2002-03 and 2004-05. However, the trend has been reversed for the next two years i.e., 2005-06 and 2006-07. This has been so because of the fact that during the initial years of observation, mean cost efficiency of the private life insurers was rising.

**Sundaraian, et. al. (2002):** The researchers made an in-depth study on financial soundness indicators and mentioned the need to have flexibility in indicators that will be considered for macro analysis of a country's sector. Their work not only pointed to the areas where significant progress had been made, but at the same time, the study also included scope for further research. It had been clearly shown that the macro-prudential indicators play a vital role, not only in the analysis at the macro-level, but also at the firm level.

**Sinha (2011):** The author studied in detail the challenges that the life insurance is facing and those factors that will determine the future success of the industry in our country. The researcher pointed out some interesting aspects relating to the distributions channels in terms of their productivity and persistency ratios. Furthermore, the author mentioned some serious lapses in the industry in terms of policy lapses (or renewals). The other issues pointed in the article relate to the aspect of mis-selling as a result of which the general public is losing its confidence on the industry. The other important challenges relate to earning profits after fulfilling mandatory regulations, maintaining the high growth rate, developing innovative distribution channels, popularizing the concept of micro-insurance, agent's attrition rate etc.

**Tiwary, R. S. (2008):** The researcher explored the importance and use of probability and statistics within a business. She stressed on “*Key Performance Indicators (KPIs)*” which allowed the business to evaluate their performance and identify any potential problem areas. According to her, the most important KPI is Billable Hour Efficiency. Mean or Expected Outcome can be determined from the past performance, even Variance can be calculated to have an idea about the risk and then economic modeling can be used to predict the future. For data collection and analysis, both qualitative and quantitative data can be used and can be represented and studied using Tables, Charts and Graphs, Histograms, Box Plots, Stem-and-leaf Plots, Scatter Plot Distributions are widely used. The outliers in the data set need to be identified in order to remove the inaccuracies in the data. Probability can be used for business decision making as such decisions are uncertain. Venn Diagrams and Probability Tree Diagrams are widely used for this purpose. Statistical Modeling is used concurrently with regression, which represents the relationship between independent and dependent variables to allow businesses to examine cause-and-effect relationships between various factors and output. If a sample

set of data is normally distributed, z-scores can be calculated to determine the probability that a value will be greater than or less than a particular value, or fall in between two specified values. She suggested that these methods help in maintaining quality of products as well. So, we find application of probability and statistics as an important tool for decision making and better prediction of the future which is uncertain.

**Tiwari and Yadav (2012):** The authors studied the Indian Life Insurance industry by using ten years' data from 2001 to 2010. Main focus of the study was to understand the impact of liberalization on this sector. They mentioned that the insurance sector in our country was one of the booming sectors of the economy, growing at the rate of 35-40% annually with a total insurable population of less than forty percent. During this period, LIC faced tremendous pressure and its market share went down by almost one-third till 2009-10 compared to that in 1999-2000. According to the authors, some of the positive developments as a result of opening up of the sector were in terms of product development, insurance awareness, insurance penetration and contribution to the country's GDP. The authors analyzed the growth aspect by studying variables like the total premium income, total income, market share and number of policies. The total premium income criterion showed that the private sector grew at a very fast pace especially during the initial years, mainly due to the low base in the earlier years. In contrast, LIC grew at a pace which ranged between 5-42% during the period 2001-2009. Performance analysis on the basis of growth in the number of policies showed that LIC reflected lower growth rate and even de-growth in some years whereas, the private sector grew at a fast pace in the range of 13-104% (excepting in 2009-10 when it showed a negative growth). The trend was the same even while considering total income as the criterion. The authors mentioned that though the competitive pressure eroded the market share of LIC, the brand still dominated the mind of the Indian consumers and it continued to remain the most trusted brand even in the post-liberalized period.

**Tone and Sahoo (2005):** The researchers applied DEA to analyze the cost efficiency and returns to scale of the Life Insurance Corporation of India (LICI) using time series data. The data set covered a period of 19 years from 1982-83 to 2000-2001. The results showed that there existed heterogeneity in the cost efficiency over the period of study. There was a decreasing performance after 1994-95 mainly due to allocative inefficiency arising from the modernization measures by LIC. However, it was encouraging to see that the efficiency level increased significantly in 2000-01.

**Venugopalan, K. V.(2011):** conducted a study on global financial crisis and Life Insurance Sector in India by undertaking a comparative study of LIC with Private Sector. The study emphasized on insurance sector as it has undergone a tremendous change after liberalization and enactment of IRDA in 1999. India had a huge untapped market for the companies. So, by 2010-11, 22 private players

entered the gamut along with LICI (Life Insurance Corporation of India), thus grasping 30% of the market share from the later. Due to globalization, the Global Financial Crisis hit Indian Insurance Sector during 2007-08 and 2008-09 reflected a large influence made by the sub-price crisis. 2009-10 reflected some signs of recovery. The impact of the Global Financial Crisis of 2007 to the Indian Life Insurance Sector is measured by using the following variables – Insurance Presentation, Insurance Density, Number of Insurance Policies issued, Number of Insurance Premiums collected, Total Premium collected, Profit obtained. Secondary Data were used for measuring the performance the performance collected from Insurance Regulatory and Development Authority (IRDA), Annual Reports, LICI (Life Insurance Corporation of India), Journals etc. For data analysis percentages and averages were used. The period covered in the study was from 2004-05 to 2010-11. Comparing on the basis of the first year premium the study found that the Sectorial Growth was 15.55% in 2010-11, 2008-09 reflected a negative growth of – 6.47% which was recovered in 2009-10, 2006-07 reflected a tremendous growth in the Sector, amongst which a large extent was contributed by the Private Sectors. On the basis of the first year premium underwritten by the leading Insurance Companies in the Public Sector (LICI) and other Private Sectors reveals a positive growth during the financial year 2010-11, as compared to the previous year except Bazaz Allianz Life, Reliance Life and Birla Sun Life. They found that ICICI Prudential and SBI Life are the First and Second positioned Life Insurance Companies in the Private Sectors during the year 2010-2011. The number of Insurance Policies issued by the LICI and Private Sector Companies also revealed that during 2007-08 and 2008-09, it was negative for the LICI and low for Private Sector Companies. However, the situation was not found to improve much in 2009-10 and 2010-11, may be because of the stringent rules regulating ULIP (Uni-Linked Insurance Policies by IRDA). Considering Total Premium collected by LICI and Private Sector Companies, it was revealed that the share of LICI was declined from 90.67% during 2004-05 to 69.80% in 2009-10. The share of Private Sector Life Insurance Companies reflected a decline in 2009-10 compared to the earlier years. The Total Premium (first-year and renewal) collected by the LICI and Private Sector Companies, showed a positive growth throughout the period of the study. ULIP Policies did show a decreasing trend in 2008-09 due to the Stock Market Recession, but, 2009-10 had shown signs of recovery. The study suggested that Insurance Sector was considered as an emerging and untapped sector in our country with good growth potentials. A mixture of traditional and ULIP Policies was also suggested in the study.

**Viradi et. al. (2009):** The authors investigated into the efficiency of 93 commercial banks which included 27 public, 30 private and 36 foreign banks in India operating in the country during the period 1999-2000 to 2002-03. The following four indicators, namely productivity, profitability, financial management and asset quality were used to arrive at the results. Different

criteria were used for each of the indicators. The results of the analysis were as follows: (a) the overall mean of productivity lay in the range of 38%-45% (b) the overall mean of profitability remained in the range of 60-79% (c) the overall average of financial management efficiency remained in the range of 77%-85%, (d) the overall mean of asset quality efficiency score remained in the range of 43%-51%. In all the above four cases, the PSBs outperformed the other two sectors.

**Worthington and Hurley (2002):** The authors measured cost-efficiency in the Australian general insurance industry. For the purpose, a two-stage analysis was applied. In the first case, they calculated measures of pure technical efficiency (PTE), scale efficiency (SE), allocative efficiency (AE) and cost efficiency (CE) using non-parametric methods. In the second stage, they developed a link between insurer size, product line diversification and organizational form with efficiency. Results showed that out of 46 insurers examined, 28 were purely technically efficient while 19 were scale efficient. The result for pure technical efficiency showed that the efficiency level was only 76.2% of the 'best practice' firm, whereas the average score for scale efficiency was around 72.9%. The main reason behind a medium efficiency score was the poor result of the inefficient insurers who showed an average score of 0.391 for pure technical efficiency, 0.538 for scale efficiency, 0.116 for allocative efficiency and only 0.10 for cost efficiency. The results generally indicated that a large portion of the cost efficiency was due to the effects of allocative rather than technical (including scale) efficiency. Furthermore, the authors identified the outliers using the ratio of total costs to total assets as the criterion after which fresh calculations for relative efficiency scores was done. However, the results of the sensitivity analysis indicated that the results were moderately robust with respect to the presence of outliers, with no dramatic changes in the average level of pure technical, scale, allocative and cost efficiency. They found that when the outliers were excluded, the mean scores of PTE, SE, AE and CE was found to be 0.764, 0.769, 0.311 and 0.291 respectively. The paper also applied the Mann-Whitney and Kolmogorov-Smirnov tests to deduce statistical inferences. The Mann-Whitney test indicated that there were significant differences between the largest asset group and the next to largest group across all four measures of efficiency. Also, the Kolmogorov-Smirnov test provided broadly comparable statistically significant differences in the efficiency distributions. For instance, only the largest and smallest twenty percent of insurers had different distributions of allocative and cost efficiency, whereas only the largest twenty percent had a statistically different distribution of scale efficiency. Overall, the results suggested that there were statistically significant differences in cost efficiency across Australian general insurers; more specifically, the largest twenty percent of insurers by asset size were considerably more cost efficient than the remaining. The authors also applied Tobit regression model to find out the relationship between the four efficiencies and the

independent variables used by the authors. The regression model using pure technical efficiency as the dependent variable indicated that total assets and total assets squared were significant at 5% level and the dummy variable representing stock listing was significant at 1% level. The estimated coefficients for asset size, namely asset and asset size squared showed a negative and positive relationship respectively, indicating a non-linear relationship between firm size and efficiency. The regression results using scale efficiency as the dependent variable indicated that all the estimated coefficients were insignificant. In cases where allocative efficiency and cost efficiency were specified as dependent variables, tests of the null hypothesis that all slope coefficients were zero was rejected at the 1% level using the log likelihood ratio procedure. However, in the regression equation where allocative efficiency and cost efficiency were specified as the dependent variable, the estimated coefficients of the firm size proxies were found to be significant at 1% level. The results suggested that larger and smaller sized general insurers were associated with higher levels of pure technical, allocative and cost efficiency while medium-sized insurers were generally less efficient. The effect of product line specification on efficiency score was also tested which showed that in no way it affected the efficiency results.

## 2.3 REVIEW OF BOOKS

**Ali, Mohammad and Ahmad (2007):** The authors covered different aspects of the Indian Insurance sector. The book covered the basics of insurance, the definition of the term and the different types of insurance that are available. They touched upon important aspects like the liberalization era of the Indian insurance market – both life and non-life. They also covered the different phases of economic liberalization. The book also discussed in detail the insurance sector reforms in India and also provided information about the business of LIC. Some of the other areas included in the book were the investment pattern followed by LIC and its progress since the nationalization of the life insurance sector, progress of the general insurance business and the performance of public sector non-life insurance companies. Moreover, the book discussed a chapter exclusively on the risk of insurance business which covered points relating to its types, classification, risk mapping, risk management and measurement, and risk assessment. Furthermore, the authors discussed the trends that the insurance market in India is going through since the opening up of the sector which included points relating to competitive character in the industry, financial structure, insurance products, and distribution channels among others. The last chapter of the book covered the performance of the overall insurance sector – both life and general, in the post-liberalization period. The book covered information on the share of the public and private sectors in the total business, their market share, changing investment pattern between 1998 and 2003 and the like.

**Bawa (2007):** The author covered majority of the contents in discussing the performance aspect of LIC. Out of eight chapters that the book has, only the first one contained basics covering issues like the concept of insurance, reforms in the life insurance business in India, the role of IRDA and its regulations. The second chapter mentioned the literature review section where reference has been made to the areas already covered by different researchers. The third one highlighted the parameters that the researcher used for assessing the performance of LIC. The remaining chapters focused on the performance of LIC till the middle of the last decade. Some of the other relevant aspects covered by the author included business generation, rural business, number of agents, average sum assured per policy, claims settlement record, productivity of branches and agents etc. The sixth chapter of the book highlighted the investment policy and portfolio of LIC together with its changing trend over the years. The second last chapter discussed about the impact of privatization on the business of the life insurer. It touched upon aspects like total premium income, market share of the players, new policies sold and the growth rates of the performance indicators.

**Becham, H. L., (2009):** The author suggested Financial Ratios as an important yardstick for measuring how the firm stacks up against its competition. She suggested internal comparisons using historical *Financial Ratios* as excellent tools for understanding the Company's performance i.e. improving or declining which are very simple to calculate. The ratios fall into five distinct categories and twenty ratios are commonly used as Financial Ratios.

The categories are –

- i) Profitability (Net Profit Ratio, Return on Sales)
- ii) Activity or Efficiency (Asset Turnover, Days of Inventory, Inventory Turnover, Days Receivable, Avg. Collection Period, Days Payable, Working Capital Turnover)
- iii) Liquidity (Current Ratio, Quick Ratio)
- iv) Leverage (Debt Ratio, Debt to Equity Ratio, Times Interest Earned or Coverage Ratio)
- V) Market Value Ratios (Price Earnings Ratio, Dividend Yield Ratio, Dividend Payout Ratio).

Becham further suggested using *Du Pont Model* and Common Size Statement for comparison. She emphasized on proper understanding of the company's accounting practices as a prerequisite for implementing ratio analysis. To quote her - *Financial ratios are most valuable when used as part multifaceted approach to analyzing a business*".

**Das, Davies and Podpiera (2003):** The book was divided into six sections. The authors gave an overview of the industry and its role in an economy. In the introductory part, they discussed

about the three forms of risks that an insurance business is exposed to viz. technical risk, investment risk and other risks. According to them, the riskiness of an insurance business increased after the financial deregulation which changed the focus of activities of insurance companies. That change increased the vulnerability of insurance companies and resulted in their failures, some examples of which were cited by the researchers. Hence, they realized the need to apply qualitative as well as quantitative indicators that would indicate the safety of companies and the financial system as a whole. For better understanding of the soundness status, they proposed two sets of indicators which could be used for both individual insurers' and sectoral surveillance. They further mentioned that financial soundness indicators helped to monitor and assess the financial condition of not only the institutions individually but the market as a whole. The sum total of the indicators gave an idea about the trends and its vulnerability or chances of failure.

**Das, U.S., Davies, N. and Podpiera, R. (2005):** The authors in the first two chapters of the book mentioned about the basics of financial sector assessment and the aspect of macro-prudential surveillance. In the second chapter specifically, they defined the indicators of financial structure, aspects relating to system wise indicators, indicators of the key attributes of the sector and measures of outreach of financial services. The relevant part for our study relates to financial soundness indicators that are defined for the insurance sector particularly for the life insurance sector which have been categorized in terms of core and encouraged ones. The chapter also discussed about the FSIs relating to banking, securities market etc.

**Harold, Lovell and Schmidt (1993):** Their book "the measurement of productive efficiency- Techniques and Application" is divided into two sections. The first section mentions the techniques of measuring efficiency. Chapter one explains the production frontier and Productive efficiency. Chapter two discusses the econometric approach to Efficiency Analysis. Chapter three elaborates on the mathematical programming approach to efficiency analysis. Chapter four deals with efficiency and productivity. The second section is on application of these techniques. However this book mainly emphasizes on application of econometric methods.

**Mishra and Mishra (2008):** The contents of the book are divided into seven parts. Part one introduced the topic of insurance and discussed the evolution, role and importance of insurance. The second part of the book discussed about the different features in an insurance contract. The authors also included a section on classification of policies. Some of the other topics covered were the factors affecting risk, sources of risk information, mortality table, premium calculation procedure, reserve, various issues related to investment of funds, valuation and surplus. The last chapter in this part covered in detail about the progress of LIC. The third and fourth part of the book

covered the topic of marine insurance and fire insurance respectively. The fifth part of the book covered the other types of insurance policies that are available in the market. The next part covered the topics relating to prospects of insurance companies and the circumstances that lead to the opening up of the insurance industry. The last part discussed about the progress of insurance business after the sectoral reform in 2000, bancassurance and India's position in the world.

**Palande, Shah and Lunawat (2003):** The authors divided the content into nine chapters. Chapter 1 discussed the growth and development of the Indian insurance industry. It touched upon important issues like reasons behind nationalization of the life insurance industry in 1956 and the progress of the sector since then. A discussion is also made about the world insurance market and changes the industry is going through. Chapter 2 gave a detailed discussion about the debate regarding opening up of the industry. They mentioned that some of the main reasons behind the deregulation included dismantling restrictive barriers, inculcating positive effects of competition, need for infrastructural development, increasing the spread of insurance coverage, making more product choices available to customers, following the footsteps of developments in other sectors among others. Chapter 3 of the book referred to the upcoming challenges for the insurance sector after its opening up. It discussed the changes that are expected at the industry level some of which include changing the mindset of the insurers, infusing capital, recruiting of quality staff, practicing skill development in the entire industry, increasing focus towards marketing, increasing consciousness about cost, bringing about a structural change within the organizations and upgrading technology. Chapter 4 discussed about the proactive and focused strategies in the industry. The chapter started with the potential that is remaining in the sector and opportunity it provides to the companies. In fact, the market is backed by a huge potential demand which is a result of many factors like demographic changes, economic environmental changes, growth of the overall global economy, increase in the awareness levels, changing government policies etc. Some of the other pertinent factors pointed by the authors include the increasing literacy rate in the country, changes in the social factors, growing middle class, a general shift towards the urban areas etc. Chapter 5 discussed the changes that are taking place in different sectors of the environment and tried to connect those developments with the products that would be in demand in the coming days. In the last part of the chapter, the authors touched upon the response of the public sector players to the environmental needs. Chapter 6 discussed about the growing importance of marketing as a function in the insurance industry in the light of the reforms that took place in 1999. The authors mentioned that the need of the hour is to change the thinking style and do something new and adopt new strategies. They also mentioned the need for free market pricing in the general insurance business which was eventually done in 2005. They also laid stress on the importance of

pricing, customer satisfaction, technology in distribution, technology-driven marketing, claims settlement, surveyors and distribution channels. The authors made a specific discussion about the distribution strategies in the insurance industry and the weaknesses that are existing therein. Chapter 7 of the book discussed about the investment of funds in the insurance business. They pointed towards the concerns in investment management for an insurance business. In other words, since claim settlement is one of the main objectives of any insurance business, the asset-liability management aspect was considered to be very important by the authors. Moreover, a brief discussion regarding the changing investment regulations was done. The next chapter discussed various issues relating to the regulatory aspect in the insurance industry. The developmental role of the regulator was also touched upon by the authors. Chapter 9 discussed about the government's role as a change facilitator in the insurance industry. In the last chapter of the book, the authors briefly identified the changes that would take place in the insurance business. They mentioned about more product choice, better customized product, stricter regulation, organizational restructuring etc. to be the immediate results of change brought about in the sector.

**Ramanathan(2003):** This book is on Data Envelopment Analysis as a tool of performance measurement. It is divided into seven chapters. The first chapter introduces to the concept of decision making units, The second chapter deals with the mathematical programming aspect of DEA. The third chapter elaborates on economies of scale. The fourth chapter mentions the various DEA models including Time Series Analysis using DEA used in the study. The fifth chapter emphasizes on the computational aspect of DEA. The last two chapters reflect application of DEA technique in details. This book is very useful for understanding DEA and its application as it also helps for using data in various softwares.

**Sadhak (2009):** The author discussed about the life insurance sector in India. The book covered areas relating to liberalization, privatization and globalization of the Indian economy and deregulation of the insurance sector. The book covering seven chapters discussed about the changes taking place in the insurance sector in the context of the rapidly changing financial services sector in the country. Chapter one dealt with the financial economy in the era of globalization and liberalization. It also touched upon the aspect of financial globalization and its benefits. Further the chapter discussed in detail about the extent of globalization in the country and its effect on the gross domestic product (GDP) and trade. In the later part of the chapter, a discussion about the effect of liberalization on the institutional investment is made. The initial chapter of the book also covered the emerging trends in the global and domestic insurance market. The second chapter covered the emerging economic and financial environment in the country. It cited data relating to the trend in GDP growth rates in the country, the financial assets of banks,

gross domestic savings (GDS), changing investment pattern of the household sector and the emerging scenario in the country's insurance market. The third chapter discussed about the life insurance sector of the country. It touched upon the historical development of the industry and the cycle of reforms that it has been going through. Moreover, the chapter highlighted the growth story of the insurance sector and different aspects of LIC. It also discussed the changing scenario after the deregulation of the sector. Data about the insurance market in different countries were also cited by the author. Chapter four of the book described the changing nature in product development and the distribution pattern as effects of the financial liberalization process. The authors also elaborated on ULIPs and its regulations, microinsurance and the distribution channels being used for marketing of insurance services. The fifth chapter discussed about the investment regulation passed by IRDA and the changing investment policies of companies. Investment-related data of life insurers during the initial years of the 21st century were also given. In the later part of the chapter, a brief discussion was made about the types of risks and macro-economic indicators that could be used to determine investment strategy. The sixth chapter discussed about the corporate governance aspect of the insurance industry, whereas the last one highlighted the different strategies which would help to meet the challenges in the industry.

**Sinha (2004):** The author made a study on the Indian insurance industry focusing mainly on the challenges and prospects. The basic areas covered included overview of the insurance market, understanding India's position with respect to the world and regulatory regime existing in the country. They provided data relating to the years 1957, 1963, 1972-73, 1992-93 and 2001-02 to depict how the industry grew over the years. In order to understand the change in the investment portfolio of LIC over the years, suitable data were cited in the article. The growth of general insurance business was also covered in the article. The major part in the article studied the opportunities and the challenges that the sector is confronted with.

**Tripathy and Pal (2005):** The authors included not just the theoretical chapters but also certain research-based studies which used primary survey to collect data and arrive at results. The book is divided into two parts. The first part covered an overview of insurance industries, whereas the latter discussed about areas like rural insurance, social insurance and health insurance. In the former section, many important areas have been discussed. To be specific, it covered chapters on financial convergence in India and development of the Indian insurance industry, performance aspect of LIC, various types of insurance policies, study on factors affecting purchase of insurance products, issues and challenges for the general insurance industry, bancassurance, brand positioning of private sector players etc. The second part of the book covered chapters on rural insurance,

social insurance, social security system in India and microinsurance. Some of the other practical studies included in the book covered areas like health insurance and diabetes.

## **2.4 REVIEW OF REPORTS**

**Ernst & Young (2010):** The report is divided into three sections which are as follows: Section I is on industry overview, Section II on industry at the cross-roads of development and Section III on critical factors for market development. The study titled, “Indian insurance sector: Stepping into the next decade of Growth” made an in-depth analysis of the insurance sector of India. The report mentioned about the role played by the liberalization policy in making the sector more vibrant. The report highlighted the role played by the overall financial services sector (including insurance services) in contributing to the country’s gross domestic product (GDP). It also mentioned about the sectoral contribution in the long-term infrastructural development of India and employment generation within the country. The report also discussed about the rapid pace at which the sector has been growing during the last decade and also mentioned about the factors that are facilitating the accelerative growth rate. Some of the prominent factors which were mentioned in the report included India’s growing consumer class, increase in the domestic savings, rising awareness about insurance, improved investments scenario etc. The report has divided the post-liberalization phase into three parts. The first one pertained to the period where there was an unprecedented rise in the sale of insurance products. The period used the capital infusion strategy to give more focus towards growth rather than profitability. The second phase was the period of innovative product development and spread of the distribution network to generate the first-mover advantage. The last stage focused on “stable profitable growth”. This was the phase where focus changed from reducing the growth rate to increasing the channel retention and channel productivity. The next part of the report discussed the role of IRDA. It highlighted the regulatory measures to ensure the protection of policyholders’ interest on the one hand and growth of industry on the other. In the last part of the report it discussed about the role and challenges being faced by the distribution channels in the insurance industry. The report also highlighted the term ‘financial inclusion’, its importance in the Indian context and the measures that are being adopted to spread the message of financial inclusion. It also discussed the changing customer preferences towards products like ULIPs which gained immense popularity in the last decade.

## **2.5 REVIEW OF PH.D. THESIS**

**Dalal (2006):** In his thesis on “*A Study on Life Insurance Sector in India: Structural Adjustment and Its Consequences on Companies’ Performance and Schemes’ Profitability*”, the researcher focused his study on the structural adjustment and its impact on the performance of the insurance companies which included LIC and the private life insurers. The overall research not only covered certain basic aspects relating to the growth and developments in the insurance sector but also studied specifically about the different aspects of LIC. In order to capture an idea about the adjustment as a result of reforms, some of the areas studied included individual and group business, sum assured, premium income, percentage of rural business, growth of life insurance fund, claims record, investment pattern etc. For the purpose of analyzing the profitability of schemes, the researcher made a comparative study of different policies of LIC and those of the private insurers. The study showed that in terms of structural adjustment, there has been a changing trend in terms of the growth pattern. Furthermore, the comparative analysis of the long-term schemes of LIC like the Endowment policy, Money Back Policy, Retirement policy and the Children’s policy with those of the private insurers showed that the public insurer performed better.

**Sen (2011):** In his Ph.D. thesis “*Evaluation of Profitability and Growth of Life Insurance Business in India- A Comparative Study between Public Sector Unit and the Private Sector Units*”, Dr. Sen has taken 17 private sector companies and one public sector company for the study. Period covered is 2000-01 to 2007-08 for the private sector companies and 1995-96 to 2007-08 for the LIC. Tools used for the study are- Ratios analysis, Co-relation Co-efficient and Test of Hypothesis. Comparative study has been made regarding performance of both the sectors. The researcher found that public sector insurer was a far better performer than the private sector insurers.

**Ghosh (2011):** In his Ph.D thesis “*Impact on reforms on Life Insurance in India*”. The study revealed that Income, education, inflation and Interest Rate are the major determinant factors of Life Insurance demand in India.

**Sinha(2012) :** In his Ph.D thesis “*Financial Performance Analysis of Insurers in India*” used CAMELS Model and basic DEA Models to rank the life insurance companies operating in India. The study covered a period from 2001-02 to 2009-10. The growth and financial stability of the companies were also studied. The study inferred that the only Public sector life insurance company viz. Life Insurance Corporation of India is still much ahead of the private life insurance companies.

## **2.6 RESEARCH GAP**

On the basis of literature survey, we found that the extent of study made on insurance in India is not a huge one. There are a number of general theoretical papers that are written on the Indian life insurance industry which covered mainly the areas like historical development of the industry, insurance sector reforms, objective of the reforms, survival strategies to uphold competitive advantage, bancassurance, performance analysis of LIC etc. In respect of articles using statistical tools, we found three papers on the Indian life insurance industry. The first one (by Sinha and Chatterjee, 2007) made a study of cost efficiency on a small sample comprising of LIC and private insurers using the non-parametric method. Another by Bedi and Singh (2011) in their paper exclusively dealt with a study on the Indian public and private life insurers which showed a significant difference in the performance of the two sectors. Furthermore, another paper by Tone and Sahoo (2005) analyzed the cost efficiency and returns to scale of LIC covering a period of 19 years from 1982-83 to 2000-2001. In his Ph.D. thesis Dr. Sen (2011) made an empirical study on 17 private sector insurance companies and one public sector insurer for which they used Ratios analysis, Co-relation Co-efficient and Testing of Hypothesis. Apart from these three papers and two Ph.D. thesis on life insurance, we did not come across any Indian or foreign empirical study that statistically evaluated the life insurance sector of our country.

It was understood and found that though research on the insurance sector has not yet got popularized in India, it is encouraging to see that immense number of research papers have been published on the insurance sector in foreign countries. The non-life sector has, however, received more attention from the researchers. Most of them have evaluated the insurance sector using different parametric and non-parametric measures and determined the relative technical or cost efficiency scores. There are a few papers which made a cross-country comparison of the efficiency results. Therefore, one of the easily identifiable research gaps in the area of life-insurance is the lack of any analytical approach to determine the performance level of life insurers in India after rapid entry of private players following the deregulation of the sector. Another gap identified is that the literatures we came across highlighted the importance of CARAMELS model in evaluating the performance of an insurance industry and insurers. But uses of such models are not so obvious (which is corollary to the CAMELS model applied to the banking sector). The life insurance studies in recent past barely used non-parametric techniques which help to understand the efficiency in a better way. The use of dynamic panel approach was also not seen in any of the earlier literature.

Thus, this study may be among the unique studies in India that has evaluated the life insurance sector and the players in so much detail for so many years with the help of financial tools like-

ratios under CAMELS model and studied the efficiency of the companies using non-parametric method-Data Envelopment Analysis.

## **Chapter 3: Historical Development of Life Insurance Industry**

3.1 An Approach to Security

3.2 The beginning of Life Insurance Offices

3.3. Concept of Insurance in India

3.4. Progress during the Period 1901-1948

## 3.5. Life Insurance Business in India after Independence

### 3.1 An Approach to Security

The crude concept of Insurance dates back to the history of mankind. Human beings since time immortal strive to achieve and retain security. The urge for security was prominent in the primitive people as we see in the modern days. They tried to avert the evil consequences of fire, flood and loss of life by making some sort of sacrifice in order to gain security. Though, the term '**insurance**' was coined in recent part i.e. after the industrial era. The concept of insurance existed almost 6000 years ago.

On records the Biblical Story of Joseph during the famine in Egypt is cited as the first example of insurance plan. In interpretation of Parade's Dream, Joseph advised him to keep 1/5 (one-fifth) of the crop of each prosperous year for using it in the years of famine. Same kind of story has also been mentioned in the Islamic scripts with the name of Prophet Yusuf. Symbolically, these stories preaches the *insurance principle* of spreading risks and the wisdom of equipping in the prosperous present of unknown future.

With the growth of civilisation and international trade, *property insurance* gained priority to *life insurance*. Traces of securing the traders against debt in view of entragencies (like natural calamities or thefts) were found in the 'Babylonian History' around six thousand years ago. Around 2000 BC, the Babylonians and also Hindus were accustomed to the need of the contract of bottomry or respondentia as indicated by the provisions in the codes of Hammurabi and Manu, respectively. However, the *Babylonian Contract* and *Code of Hammurabi* applied mostly to caravans but *Manu Dharma Shastra* realised to both sea-borne and overland traffic.

Phoenicians were considered as the great sea traders of the period since they formed connecting risks between three continents, viz. Asia, Africa & Europe with their 5 or 6 coastal towns. About 900 BC,

the Greeks inherited the knowledge of bottomry from the Phoenicians with exchange of commerce culture.

### Roman Contribution to the Concept of Insurance/Security

The Romans developed a high state of social structure and in order to meet their social and commercial needs, complementary forms of insurance evolved. Archaeologists unearthed an inscription dated 136 AD, which portrayed “Collegia Tenutrium” for the lower classes. The purpose of the ‘Collegia’ organisation was to pay money for the funeral celebration which were very costly. Each member at the time of joining had to pay a sum equal to Rs. 25/- (then) and good wine up to six gallons approximately. Equal amount was paid every month thereafter.

In return, the members were promised to fund their burial expenses of Rs. 75/- of which Rs. 10/- was for distribution to the ‘funeral train’. Members of all ages paid the same fees but for a maximum period of fifty years. The funeral benefits were denied if regular monthly payments were not made or the member committed suicide. An intricate higher payment was charged as compensation to be benefited promised so that members can be prohibited from belonging to two or more such societies.

Domitius Ulpianus, jurist under Emperor Alexander Severus (222-235 AD) compiled an *Annuity Table* which should signify knowledge of some kind of mortgaging. Ulpianus also devised an *Annuity Table* though not as good as Ulpianus but was widely used for its simplicity. It was used by the ‘Tuscan Government’ as the official *Annuity Table* till nineteenth century.

### Contribution of the ‘Guilds’ (Guilds)

*Marine Insurance* was the only connection between the medieval and modern insurance and the ‘Roman Collegia’ and the ‘Guilds’. Traces of *mutual insurance* against losses from fire, ship-wreck, captivity and other courses can be traced at the beginning of the Guilds. From around the Twelfth Century came *non-mutual insurance of goods, marine insurance* and finally *life insurance*.

The Guilds were identified as the descendants of the ‘Roman Collegia’ spread throughout Europe in the middle ages. The societies formed carried out the chief functions of sickness and burial club. The sea societies cared for the family of a member even after his death. Thus the power of ‘Guilds’ became prominent in the Sixteenth Century.

In order to suppress the ‘Guilds’, Government of England formed ‘friendly societies’ in the 17th Century which took over the functions of the Guilds in connection with payment due to sickness or death.

In 1819, the *British Parliament* defined the ‘friendly societies’ - “no longer as societies of good fellowship, but as institutions”.

“Whereby, it is intended to provide, by contribution, on the *principle of mutual insurance* for the maintenance or assistance of the contributors thereto, their wives or children in sickness, infancy, advanced age, widowhood, or any other natural state or contingency, whereof the occurrence is susceptible of calculation by the way of average”.

### Advent of the Modern Concept of Insurance

In medieval period, a unique form of financial protection on the lives of captains of trading vessels was introduced as a process of *marine insurance*. This gives or essence of *life insurance* was considered as ‘reprehensible and illegal’. Ultimately, the economic forces prevailed and the Churches also recognised the need for *life insurance* and provided the grant of *life annuity* and often sold *life annuity* in order to raise money.

Industrial revolution brought various *social insurance* gradually became the responsibility of workers, employers and the State. Prudent men developed a sense of responsibility towards their dependants after their death. *Life Insurance* was developed as a voluntary measure. *Social Insurance* benefited the under privileged class whereas *Voluntary Insurance* benefited the upper and middle classes.

### First Life Policy

As on records, the *First Life Policy* is on the policy is on the life of *William Gybbons*, a citizen and a Salter of London, in to effect on the 18<sup>th</sup> June, 1583. The policy was bought by Sir Richard Martin, citizen and Alderman of London and it was underwritten by 16 individuals. The amount of the Policy was £ 383-6-8 and 12 month premium was 8% thereof, ie. £ 30-13-4.

In brief, the tent of the policy began with the translated Italian Phrase – “In the name of God, Amen” and continued “if it happens (as God defend) the said *William Gybbons* to die on disease out of this present world by any ways or means whatsoever before the full end of the said XII months be expired.” The writhing ended with a prayer phrase, “God send the said *William Gybbons* health and long life.”

But, *God* had some other plans. *William Gybbons* died on May 29, 1584, within one year from the issue date of the policy. Richard Martin claimed the benefits but it was disputed on the ground that the insured had survived 12 lunar months of 28 days each. However, the court judged that it was the intent of the policy to insure *Gybbons* life for the year and therefore order payment of the claim.

### Further Interesting Development in the Middle Ages

Coffee Houses came to be associated with particular areas of business rather than just a meeting place for communication between trader's from different parts of the world. The *Association of Marine Insurance* with Edward Lloyd's raised the name of a mere Coffee-House Keeper to the dignity of being synonymous with financial solvency.

By 1760, Lloyd became the main centre of individual underwriting for about that time a *Register for Shipping* was maintained. It was *biennially initially and later annually* by "A Society of Underwriters of Lloyd's Coffee-House".

### Tontines

The Co-operative provisions of the 'Guilds' during the earlier centuries hereby level any scientific bars. According to Walford's Handbook, *Tontine Annuities* is the first recorded description of *Annuities*. Berthold Holtzschuzer and George Obrecht pioneered the schemes of insurance on *Tontine Principle*, which though significant, received little appreciation from their contemporaries. In 1689, the first *State Tontine* made its appearance.

The principle of these annuities was very simple. A certain number of persons contributed a specified sum (without reference to age or sex) to a fund. At the expiry of each year, the interest on this fund was divided amongst the subscribers who were living and so on, from year to year, while the last survivor received the whole of the interest. The fascinating feature of the scheme was that the last survivor received an enormous sum in return of trifling contribution at entry. There is record of the case of a widow, who at the time of her death at the age of 96 years, enjoyed an income of 73,500 livers ie. over 3,000 £ - for her original subscription of 300 livers only.

The first *State Tontine* in England was floated in 1762. The interest of the Government in promoting *Tontines* was apparent as the subscribers only received the interest on the fund and with the death of the final annuitant went to the Exchequer. Various modifications were made by the private participants as and when required. In fact, this was a great contribution towards the

development of the concept of *life insurance* as this was the basis of mortality tables by modern life assurance companies. So, *Lorenzo Tonti*, is sometimes called as the "Father of Modern Life Assurance".

The very feeling of insecurity can be termed as the mother of the concept of insurance. The basic requirement of the science of *life insurance* is precise knowledge about the rate at which the members

of a group will die at a given age and from year to year. The past records of death are studied for this purpose with an assumption that 'history repeats itself'. The validity of these assumptions was demonstrated by experiment and has been formulated in the "Law of Large Numbers" which served as the basis of all applications of the branch of Mathematics, popularly known as "Theory of Probabilities".

It was the *Gaming Table* which led to the first important application of Mathematics to the determination of the *Law of Averages*. When Paris was receiving the interesting system by *Tonti* (1623-1662), the French Philosopher, Mathematician and Physicist, was attracted to the *Problems of Probability* as demonstrated by the Games of Chance using Cards and Dice to accumulate data. De Witt, Grand Pensionary or Head of the Dutch Parliament Republic, age of twenty eight, sought to apply the *Mathematical Principle of Probability* to the valuation of *life annuities*. In 1671, he presented a report on the subject to the *States General*, which was an important advancement over the calculations of Ulpiarus. But it was stacked in the archives for more than a century.

At the end of Fifteenth Century, frightful ravages had caused such alarm in England that to 'quiet public feeling', the Government of the day urgently thought it desirable to publish correct account of the progress of the pestilence. These was called the "Bills of Mortality". John Grunt compiled and published his work on these mortality records in 1661. This is probably the earliest example in economic arithmetic and the closest approximation to the data on which *life assurance* is founded. His finding regarding life expectancy though mere approximations, laid the foundation of the *Actuarial Science*.

Edmund Halley, the famous astronomer, presented before the Royal Society in 1693, his "Degrees of Mortality of Mankind" based on *vital statistics*, obtained from Breslau in Silesia, the only city in the world which, at that time, maintained record of *births and deaths* including the ages of its dead. The next contributor in this branch of research was Ibraham De Moiver. Other advances were from both England and Europe. Thomas Simpson, Antoin De Pracicux, James Dodson, Richard Price, Joshua Milne etc., were some scholars who were connected with the success of pioneer insurance companies and well known *Mortality Tables*. The *Actuarial Science* was developed to a great extent in the 19<sup>th</sup> Century. The most prominent turning point in the history of *life insurance* was the establishment of the *Institute of Actuaries* in 1848 in England.

### **3.2 The Beginning of Life Insurance Offices**

As on record, the first registered *Life Insurance Office* in England was “The Hand-in-Hand Society” in 1698. In 1698, “The Mercer’s Company” was established. In due course, life *insurance* began to be sold on an associated scale. A fixed number of person were bought and insured together by paying the same amount. In return the Master, promised to pay in the occasion of death, after a fixed probationary period, a certain sum on the satisfaction of certain conditions. The piprest being “The Society for Assurance of Widow and Orphans” founded in 1699. The membership of Hand-in-Hand was restricted to one hundred men whereas the membership of this society was limited to 2000 men.

However, the Old Amicable Society is recognised as the oldest registered *life insurance office* in the world. The society obtained a Royal Charter from Queen Anne authorising them to transact *life insurance* business from 25<sup>th</sup> March, 1706. In contrast to the contemporaries, Amicable Society provided ‘perpetual insurance’. All admitted members age was restricted upto forty years of age and showed equal premium regardless of age. The member’s good health and reputation were also checked before admission. Thus, this can be said as the beginning of the security of character and physical examination which has now become mandatory.

### Gambling Techniques on Life Insurance

Simultaneously, there were few specialized Insurance Companies which insured almost every conceivable title as a result thousands of citizens were made to invest their savings. The unscrupulous companies vanished with there ill–gotten gains like “South Sea Company”- its fall in 1720 led many citizens to insolvency.

As a result of this epidemic of gambling, around 100 insurance companies prospered by selling policies based on any event of public interest. To control the situation, the British Government enacted the *Gambling Act of 1774*, where *Life Insurance* was restricted only on life of the person and the insuring person should have an interest in the life or death of the person insured. Later, this concept was developed and now termed as ‘insurable interest’.

### Birth of Old Equitable

James Dodson, a Mathematician in London, applied for insurance with Amicable but he was denied as ineligible on account of age as he was 49 years and the permissible age limit being 45 years. So, he floated an organisation which would operate on a basis allowing an extension of insurance benefits to men of advanced age. He prepared for applying for a charter and raised a fund for that purpose which was subscribed to by 43 persons. Edward Rowe Mons assisted Dodson in these efforts. But the petition remained unheard. Dodson died but Mons agreed to take the lead and the first hearing of the petition

for the charter came off early in 1758. The petition was dismissed repeatedly. The promoters formed themselves into a voluntary partnership and carried out the scheme which they felt was practicable.

*Old Equitable* applied the actuarial basis for calculating premiums. Dodson used *London Bills of Mortality* as his basic data. The premiums charged were graded according to age ie. the policy holders paid in proportion to the risk involved, thus justifying the name 'Equitable'. Dr. Richard Price an outstanding actuary, highly commended *Equitable Society* in his classic work "Observations on Revisionary Payment", was associated with the society for many years. In 1774, his nephew, William Morgan was appointed as *Assistant Actuary* and one year later became *Actuary*. He held the post for over 50 years.

### Other Spheres of the Globe

The other countries lagged far behind England in organised form of *life insurance business* in France, the "Compagnie Royal D'Assurance Sur La Vie" was chartered by the King in 1787. The company was given a monopoly for 15 years but it ceased to exist in 1792 during the revolution. In the second decade of 19<sup>th</sup> Century, new companies were formed. The first *life insurance company* was established in 1806 and lasted for only a few years. Some local efforts were prominent during 1827-28. English Companies opened branches in German cities and established agencies in Netherland and Scandinavian countries. French Companies reached out in Belgium, Spain, Italy and Switzerland. Austria and Hungary did not establish their own companies until the middle of the 19<sup>th</sup> Century.

In United States *life insurance* began shortly before the War of Independence. The first company was established in 1759 which is now known as the Presbyterian Ministers' Fund. Canada and United States of America brought great and remarkable developments in the field of life insurance.

### **3.3 Concept of Insurance in India**

Insurance was practised in India in *Vedic Times*. The Sanskrit term 'Yogakshema' in *Rig Veda* meant *some kind of insurance* which was followed by the Aryans in India. *Manu* enjoined that a special charge be levied on goods carried from one town to another in return of providing safety to carriage till received by the consignee at destination. After few centuries, *Kautilya* also laid down several rules and regulations in his 'Artha Shastra'. The *contract of insurance* started as a part of *contract of carriage*.

During the *Moghul* period *insurance* took firm roots. There are even reference to the cover against war risks. Losses due to passage of royal troops through farms were compensated by the State as a gesture

of goodwill. The earliest known policy in English (1555) is expressed as “on the good ship *Santa Crux* from any part of India of Calicut into Lixborne”. Thus *marine insurance* was the first to develop in India also.

Some resemblance to a *life annuity* can be found in the practise of widows. While starting on a holy pilgrimage, the widows used to hand over their entire belongings to a rich neighbour on condition of being paid monthly allowance for life, thus resolving the purpose of getting insured. The ‘Sinni’ of *Satyapir* was a crude system of social insurance the offerings made to the duty by the affluent Hindu and Mohammedan religious people in Bengal were offered to the destitute from the community irrespective of religion they supported.

The Indian culture inculcates the joint family system which provided complete protection to all its family members. Education and marriage of children maintains of old and infirm members of the family, the well-being of widows of deceased family members were the responsibility of all the members of the joint family. This system resembled *self insurance* which can be compared to a scheme of mutual helpfulness, a small co-operative society, a miniature labour organization or a diminutive insurance society. The Hindu Society vested on this principal for thousands of years. The shadow of this banyan tree covered the members from all sufferings. The modern idea of *individualism* however ruined this system when few highly potential members began to believe that this system refrained then from growth and development. The caste system, village *panchayat*, temple and charitable institution all provided protection to a person and his dependents in case of any misfortune.

So the necessity for security was satisfied by this system of the society. In Northern India, the payments by the society or *Biradri* at time of death were generally made on the ‘*Bura Din*’ or ‘Evil Day’. The widow received her dues even before her husband’s dead body turned to ashes and the children got there share on ‘*Kriya Day*’ ie. not later than eleven or thirteen days from the death of their father. So the waiting period is much less then the claim settlement period by many modern insurance companies. Similar help was rendered on the occasion of marriage which was called “*Neota*” ceremony. The bride and the bride-groom received marriage gifts, clothes, ornaments and cash from the members of *Biradri*. Contribution was also made on the birth of child but there were not large or regular as in case of marriage or death.

This form of tradition continued to have a strong held on people for a prologue period. The concept of *Life Assurance* was not accepted as it conflicted with their spiritual and philosophical ideas ie. each individual providing for his dependents on his death. The influence of Islam too was against usury. During the 19<sup>th</sup> Century, the Indians were quite unaware of the advantages and utility of *insurance*, but they believed that to insure one’s life means to invite death.

In local language *life insurance* was often described as registration for death. The process of political and military dissolution of *Moghuls* that set in after *Aurangajeb's* regime was completed with the rise of East India Company.

Exposure of Indians to the full strength of British industrial and commercial systems led to fundamental change in their social, economic and commercial outlook. Indian Institutions in the fields like Banking and Insurance were initiated. Sir John Child, Governor of Bombay (now *Mumbai*) between 1681-1690, was instructed by the Court of Directors of East India Company "to constitute an insurance office on the (Bombay) island", but the fate of this suggestion is yet unknown. In 1793 few leading European merchants in Bombay established the earliest known insurance company named "Bombay Insurance Society".

The year 1818 is a remarkable year in the history of India. Central Maratha Power which had stopped the British Rule in entire India fell in this year. In Calcutta, a few Bengali Gentlemen owned and edited the first Indian Newspaper. And also the first British owned and edited monthly and weekly in Bengali. The notorious Regulation-III was introduced in this year which allowed the British to detain without trial, later used as a political weapon. This brought dominance of western thoughts over Indian ideas.

A Group of Europeans pioneered the establishment of the *Oriental Life Insurance Society* to provide relief to the widows and orphans of war struck Europeans. This venture was not very successful but was reformed in 1829 in 1833, the renewed company also fell into trouble and *Prince Dwarkanath Tagore* was entrusted to carry on the institution thinking him as the only solvent partner. He patiently took the burden and waited for the day when he could be relieved. In January 1834, the Government made up its mind to establish a *public insurance company*. A number of foreign insurance company entered the Indian market by this time. The Government initially compelled the existing companies to set up committees to review their individual affairs. *Dwarkanath Tagore* was also no exception as so "New Oriental Company" was formed. Mr. W. F. Ferguson became associated with this company but this company was only for the Englishmen. *Babu Matilal Seal* made efforts and prevailed to except at least select Indian lives. The company however was at turmoil and its business was turned over to the "Medical Invalid and General" (incorporated in UK in 1841) in the year of 1853. The later company too was amalgamated later to 'Albert' which 'Crashed' in 1869.

The contribution of *Prince Dwarkanath Tagore* in association with *Raja Ram Mohan Roy* needs no special mentors. He was news paper magnate and strong supporter of freedom of press, a promoter of English Education and original benefactor of the Calcutta Medical College and donor to various other benevolent and cultural institutions. He started factories, floated Banks, owned and built shipyards and carried on trade between East and West. With his business acumen he could for see the possibilities of

*life assurance* as a help to the ordinary households and to business men and was associated to “Laudable Societies for many years. In 1845, *Prince Dwarkanath Tagore* died on his second visit to England.

In 1834, when ‘Oriental’ was reformed two gentlemen, *Ramtanu Lahiri* and *Rustomjee Cowasji* was associated with it. *Rustomjee* was from Bombay but settled in Colcutta in 1821. He was a prominent figure in the business world but was associated with companies like Sun Life Office (1834), New Oriental (1835), Universal Life (1835), Laudable (1840) and Indian Laudable (1841). *Rustomjee* was the only Indian in the committee of live persons of the Union Insurance Company. This company issued policies covering river-risks only. In 1832, *Rustamjee Cowasji* and *Dwarkanath Tagore* situated a *non-life insurance* in Kolkata (Calcutta). None of the companies treated Indian lives at par to the Europeans. Indian lives were seldom granted insurance policies in lieu at heavy extra premium.

*Samachar Darpan*, dated May 9, 1835, provided some news on the Government proposal of *life insurance firm* and emphasized on the Government to publish the rules and regulations and the premium. It appeared that the Hon’ble Court of Directors of the East India Company objected to the Government of India undertaking *life assurance* as a part of its operations. The memorandum sent by various companies to the Government intended to state that such public institution could serve no beneficial purpose to the people at large. The existing companies like ‘Oriental’ were reformed and investigations by respective committees provided that those were as strong as before so many new institutes of the Government were shown needless. Therefore, the Government did not proceed further.

In 1926, file of the *Samachar Darpan*, a news item was there under the name ‘A New Insurance Office’, announcing that a company was going to be on the 1<sup>st</sup> day of August of that year. All the Directors were Europeans and most of the insurance business were proposed on marine business. Majority at the early attempts were in the province of Bengal due to its political and economic importance of that time.

The contribution of prominent social reformer, *Raja Ram Mohan Roy*, in the field of *life insurance* is also great. His revolt against the practise of ‘*sati*’ is known to everybody. He appealed through ‘*Sambad Kaumudi*’ in 1821 as under :-

“There has been a fund established by the laudable society called the *Civil and Military Widows’ Fund* for the purpose of supporting the children of the deceased, both of the civil and military services, but there is among Hindus no provision for the maintenance of poor widows ... .. To remedy this, if two or three respectable native gentlemen were to institute a *life insurance*, this would be most advantageous to people in narrow circumstances ... .. should some charitable persons be kind enough to establish such a society and be desirous to know how to proceed in this affair, we shall, by their

writing to the '*Sambad Kaumudi*' press, publish them as may be found most convenient". But as on record no concrete results could be traced.

### From Overseas

Amongst the British companies which came to India the prominent ones are the 'Medical, Invalid and General' in 1841 from London. The company absorbed the '*Agra Life*' in 1853 and the 'New Oriental'. The 'Universal Life Assurance Company', which was established in England in 1836 opened its Indian Branch in 1840 and operated successfully for a long period until it was taken over by the "North British" in may 1901. Insurance exceeding Rs. 10 (ten) cores were issued in India during this period.

Another English concept was 'New Colonial Life Assurance Company'. It was established in 1846 under the auspices of the 'Standard Life Assurance Company'. The prospectus declared its purpose as "Extending to the colonies of Great Britain and to India the full benefit of *Life Assurance*". It appointed agents with local boards which were first established in Calcutta, Bombay, Madras and Colombo. Later on, this Company was taken over by the 'Standard Life' and made valuable contribution to investigations into the mentality experience of assured lives in India. Eventually it ceased its operations in India in 1983.

The oldest *life policy* known to be issued in India is the one sold by the 'Royal Insurance' (commenced business in 1845) on the life of one *Cursetjee Furdoonjee* on 6<sup>th</sup> January, 1848. A reference to this policy was made by *Sir Byramjee Jeejeebhoy* on the Centenary Dinner of the 'Royal' in 1945. In the year 1853, the 'Liverpool and London and Globe Insurance Company' established in England in 1836, commenced business in India. Sir Charles Forbes was its first agent, succeeded by 'M/S Forbes, Forbes and Campbell'. It accepted only European lives and commenced insuring Indian lives only after 1929. This attempt was to oblige good agents of the company for the classes other than life business. The 'North British and Mercantile' was the next company to come to India with *fire insurance business* in 1861 and life "Insurance" in 1864. The 'London Assurance' started business in 1864 which principally insured European lives but closed down its life department when the Life Assurance Companies Act 1912, made submission of returns compulsory.

During the *1857 Mutiny*, almost more than a quarter of million pounds was paid by life assurance offices in respect of policies affected by persons whose lives were lost in turmoil.

The *Missionary Societies* being the pioneer, India experienced a random growth in the *mutual trusts and societies* to save the widows, orphans and destitute viz. the 'Christian Mutual of Meerut' in 1847, (later shifted to Lahore), the Bengal Christian Family Pension Fund in 1852, the 'Church Missionary

Society' at *Palayamcottah* in 1834, *Tinnevelly Diocessan Council* in 1925 (later registered under Indian Companies Act 1949 in the name of *Tinnevelly Diocessan Mutual Insurance Company Ltd*).

By 1870, there were nearly fifteen companies working in India, of which seven were established in India and eight foreign companies with had affairs in UK, till then the European lives and their descendants born in India were mainly insured. Few selected Indian lives were insured but at a very high premium. The first attempt towards indiscrimination in terms of caste or creed and treating Indian lives at par to Europeans was the beginning of '*Indian Life Assurance*'.

The period from establishment of oriental in 1818 to 1870, about half-a-century, was the period to propagate life insurance in India according to the lines of contemporary English model. England also experienced a remarkable growth during this period. Many companies were set up to transact *life assurance*. The promoters often offices, advertised rigorously, collected large amounts and in due course disappeared.

This abrupt rise led to mergers and takeovers and many companies ceased to exist for various reasons. Bad managements and bad lives selection became a regular practise by these companies. This resulted in the extensive liquidation of companies even few very well known ones could not escape. '*Albert Life Assurance Company*', in August 1869 went to liquidation and the whole world was astonished. This company started in 1838 and had absorbed at least another 26 other life offices during its life span. The reason for liquidation was long time deficiency in its funds on account of the reckless manner in which the office had been managed.

A sealing inventory action probed that the reason for failure was mainly because of large sums were paid away for acquiring the business at the offices transferred to the company. The company had opened a gorgeous office at Kolkata in 1860 and an agent sold *life assurance* and *annuities* to anybody who asked for it. The '*Medical, Invalid and General*' was amalgamated with '*Albert*' and this powerful combination opened branches at Bombay, Madras and penetrated throughout undivided India. It received one-third of its premium income from India. The amount was remitted to England until the Calcutta directors refused to continue remittances. This created financial stringency at their head office. After the Board was confronted by a Committee of Indian Policy Holders, the Directors instituted an independent actuarial investigation. The report made them realizes to call for a liquidator. '*Albert*' brought down 26 life offices which it had absorbed sending numerous families to misery and ruin.

The '*European*', a close rival of '*Albert*', similarly impoverished various policy holders in England and India when it foundered in 1870. *Missionaries Societies* too, had a difficult existence. The reason for such massive failures owed to indifferent administration and defalcation of funds. These failures led to passing of the '*Life Insurance Companies Act*' in 1870 by the British Parliament.

In 1853, the British Parliament had appointed a *select committee* to report on assurances, mainly due to the social consciousness aroused by the press. However, the recommendation of this committee remained in shelves at that time. The Act of 1870 and further Act passed in 1872, made it compulsory for the new company to deposit £ 20,000 with the Government and to keep separate account of life business etc. The Act tried to reform the industry and inject good practices to make it more serviceable to the society and nation.

The Government of India, keen followers of the progress of *life assurance* in England, proposed to start an insurance company for insuring the Indian lives. Government spokesman declined the proposal stating that the Government did not have adequate information about mortality of Indian lives and it was difficult to find the correct age of Indians. It was also stated that the majority of Indians did not want insurance, so only a few would join such a scheme. As a result, the venture will not be profitable due to high management cost. The whole sequence would lead to discredit to the Government.

A proposal initiating a system of life insurance by the Government was made by Sir Richard Temple, Finance Minister of Government of India. He sought local opinion and practical suggestion for Mr. D. R. Lyall, the Hon'ble District Magistrate E. J. Duda, who in turn entrusted *Sri Dinanath Sen*, Headmaster of *Ducca Normal School*, to draft a detailed memorandum, depending on a vivid observation and suffering of the local people, including the affluent but who clearly need life insurance policies.

### First Indian Company for Indian Lives

The *Silver Jubilee Souvenir* brought out by Indian Life Assurance Offices Association stated that – ‘*notwithstanding*’, the opinion of the Government of India. Some influential citizens of Bombay decided to form Indian companies themselves, so that the controlling of the business would remain in their own hands instead of the speculative promoters in England. They also intended to accept Indian lives freely on the same rate as the European lives in India.

On 3<sup>rd</sup> December, 1870, seven earnest men of Bombay with just for initial expenses gave shape to a plan of offering insurance to the public without the risk of ruin and the Bombay mutual life insurance society came into existence.

The First Articles of the Society gave recognition to the high ideals and selfless ideas of the promoters, specify that :-

“All the affairs and every transaction of the society must be opened to the most minute inspection of every member. Each member may take part in the management. Business is to be conducted with strictest economy. All profits that may accrue must be awarded exclusively to those whose contributions have caused them and to each in due proportion to his contribution”.

In 1938, in his book, ‘Some aspect of Life Assurance’, *Shri N.G. Samadder* wrote –

“... the first Indian company known as the Bombay company mutual open to the public irrespective of colour and creed was founded in Bombay in 1871”.

*Dr. R. M. Roy*, in his work, ‘Life Assurance in India (1940)’, stated that –

“... the year stands out as a landmark in the history of Indian Insurance, separating early period of pioneering attempts of life assurance from the subsequent period of steady development.”

The *Insurance and Banking Souvenir*, published in 1954, read as –

“The first life policy in India was issued perhaps 150 years ago and that too on the life of some European. The mass illiteracy on the one hand and poverty on the other coupled with the anti insurance of Muslims remained out standing impediment to the growth of insurance business in the country ... with the flotation insurance companies to which an impetus was given by the dejection and disappointment caused by the Political Reforms of 1892 which fell for short of peoples aspiration”.

*Prof. O. P. Bajpai* feels that –

“... reaction to this sad state of affairs was seen in Bombay. The people their decided to introduce principle of co-operation in the organization of insurance business and also it was decided that the conditions of granting insurance business also it was decided that the conditions of granting insurance protection should be some as were applicable to Europeans. This desire culminated in the established of Bombay mutual life assurance society.”

*Shri B. N. Sahasrabuddhi* (1947) emphasised that – “even the foreign insurance company had to admit Indian lives without any discrimination.”

*Dr. A.N. Agarwala*, in his famous book “Insurance in India”, mentioned that –

“... the last three decades of 19<sup>th</sup> Century saw the Bombay Presidency wresting initiative from the Madras Presidency in this direction. The powerful Bombay Mutual (1871), Oriental (1824), Empire of India (1897), all stunted clearing this period.” In the meantime, many small society funds and provident societies (which worked like pension funds) had mushroomed in the insurance sector. Till the end of nineteenth century, it was mainly the overseas companies that had invested in the insurance activities

in the country. Their main intention was to protect the needs of the European community; Indian lives were neglected by those insurers. In fact, Indian lives were not insured. However, with the efforts of people like Babu Muttylal Seal, Indian lives started to be insured but at a 15-20% extra premium charged by the insurer compared to European lives as they were considered to be riskier (Bedi and Singh, 2011).

Thus the Era of Indian Life Insurance began. A list of companies in chronological order is enlisted below :-

**Table: 3.1 : Companies Originated in India**

<b>Established on</b>	<b>Name of the Company/Fund</b>	<b>Exit</b>
1818	Oriental Life Assurance Co.	1834
1823	Bombay Life Assurance Co.	1956
1829	Madras Equitable	1921
1833	Agra Fund	
1833	Madras Widows & Orphans Fund	1956
1847	Christian Mutual	1956
1849	Tinnevelley	1956
1852	Bengal Christian Family Pension Fund	

**Table: 3.2: Foreign Companies**

<b>Established on</b>	<b>Name of the Company/Fund</b>	<b>Exit</b>
1835	Family Endowment	1861
1840	Universal Life Assurance Co.	1901
1846	Colonial Life	1866
1846	Standard Life Assurance	1938
1849	Medical, Invalid and General	1860

N.K.	European Life	1869
N.K.	Indian Laudable	1865
1853	Liverpool, London and Globe	1939
1860	Albert Life	1869
1860	Royal Insurance	
1864	North British and Mercantile	1864
1864	London Assurance Corp.	1973

### 3.4. Progress during the Period 1901-1948

In the early part of twentieth century, the nationalist movement was gaining momentum. There was a cry for Swadeshi movement against the British. This situation gave rise to many Indian enterprises establishing insurance companies during 1905-07. The United India in Madras, National Indian and National Insurance in Calcutta and the Co-operative Assurance at Lahore were established in 1906. The Indian Mercantile (in 1913), General Assurance and Swadeshi Life (renamed to Bombay Life in 1913) were some of the 'other companies that were established during the initial years of the last century.

With the brisk increase in insurance companies, there was an immediate requirement of regulatory environment for monitoring those businesses. Thereby, the Indian Government took various steps by passing different Insurance Laws and Acts time and again. The first legislation to be passed was the Life Insurance Companies Act, 1912 which forced insurance companies to work on good actuarial principles instead of being speculative in their business transactions. So, it required the insurance companies to have their premium rate tables and periodical valuations certified by an actuary. But the Act contained regulations that discriminated Indian and foreign insurers in different ways like requirement to make deposits with the Indian government. So, it created a room for discontentment among the Indian insurers. In the same year, the Provident Fund Act was also passed.

The other regulations that were passed included the Provident Insurance Societies Act, 1922, the Indian Insurance Companies Act, 1928 - it empowered the government to gather required information

about life and non-life insurance organizations operating in the country, and also the Insurance Act, 1938. With the rise of the freedom struggle movement and the call for Swadeshi, till 1938, it was seen that there was a surge not only in the number of insurance businesses, which increased from 44 to 176, but also the turnover which jumped from Rs 22.44 crore in 1914 to Rs 298 crore ([www.bimabazaar.com](http://www.bimabazaar.com)). However, things were not all fine. Later it was realized that many of these businesses showed signs of malpractices and failures which were reflected in lapsed policies (as per actuarial reports), doubtful valuation, unhealthy competition and hostile competition (Sadhak, 2009).

At this point, the Insurance Act 1938 was passed which became the first legislation to be applicable for both life and non-life form of insurance business. The inclusion of stringent measures in the Act with regard to registration of companies, investment of securities, periodical valuation, payment of initial deposits, licensing of agents, appointment of directors and submission of accounts resulted in weeding out of the weaker players and a fall in the speculative practices. However, some weaknesses still existed and it was indirectly mentioned by the Planning Committee. The Committee gave its opinion in 1946 saying, "Insurance even today is not looked upon in India, as a public utility service. It should extend to and embrace all forms of risk to which an individual's life, business, property etc. may be exposed and which may, therefore, be owned and conducted very closely by the government in the public interest."

In the early days of twentieth century, the nationalist movement was gaining momentum. There was a cry for Swadeshi movement against the British. This atmosphere gave rise to many Indian enterprises establishing insurance companies during 1905-07. The United India in Madras, National Indian and National Insurance in Calcutta and the Co-operative Assurance at Lahore were established in 1906. The Indian Mercantile (in 1913), General Assurance and Swadeshi Life (renamed to Bombay Life in 1913) were some of the 'other companies that were established during the initial years of the last century.

With the rapid increase in number of insurance companies, there was an immediate need to have a regulatory environment for monitoring those businesses. Since then, the Indian Government took various steps by passing different Insurance Laws and Acts from time to time. The first legislation to be passed was the Life Insurance Companies Act, 1912 which forced insurance companies to work on sound actuarial principles instead of being speculative in their business transactions. In other words, it required the insurance companies to have their premium rate tables and periodical valuations certified by an actuary. However, since the Act contained regulations that

discriminated Indian and foreign insurers in different ways like requirement to make deposits with the Indian Government, it created a bone of discontentment among the Indian insurers. In the same year, the Provident Fund Act was also passed.

Following this, the other regulations that were passed included the Provident Insurance Societies Act, 1922, the Indian Insurance Companies Act, 1928 (which empowered the government to gather required information about life and non-life insurance organizations operating in the country), and the Insurance Act, 1938. During this period till 1938, with the up-rise of the freedom struggle movement and the call for Swadeshi, it was seen that there was a spurt not only in the number of businesses (which increased from 44 to 176) but also the quantum of business which jumped from Rs 22.44 crore in 1914 to Rs 298 crore (<http://www.bimabazaar.com/>). However, things were not all rosy. It was noticed that many of these businesses showed signs of malpractices and failures which were reflected in lapsed policies, doubtful valuation, unhealthy competition and hostile competition (Sadhak, 2009). As a result, the Insurance Act was passed in 1938 which became the first legislation to be applicable for both life and non-life form of insurance business.

The incorporation of stringent measures in the Act with regard to registration of companies, investment of securities, payment of initial deposits, licensing of agents, periodical valuation, appointment of directors and submission of accounts led to the weeding out of the weaker players and a fall in the speculative practices that they adhered to so long. However, certain weaknesses still continued to exist and it was indirectly mentioned by the Planning Committee when it gave its opinion way back in 1946 saying, “Insurance even today is not looked upon in India, as a public utility service. It should extend to and embrace all forms of risk to which an individual’s life, business, property etc. May be exposed and which may, therefore, be owned and conducted very closely by the government in the public interest.”

The progress of the Life Insurance Industry during the period 1930 to 1948 has been highlighted in Table 3.3 given below:

**Table: 3.3: Life Insurance business in India during 1930 to 1948**

Sl. No.	1930	1940	1945	1948
<b>Policies in Force (in lakhs)</b>				
Indian	5.13	13.71	23.76	27.91
Non-Indian	2.20	1.81	2.61	2.34
Outside India	0.14	0.75	0.77	2.02
Total	7.47	16.27	27.14	32.27
<b>Total Business in Force (Rs. in crore)</b>				
Indian	84.89	225.51	459.43	566.38
Non-Indian	69.76	60.12	91.85	101.08
Outside India	3.77	18.40	21.79	45.30

Total	158.42	304.03	573.07	712.76
Life Fund (Rs. in crore)	20.53	62.41	107.4	150.39

Source: Adapted from Sadhak (2009)

The above table clearly depicts the dominance of Indian insurers in the life insurance business of the country. In terms of number of policies, almost 70% were issued by Indian insurers which increased to 87% by 1948. Similar was the trend in respect to total business generated. In 1930 it was 53.5%, the Indian insurers increased their share in the total business to around 80% by 1948. Appendix I gives a detailed view on the year wise new business and total business in force from the year 1914 to 1969-70.

Appendix II depicts the rate of dividend paid by the Indian Life Insurance Firms between 1900-1910.

Appendix III enumerates the ranking of the Indian firms based on the dividends paid.

Appendix IV states the rate of dividend paid by the Indian Life Assurance Companies during 1911-1920.

Appendix V shows the rank of the life insurers based on rate of dividend paid during the twenty years period i.e. 1911-1920.

### 3.5 Life Insurance Business in India after Independence

The concept of nationalising insurance business in India emerged from a document written by Mr. H.D.Malaviya (1955) called “Insurance Business in India” on behalf of the Indian National Congress. The author also justified the call for nationalization on mainly the following four grounds:

(a) He argued insurance to be a “cooperative enterprise” under the socialist form of government and therefore was more suited for the government to be in business.

(b) He claimed the Indian insurers to be excessively expensive. It depicts that in India, on an average more than 27% of the premium income was used to meet operating expenses, in comparison to only around 16.5% for USA and 13.9% for UK.

**TABLE NO. 3.4: Expense Ratio in Life Insurance Business (in%)**

Year	India	USA	UK
1950	28.9	16.8	13.0
1951	27.2	16.5	14.1
1952	27.1	16.7	14.2
1953	27.3	17.0	14.5

Source: Sinha (2005)

(c) Non-improvement of services either to the public or to the policyholders.

(d) Lapse ratio of the companies was very high.

It was also noted that the insurance businesses were not performing as desired. It was observed by the policy-makers that the needs of the poor and neglected classes were ignored. The insurance business mainly targeted the richer sections of the society and operated only from the metropolitan areas. The performance and policies of the 245 private enterprises (154 Indian insurers, 16 Non-Indian insurers and 75 Provident Societies) that were in life insurance business were against the spirit of insurance. The spread of insurance was also not up to the mark. The per capita insurance in India was only Rs. 1.50 during the early 1900s which increased to Rs. 8 in 1944 and Rs. 25 in 1955 (compared to an average of Rs. 2000 for USA and Rs. 1300 for Canada). In brief, some of the shortcomings that were observed in the overall industry performance were as follows:

1. Low penetration of insurance.
2. Existence of unsound investment practices which resulted in investment in companies having minimum credibility.
3. Grant of loans not backed by adequate security.
4. Siphoning away of funds to be invested in poor performing companies.
5. Growing interest towards investments in risky assets like shares while conducting income generation activities.
6. Indulgence of agents in unfair practices.
7. Poor track record of the industry during the previous three decades: 25 companies went into liquidation between 1945 and 1955, 75 companies declared no bonuses in 1953-54 and the with-profit policies became without profit policies which ruined faith of the public on these businesses.
8. A huge percentage of business lapses between 1951 and 1954.

Appendix VI depicts the results of valuation done by the Actuary as per the Actuary report 1921 where it is evident most of the companies have a deficit valuation. This scenario clearly indicates the terrible condition of Indian Life Assurance firms during the period

**TABLE NO. 3.5 Size of Business and Lapse Ratio of the “Big Eleven” and the “Middle Eleven” Insurance Companies**

Insurer	New life business written in 1951 (Rs. crore)	% of business in 1951 Lapsing by 1954
<b>The Big Eleven</b>		

Oriental	19.6	35
New India	15.2	38
Hindustan Cooperative	15.1	47
National Insurance	6.81	51
Metropolitan	7.5	57
Bombay Mutual	3.9	32
Lakshmi	3.0	41
Empire Of India	3.7	42
Bharat	3.9	42 *
New Asiatic	2.8	43
United India	2.7	30
<b>The Middle Eleven</b>		
General Assurance	1.7	46
National Indian Life	2.7	67
Western Life	2.5	37
Bombay Life	2.1	55
Ruby General	2.0	45
Industrial And Prudential	1.8	25
Asian	1.8	47
Andhra	2.1	43
Jupiter General	1.0	56
Warden **	1.1	64
Calcutta Insurance	1.0	64

Source: Sinha (2005)

\*1954 lapse figure is not added as information not available..

\*\*Figure for 1949, 1950 and 1951 not available. The figure pertains to 1948.

The above table shows that a huge percentage of the business of 1951 lapsed within three years. On an average, in the “Big Eleven Group”, more than 40% of the business lapsed. In some of the cases, it crossed even 50%. The situation for the “Middle Eleven Group” was even worse. On an average, more than 50% of the business lapsed by the end of third year. In many of the cases, lapse ratio touched almost 70%.

9. The huge corpus of funds was channelized for the business’ self- interest and not towards the country’s economic development.

10. The focus of the of the insurance companies was mainly towards insuring in the urban areas and amongst the high-income group who already had some security and financial strength.

11. Insensible business practices.

12. Moreover a few instances like siphoning away funds to the insurers’ parent countries, mis-utilisation of funds and insolvency position of a number of businesses compelled the government to think afresh about the life insurance industry.

Under these circumstances, it was realized that a change had to be ushered so as to restore confidence of the public on the insurance business. Consequently, on the night of January 19, 1956, the Union Finance Minister, C.D. Deshmukh, announced the nationalisation of life insurance business in the following words, “The Nationalisation of Life Insurance will be another mile stone on the road our country has chosen in order to reach its goal of a socialistic pattern of society. In the implementation of the Second Five Year Plan, it is found to give material assistance into the lives of millions in the rural areas. It will introduce a new sense of awareness of building for the future in the spirit of calm confidence which insurance can alone give. It is a measure conceived in a genuine spirit of service to the people. It will be for the people to respond, confound the doubters and make it a resounding success” (Source: <http://geevee-rajahmundry.blogspot.in/2011/01/9th-january-protecf-nationalised.html>).

Consequently, the management of all the life insurance businesses was taken over by the Central Government through the Life Insurance (Emergency Provisions) Ordinance, 1956. The Bill to nationalize the life insurance business was introduced in Parliament in February, 1956 which later became an Act (now known as the Life Insurance Corporation Act, 1956) and the LIC (Life Insurance Corporation of India) was formed on 01st September, 1956 with a capital contribution of Rs. 5 crores from Government of India. Thus, the present behemoth Life Insurance Corporation was formed.

For further insight on the status of the life insurance firms during the period appendix I to appendix V.

### Conclusion

The above discussions enlighten us to know that the life insurance industry is not a new one in India. The commencement of the business was made by the foreign business groups mainly for the purpose of insuring businesses, goods etc. After the life insurance business was started by the foreign houses, it was realized that they practiced discrimination in their businesses. So, with increase in force of the nationalist movement and the call for Swadeshi, large number of Indian business houses also started the life insurance business. There was a jump in the quantum of business on one hand and an increase in the illegal and fraudulent practices on the other. With a view to develop sound business practices, several Acts were passed from time to time in the pre-Independence period. After the Indian independence, during the early years of the 1950s, when several lacunae were observed in the business practices of the life insurers, there was a call for nationalization of the life insurance industry which took effect in 1956 with the formation of LIC.

# **Chapter 4: Life Insurance Industry in India:**

## **Post Nationalisation**

4.1 Growth of Life Insurance Corporation of India

4.2 Insurance Sector Deregulation

4.3 Formation of IRDA

4.4 Role of IRDA

4.5 Liquidity Structure of LICI

#### 4.1 Growth of Life Insurance Corporation of India

After the nationalization of life insurance sector, Life Insurance Corporation of India (LIC) worked as a monopoly in the industry. The following paragraphs discuss about the various performance aspect of the only public sector giant since its formation in 1956.

##### Business in force

It can be undoubtedly believed that LIC has contributed immensely to the growth of the nation. This may be contributed to the premium it has generated over the years. The table below depicts the performance of LIC in terms of total life insurance business which includes the quantum of new business.

**Table: 4.1. Business in Force of LIC (Rs. in Crores)**

YEAR	INDIVIDUAL	GROUP
1957	1476.52	5.29
1969-70	6348.09	77.17
1979-80	19242.55	6137.46
1989-90	94823.22	23049.64
1999-2000	536450.82	76384.53

*Source: Tripathy and Pal(2005)*

It is evident that during the period from 1957 to 2000 the performance of LIC is praiseworthy. The total business in force of the public sector giant has escalated at a very fast pace for both individual and group insurance business. In the case of individual, it increased from Rs. 1476 crores in 1957 to Rs. 19242.55 crores in 1979-80. From 1980 to 2000, the total business in case of individual category increased from Rs.95000 crores in 1989-90 to Rs. 536450 crores in 1999-2000. In the case of group insurance business also an icresing trend is evident. From Rs.5.29 crores business in 1957, it increased to more than Rs.75000 crores by 1999-2000. It is prominent from the above table that LIC grew enormously during the post- nationalisation period.

The table below relates to the new business generated by LIC after the New Economic Policy (NEP) was approved by the Indian government in 1991. It is evident from the table below that the new

individual business premium increased more than double during the period 1993-94 to 1999-2000. In terms of number of policies sold, there was an increase by 60% during the same period. So it may be inferred that the premium per policy had increased during the period. In terms of sum assured, there was an increase from Rs. 41813 crores in 1993-94 to Rs. 91214 crores in 1999-2000, an increase of 120%.

**Table 4.2: New Business Procured in India (Individual Assurance)**

<b>Year</b>	<b>Annual Premium (Rs. In crores)</b>	<b>No. of Policies (in lakhs)</b>	<b>Sum Assured (Rs. in crores)</b>
1993-94	2507.73	107.25	41813.83
1994-95	2533.90	108.74	55228.50
1995-96	2813.63	110.20	51815.54
1996-97	3345.39	122.68	56740.50
1997-98	3841.12	133.11	63617.69
1998-99	4863.41	148.43	75316.28
1999-2000	6008.28	169.76	91214.25

Source: Bawa (2007)

### Life Insurance Fund

The performance of any life insurance company can be judged by the Life Insurance Fund it has generated. Life insurance fund means the corpus fund lying with the life insurer using which investments are made in different avenues to generate income and also loans are disbursed for various purposes. Table below reflects the growth in Life Insurance Fund during the period 1957-58 to 1999-2000.

**Table 4.3: Life Insurance Fund of LIC**

<b>YEAR</b>	<b>LIFE INSURANCE FUND (in Crores)</b>
1957-58	447.81
1963-64	808.37
1966-67	1123.90
1969-70	1611.03
1974-75	3033.79
1979-80	5818.09
1984-85	11191.09

1987-88	16631.84
1990-91	28400.97
1992-93	40998.29
1993-94	49665.52
1994-95	59978.90
1995-96	72780.06
1996-97	181759.96
1997-98	105832.89
1998-99	127389.06
1999-2000	154043.73

*Source: Sadhak (2009) Adapted*

The above table reflects that huge corpus was lying with LIC in the aforementioned years. In 1957-58, it was only Rs.447 crores which increased to Rs.49665 in 1993-94. Further, it increased to Rs. 154043 crores at the end of 1999-2000. Hence, LIC efficiently performed its' job in generation of premium income and investment which led to creation of such a huge corpus fund. It should be noted that after the economic reforms took place in 1991, the corpus of the only public sector giant almost quadrupled between 1990-91 and 1999-2000.

### Rural Business

Prior to nationalization of the life insurance sector, one of the major deficiencies in the operation of the then life insurers and the provident societies were that they neglected the rural areas. To change this situation, one of the objectives that was set for LIC was to draw its focus towards the rural sector and increase the insurance spread to all corners of the country.

Table below gives information about the progress of LIC and depicts the extent to which it has been able to meet its social obligatory objectives.

<b>Year</b>	<b>% of Policies</b>	<b>% of Sum Assured</b>
1969-70	33.00	24.54
1974-75	31.85	26.37
1979-80	28.20	22.09
1984-85	35.26	29.20

1989-90	41.23	34.33
1993-94	45.3	39.9
1994-95	45.1	39.1
1995-96	47.7	41.0
1996-97	49.1	42.80
1997-98	51.0	43.3
1998-99	54.7	47.0
1999-2000	57.5	48.7

**Table 4.4: Rural Business of LIC**

Source: Bawa (2007) and [www.pib.nic.in](http://www.pib.nic.in)

In terms of percentage of policies sold in the rural areas, a continuously increasing trend is observed. From 33% in 1969-70, it has increased to 45% in 1994-1995 and further went up to 57.5% at the end of the last century. In proportion to sum assured also, there was a tremendous increase during the same period. In 1969-70, only 25% of the total sum assured was from policies sold in the rural region which improved slightly over the years. In 1989-90, it increased to 34% which increased further to almost 49% by the end of 1999-2000. Thus, the commendable performance of LIC has justified one of the prime causes behind nationalization of the industry in 1956. The rural-oriented focus of LIC is evident from the supporting data. Despite LICs overwhelmed performance for 44 years since its formation, even today, nearly 80% of the country's population remains uninsured. At the national level also, our country is highly under-penetrated compared to those of the developed as well as the other developing nation of the world. This paves the way for the potential insurance companies to grow their market in India.

#### Investments made by LIC

LIC has also made huge investment for the development of the nation and the public sector of the country. The following table gives details about the investment by LIC in the public and other sectors

**Table 4.5: Investments made by LIC**

As on	Amount (in Rs. crores)	Percentage Investment		
		Public Sector	Cooperative	Private
31.12.57	329.75	77.3	NIL	22.7
31.12.63	678.81	76.8	3.3	19.4
31.3.70	1528.66	73.6	9.5	16.5
31.3.76	3134.64	76.3	11.8	11.9
31.3.80	5747.51	63.4	9.7	12.5
31.3.84	9613.74	79.3	10.2	10.5

31.3.90	20503.74	79.8	6.5	13.7
31.3.94	46560.63	82.1	3.9	14.0
31.3.95	56182.44	82.9	3.3	13.8
31.3.97	82665.17	84.58	2.49	12.93
31.3.2000	139032.15	84.2	1.5	14.3

*Source: Mishra and Mishra (2008)*

Above table highlights the huge investment that LIC has been making over the years. In 1957, the investment amount was Rs. 329.75 crores and more than 75% of the investment was in public sector. The amount has increased in 31.3.70 which was Rs.1528.66 crores. It further increased to Rs.5747.51 crores on 31.3.80. But after the economic liberalization in 1991, the investment scenario gained momentum. It shot up to Rs.46560.63 crores on 31.3.94 and further increased to Rs.139032.15 crores at the end of 1999-2000.

A detailed analysis at the percentage of investment in the public and private sector reveals that the focus of investment was heavily skewed towards the public sector. From 1957 to 1976, the investment in the public sector was around 75% which increased to around 80% in 31.3.90. The situation aggravated further and percentage investment in the public sector escalated to 84% on 31.3.2000.

## **4.2 Deregulation of Insurance Sector**

The storm of economic and financial reforms and the measures taken by the Indian Government since 1991 has shaped the present life insurance industry. With the initiation of New Economic Policy (NEP) in 1991 and commencement of reforms in the banking sector and the capital market, the Government of India identified the need to bring structural changes in the insurance industry as well. In early 1990s it was realised that the growth of the economy could not be sustained if the insurance industry remained entirely state-controlled. So, there was a call for appropriate regulatory measures to end the state monopoly (C.S.Rao, 2006). Besides, opening up of the insurance market was one of the objectives of the Uruguay Round Negotiations conducted under the patronage of GATT.

### Gaps in the Industry Performance before Deregulation

The Government of India initiated the change process because of the following weaknesses found in the sector:

- Poor insurance penetration and density levels throughout the country in both life and non-life insurance
- Lack of competitiveness in the industry
- Inadequate mobilization of long-term savings
- A large gap in pension coverage of the Indians
- Inadequate response to customers' needs
- Lack of innovation in distribution channels
- Excessive policy lapses
- Poor quality of work culture
- Poor pace of technology up-gradation.

#### Malhotra Committee and its Recommendations

In April 1993, the first leap towards reforms in the insurance sector was initiated. The Government appointed an eight-member Committee for bringing reforms in the Insurance Sector of India (known as the Malhotra Committee) headed by the former Finance Secretary and RBI Governor, R.N. Malhotra. It was constituted to assess the Indian Insurance Industry and recommend its future path. The prime objective of this Committee was to complement the reforms of overall financial sector of India. The reforms were aimed at "creating a more efficient and competitive financial system suitable for the requirements of the economy keeping in mind the structural changes currently underway and recognizing that insurance is an important part of the overall financial system where it was necessary to address the need for similar reforms...". In a nutshell, the Committee was given the responsibility to:

- Examine the structure and existing regulation of the insurance industry,
- Assess its strengths and weaknesses so that it could help in not only providing high quality services to the public but also serve as an effective instrument for mobilization of financial resources for development,
- Review of the then existing structure of regulation and supervision of insurance sector, and

- Suggest reforms for strengthening and modernizing regulatory system in tune with the changing economic environment.

In 1994, the Committee submitted its report in which highlighted the following three major recommendations:

- (a) To offer autonomy to the insurance service providers
- (b) To open the industry to private players and
- (c) To form an independent regulatory authority in order to ensure a level- playing ground to the private players.

The other key suggestions covered the following points: (Adapted from [www.indiacore.com/insurance.html](http://www.indiacore.com/insurance.html))

#### 1) Structure

- i. The Indian insurance companies should be formed and registered under the Companies Act, 1956
- ii. Government's stake in the insurance companies was required to be brought down to 50%.
- iii. Government should take over the holdings of GIC and its subsidiaries so that they can act as independent corporations.
- iv. All the insurance companies should be given greater freedom to operate.
- v. The aggregate holdings of equity shares by a foreign company, either by itself or through its subsidiary companies or its nominees should not exceed 26% paid- up capital of the Indian insurance company. In other words, upto 26% foreign direct investment only was suggested by the Committee.

#### 2) Competition

- i. Private companies willing to enter the industry were required to have a minimum paid-up capital of Rs.1 billion.
- ii. The required minimum paid-up capital for carrying out the re-insurance business was Rs. 2 billion.
- iii. A single company should not deal in both life and non-life insurance. In other words, they were allowed to operate either life or general insurance business.
- iv. Foreign companies could be allowed to enter the industry, but only through collaboration with domestic players.

- v. Postal Life Insurance should be allowed to operate in the rural market.
- vi. Only one State Level Life Insurance Company should be allowed to operate in each state.

### 3) Regulatory Body

- i. The Insurance Act should be changed.
- ii. An Insurance Regulatory body should be set up.
- iii. The Controller of Insurance (then a part of the Finance Ministry) should be made independent.

### 4) Investments

- i. The mandatory investments in government securities by LIC out of its Life Fund were to be reduced from 75% to 50%.
- ii. GIC and its subsidiaries should not hold more than 5% in any company.

### 5) Customer Service

- i. LIC should pay interest on delays in payments beyond 30 days.
- ii. Insurance companies should be encouraged to set up unit linked pension plans to give them higher returns.
- iii. Upgradation of technology and computerization of operations was proposed to be carried out in the insurance industry
- iv. The industry should be opened up to competition which would lead to an increase in the coverage of insurance.

Few other important proposals included the following:

- i. Improving the commission structure for agents so that they procure business from the rural areas.
- ii. Developing insurance plans for the economically backward sections of the society.
- iii. Focusing on sale of life insurance policies to the rural areas and the social sector of the society.
- iv. Creating the provision for selling life insurance policies through co-operative societies.

(Source:[http://lawcommissionofindia.nic.in/consult\\_papers/insurance%201-27.pdf](http://lawcommissionofindia.nic.in/consult_papers/insurance%201-27.pdf))

### **4.3 Formation of IRDA**

In the month of September of the year 1996, the government issued an executive order to establish an interim regulatory authority and thereby decided to implement a regulation for setting up an independent authority and end state monopoly in the insurance sector. After another three months i.e. in December 1996, the Insurance Regulatory Authority Bill was introduced in the Parliament of India with a view to protect the interests of the policyholders and also to ensure growth and prosperity of the insurance sector. The Bill was then referred to the Standing Committee in the Ministry of Finance which submitted its report in the month of May 1997. The recommendations of the Committee were incorporated in the bill but it could not be passed and thus the bill was withdrawn.

When the new government was formed in the Centre, it was announced in the budget speech that the sector would be opened up to the private players and a separate regulatory authority would be set up. Subsequently, the Insurance Regulatory Authority (IRA) Bill was introduced in December 1998. The Standing Committee considered the Bill and suggested certain modifications which were incorporated. Further on 16<sup>th</sup> March, 1999, the Indian Cabinet approved Insurance Regulatory Authority (IRA) Bill which was intended to liberalize the insurance sector which further awaited ratification by the Indian Parliament. But the BJP government fell in April 1999 and the deregulation was again put on hold. However, an election was held in late 1999 and new BJP-led government came to power. In the latter half of the year 1999, a new Bill containing the proposed changes was placed before the Lower House. Finally on 7<sup>th</sup> December, 1999, the Parliament passed the Insurance Regulatory and Development Bill which was subsequently passed by the President of India on 29<sup>th</sup> December, 1999. With the enforcement of the Insurance Regulatory and Development Authority Act, 1999 (IRDA Act) and the formation of IRDA (on 19<sup>th</sup> April, 2000), the insurance sector was deregulated and opened up for competition from Indian Private firms and joint ventures of Indian private and foreign insurers (with 26% FDI restriction). The Act aimed to regulate, promote and assure orderly growth of the insurance industry on one hand and also to protect the interests of policyholders on the other.

After the passage of Insurance Regulatory and Development Authority Act, 1999 (IRDA Act) and formation of the IRDA on 19<sup>th</sup> April, 2000, the responsibility for better regulation of the industry and taking measures for protecting the interests of the policyholders, in particular and the society at large was transferred to IRDA. The following paragraphs discuss about the mission, duties, powers and functions of IRDA and also highlights the initiatives taken by it to meet its objectives.

### Mission Statement of IRDA (Adapted from [www.irdaindia.org](http://www.irdaindia.org))

The IRDA has a very important role to play. On the one hand, it has to ensure the development and growth of the industry and on the other, it has to protect the interest of the policyholders. The long-term objectives of the regulator as given in the mission statement are as follows:

- i. To protect the interest of policyholders and secure fair treatment to them.
- ii. To bring about speedy and orderly growth of the insurance industry for the benefit of the common man and to provide long term funds for accelerating the economic growth.
- iii. To set, promote, monitor and enforce high standards of integrity, financial soundness, fair dealing, and competence of those it regulates.
- iv. To ensure that insurance customers receive precise, clear, and correct information about products and services and make them aware of their responsibilities and duties in this regard.
- v. To ensure speedy settlement of genuine claims, to prevent insurance frauds, and other malpractices and put in place effective grievance redressal machinery.
- vi. To promote fairness, transparency, and orderly conduct in financial markets dealing with insurance and to build a reliable management information system to enforce high standards of financial soundness amongst market players.
- vii. To take action where such standards are inadequate or ineffectively enforced.
- viii. To bring about optimum amount of self-regulation in day to day working of the industry, consistent with the requirements of prudential regulation.

### Duties, Powers and Functions of the IRDA (Adapted from [www.irdaindia.org](http://www.irdaindia.org))

The basic responsibility of the regulator is to regulate, promote and ensure orderly growth of the insurance and re-insurance business. Section 14(1) of the IRDA Act, 1999 lays down the following duties, powers and functions of the insurance regulator:

- i. Issuing the certificate of registration and renewing, modifying, withdrawing, suspending or cancelling such registration,
- ii. Protecting the policyholders' interests,
- iii. Specifying the requisite qualifications, code of conduct and practical training for intermediary or insurance intermediaries and agents,
- iv. Specifying the code of conduct for surveyors and loss assessors,
- v. Promoting efficiency in the conduct of insurance business,

- vi. Promoting and regulating the professional organizations connected with the insurance business,
- vii. Imposing / levying penalty / fees on the companies as and when required,
- viii. Regulating the investment of funds by insurance companies,
- ix. Asking for information and clarifying issues from insurers, intermediaries, insurance intermediaries and other organizations connected with the insurance business,
- x. Undertaking investigations / enquiries / inspections including audit of the insurers, intermediaries, insurance intermediaries and other organisations connected with the insurance business,
- xi. Controlling and regulating the rates, advantages, terms and conditions that may be offered by insurers in respect of general insurance business not so controlled and regulated by the Tariff Advisory Committee under Section 64U of the Insurance Act, 1938 (4 of 1938),
- xii. Specifying the manner in which books of account shall be maintained and Statement of Accounts shall be submitted by insurers and other insurance intermediaries,
- xiii. Regulating the maintenance of solvency margin,
- xiv. Resolving disputes that may arise by putting in place appropriate mechanisms,
- xv. Supervising the functioning of the Tariff Advisory Committee,
- xvi. Specifying the percentage of life insurance business and general insurance business to be undertaken by the insurer in the rural or social sector, and
- xvii. Exercising such other powers as may be prescribed.

#### **4.4 ROLE OF IRDA**

Since its establishment in the year 2000 IRDA has been playing a key role in ensuring the development and growth of the insurance sector in our country. The Malhotra Committee, set up in 1993, pointed out that the sectoral reforms in the country should be such that it ensures better regulation and supervision. Accordingly, with the formation of IRDA, the regulator has been dynamically bringing about necessary changes/modifications from time to time in accordance to the demand of the economy. It has been a watch dog on the prominent areas to ensure that the interests of both the policyholders and society are well protected.

##### Determining Investment Norms of the Insurers

In the first year of its operation, IRDA passed a regulation which specified certain limits on investments to be made in different securities by the insurance companies. The objective was to ensure that the insurers do not expose too much of their investments to market risk and also to trim down the

volatility of their returns. But with the introduction of newer financial products in the market, the regulator has been continuously making amendments so that the insurers can create a balance between income from investments and protection of policyholders' interests by monitoring the limits to be invested in different categories of securities.

In respect to investment in ULIPs, it has been specified that the maximum limit of investment in “other than approved category” is 25% in order to restrict the limit of riskiness in the portfolio and also to ensure its good quality. To ensure investment in good-quality securities, the authority has clearly specified that the money should be invested in only AA grade assets/securities. It has been also mentioned that investment in equities should be restricted to actively traded shares only. However for LIC, which already had a huge portfolio when the market was deregulated, the investment norms were made applicable only on the new investments. Apart from this regulation, the management of life insurers has been asked to submit half-yearly reports to the IRDA with regard to the investments so that constant monitoring is possible. For further closer supervision on the overall portfolio of insurers, guidelines have been passed by IRDA by initializing the concept of “Internal and Concurrent Audit”.

#### Forming other Financial Norms

All companies are required to prepare financial statements that would include all important details like cash flow statements, related party transactions, segment reporting, investments etc. This important information would help the various end users to completely assess the companies correctly. The regulator has also passed certain relevant measures to ensure financial stability of insurers viz. insurers are required to file solvency status four times yearly with effect from 2007-08. The regulator has also passed guidelines for audit of the investment risk management systems and processes. In 2009-10 the IRDA annual report mentioned that henceforth all insurers will be required to submit details about their economic capital in order to develop the capital efficiency.

#### Making Rural and Social Sector Obligations Mandatory

One of the major drawbacks in the performance of insurance sector in the pre-liberal period was the neglecting attitude towards the rural areas and needy sections of the society. Thus, to break this practice, the IRDA has drawn regulations from time to time with regard to mandatory business in the rural areas and towards the social class. The regulator also imposed serious penalty provisions on the non-complier(s). However, the regulation has been updated from time to time and the present mandated business is as follows:

**Table 4.6: Mandatory Business Requirement for Private Life Insurers**

<b>Financial Year</b>	<b>Rural business (in %)</b>	<b>Social Sector (in %)</b>
First	7	5
Second	9	7
Third	12	10
Fourth	14	15
Fifth	16	20
Sixth	16	20
Seventh	18	25
Eighth	19	35
Ninth	19	45
Tenth	20	55

*Source: IRDA Annual Reports*

Note: The percentage is calculated based on total policies issued.

However, the business quantum in respect of LIC is slightly different from what is mentioned in the above table. Moreover, if the period of operation is less than six months and the starting point of operation is in the second half, there would be no rural / social obligation. Further, in the case of operation for more than six months, the mentioned obligations will be discounted by 50%.

“Rural sector” shall mean any place as per the latest census which has —

- (i) a population of not more than five thousand;
- (ii) a density of population of not more than four hundred per square kilometre; and
- (iii) at least seventy five per cent of the male working population is engaged in agriculture.

The term “Social sector” includes unorganised sector, informal sector, economically vulnerable or backward classes and other categories of persons, both in rural and urban areas.

(a) “Unorganised sector” includes self-employed workers such as agricultural labourers, bidi workers, carpenters, cobblers, construction workers, fishermen, hamals, handicraft artisans, handloom and khadi workers, lady tailors, leather and tannery workers, papad makers, vegetable vendors, washerwomen, working women in hills, or such other categories of persons.

(b) “economically vulnerable or backward classes” mean persons living below the poverty line.

(c) “other categories of persons” includes persons with disability as defined in the Persons with Disabilities (Equal Opportunities, Protection of Rights, and Full Participation) Act, 1995 and who may

not be gainfully employed and also includes guardians who need insurance to protect spastic persons or persons with disability. Thus, it is clear that the definition covers all types of people who should be covered by insurance. The regulator has clearly mentioned the responsibility of the insurer in terms of doing business in rural areas and amongst the social sector / vulnerable classes of the society. To boost the matter further, Micro- insurance Regulations have been also passed by the IRDA in 2005 to promote micro insurance products which are low-premium products targeted for the social sector.

#### Passage of Micro-insurance Regulations, 2005

With the need to insure the social sector, IRDA passed the Micro-insurance Regulations in 2005. It refers to the type of insurance that has the following characteristics:

- (i) Low premium
- (ii) Pricing based on individual or group risk
- (iii) Low coverage limits

The aim was to promote Micro-insurance (MI) products through distribution channels with the license being granted to NGOs, SHGs, Microfinance institutions and the Primary Agricultural Credit Societies. The above named licensees have been considered as agents because of their nearness to the members of the rural society which will help to collect the correct inputs which will ultimately result in a right combination of product and price. Further, the IRDA has allowed insurers to issue policies with a maximum cover of Rs. 50,000 for general and life insurance under these Regulations. The insurer will be required to take IRDA's prior approval for launching MI products through the "file and use" mode. The maximum cover allowed is Rs. 30,000 per annum for a dwelling and contents or livestock or tools or implements or other named assets or crop insurance against all perils. For individual and group health insurance, the maximum cover is Rs.30,000 per annum per individual. In case of life micro-insurance products, the cover amount for term insurance ranges between Rs. 5,000- Rs.50,000 for a minimum term of five years and maximum of 15 years. The entry age for this product is kept between 18-60 years. Endowment insurance policy provides cover for Rs. 5,000-30,000 for a minimum five years and maximum 15 years for people aged between 18 and 60.

#### Customer-Centric Approach

The first initiative of IRDA was to ensure that the policy documents are simple and understandable. So, it passed a regulation requiring insurers to publish documents written in a manner that it could be easily understood. This would enable the interested buyers in understanding the policy terms and take a learned decision. In 2001-02, the regulator had also introduced the provision of free look-in period

wherein an insurer had the right to try a policy and return it, if s/he is not satisfied. Further, in order to see that policyholders receive justice at proper time, IRDA has been keeping an eye on the speedy settlement of claims. In case of any disputes, a grievance handling cell has been asked to be opened by each insurer to speedily resolve such matters. Customer servicing is an important ingredient in determining the level of customer satisfaction. With this view, a system of premium calculator has been asked to be introduced in the website of each company apart from the system of online payments. Few other recent customer-centric measures include to have simplicity of language in documents in respect of premium amount, payment period, risks, consequences of discontinuance, charges etc. and also policy verification call acknowledging the policy details so that the customers are made known about all important characteristics before investing in a particular policy.

The recent trend is towards investment in Unit Linked Insurance Products (ULIPs). Policyholders are giving more priority towards appreciation of investments rather than risk management which is the prime reason behind insurance. But, due to the financial meltdown, these market linked policies have taken a severe beating and in most of the cases, market value of the investment is less than the capital invested. As a result, the premium payment is discontinued due to which a huge loss is incurred by the investor. So, to combat this situation, the regulator has stipulated minimum premium payment period of five years (i.e. raised from three years) in September, 2010, the range of risk coverage and also net asset value calculation method. With effect from the year 2009-10, some of the initiatives taken on ULIPs include the payment of a minimum guaranteed return and allocation of the management expenses over five years, instead of dumping maximum amount in the initial years. In order to protect the interest of the investors, it has been made mandatory for the insurers to submit to the IRDA, guaranteed and non-guaranteed benefits for each policy year in the case of ULIPs. From the year 2009-10, the regulator has asked all insurance companies to disclose information in print media and in the website of companies. The regulator is also in a continuous process of collecting, processing and disseminating information through the Insurance Information Bureau which has been assigned task for the same. Therefore, all these measures are in favour of the customers and will definitely lead to increase the confidence of the public on the insurers.

#### Ensuring better Corporate Governance

IRDA introduced a regulation in the year 2000 to maintain transparency in the disclosure in financial statements. It ensured that the management report mentions different important aspects relating to insurance business like the overall risk exposure of the business, claims settlement time record, solvency margin ratio etc.

The directors and top management of insurers adopted measures to concentrate on better corporate governance practices. In this view, Corporate Governance Guidelines have been passed in 2009-10 which were actually put into effect from 01.4.2010. The management of companies required to take increased interest and responsibility in areas like governance structure, disclosures, formation of mandatory committees, whistle blowing policy and investor protection amongst others. To improve the role of the senior management, the structure, responsibility and the functions of the Board of Directors have been mentioned in the guidelines. Further, to ensure better performance and unbiased decision-making, the formation of certain committees like Audit, Investment, Risk Management, Asset-Liability Management and Policyholder Protection have been made compulsory while Remuneration, Nomination and the Ethics Committee have been made optional.

#### Measures adopted for better Training and Service

IRDA has been taking active measures from time to time to improve the quality of agents. So, it has mandated 100 hours of training for them (at the time of granting new license) and 25 hours (at the time of renewal). It has also taken active steps for ensuring better and more responsible, long-term focused intermediaries. The regulator has accredited more than 500 agents training institutes across the country in order to generate more number of jobs for the young generation.

IRDA has taken initiatives to make sure that there are no new cases of mis-selling, grievances of customers are settled fast, businesses are conducted as expected and maximum disclosure is made in advertisements. This will in turn not only increase the trust of the public on the overall insurance industry but also raise the standards of ethical and professional performance. Thus, this will help to raise the confidence on insurance as a product which will help to realize future dreams.

#### Spreading Insurance to all parts of the Country

One of the major objectives of any regulator is to ensure growth by emphasizing on professional and ethical conduct. So, IRDA has rightly allowed several forms of financial institutions and bodies like the banks, NBFCs, RRBs, Co-operative Banks, Panchayats, and NGOs etc. to carry out insurance business. In order to increase the insurance awareness among the public, awareness campaigns, seminars, consumer education programmes are regularly taken up by the regulator.

Therefore it is obvious that IRDA has been actively coming up with different regulations and practices from time to time. The pace at which the industry is growing reflects the development that the regulator has been able to spawn. Though the overall industry has been doing better, still there is a lot to be done.

#### Adhering to International Standards

IRDA is continuously developing regulatory standards so that they are in commensurate to the policies being adopted by the developed nations. Thus, in due course of time it will help to raise the industry standard at par to those of the developed economies. So, it is trying to harmonise with the 17 core principles issued by the International Association for Insurance Supervisors (IAIS). Further, to upgrade the regulatory level, it is in continuous touch with several international bodies like the IAIS, National Association of Insurance Commissioners (NAIC), Canadian Institute of Actuaries etc.

#### Promotion of Insurance as Profession

With a to make insurance more popular as a profession, IRDA has taken steps like granting approvals to a few selected institutes to provide diploma or degrees on various courses in insurance. Along with creating chances for having more number of intermediaries, the regulator is imposing a culture that will develop professionalism in insurance, risk management and actuarial sciences. Thus, customers will get better guidance through correct financial counselling.

#### **4.5 Liquidity Structure of LIC: A comparative study**

The life insurance companies are vulnerable to the liquidity risk and might run into insolvency if proper precautions are not adopted. Life Insurance Corporation of India (LIC) enjoyed a monopoly since its inception in 1956 to the opening up of insurance sector to private participants in the year 2000. The study aims to analyze the liquidity position of LIC in the past two decades. The study tries to identify the changes in the liquidity structure of LIC after opening up of the insurance sector in India. The study also tries to throw some light on the profitability aspect of LIC in this liberalized regime. It is revealed from the analysis that LIC possesses a sound liquidity position with an increasing trend of profitability even after opening up of the insurance sector during last one decade. Liquidity can be termed as having sufficient resources to meet the financial obligations on time at a minimum cost. It is the amount of firm's internal cash flow which may be used to meet its current obligations. Liquidity can pose a threat to the firm as there are chances of funding crisis and this is termed as liquidity risk. Unforeseen events such as a large claim, a write down of assets or a legal crisis can cause liquidity risk. Considering the financial services sector, it is generally believed that there is a lower probability of the insurance companies to run into difficulties over liquidity issues as compared to the banking companies. (Newton et al, 2009; Lorent, 2008). But in any case if liquidity becomes a problematic issue for the insurance companies, then that will generally become a serious issue and sometimes it may push a company to become insolvent.

The insurance companies operate with many unknown threats from the environment, like: i) loss due to natural calamities may result in bulk claims payments or ii) a sudden change in the rate of interest

may instigate the policy holders towards withdrawals through surrender of policies. Simultaneously, if we concentrate on the assets of the insurance companies it will be observed that their assets are sometimes less liquid as they invest in private placement and real estates. When these assets are not enough liquid to cover the liabilities due it is obvious that an insurer will certainly become insolvent. Thus, it is important for an insurer to maintain sufficient funds (i.e. liquidity) to easily handle any demand for cash due to expected or unexpected events.

Liquidity of a firm also has an impact over the firm's ability to obtain finance. The better the liquidity position of the firm, the better will be its position in the market to obtain funds, the more are the prospects for its growth. On contrary lack of liquidity may adversely affect the continuity of the activities of the life insurance companies'. Liquidity analysis reflects the firm's ability to meet its current liabilities using its current assets. It measures resource availability of the firm for discharging its short term debt obligations. The various interested stakeholders viz. investors, lenders and regulators usually analyze liquidity of any firm in order to ascertain how well equipped it is to meet its debt obligations in future.

Liquidity ratios are used to measure the company's ability to meet its short term debt obligation. Low or decreasing ratios generally indicate that a firm is over leveraged i.e. paying bills too fast or collecting receivables too slowly. On contrary if the ratios are high or increasing it implies that a firm is under-leveraged i.e. quickly converting receivables into cash and thereby easily able to meet its financial obligations. At the same time it should be borne in mind that a high current ratio is not always good and a low current ratio is not always bad. Further, liquidity ratios have its inherent drawbacks. It does not take into account the level and timing of cash flows which determine the ability of a company to pay off its liabilities when it becomes due. The quick ratio also assumes that accounts receivables are readily available for collection which may not be always true. Finally, the formulae assume that a firm would liquidate its current assets to pay current liabilities, which may not always materialize, as some amount of working capital is always required to maintain operations. In spite of these limitations, liquidity ratios are most commonly used because it provide an insight into firm's ability to pay off its current liabilities and also reflects the firm's efficacy with which it manages its current assets.

In the financial services sector, it is believed that there is a lower probability of the insurance companies to run into difficulties over liquidity issues as compared to the banking companies.(Newton et al, 2009; Lorent,2008).The insurance theory states that the Life insurers require less liquidity than the non-life insurers due to the sufficiently long-term nature of the business (Shiu 2006). The life insurers imposes high surrender charges which are either explicitly stated or implied implicitly as one of the feature in the contract issued by them(Babel and Santemaro, 1997). Therefore, these charges lowers the

vulnerability of life insuring companies to liquidity risk which may happen due to premature policy withdrawals(Herrington 1994).

Basically two distinct features, first the long duration of liabilities in the life insurance industry(compared to banks and non-life insurers) and second high surrender charges make the life insurance companies less susceptible to liquidity risk(Lorent, 2008). But that does not eliminate the chances of a life insurance company to go into doldrums due to liquidity risk. A glimpse from history reminds us of various experiences where several well known life insurance companies ended up to be big failures due to liquidity problem (Shiu 2006;Babel and Santemaro, 1997). Thus, it can be well established that the life insurance companies does need to manage the liquidity risk in an efficient manner otherwise severe consequences may be waiting ahead.

The objectives of the Study are:

- To analyze the overall liquidity aspect of the Corporation.
- To examine the relationship with liquidity and profitability.
- To analyse the changes in the liquidity aspect of LICICI after opening up of the insurance sector.

The study has considered the annual reports of Life Insurance Corporation of India (LICI) for a period of last twelve years which falls in the liberalized regime. The annual reports and published accounts are obtained from the different annual reports of LICI in the post competitive decade. Here, the various components of working capital are evaluated on the basis of its fundamental principles. Here, Ratio analysis and other relevant statistical tools have been used to evaluate the relationship between liquidity and profitability of LICI. Here, the regression equation has been used to find out the change in the profitability due to change in the working capital employed.

#### Findings and Analysis

**Table:4.7: Liquidity Position of the Insurance sector (1988-89 to 2011-12)**

<b>Year</b>	<b>Rate of Change in Current Assets(%)</b>	<b>Rate of Change in Current Liabilities(%)</b>	<b>Current Ratio</b>	<b>Year</b>	<b>Rate of Change in Current Assets(%)</b>	<b>Rate of Change in Current Liabilities(%)</b>	<b>Current Ratio</b>
1988-89	24.2	39.1	2.62	2000-01	23.17	-9.04	3.62

1989-90	41	13.4	3.26	2001-02	35.41	42.95	3.43
1990-91	26.1	23.9	3.32	2002-03	10.17	94.56	1.94
1991-92	22.8	14	3.57	2003-04	-2.41	59.36	1.19
1992-93	9.2	21.8	3.20	2004-05	4.94	-0.79	1.26
1993-94	27.8	42.6	2.87	2005-06	16.60	0.66	1.46
1994-95	26.4	34.1	2.70	2006-07	10.54	-4.88	1.69
1995-96	20.9	17	2.79	2007-08	24.71	8.99	1.94
1996-97	13.9	14.1	2.79	2008-09	13.83	-11.31	2.49
1997-98	47.1	8	3.80	2009-10	1.57	11.80	2.26
1998-99	7.7	31.9	3.10	2010-11	23.98	-24.77	3.72
1999-2000	7.1	24.2	2.67	2011-12	61.83	95.16	3.09

*Source: Calculated*

In this liberalized era, the current assets have been gradually increasing except the year 2003-04 where there was a negative growth. The current assets increased 4.69 times in these twelve years which indicates a strong growth in the business of LIC. The current liabilities have also grown up simultaneously. In the year 2002-03 the increase was as high as 94.56% as compared to the year 2001-02. Again in the year 2011-12, the growth was the highest during this period (95.16%). In many

occasions we find that there has been a negative growth in the current liabilities viz. financial years 2004-05, 2006-07, 2008-09 & 2010-11.

Current Ratio (CR) is an important indicator of the liquidity position. It has been revealed that CR of LICICI was 3.62 in the year of liberalization. It dripped down to as low as 1.19 by 2003-04 because the current assets faced a negative growth whereas the current liabilities experienced a high rate of positive growth. But it can be inferred that LICICI had tried to manage its liquidity position by reducing its current liabilities whenever the CR came down.

According to the study by Wild et al.(2007) and Walsh(2006), current ratio of 1:1 is considered to be the ideal ratio for the insurance sector. LICICI had a higher current ratio in all the years as compared to the industry standard. So, it can be inferred that that there are least chances of LICICI to face the liquidity trouble as it has a high current ratio. LICICI had the least Current ratio of 1.19 in the year 2003-04 but that is also above the industry standard. The study further tries to analyze the working capital position of the firm which is enumerated in the following section.

**Table 4.8: Working Capital (rate of change)**

<b>Year</b>	<b>Working Capital (Rs.In Lakh)</b>	<b>Rate of Change (%)</b>	<b>Year</b>	<b>Working Capital (Rs. In Lakh)</b>	<b>Rate of Change (%)</b>
2000-01	1261354	42.41	1988-89	97247.84	17
2001-02	1671753	33	1989-90	153684.5	58
2002-03	1260913	-25	1990-91	195304.4	27
2003-04	403421	-68	1991-92	247140.1	27
2004-05	545512	35	1992-93	257667	04
2005-06	973572	78	1993-94	311951.9	21
2006-07	1404902	44	1994-95	381442.5	22
2007-08	2070718	47	1995-96	470091.6	23
2008-09	2912445	41	1996-97	534507.5	14
2009-10	2757590	-05	1997-98	903265.3	69

2010-11	4486715	63	1998-99	894493	-01
2011-12	6711846	50	1999-2000	885720.3	-01

Source: Calculated

Working capital is the excess of current assets over current liabilities of a firm. Working capital is the capital required to carry out the day to day activities of the firm. Insurance Industry is considered to be a capital intensive industry. The investments are blocked for a long period of time; thereby it is considered to have lower level of liquidity. The life insurance companies are appraised on the basis of their ability to settle the claims of their customers. So, it is very essential for the life insurance companies to have sufficient liquid funds to settle the claims of the insured as and when it occurs.

The working capital position of the firm reflects an overall increase of 432% in these twelve years. It was found that in the year 2003-04, the working capital was lowest because the cash balance and the advances decreased by 2.41% but the current liabilities had a steep increase of 59.6% from the last year. However it can be observed from the above bar diagram that from the year 2004-05 onwards the working capital position of the firm has been gradually increasing. The year 2009-10 experienced a decline of 5% but after that in the last two years there has been a commendable growth in the working capital position of the firm. It is because in the year 2010-11 the current assets has increased to a great extent but current liabilities decreased; it indicates the strong liquidity position of the corporation after opening up of the insurance market. In the year 2011-12 we can observe that the current assets and the current liabilities both increased but the increase in the current assets is quite less than the increase in the current liabilities as a result the working capital has increased but not at a lower pace than the earlier year.

**Table 4.9: Profit After Tax (Rate of change)**

Year	Profit After Tax (Rs. In Lakh)	Rate of Change(%)	Year	Profit After Tax (Rs. In Lakh)	Rate of Change(%)
2000-01	31665	13	1988-89	2944.19	38
2001-02	82179	160	1989-90	3903.05	33
2002-03	49697	-40	1990-91	4929.13	26
2003-04	55181	11	1991-92	6290.42	28

2004-05	70837	28	1992-93	6306.9	0.26
2005-06	63158	-11	1993-94	8667.53	37
2006-07	77362	22	1994-95	10313.08	19
2007-08	84463	09	1995-96	12801.16	24
2008-09	95735	13	1996-97	14979.9	17
2009-10	106072	11	1997-98	18072.93	21
2010-11	131334	24	1998-99	23069.51	28
2011-12	117180	-11	1999-2000	28066.09	22

Source: Calculated

The profitability position of the firm has been represented by Profit after Tax (PAT) position of the firm. It can be observed that there has been a huge increase in profit after tax from 2000-01 to 2001-02. The rate of increase was 160%. But after that the profit after tax has never increased to that extent. Unfortunately, LICI had a negative growth in profit after tax in three years, viz. 2002-03 (40%), 2005-06 (11%) and 2011-12 (11%). The rise in the PAT in the year 2001-02 may be due to the strong stock market position of the nation which was to some extent affected by the global recession in the later years. However, the overall position of LICI was found to be quite satisfactory as the Profit after tax improved by 270% in the last 12 years. This resembles that LICI is quite capable to earn superior return in this competitive environment.

**Table 4.10: Comparative Analysis of the Liquidity position**

	Mean (after)	Mean (Before)	SD (after)	SD(Before)	CV(before)	CV(after)
<b>CA(Rs. in lac)</b>	4049915.17	657786.73	2260312	453473.23	1.791751	1.450553
<b>% ^ in CA</b>	0.19	0.23	0.173732	0.1248559	1.076106	1.83011
<b>CL(Rs. in lac)</b>	1844853.50	221335.81	732877.4	151555.43	2.517274	1.460428
<b>% ^ in CL</b>	0.22	0.24	0.412121	0.1110848	0.531202	2.131254
<b>WC(Rs. in lac)</b>	2205061.75	444376.31	1823185	298336.24	1.209456	1.489515

<b>% ^ in WC</b>	0.28	0.23	0.408894	0.2132914	0.683516	1.092995
<b>CR(Rs. in lac)</b>	2.34	3.06	0.921394	0.3789387	2.539736	8.068864
<b>PAT(Rs.inlac)</b>	80405.25	11695.32	28939.85	7991.295	2.778357	1.463508
<b>% ^ in PAT</b>	0.19	0.24	0.480226	0.1018378	0.399841	2.393495

Source: Calculated

The mean position reflects a sound position in terms of all the parameters which resembles that LICI is less likely to have liquidity trouble. The standard deviation is quite high this resembles that the Current assets, Current liabilities and Working capital are quite dispersed over the years. This is because there has been a tremendous growth in the last twelve years. However, the standard deviation of current ratio is comparatively low which depicts that the CR of the firm is quite steady. This is also a good indicator of the liquidity position of the firm. The Profit after tax position of LICI was on an average Rs. 80405 lakh in the last twelve years. The standard deviation is comparatively quite low. This implies that there has been more or less a steady growth with few exceptions in the last twelve years.

**Table 4.11: Working Capital / Current Ratio and Profitability: Correlation**

<b>Correlation (Entire period)</b>	<b>Working Capital</b>	<b>Current Ratio</b>
Profit After Tax	0.83	-.27
<b>Correlation (Before)</b>	<b>Working Capital</b>	<b>Current Ratio</b>
Profit After Tax	0.96	-.13
<b>Correlation (After)</b>	<b>Working Capital</b>	<b>Current Ratio</b>
Profit After Tax	0.80	0.38

Working capital is an important contributor to the earnings of the firm. So, the study examined the correlation between the profit after tax and the working capital of the firm. The study revealed that there is a strong positive relation between the profit after tax and the Working capital invested by the firm. To confirm the earlier findings a correlation between the current ratio and the profit after tax was undertaken. It was revealed that Current ratio has a negative correlation with the profit after tax during

the entire period. But after liberalization we find that Current ratio has a positive relationship with profit after tax. This resembles that preference for liquidity did not bring a negative impact of the profitability of the firm. In fact it may be observed that LIC had a simultaneous increase in the working capital and the profit after tax position in the liberalized regime. This finding is in commensurate with earlier studies.

### Conclusion

The above discussions engulf around the independent India to financial sector reforms of 1990. After the Indian independence, during the early years of the 1950s, there was a call for nationalization of the life insurance industry which took effect in 1956 with the formation of the LIC. Since then, the public sector giant operated as a monopoly in the industry and contributed tremendously towards the development of the nation. However, with the financial sector reforms taking shape in the 1990s, the Malhotra Committee which was set up in 1994 recommended the opening up of the sector to the private and foreign players. Consequently, the industry was deregulated in 1999 with the passage of the IRDA Act and the formation of the IRDA. The insurance regulator has been playing a very important role in ensuring the sound growth of the industry, protection of the policyholders' interests and development of the society.

The study on liquidity structure indicates that LIC has maintained a strong liquidity position in the past twelve years as in the past. The company had sufficient current assets to meet the current liabilities. The profit position of the company is also considered to be quite satisfactory. It can be inferred that the profit of the firm remains unaffected even after opening up of the insurance sector. This implies that LIC has a strong footing both in terms of its working capital management and profitability even in this era of strong competition.

# **Chapter 5: Life Insurance Industry in India: Post Deregulation**

5.1 Background

5.2 Developments in the post deregulation period

5.3 About the Life Insurers operating in India

**5.1 Background**

The LPG drive in India affected the Indian Insurance sector tremendously. The deregulation of insurance sector in India brought positive development in terms of innovative products, new distribution channels and better customer service. Gradually, the developments have taken place after the insurance sector reforms took effect in the year 2000. This chapter studies the progress of the life insurance industry from various aspects. Vital areas like contribution of the public and private sector in the total life insurance premium, changing market share of the public and private sector players in the industry, new policies issued, growth in terms of policies and premium in the sector, contribution of the sector to the country's GDP etc has been covered in this study. A comparison has been done to understand the relative position of our country in terms of insurance penetration and density levels with the other countries of the World. The trend in the Assets under Management has been analyzed to understand pace of growth in the industry. In the final part of the discussion, the rate at which offices have been opened up by the insurers and capital being infused by the promoters has been studied. Finally, this chapter gives a brief description of the insurers, their profile, values and achievements etc. in order to be familiar with the insurers in a better way.

## **5.2 Developments in the post deregulation period**

After opening up of the insurance sector a number of private firms and foreign companies identified huge prospect and entered into life insurance market of India. This made the industry more vibrant and competitive. "In Financial Year 2015-16, the life insurance industry recorded new premium income of Rs.1.38 trillion (\$20.54 billion), a growth rate of 22.5%. India's life insurance sector is the biggest in the World with about 360 million policies which are expected to increase between 12-15% over the next five years"- India Brand Equity Foundation (IBEF) ([www.news18.com](http://www.news18.com)). The following subsections discuss about the progress made by the industry on different counts.

### Increase in the number of Life Insurance Companies and their initial share holding structure

The private sector was encouraged to enter into the insurance business and resultantly there was a positive response from the market and large number of company commenced their insurance business either jointly in the form of a joint venture or single-handedly. The table below shows that from four private players in 2000-01, the number increased to fourteen in 2005-06, and was twenty four at the end of 2015-16. This depiction is natural for our country since it accounts for 16% of the total world population, but covers only 1.68% of the world life insurance market as in the year 2006 (World Insurance Report 2008), so giving ample opportunity for business to the baby boomers.

**Table 5.1: Number of Life Insurers In India**

<b>Year</b>	<b>Public Sector</b>	<b>Private Sector</b>	<b>Total</b>
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2000-01	1	4	5
2001-02	1	11	12
2002-03	1	12	13
2003-04	1	12	13
2004-05	1	13	14
2005-06	1	14	15
2006-07	1	15	16
2007-08	1	17	18
2008-09	1	21	22
2009-10	1	22	23
2010-11	1	22	23
2011-12	1	23	24
2012-13	1	23	24
2013-14	1	23	24
2014-15	1	23	24
2015-16	1	23	24

Source: IRDA Annual Reports

In accordance with the recommendations of the Malhotra Committee, the private sector was allowed to begin insurance business either individually or as a joint venture of Indian firms with foreign partners, in such cases maximum 26% foreign holding was allowed. However, later in the year 2017 the foreign holding was increased to 49% to augment the growth in the life insurance industry. The list of life insurers along with their holding structure is shown in the following table:

**Table 5.2: Share Capital holding Structure of Life Insurers Operating in India**

SI No.	Insurer	Domestic Partner(s) and their contribution(in %)	Foreign Partner(s) and their contribution (in %)	Year of commencement of business
<b>Public Sector</b>				
01.	Life Insurance Corporation of India	Government of India (100%)	None	1956-57
<b>Private Sector</b>				
02.	Aegon Religare Life Insurance Company Ltd.	Religare (44%), Bennett, Coleman & Company (30%)	Aegon (26%), Netherlands	2008-09
03.	Aviva Life Insurance	Dabur (74%)	Aviva International Holdings Ltd., UK (26%)	2002-03
04.	Bajaj Allianz Life Insurance Co. Ltd.	Bajaj Auto (74%)	Allianz AG, Germany (26%)	2001-02
05.	Bharti AXA Life Insurance Co.Ltd.	Bharti (74%)	AXA Asia Pacific	2006-07
06.	Birla Sun Life Insurance Co. Ltd.	Aditya Birla Group (74%)	Sun Life, Canada (26%)	2000-01
07.	Canara HSBC OBC Life Insurance Company Ltd.	Canara Bank (51%), Oriental Bank of Commerce (23%)	HSBC, UK (26%)	2008-09
08.	DLF Pramerica Life Insurance Co. Ltd.	DLF Limited (74%)	Prudential of America, USA (26%)	2008-09
09.	Edelweiss Tokio Life Insurance Co.Ltd.	Edelweiss Financial Services Ltd.	Tokio Marine Holdings Inc.,Japan	2011-12

10.	Future Generali Life Insurance Company Ltd.	Future Group (74%)	Generali, Italy (26%)	2007-08
11.	HDFC Standard Life Insurance Co. Ltd.	HDFC Ltd. (74%)	Standard Life Assurance, UK (26%)	2000-01
12.	ICICI-Prudential Life Insurance Co. Ltd.	ICICI Bank (74%)	Prudential, UK (26%)	2000-01
13.	IDBI Federal Life Insurance Company Ltd. (Formerly IDBI Fortis Life Insurance)	IDBI Bank (48%), Federal Bank and (26%)	Ageas (earlier known as Fortis) - 26%	2007-08
14.	IndiaFirst Life Insurance Co. Ltd.	Bank of Baroda (44%), Andhra Bank (30%)	Legal & General (26%), UK	2009-10
15.	ING Vysya Life Insurance Co. Ltd.	Exide Industries (74%)	ING Insurance International B.V., Netherlands (26%)	2001-02
16.	Kotak Life Insurance Co. Ltd.	Kotak Mahindra Bank Ltd. (74%)	Old Mutual, South Africa (26%)	2001-02
17.	Max New York Life Insurance Co. Ltd. (recently rename as Max Life Insurance)	Max India (74%)	New York Life, USA (26%)	2000-01
18.	Metlife India Insurance Co. Ltd.	The Jammu and Kashmir Bank, M.Pallonji and Co. Pvt. Ltd. and others (74%)	Metlife International Holdings Ltd., USA (26%)	2001-02
19.	Reliance Life Insurance Co. Ltd. (earlier known as AMP Sanmar Life)	An associate company of Reliance Capital Ltd. (100%)	None (Recently, Nippon Life has brought 26% stake in the company).	2001-02
20.	SBI Life Insurance Co. Ltd.	State Bank of India (74%)	BNP Paribas Cardif SA, France (26%)	2001-02
21.	Sahara Life Insurance Co. Ltd.	Sahara (100%)	None	2004-05
22.	Shriram Life Insurance Co. Ltd.	Shriram Group (74%)	Sanlam, South Africa (26%)	2005-06
23.	Star Union-Daichi Life	Bank of India (48%), Union Bank of India (26%)	Dai-ichi Mutual Life Insurance (26%)	2008-09
24.	Tata-AIG Life Insurance Co. Ltd. (recently renamed as Tata AIA Life Insurance Co. Ltd.)	Tata Sons (74%)	American International Assurance Co., USA (26%)	2000-01

Source: Compiled

From the above table, it is evident that majority of the private insurers have partner which is a foreign entity in the joint venture business. However, Sahara Life Insurance is the only exception. All other companies have a collaborative arrangement between two or more partners to develop a synergistic business model by utilizing the strengths of their partners. Reliance Life also had started its business with sole contribution from Reliance Capital. Later in 2009-10, Japan's Nippon Life has bought a 26% stake in the company.

#### Sector wise Market Share in Insurance Premium

The market share of both the sectors in the life insurance premium is enumerated in details through the following table:

**Table 5.3: Sector-wise Contribution in Total Life Insurance Premium (Rs. in crore)**

Year	Public Sector	Private Sector	Total
2001-02	49821	273	50094
2002-03	54628	1119	55747
2003-04	63533	3120	66653
2004-05	75127	7728	82855
2005-06	90792	15084	105876
2006-07	127823	28253	156076
2007-08	149790	51561	201351
2008-09	157288	64497	221785
2009-10	186077	79373	265450
2010-11	203473	88132	291605
2011-12	202889	84183	287072
2012-13	208804	78399	287203
2013-14	236942	77359	314302
2014-15	239668	88434	328101
2015-16	266444	100499	366943

Source: Compiled

Note: Decimals have been ignored

The above table depicts the life insurance premium collected during the period 2001-02 to 2015-16. Industry wise it shows a substantial increase over the years. The total premium increased from Rs. 50,094 crores in 2001-02 to Rs. 2,65,450 crores in 2009-10, an increase by 430% and further 632% by 2015-16. Both the public and private sector have been contributing to this increase, but the rate of increase for private players is much more compared to LIC till the year 2011-12. However, during 2012-13 and 2013-14 there has been a fall in the premium collected by Private Insurers which may be due to the market turmoil and the private companies over dependence on ULIP products. The total premium collection of LIC increased by 5.35 times whereas for the private sector it increased by 368.13 times during the period. The super-normal performance of the private sector was due to the fact that they started from a scratch. However the combined total of private players was also much behind LIC.

The table below depicts the percentage break-up of the insurance premium between LIC and the private sector in the industry. It also reflects that the share of private sector is on the rise.

**Table 5.4: Sector-wise Percentage of Market Share on the basis Insurance Premium**

Year	Public Sector	Private Sector	Total
2001-02	99.45	0.55	100
2002-03	97.99	2.01	100
2003-04	95.31	4.69	100
2004-05	90.67	9.33	100
2005-06	85.75	14.25	100
2006-07	81.89	18.11	100
2007-08	74.39	25.61	100

2008-09	70.91	29.09	100
2009-10	70.10	29.90	100
2010-11	69.78	30.22	100
2011-12	70.67	29.32	100
2012-13	72.70	27.30	100
2013-14	75.39	24.61	100
2014-15	73.04	26.95	100
2015-16	72.61	27.39	100

Source: Computed

It is evident that LIC faced increased competition initially just after the deregulation but regained its market share till 2013-14. However, the current scenario reveals that the private players are focusing equally on the traditional plans so gradually LIC have started losing its dominance over the sector. Thus, increase in the number of competitors has been putting pressure on the business of LIC which is evident from the table above. However, it is still the market leader with almost 73% share of the market in terms of total premium.

#### Market Share of Companies in terms of Insurance Premium Collected

There has been a rapid change in the industry environment due to sudden rise in competitive pressure from an increased number of competitors. As a consequence of the free-market mechanism, at present we see the existence of both LIC and the private players side by side. Nevertheless, the entry of private sector has affected the business of LIC which is understood from its market share erosion, but it still retains the market leadership.

**Table 5.5: Market Share of Individual Life Insurers in India (in %)**

Insurer	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
<b>Public Sector</b>															
LIC	99.46	97.99	95.32	90.67	85.75	81.90	74.39	70.92	70.10	69.78	70.67	72.70	75.39	73.04	72.61
<b>Private Sector</b>															
ING Vysya /Exide Life	0.01	0.04	0.13	0.41	0.40	0.45	0.58	0.65	0.62	0.59	0.59	0.61	0.58	0.62	0.56
HDFC Standard Life	0.07	0.27	0.45	0.83	1.48	1.83	2.41	2.51	2.64	3.08	3.55	3.94	3.84	4.52	4.45
Birla Sun Life	0.06	0.26	0.81	1.10	1.19	1.13	1.63	2.06	2.07	2.02	2.05	1.82	1.54	1.59	1.52
ICICI Pru. Life	0.23	0.75	1.48	2.85	4.02	5.07	6.74	6.92	6.23	6.13	4.88	4.71	3.95	4.67	5.22
Kotak Life	0.02	0.07	0.23	0.56	0.59	0.62	0.84	1.06	1.08	1.02	1.02	0.97	0.86	0.93	1.08
Tata AIG Life	0.04	0.15	0.38	0.60	0.83	0.88	1.02	1.24	1.32	1.37	1.26	0.96	0.74	0.65	0.68
SBI Life	0.03	0.13	0.34	0.73	1.02	1.88	2.79	3.25	3.81	4.44	4.58	3.64	3.42	3.9	4.31
Bajaj Allianz Life	0.01	0.12	0.33	1.21	2.96	3.43	4.83	4.79	4.30	3.3	2.61	2.40	1.86	1.83	1.61

Max New York Life	0.08	0.17	0.32	0.50	0.74	0.96	1.35	1.74	1.83	1.99	2.33	2.31	2.32	2.49	2.51
PNB MetLife	0.00	0.01	0.04	0.10	0.19	0.32	0.58	0.90	0.96	0.86	0.93	0.85	0.71	0.75	0.77
RelianceLife	0.00	0.01	0.05	0.13	0.21	0.64	1.60	2.22	2.49	2.25	1.91	1.41	1.36	1.41	1.2
Aviva Life	-	0.02	0.12	0.31	0.57	0.74	0.94	0.90	0.90	0.81	0.84	0.74	0.59	0.55	0.41
SaharaLife	-	-	-	0.00	0.03	0.03	0.07	0.09	0.09	0.08	0.08	0.07	0.06	0.05	0.04
ShriramLife	-	-	-	-	0.01	0.12	0.18	0.20	0.23	0.28	0.22	0.21	0.18	0.22	0.28
BharatiAXA Life	-	-	-	-	-	0.00	0.06	0.16	0.25	0.27	0.27	0.26	0.28	0.32	0.33
Future	-	-	-	-	-	-	0.00	0.07	0.20	0.24	0.27	0.24	0.20	0.18	0.16
IDBI Federal Life	-	-	-	-	-	-	0.01	0.14	0.22	0.27	0.26	0.28	0.26	0.33	0.34
Canara HSBC Life	-	-	-	-	-	-	-	0.13	0.32	0.53	0.65	0.67	0.58	0.51	0.56
DLFPramerica Life	-	-	-	-	-	-	-	0.00	0.06	0.03	0.06	0.08	0.10	0.22	0.25
Aegon	-	-	-	-	-	-	-	0.01	0.01	0.13	0.16	0.15	0.14	0.17	0.14
Religare life	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Star Union Daichi	-	-	-	-	-	-	-	0.02	0.20	0.32	0.44	0.37	0.30	0.35	0.36
India First	-	-	-	-	-	-	-	-	-	0.27	0.45	0.59	0.68	0.62	0.54
Edelweiss Tokyo	-	-	-	-	-	-	-	-	-	-	.004	.02	.03	.06	.08
<b>Private Sector Total</b>	<b>0.54</b>	<b>2.01</b>	<b>4.68</b>	<b>9.33</b>	<b>14.25</b>	<b>18.10</b>	<b>25.61</b>	<b>29.08</b>	<b>29.90</b>	<b>30.22</b>	<b>29.32</b>	<b>27.30</b>	<b>24.61</b>	<b>26.95</b>	<b>27.39</b>

Source: Computed

“-“ denotes- Not Commenced Business

Note: The above share is calculated as a percentage of total premium income.

Amongst the private players, the leading ones in terms of market share were ICICI Prudential Life , Bajaj Allianz Life ,SBI Life, HDFC Standard Life, Reliance Life, Birla Sun Life Insurance and Max New York Life .

#### Growth Rate of the Industry on the basis of Insurance Premium

The table below shows the growth rate of the entire industry, LIC and private sector in terms of total life insurance premium.

**Table 5.7: Life Insurance Industry Growth in terms of Premium(in %)**

Year	Growth of Public sector (i.e. LIC)	Growth of the private sector	Growth of the life insurance sector as a whole
2001-02	42.79	4124.31	43.54
2002-03	9.65	310.59	11.28
2003-04	16.3	178.83	19.56
2004-05	18.25	147.65	24.31
2005-06	20.85	95.19	27.78

<b>2006-07</b>	40.79	87.24	47.38
<b>2007-08</b>	17.19	82.57	29.01
<b>2008-09</b>	5.01	25.09	10.15
<b>2009-10</b>	18.3	23.06	19.69
<b>2010-11</b>	9.34	11.03	9.85
<b>2011-12</b>	-.29	-4.48	-.02
<b>2012-13</b>	2.92	-6.87	.04
<b>2013-14</b>	13.48	-1.32	9.44
<b>2014-15</b>	1.15	14.31	4.20
<b>2015-16</b>	11.17	13.64	11.84

*Source: IRDA Annual Reports*

Note: The growth rate has been calculated based on year on year basis i.e. current year over the previous year.

From the above table it may be inferred that the growth of LIC and private sector should not be compared as there is a huge difference in the period for which they exist. LIC is in existence since 1956 whereas the private players commenced business after 2000. A direct comparison of nominal values reveals that the public sector behemoth has been growing at a moderate rate which ranged between 5% and 43%. On contrary the private sector grew at a much higher rate during the initial period of study. The rate of growth of the private sector in the first year after the deregulation exceeded 4100% which was mainly due to the low base in the previous year. So, the growth rate during the later years should be given due notice.

It is evident from that as the private sector is getting matured; the growth rate is declining (because of increasing base in the later years). From a growth rate of 310% in 2002-03, it has come down to 95% in 2005-06 and was a moderate 23% in 2009-10 and 13% in 2015-16. A look at the industry growth during the period 2001- 02 to 2009-10 shows that it is growing at a substantially good rate. But after that the growth rate has been taking a bumpy ride in the later part. In 2001-02, the total industry premium grew at a rate of 44% which decreased to 20% in 2003-04 after which it again increased. In 2006-07, the business increased by 47%. However, with advent of the sub-prime mortgage crisis in 2008 which affected the entire global economy, the Indian insurance industry could not remain unscathed. In 2008-09, the industry grew at a comparatively low rate of 10%. But then the industry growth became very minimal and even went negative in 2011-12. However, in recent years the industry is gaining its position and may be expected to learn from its earlier mistakes.

#### Contribution to the Country's GDP

The banking and insurance sector are two major pillars of the Indian financial system. They have been contributing immensely towards the Gross Domestic Product of our country. It needs to be mentioned here that data relating to the contribution of insurance sector standalone to the country's GDP could not be availed. Since, the data compiled by the CSO does not maintain data separately for the two aforesaid sectors. Instead, for each year, the data for the two sectors combined is provided. Henceforth, the discussion depicts the growth rate accordingly.

Throughout the last two decades of the twentieth century, it may be noticed that the two sectors combined immensely contributed towards the economic development of the Country. The table below shows that it rose consistently from 2.78% in 1980-81 to 6.15% in 1992-93 and landed up to 6.27% in 1997-98 before the present set of reforms was initiated.

Subsequent to the insurance sector deregulation, the two sectors combined have been contributing around 5.5% to the GDP on an average. In 2004-05, their contribution was 5.8% to the country's GDP which came down to 5.4% in 2009-10. During the period from 2004-05 to 2009-10, the contribution remained in the range of 5.4% to 5.8%. In 2011-12 it contributed just 3.75% but after that it may be observed that there has been a drastic increase but gradually. It has touched 7% in 2015-16 which is very impressive. An overall analysis shows that the contribution to GDP is increasing though there were many ups and downs during the period.

**Table 5.8: Contribution of the Banking and Insurance Sector to India's GDP (in %)**

Year	Contribution to GDP
Prior to insurance sector deregulation	
1980-81	2.78
1985-86	3.72
1990-91	5.26
1991-92	6.13
1992-93	6.15
1993-94	6.74
1994-95	5.25
1995-96	5.54
1996-97	5.81
1997-98	6.27
After insurance sector deregulation	
2004-05	5.8
2005-06	5.4
2006-07	5.5
2007-08	5.5
2008-09	5.7
2009-10	5.4

2010-11	4.1
2011-12	3.95
2012-13	4.7
2013-14	5.9
2014-15	5.7
2015-16	7.0

Source: Studies by RBI ([www.indiaonesto.com/serviceindustry.htm](http://www.indiaonesto.com/serviceindustry.htm)) and Central Statistical Organization (Economic Survey 2010-11)

### Growth of the Life Insurance Sector

The insurance industry of India showed a CAGR (Compound Annual Growth Rate) of 10.49% over the past eleven years. The life Insurance market grew from \$10.5 billion to \$54.58 billion through 2001-02 to 2015-16 (AIBEF, IRDA Data). Since its inception to 2015-16 the life insurance sector alone grew 12.49%. As per PWC studies, insurance industry has the potential to grow 2-2.5 times by 2020 due to strong fundamentals and grabbing share of household savings. .

**Table 5.9: Compound Annual Growth Rate of the Life Insurance Sector**

Year	Growth Rate (%)
2004-05	19
2005-06	24
2006-07	34
2007-08	50
2008-09	48
2009-10	56
2010-11	64
2011-12	60
2012-13	52
2013-14	52
2014-15	61.75
2015-16	54.58

Source: Adapted from Indian Chamber of Commerce(pwc survey)

The major reasons behind such growth may be attributed to growing awareness about insurance, innovative and customized products, new distribution channels like bancassurance and rising use of internet. It is predicted by Swiss Re that the fastest-growing insurance market will be that of India with the premium likely to grow at a compounded rate of 15% for the next decade which is more than 14% predicted for China. Therefore, India and China will be the most- promising markets in Asia (Ernst & Young, 2010).

### Life Insurance Penetration: A World wide measure

Life Insurance Penetration is one of the most important indicators to study the performance of an insurance industry in a country. It is a measure of the total **life insurance premium as a**

percentage of a country's GDP. The following table gives a depiction of life insurance penetration across different countries of the world.

**Table 5.10: Life Insurance Penetration: A Cross-Country Comparison (in US \$)**

Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Non Asian Countries</b>																
Australia	5.7	5.02	4.42	4.17	3.51	3.8	3.8	4.4	3.4	3.1	3	2.8	3	3.8	3.5	2.99
Switzerland	7.95	8.41	7.72	6.73	6.20	6.20	5.70	5.50	5.4	5.5	10	9.6	5.3	5.1	5.1	4.72
UK	10.73	10.19	8.62	8.92	8.90	13.10	12.6	12.80	10	9.5	11.8	11.3	8.8	8	7.5	7.58
France	5.73	5.61	5.99	6.38	7.08	7.90	7.30	6.20	7.20	7.40	9.5	6.2	5.6	5.59	6.2	6.06
US	4.40	4.60	4.38	4.22	4.14	4.0	4.20	4.10	3.5	3.50	3.2	3.1	3.2	3	3.1	3.02
Germany	3.0	3.06	3.17	3.11	3.06	3.10	3.10	3.0	3.3	3.5	6.8	6.9	3.1	3.1	2.9	2.75
Brazil	0.36	1.05	1.28	1.36	1.33	1.30	1.40	1.40	1.60	1.60	1.7	2	2.2	2.1	2.1	2.28
SouthAfrica	15.19	15.92	12.96	11.43	10.84	13.0	12.50	12.50	10	12	10.2	NA	12.7	11.4	12	11.52
Russia	1.55	0.96	1.12	0.61	0.12	0.10	0.10	0	0	0	0.1	0.1	0.1	0.2	0.20	0.25
<b>Asian Countries</b>																
Malaysia*	3.38	2.94	3.29	3.52	3.60	3.2	3.10	2.80	2.9	3.2	3.3	3.1	3.2	3.1	3.4	3.15
Thailand	1.86	2.09	2.25	1.94	1.99	1.90	1.80	1.80	2.4	2.6	2.7	3	3.8	3.6	3.7	3.72
China	1.34	2.03	2.30	2.21	1.78	1.70	1.80	2.20	2.3	2.5	1.8	1.7	1.6	1.7	2	2.34
<b>India*</b>	<b>2.15</b>	<b>2.59</b>	<b>2.26</b>	<b>2.53</b>	<b>2.53</b>	<b>4.10</b>	<b>4.0</b>	<b>4.0</b>	<b>4.6</b>	<b>4.4</b>	<b>3.4</b>	<b>3.2</b>	<b>3.1</b>	<b>2.6</b>	<b>2.7</b>	<b>2.72</b>
Japan*	8.85	8.64	8.61	8.26	8.32	8.30	7.50	7.60	7.8	8.0	8.8	9.2	8.8	8.4	8.3	7.15
Hong Kong	5.13	5.20	6.38	7.88	8.63	9.20	10.60	9.9	9.6	10.1	10.1	11	11.7	12.7	13.3	16.2
SouthKorea*	8.69	8.23	6.77	6.75	7.27	7.90	8.20	8.0	6.5	7	7	6.9	7.5	7.2	7.3	7.37
Sri Lanka	0.53	0.55	0.55	0.60	0.62	0.60	0.60	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.52
Pakistan	0.30	0.24	0.24	0.28	0.27	0.30	0.3	0.3	0.3	0.30	0.4	0.4	0.5	0.5	0.5	0.63
Bangladesh	0.29	0.29	0.37	0.37	0.42	0.40	0.50	0.7	0.7	0.70	NA	NA	NA	NA	NA	NA
Singapore	3.40	3.48	6.09	6.02	6.0	5.4	6.20	6.30	5.1	4.6	4.3	4.4	4.4	5.0	5.6	5.48
Taiwan	6.03	7.35	8.28	11.06	11.17	11.60	12.90	13.30	13.8	15.4	13.9	15	14.5	15.6	15.7	16.65
<b>World</b>	<b>4.68</b>	<b>4.76</b>	<b>4.59</b>	<b>4.55</b>	<b>4.34</b>	<b>4.5</b>	<b>4.4</b>	<b>4.1</b>	<b>4.0</b>	<b>4.0</b>	<b>3.8</b>	<b>3.7</b>	<b>3.5</b>	<b>3.4</b>	<b>3.5</b>	<b>3.47</b>

Source: IRDA Annual Reports

Note: Data relates to the calendar year. However, \* represents financial year.

The comparison with other countries throws light on India's position in comparison to few selected Asian and Non-Asian countries in respect to life insurance penetration after the opening up of insurance sector to the private players. It can be inferred that the penetration level is gradually decreasing for most of the non-Asian countries except Brazil. Though, Brazil's penetration level is yet much below the average, still Brazil is improving its penetration level at a slow but steady pace. South Africa has a very high penetration level amongst the non Asian countries but it is also following a downward trend. It is very surprising to spot that developed nations namely, US and Germany do not have good penetration levels. Comparatively France and UK reflects an encouraging scenario. Australia, Switzerland and Russia reflect a very discouraging trend.

The Asian countries exhibit a reverse trend. It may be observed that India is lagging far behind the World average. Further the penetration level is decreasing gradually even after such initiatives by the regulator and Government. This scenario calls for serious probe and adoption of necessary steps in near future. However, India's position in comparison to its immediate neighbours Pakistan, Bangladesh and

Srilanka is commendable. Taiwan and Hong kong have very high penetration levels which is a very good sign of a welfare economy. Some of the other South Asian countries like Malaysia and Thailand is improving drastically and has also beat India in terms of Insurance penetration. However, India's position with respect to nations like Japan, Hong Kong and South Korea is miserable. China, the fastest-growing economy in the world and India is almost at the same zone

### Life Insurance Density: World wide measure

Life Insurance Density is another important measure to judge countries performance in terms of insurance. The 'life insurance density' may be otherwise termed as per capita insurance premium. The cross-country comparison helps to understand India's position in comparison to World, Asian, European and other non-Asian countries. The table below reflects the life insurance density across various countries of the world.

**Table 5.11: Life Insurance Density: A Cross-Country Comparison ( in US \$)**

Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Non-Asian Countries</b>																
Switzerland	2715.7	3099.7	3431.8	3275.1	3078.1	3111.8	3159.1	3551.5	3405.6	3666.8	4421	4121.1	4211	4391	4079	3700.3
UK	2567.9	2679.4	2617.1	3190.4	3287.1	5139.6	5730.5	5582.1	3527.6	3436.3	3347	3255.8	3474	3638	3292	3033.2
France	1268.2	1349.5	1767.9	2150.2	2474.6	2922.5	2928.3	2791.9	2979.8	2937.6	2638	2239.2	2391	2552	2263	2227.7
US	1602	1662.6	1657.5	1692.5	1753.2	1789.5	1922	1900.6	1602.6	1631.8	1716	1808.1	1654	1657	1719	1724.9
Germany	674.3	736.7	930.4	1021.3	1042.1	1136.1	1234.1	1346.5	1359.7	1402.2	1389	1299.3	1392	1437	1181	1150.6
Brazil	10.8	27.2	35.8	45.9	56.8	72.5	95.3	115.4	127.9	169.9	208	225.5	246	222	178	195.5
SouthAfrica	377.2	360.5	476.5	543.5	558.3	695.6	719	707	574.2	854.6	823	882.3	844	748	688	615.8
Australia	1040.3	1010.4	1129.3	1285.1	1366.7	1389	1674.1	2038	1524.8	1766.3	2077	1987.7	2056	2382	1830	1558.5
Russia	33.2	23.1	33.9	24.8	6.3	4	6.1	5.4	4.5	6.2	8	12.1	19	20	15	22.4
<b>Asian Countries</b>																
Malaysia*	129.5	118.7	139.8	167.3	188	189.2	221.5	225.9	206.9	282.8	328	329.9	341	338	316	298.3
Thailand	34.1	42.1	52	50.8	54.6	60	70.8	77.2	91.7	121.9	134	156.5	214	198	215	222
China	12.2	19.5	25.1	27.3	30.5	34.1	44.2	71.7	81.1	105.5	99	102.9	110	127	153	189.9
<b>India*</b>	<b>9.1</b>	<b>11.7</b>	<b>12.9</b>	<b>15.7</b>	<b>18.3</b>	<b>33.2</b>	<b>40.4</b>	<b>41.2</b>	<b>47.7</b>	<b>55.7</b>	<b>49</b>	<b>42.7</b>	<b>41</b>	<b>44</b>	<b>43</b>	<b>46.5</b>
Japan*	2806.4	2783.	3002.	3044	2956.	2829.	2583.9	2869.5	3138.7	3472.8	4138	4142.5	3346	2926	2717	2803.4
HongKong	1249.7	1237.	1483.	1884.	2213.	2456	3031.9	2929.6	2886.6	3197.3	3442	4024.7	4445	5071	5655	7065.6
SouthKorea*	763.4	821.9	873.6	1006.	1210.	1480	1656.6	1347.7	1180.6	1454.3	1615	1578.1	1816	2014	1940	2049.6
Sri Lanka	4.3	4.5	5.3	6.2	6.9	8.5	10.2	12.8	11.8	13.7	15	14.8	16	17	19	21.2
Pakistan	1.2	1.0	1.1	1.5	1.9	2.3	2.6	2.8	3.0	3.2	4	5.3	6	7	8	9.2
Bangladesh	1.0	1.0	1.4	1.5	1.7	1.8	1.9	3.3	3.9	4.4	NA	NA	NA	NA	NA	NA
Singapore	713.2	730.1	1300.2	1483.9	1591.4	1616.5	2244.7	2549	1912	2101.4	2296	2471.8	2388	2840	2932	2894.5
Taiwan	760.9	925.1	1050.1	1494.6	1699.1	1800	2165.7	2281.1	2257.3	2756.8	2757	3107.1	3204	3371	3397	3598.7
<b>World</b>	<b>235</b>	<b>247.3</b>	<b>267.1</b>	<b>291.5</b>	<b>299.5</b>	<b>330.6</b>	<b>358.1</b>	<b>369.7</b>	<b>341.2</b>	<b>364.3</b>	<b>378</b>	<b>372.6</b>	<b>366</b>	<b>368</b>	<b>346</b>	<b>353</b>

Source: IRDA Annual Reports

Note: Data relates to the calendar year. However, "\*" represents financial year.

It is evident that the position of Switzerland and UK is far better than the other non asian countries. It is quite unexpected to observe that South Africa, which ranks so high in respect of penetration, scores

comparatively poor in respect of life insurance density level. US and France have been doing pretty well and gradually increasing in terms of life insurance density level. Germany and Australia are the next in the queue. The position of Brazil has improved a lot since 2001. Russia carried on a downward trend but is increasing rapidly since 2012.

In the other part of the globe i.e. for the Asian countries, we find that Hong Kong is very successful in terms of its insurance business. Japan has declined since 2012 still it is far better compared to the other countries. Singapore, Taiwan and South Korea have drastically improved in terms of insurance density level. China, the emerging superpower has shown gradual increase during these years. India had improved upto 2011 but the density level started dwindling right from 2012 and has managed to keep it 46.5 in 2016 which is much below the World level of 353. So, India has much to do in this aspect. Malaysia and Thailand has also improved in terms of insurance density. Srilanka has also improved its performance but it is still very low. Pakistan and Bangladesh also has very low density levels.

#### Number of Policies Issued

In the insurance sector, number of policies issued is a key parameter to understand its growth. The sector wise number of policies issued after opening up of the sector is given below:

**Table 5.12 Number of Life Insurance Policies Issued in India (in lakhs)**

Year	Public Sector		Private Sector		Total	
	No.	Growth	No.	Growth	No.	Growth
2002-03	245.46	-	8.25	-	253.71	-
2003-04	269.68	9.87	16.59	101.05	286.27	12.83
2004-05	239.78	(11.09)	22.33	34.62	262.11	(8.44)
2005-06	315.91	31.75	38.71	73.37	354.62	35.29
2006-07	382.29	21.01	79.22	104.64	461.51	30.14
2007-08	376.13	(1.61)	132.62	67.40	508.75	10.23
2008-09	359.13	(4.52)	150.11	13.19	509.24	0.09
2009-10	388.63	8.21	143.62	(4.32)	532.25	4.51
2010-11	370.38	(4.70)	111.14	(22.61)	481.52	(9.53)
2011-12	357.51	(3.47)	84.42	(24.04)	441.93	(8.22)
2012-13	367.82	2.88	74.05	(12.28)	441.87	(0.01)
2013-14	345.12	(6.17)	63.60	(14.11)	408.72	(7.50)
2014-15	201.71	(41.55)	57.37	(9.79)	259.08	(36.61)
2015-16	205.47	1.86	61.92	7.92	267.38	3.20

Source: IRDA Annual Reports

Figures in bracket denotes negative growth

The Indian insurance market is a plethora of opportunities. The private sector has started penetrating the market very aggressively. In the initial period the growth trajectory was huge but gradually after 2009-10 they started negative growth. Still, the year 2015-16 may be a silver lining beyond the cloudy days for the private sector companies. LIC, the only public sector giant, alone issues 4-5 times of the

total life insurance policies compared to the 23 private sector companies. The mammoth has neither shown steep increase nor steep decrease in issue of policies except in the year 2014-15.

The influence of sub-prime mortgage crisis on the Indian stock market affected the performance of ULIPs, as a result the increasing sales of private players fell drastically to 143.62 lakh policies in 2009-10. On contrary, the number of policies issued by public sector increased from 245.46 lakh policies in 2002-03 to 388.63 lakh policies in 2009-10 due to their strong hold in the market based on traditional plans. Upto 2009-10, there has been a consistent rise of the private sector, but the numbers for the public sector has been fluctuating.

It is evident that the private sector has grown at a positive rate in the first decade except in the year 2009-10 after which there was a decline in sale of policies. The reason may be selling insurance as an investment by over emphasizing on ULIP products. However, it may be also considered that the absolute percentage growth rate shows a falling trend thereby reflecting that the rate of growth is stabilizing as the market is getting matured. As far as the industry growth rate is concerned, it gets carried away with the public sector giant. However overall it was attractive till 2006-07. Then it started dwindling. After the year 2010-11 it was negative. Finally in 2015-16 it has shown a positive growth rate and mostly due to increase in the private sector growth.

#### Assets Under Management (AUM)

Assets under management (AUM) means the sum total of assets being managed under the four categories of funds viz., life fund, pension fund, annuity fund and the ULIP fund. This parameter is helpful in understanding the growth in insurance business as right investment is a key to success for any financial services firm.

**Table 5.13: Assets Under Management in Life Insurance Business  
(Rs. in Trillion)**

Year	LICI	Private Sector	Industry Total
2002-03	22.77	0.28	22.96
2003-04	30.44	0.19	30.73
2004-05	36.14	0.28	36.62
2005-06	38.95	0.77	39.72
2006-07	45.34	1.21	46.55
2007-08	52.61	1.86	54.47
2008-09	60.65	2.31	62.96
2009-10	69.95	3.31	73.26
2010-11	79.83	4.28	84.10

2011-12	91.46	6.00	97.46
2012-13	103.76	8.23	111.99
2013-14	118.1	10.72	128.82
2014-15	135.98	13.55	149.53
2015-16	152.70	17.04	169.74

Source: IRDA Annual Reports

The AUM for LIC has been steadily increasing during the period 2002-03 to 2015-16. The rise has been almost 7 times from 2002-03 to 2015-16. The private sector being the new comers in the sector will take due time to increase their investments and it is also prudential to take time rather than entering into risky ventures. However, on observing the rate of increase, it was found that it has increased almost 61 times during this period. This rapid increase is commendable but it is due to the advantage of small numbers at the initial years. The year on year growth rate will reflect that the market is gradually stabilizing and entering early maturity. However, since the private sector is new to the industry, the growth rate difference between the two sectors should not be compared.

#### Number of Life Insurance Offices

The success for any insurance company depends on its reach to the customers. The extent of distribution network and proximity to the customers is a basic infrastructural requirement of any insurance business. The customers seek accessibility and visibility in case of financial firms which builds up their trust and reliability on the insurer. Keeping this in mind, to win the confidence of their prospects the insurers opened large number of offices during this period. The increase in the number of offices is evident from the table below:

**Table 5.14: Number of Offices of Life Insurers (as on 31st March)**

Year	LICI	Private Sector	Total
2000-01	2186	13	2199
2001-02	2190	116	2306
2002-03	2191	254	2445
2003-04	2196	416	2612
2004-05	2197	804	3001
2005-06	2220	1645	3865
2006-07	2301	3072	5373
2007-08	2522	6391	8913
2008-09	3030	8785	11815

2009-10	3250	8768	12018
2010-11	3371	8175	11546
2011-12	3455	7712	11167
2012-13	3526	6759	10285
2013-14	4839	6193	11032
2014-15	4877	6156	11033
2015-16	4892	6179	11071

*Source: IRDA Annual Reports*

This growth is mostly led by the private sector companies which rapidly increased within a few years of their entering the industry and LIC the only public sector giant also influenced the growth to some extent. It is prominent that the private players taken together started expanding their reach through branches at a fast pace initially. Later after 2011-12 they started contraction. However, LIC has increased its number of offices from 2186 in 2000-01 to 4892 in 2015-16, while the private sector has increased the number from 13 to 6179 during the same time period. The growth of LIC in terms of branches has been steadily on the positive side.

There has been a change in the distribution pattern of insurance business. Many alternative channels have emerged like bancassurance. Agency channels have no alternative since its origin. The growth in the dependence of internet may be a reason for decline in the number of branch of the private players.

### Equity Share Capital

Any business needs capital to start, grow and sustain. It is a well known fact that insurance industry is a capital-intensive industry. It needs a gestation period of around eight years. In India, due to opening up of insurance sector to the private participants there has been a huge infusion of capital all this while. The major changes like increase in competition, increasing management expenses and urge to build up competitive advantage have compelled the private promoters as well as the public sector giant to invest more and more capital which is clear from the table below.

**TABLE 5.15: Equity Share Capital of Life Insurers (Rs. in crore)**

<b>Year (on 31st March)</b>	<b>Public Sector</b>	<b>Private Sector</b>	<b>Total</b>
2002	5.00	1664	1669
2003	5.00	2229.13	2234.13
2004	5.00	3238.71	3243.71



<b>Aegon Religare</b>	1.85 (80)	2.11 (106)	5.07 (172)	0.1 (128)	0.8 (4)	0.28 (4)	0.37 (4)	1.21 (8)	0	0.1 (1)
<b>AvivaLife</b>	6.56 (335)	4.5 (267)	15.27 (775)	2.36 (524)	1.77 (59)	2.74 (82)	2.86 (20)	31.55 (1111)	0.8 (3)	2.07 (9)
<b>Bajaj Allianz</b>	-	0	0.36 (7)	14.21 (4)	3.39 (1527)	22.91 (1145)	26.23 (845)	1.3 (9)	23.33 (572)	36.36 (624)
<b>Birla Sunlife</b>	2.18 (12)	2.25 (10)	2.79 (17)	0.17 (14)	0	0.27 (2)	2.08 (14)	32.89 (444)	14.99 (23)	3.29 (32)
<b>Canara HSBC</b>	3.49 (202)	-	-	0.77 (8)	0.06 (14)	1.96 (34)	2.04 (31)	1 (11)	2.04 (246)	17.72 (142)
<b>DLF Pramerica</b>	2.62 (111)	5.55 (242)	-	0	3.19 (42)	0.96 (35)	0.76 (20)	10.52 (325)	3.73 (16)	2.38 (18)
<b>Edelweiss Tokio</b>	0.87 (62)	4.02 (151)	-	0.06 (4)	0.21 (5)	0.64 (24)	4.27 (137)	0.23 (3)	1.35 (463)	2.41 (55)
<b>Future Generali</b>	2.5 (99)	-	7.83 (310)	8.16 (210)	4.07 (144)	0	0	3.89 (70)	1.32 (14)	1.03 (6)
<b>HDFC Std</b>	9.63 (540)	2.83 (171)	6.91 (365)	16.9 (886)	1.28 (161)	7.82 (348)	4.26 (96)	9.51 (101)	9.65 (206)	4.15 (48)
<b>ICICI Pru</b>	1.62 (36)	2.55 (145)	-	0.55 (25)	19.5 (1053)	1.93 (28)	1.21 (10)	2.34 (12)	8.59 (231)	1.75 (38)
<b>IDBI Federal</b>	0.5 (9)	9.13 (358)	3.92 (281)	0	4.37 (56)	7.14 (361)	2.64 (47)	1.71 (26)	14.48 (94)	53.55 (275)
<b>India First</b>	0.6 (7)	3.1 (70)	1.62 (111)	4.75 (216)	0.1 (5)	2.69 (59)	2.08 (31)	1.63 (21)	29.87 (123)	14.14 (96)
<b>Exide Life</b>	1.53 (165)	0.35 (14)	0.43 (5)	5.25 (178)	2.88 (112)	2.8 (119)	0	5.64 (179)	2.44 (39)	3.56 (44)
<b>Kotak Mahindra</b>	0	0.16 (21)	5.5 (106)	1.82 (87)	8.45 (197)	5.37 (184)	4.07 (153)	4.41 (60)	2.63 (49)	6.14 (82)
<b>Max Life</b>	4.33 (236)	-	0.14 (4)	7.4 (139)	30.32 (1355)	18.5 (644)	7.82 (110)	71 (8)	4.21 (49)	8.19 (87)
<b>MetLife</b>	-	1.14 (68)	1.06 (95)	7.14 (287)	17.54 (152)	19.03 (152)	8.01 (143)	6.98 (67)	0.34 (4)	2.09 (6)
<b>Reliance Life</b>	-	3.59 (193)	2.67 (165)	1.82 (187)	4.98 (142)	27.03 (1605)	10.72 (187)	25.84 (1356)	10.44 (8)	6.74 (37)
<b>SaharaLife</b>	-	-	6.37 (322)	3.61 (287)	8.02 (334)	3.2 (299)	25.95 (910)	0.62 (69)	33.35 (1505)	32.84 (1050)
<b>SBI Life</b>	1.53 (165)	3.25 (187)	5.36 (236)	8.08 (355)	2.12 (220)	5.32 (103)	5.58 (158)	8.66 (167)	7.69 (190)	31.4 (470)
<b>ShriramLife</b>	-	-	-	0	7.85 (475)	6.15 (290)	1.39 (297)	4.14 (81)	0.21 (16)	0.29 (28)
<b>StarUnion</b>	-	-	-	10.71 (298)	0.3 (22)	1.03 (52)	7.12 (55)	3.06 (56)	0	11.48 (220)
<b>Tata AIA</b>	-	-	-	0	11.53 (307)	1.85 (42)	2.54 (29)	0	0.27 (9)	0.33 (4)
<b>LIC</b>	<b>185.39 (9574)</b>	<b>205.43 (9982)</b>	<b>141.37 (11550)</b>	<b>148.53 (13076)</b>	<b>118.45 (9527)</b>	<b>177.32 (10803)</b>	<b>171.34 (8856)</b>	<b>254.65 (7829)</b>	<b>227.69 (3929)</b>	<b>207.63 (3652)</b>

It is evident that LIC has huge customer base so it is incomparable with the other novices in the market. In case of the private players we find that the year ended March 2014 and 2015 have been a year when they had to settle big amount of claims. SBI Life is doing a commendable business all this while. It is followed by Aviva and Canara HSBC in the later part of the study. However, to summarize it is prominent that the private players are serving their customers well which will in turn build up market confidence.

### 5.3 ABOUT THE LIFE INSURERS IN INDIA

This section gives an understanding about the twenty-four life insurers that were operating in India till the financial year 2015-16. The ownership pattern, mission, vision and other remarkable achievements of the companies individually have been discussed in brief.

**I. Aegon Religare Life Insurance Company (ARL) ([www.aegonreligare.com](http://www.aegonreligare.com))**

Aegon Religare is a joint venture between AEGON, an international life insurance, pension & investment company, Religare, a global financial services group, and Bennett, Coleman & Company, India's largest media house. The venture is dedicated to build a profitable customer-centric business with scale and providing a work environment that fosters excellence and innovation. The organization promises to delight customers through a fresh approach, innovative solutions and seamless delivery. ARL launched its pan-India operations in July, 2008 following a multi-channel distribution strategy with a vision to help people plan their life better. The fulfillment of this vision is based upon having a complete product suite, providing customised advice and enhancing the overall customer experience through superior service. ARL has launched a suite of products that are focused on providing the customer with means to meet their long-term financial goals. ARL products such as AEGON Religare iTerm Plan and AEGON Religare Future Protect Plan have been ranked among the best in terms of value.

About the Partners

**i) Aegon-** It is an international company in the areas of life insurance, pension and investment. It has businesses in over twenty places in America, Europe and Asia. With headquarters in Hague, it employs approximately 28,000 people and serves some 40 million customers across the globe. The company's shares are listed on three stock exchanges: Amsterdam, New York and London. Aegon has more than 160 years of experience with its roots going back to 1844. Aegon holds 26% equity in ARLI.

**ii) Religare Enterprises Limited-** It is a global financial services group with its presence across Asia, Africa, Middle East, Europe and America. In India, Religare's largest market, the group offers a wide array of products and services ranging from insurance, asset management, broking and lending solutions to investment banking and wealth management. The group pioneered the concept of investments in alternative asset classes such as arts and films. With over 10,000 employees across multiple geographies, Religare serves over a million clients, including corporate and institutions, high net worth families and individuals, and retail investors. REL hold 44% equity in ARL.

**iii) Bennett, Coleman & Company Limited (BCCL)**

It is part of the mammoth Times Group and is India's largest media house. It reaches out to 2468 cities and towns all over India. The group owns and manages powerful media brands like The

Times of India, The Economic Times, Maharashtra Times, Navbharat Times, Femina, Filmfare, Grazia, Top Gear, Radio Mirchi, Zoom, Times Now, Times Music, Times OOH, Private Treaties and indiatimes.com. All of its brands are multinational in outlook, traditional at heart and national in spirit. From the very first edition on November 3, 1838 the mammoth BCCL Group has come a long way. The group holds 30% equity in ARL.

Vision of the insurer -The insurer's vision is to "To help people plan their life better."

Values- The Company believes in the following principles: Being empathetic, Being professional, Being vibrant and forward thinking.

## II. **Aviva Life Insurance** ([www.avivaindia.com](http://www.avivaindia.com))

Aviva India is a joint venture between one of the country's oldest and largest groups, Dabur, and Aviva Plc, UK's largest insurance group, whose association with India dates back to 1834. The stake of the Indian partner is 76% and the balance 24% is held by Aviva Plc. It has a wide network of 140 branches spreading across nearly 3,000 towns and cities in India. The organization has a strong sales force of over 20,000 Financial Planning Advisors.

### About the Partners

**i) Dabur-** Founded in 1884, Dabur Group is one of India's oldest and largest groups of companies. A professionally managed company, it is the country's leading producer of traditional healthcare products.

**ii) Aviva Group-** Aviva is a leading provider of life and pension products in Europe (including UK) with substantial positions in other markets around the world, making it the world's sixth largest insurance group based on gross worldwide premiums at 31st December, 2009.

Aviva's principal business activities are long- term savings, fund management and general insurance, with worldwide total sales of £47.1 billion and funds under management of £402 billion at 31 December, 2010. With a history dating back to 1696, Aviva Group has a 44.5 million customer base worldwide.

Vision- The company's vision is to be amongst India's leading life insurers with a quality business model, focused on sustainable growth.

### Awards and Recognitions

Given below is the list of a few awards conferred upon it in recent times-

- won a Bronze at the Effies 2010
- won a Gold at the SPIKES Asia Awards, 2010
- won the “Corporate Social Responsibility Award” at the prestigious Asia Insurance Industry Awards 2010
- won two major awards, at the ‘CMO Asia Awards’ held in Singapore– ‘Excellence in Branding and Marketing’ in Banking and Financial services, and Social Marketing.
- felicitated with the "Bronze Award for Excellence in People Management" by Grow Talent Company Limited and Businessworld.
- ranked 4th in the Best Workplaces in India study for the year 2008 by the Great Place to Work Institute.
- won the coveted Award for Talent Management during the national round of Asia Pacific HRM Congress.

### III. **Bajaj Allianz Life Insurance Co.Ltd. ([www.bajajallianz.com](http://www.bajajallianz.com))**

The company is a joint venture between Allianz AG and Bajaj Auto which started its operations in 2001. Today, Bajaj Allianz is one of India’s leading and fastest growing insurance companies with its presence in more than 550 locations with over 60,000 insurance consultants. The company stresses on customer delight and aims to provide investment solutions through customized products. Recently, it won the Bloomberg UTV Award 2011 for the best utilization of Information Technology to transform business. Bajaj Allianz has a wide array of bank partners ranging from PSU, Private Sector, District Co- operative banks to Regional Rural Banks. It is also partnered with Standard Chartered Bank, Dhanalakshmi Bank and Team Life Care Co. (India) Ltd.

It provides several types of products like the usual traditional products but also ULIPs. One of the unique aspects that we found is the presence of women’s traditional plans to cater to their specific needs. It has a wide network through its 600 branches. In order to help customers in choosing the right product, professional advice is given through its 1, 47,900 empanelled advisors. It is among the private players who have the lowest claims outstanding ratio in 2010-11; the ratio was zero percent.

#### About the Partners

i) **Bajaj Auto-** It is one of the biggest two and three wheeler manufacturers in the world.

**ii) Allianz Group-** It is one of the world's leading insurers, financial services providers and asset managers. Founded in 1890 in Berlin, Allianz is now present in over 70 countries with almost 174,000 employees. Allianz SE has over 115 years of financial experience in over 70 countries.

#### **IV. Birla Sun Life Insurance Co. Ltd. ([www.birlasunlife.com](http://www.birlasunlife.com))**

The insurer which is among the first to be registered for carrying out life insurance business in the country was established in 2001 as a joint venture between Aditya Birla Group and Sun Life Financial of Canada. It is presently among the top insurers in the country.

##### About the Partners

**i) Aditya Birla Group** is the Indian partner and is a renowned name in the business fraternity not only in India but also across the world with its presence in India, Thailand, Indonesia, Malaysia, Philippines, Egypt, Canada, Australia and China.

**ii) Sun Life Assurance** is the insurance business arm of Sun Life Financials. It is one of the leading insurance companies of the world and ranks amongst the largest international financial services organizations in the world.

##### Insurer as the trend-setter

The insurer has been the trend-setter in several areas through its innovation which include:

- Introduction of the Free Look-in Period
- The launch of Unit Linked Insurance Plans amongst the private players in India.
- Originator of the practice of disclosing the portfolio on monthly basis.

#### **V. Bharti AXA Life ([www.bharti-axalife.com](http://www.bharti-axalife.com))**

This life insurance player started its operations in December 2006. It brings together strong financial expertise of the Paris-headquartered AXA Group and Bharti Enterprises - one of India's leading business groups. The joint venture has a 74% stake from Bharti and 26% stake from AXA Asia Pacific Holdings Ltd. (APH). The venture, therefore, brings in a combination of AXA's best practice blueprints as a sound platform for efficient and profitable growth and Bharti's local knowledge, infrastructure and customer base. Today, there are more than over 5200 employees across over 12 states in the country. The business philosophy of the insurer is to make "Life Confident". Today, Bharti AXA Life has a national footprint of distributors trained to provide quality financial advice and

insurance solutions to the large Indian customer base. It offers a range of innovative products and services that cater to specific insurance and wealth management needs of customers.

#### About the Partners

**i) Bharti Enterprises-** It is one of India's leading business groups with interests in telecom, agricultural business, financial services, and retail. Bharti has been a pioneering force in the telecom sector with many firsts and innovations to its credit. Bharti Airtel Limited, a group company, is one of India's leading private sector providers of telecommunications services with an aggregate of over 110 million customers, spanning Mobile services, Telemedia services and Enterprise services. Bharti Airtel had been ranked amongst the best performing companies in the world in the Business Week IT 100 list 2007. Bharti Teletech is the country's largest manufacturer and exporter of telephone terminals. Bharti has a joint venture –

Bharti Del Monte India (P) Ltd – with Del Monte Foods India Pvt. Ltd., to offer fresh and processed fruits and vegetables in the domestic as well as international markets including Europe, USA and Middle East. Bharti recently forayed into retail business under Bharti Retail Pvt. Ltd. It also has a joint venture - Bharti Wal-Mart Private Ltd. - with Wal-Mart for wholesale cash-and-carry and back-end supply chain management operations in India.

**ii) AXA Group-** The group, headquartered in Paris, is a worldwide leader in Financial Protection. AXA's operations are diversified geographically, with major operations in Europe, North America and the Asia Pacific area. In 2010, total revenues amounted to Euro 91 billion.

Core attitudes of the insurer- The company believes in being attentive to the customers' needs, reliable in all kinds of services that it provides by practicing what it believes and being accessible to customers – both existing and potential.

Vision of the insurer- The insurer aims “To be a leader and the preferred company for financial protection and wealth management in India.”

Values of the insurer- The organization believes in Professionalism, Pragmatism, Innovation, Integrity and Team spirit.

#### **VI. Canara HSBC Oriental Bank of Commerce Life Insurance Company Limited**

( [www.canarahsblife.com](http://www.canarahsblife.com) )

The Company was launched on June 16, 2008 and is a joint venture between Canara Bank (holding 51%), Oriental Bank of Commerce (holding 23%) and HSBC Insurance (Asia Pacific) Ltd

(holding 26%), the Asian arm of the world's banking and financial services group - HSBC. The insurer has an exclusive access to around 60 million customers and a network of 6000 bank branches of its corporate agents. The company is the fastest Indian life insurance company to cross Rs. 500 crore and Rs. 1000 crore in weighted premium income till date and it also has the highest average premium per policy in the industry for individual business since its launch. The in-depth local market knowledge of Canara Bank and Oriental Bank of Commerce coupled with the considerable insurance experience, product range and proven bancassurance capabilities of HSBC make this an unparalleled union of financial strength, expertise and most importantly, trust.

#### The Partners:

**i) Canara Bank-** It was established in 1906, and has completed over a century of operations in the Indian banking industry. It is recognized today as amongst the largest nationalized banks in India in terms of aggregate business volume. The Government of India owns about 73.17% of the Bank. It currently has more than 3000 branches spread across all geographical segments and a customer base exceeding 37 million.

**ii) Oriental Bank of Commerce-** Oriental Bank of Commerce (OBC) was established in 1943 and is currently the 9th largest nationalized Bank in India in terms of assets. The Government of India owns 51.1% in Oriental Bank of Commerce. The Bank has a credit rating of AA+/FAAA/P1+ from CRISIL. Known for its sound customer-centric business practices, it has a distribution network of over 1500 branches and 13 million customers. It offers convenient banking services through more than 1000 ATMs and currently, 100% of the Bank's business is covered within the CBS branch network.

**iii) HSBC Insurance (Asia Pacific) Ltd. –** It is an insurance company based in Hong Kong and is wholly owned by the Hongkong and Shanghai Banking Corporation Limited. HSBC in India offers a full range of banking and financial services to over 2 million customers through its 50 branches and 150 ATMs across 29 cities. The multinational giant, one of the strong financial services groups in India, has more than 35,000 employees in banking, investment banking and capital markets, asset management, insurance broking, insurance, software development and global resourcing operations in the country. It is a leading custodian in India. More than 5% of India's exports and imports pass through HSBC India's banking channels.

Values of the insurer- The business of the entity is based on the principles of honesty and fairness, customer driven, simplicity and excellence, staff engagement and corporate citizenship.

Achievements- It made a record-breaking entry in July 2008. In its first full month of business - the Company wrote over Rs.12 crores of annualized premiums, exceeding what many companies achieved in their entire first year of operations.

#### VII. **DLFPramerica Life Insurance Company Limited ([www.dlfpramericalife.com](http://www.dlfpramericalife.com))**

This company is a joint venture between DLF Limited, one of India's largest and most respected real estate organizations and Prudential International Insurance Holdings. This new insurer commenced business on September 01, 2008. The company promises to protect the insured. The mission of the insurer is not just to help people with insurance, but also to help them achieve overall financial security. It believes in being a symbol of trust, commitment and leadership. The 'Rock' symbol is an icon of strength, stability, expertise and innovation and is the symbol of the insurer's unshakable commitment to the customers, stakeholders and employees. It is also the seal of security for the lives touched by it. Apart from the business, the organisation believes in selfless service to the society which is clear from the Pramerica Spirit of Community Awards which is a school-level recognition programme for voluntary community service.

Vision- The Company aims "to ensure that every life we touch, feels secure and enriched".

#### VIII. **Edelweiss Tokyo Life Insurance Company ([www.edelweisstokio.in](http://www.edelweisstokio.in))**

This company is a joint venture between Edelweiss Financial Services Limited and Tokio Marine Holdings Inc. established in the year 2011. Edelweiss Financial Services Limited is one of India's largest and diversified financial services company with 248 branches. Tokio Marine Holdings Inc. is 138 years old (one of the oldest) and largest insurance company in Japan. It operates in 469 cities across 37 countries throughout the World. At present, Edelweiss Tokyo Life Insurance Company has 121 branches and 31031 agents. This company claims to strive for delivering excellence through innovation. They introduced an innovation approach named Vijaypath in 2012 which is a customer centric need based platform for their customers. They have a claim settlement ratio of 95.24%.

Their vision:

We will take the responsibility of protecting people's dreams and aspirations. We will pro-actively find out what people's dreams and aspirations are and what could potentially hinder their dreams and aspirations. We will then bring our expertise and resources to help them fulfill their dreams and mitigate the hindrances.

Achievements:

- Next generation ULIP plan Wealth plus has won 3 awards for product innovation in 2018

- Best Product Innovation Award at the Indian Insurance Award in 2017
- Outlook Money Award as the best life insurer in just 3 years in 2016
- Launch of first on-line term plan MyLife+ in 2014
- The rising star insurance award at the Indian Insurance Award in 2013

#### IX. **Future Generali Life Insurance** ([www.futuregenerali.in](http://www.futuregenerali.in))

This company is a joint venture between the India-based Future Group and the Italy-based Generali Group.

##### About the Partners

**i) Future Group-** Future Group is one of India's leading business houses with multiple businesses spanning across the consumption space. While retail forms the core business activity of Future Group, some of the subsidiaries are present in consumer finance, capital, insurance, leisure and entertainment, brand development, retail real estate development, retail media and logistics.

This group is led by its flagship enterprise, Pantaloon Retail. The group operates over 12 million square feet of retail space in 71 cities and towns and 65 rural locations across India. Headquartered in Mumbai, Pantaloon Retail employs around 30,000 people and is listed on the Indian stock exchanges. The company follows a multi-format retail strategy that captures almost the entire consumption basket of Indian customers. Some of the big retail chains under this group include Pantaloons, Central, Big Bazaar, Planet Sports, eZone, Home Town and Aadhaar. Future Generali, the group's insurance venture is an addition to the diversified set of businesses activities that it carries out which include brand development, logistics and distribution solutions to group companies and business partners and retail media initiative. The group's presence in Leisure and Entertainment segment is led through, Mumbai-based listed company Galaxy Entertainment Limited. Galaxy leading leisure chains, Sports Bar and Bowling Co. and family entertainment centres, F123. Through its partner company, Blue Foods the group operates around 100 restaurants and food courts through brands like Bombay Blues, Spaghetti Kitchen, Noodle Bar, The Spoon, Copper Chimney and Gelato. Future Group's joint venture partners include, US-based stationery products retailers, Staples and Middle East-based Axiom Communications. The group's corporate credo is, 'Rewrite rules, Retain values.'

**ii) The Generali Group-** The Generali Group is a leading player in the global insurance and financial markets. Established in Trieste in 1831, today the Group is one of Europe's largest insurance providers. It is also one of the world's top asset managers with assets totaling more than € 400 billion. With an

employed sales force of more than 100,000 people serving 70 million clients in 68 countries, the Group occupies a leadership position in Western Europe and an increasingly important place in Eastern Europe and Asia. It has over € 400 billion of assets under management.

#### **X. HDFC Standard Life Insurance Co. Ltd. ([www.hdfclife.com](http://www.hdfclife.com))**

The life insurer, registered as the first private insurer in 2000, is one of India's leading private insurance companies. The company is a joint venture between HDFC Ltd., India's largest housing finance institution and Standard Life Assurance Company, Europe's largest mutual life company. HDFC holds about 72.43% of the equity, Standard Life holds 26%, and the rest is held by others. The insurer provides a host of services like the term plans, children plans, pension plans, health plans and women's plans to insure lives.

#### About the Partners

**i) HDFC Limited-** It is one of the leading housing finance institutions in the country having assisted around 4 million families, since its inception in 1977. It has its overseas presence through offices in Dubai, London and Singapore. It has received high level of appreciation from several national and international entities including the World Bank for the developmental projects that it assists.

**ii) Standard Life-** The company, headquartered in UK, was founded in 1825. The company is rated as "very strong" by Standard & Poor's (AA) and "excellent" by Moody's (Aa2). It has businesses spread out across the world in the UK, Canada, Ireland, Germany, Austria, India, USA, Hong Kong and mainland China. The portfolio of the insurance partner includes savings and investments businesses, which is spread across its UK, Canadian and European markets.

Long-term goals- The vision is to become 'The most successful and admired life insurance company, which means that we are the most trusted company, the easiest to deal with, offer the best value for money, and set the standards in the industry'.

Values of the insurer- Some of the principles that it believes in are - Integrity, Innovation, Customer centric, People Care "One for all and all for one", Team work, Joy and Simplicity.

#### Awards and Accolades

The insurer has been conferred several awards during these few years of its business. Some of the latest ones are mentioned below:

- Best Prax Benchmark Award 2012 for Leadership Governance in the Service category.

- Best Product Innovation Award at Indian Insurance Award, 2012
- Life Insurer of the year award by Bloomberg TV, 2012
- Winner for Customer and Brand Loyalty in 2012
- Master Brand Award, 2011
- Most Trusted Life Insurance Brand, 2011 by ET
- Innovation in CRM Award, 2011
- IMC RBNQA Award, 2011

#### XI. **ICICI Prudential Life Insurance Co. Ltd.** ([www.iciciprulife.com](http://www.iciciprulife.com))

The insurer is a joint venture between two business powerhouses, the ICICI Bank and Prudential plc. It started its operations in 2000. ICICI Prudential was the first life insurer in India to receive a rating of AAA from Fitch. The insurer has been voted as the Most Trusted Private Life Insurer, by The Economic Times - AC Nielsen ORG Marg survey several times. In order to hold on to its dominating market share, the insurer has a network of approximately 1,400 offices and over 1,75,000 advisors, as at June 30, 2011. In addition to this, it also has over 5000 distribution touch-points, over 10,000 servicing touch-points, over 263,000 advisors and 22 bancassurance partners across the country. It maintained a dominant position in the first decade in terms of new business retail weighted basis.

#### About the Partners

**i) ICICI Bank** was established in 1955 to lend money for industrial development. Today, the corporate has diversified into retail banking and is presently the largest private bank in the country.

**ii) Prudential plc** was established in 1848 and has its presence felt across different parts of the globe.

#### Awards and Accolades

Some of the recent prestigious awards won by the insurer include the following:

- ‘Insurance Company of the Year Award 2011’ and ‘Company of the Year Award 2011– Life Insurance’ at the Indian Insurance Awards, 2011
- ‘Best Leading Private Player – Life Insurance 2011’ at the CNBC TV18 Best Bank and Financial Institution Awards for 2011

- 'ICWAI National Award for Excellence in Cost Management – 2010' under the 'Private sector-Service (Large) category
- India's Most Customer Responsive Insurance Company. AGC Networks - Economic Times, Customer Responsiveness Awards, 2010.
- Most Trusted Private Life Insurance brand in the Brand Equity "Most Trusted Brands 2009" Survey.

## **XII. IDBI Federal Life Insurance Co. Ltd. ([www.idbifederal.com](http://www.idbifederal.com))**

This is among the new insurers who registered themselves for doing life insurance business in India. The insurer is a joint venture between three leading financial conglomerates - IDBI, Federal Bank and Fortis, each of which enjoys a significant status in their respective business segments. It launched its first set of products across India in March 2008, after receiving the requisite approvals from the IRDA.

### About the Partners

**i) IDBI Ltd.** - It is one of the premier industrial development banks in India. The bank was established in 1956 to provide support to the industrialization process of the country. Since then, it has evolved into a powerhouse of industrial and retail finance. Today, it is among the foremost commercial banks, with a wide range of innovative products and services, serving retail and corporate customers in all corners of the country from over 490 branches and more than 600 ATMs. The Bank offers its customers an extensive range of diversified services that includes project financing, term lending, working capital facilities, lease finance, venture capital, loan syndication, corporate advisory services and legal and technical advisory services to its corporate clients as well as mortgages and personal loans to its retail clients. As part of its development activities, IDBI has been instrumental in sponsoring the development of key institutions involved in India's financial sector – such as the Securities and Exchange Board of India (SEBI), National Stock Exchange of India Limited (NSE) and National Securities Depository Ltd. (NSDL).

**ii) Federal Bank-** It is one of India's leading private sector banks, with a national network and dominant presence in the state of Kerala. It has a strong network of over 550 branches and 450 ATMs spread across India. The bank provides over four million retail customers with a wide variety of financial products.

**iii) Fortis-** This European financial service provider is engaged in banking and insurance with a presence in over 50 countries. It offers its personal, business and institutional customers a comprehensive package of products and services through its own channels, in collaboration with

intermediaries and through other distribution partners. With a market capitalization of over €40 billion, Fortis ranks among the 20 largest financial institutions in Europe.

Vision- The long-term goal is to “be the leading provider of wealth management, protection and retirement solutions that meets the needs of our customers and adds value to their lives.”

Mission- The reasons behind the company’s existence is embedded in these statements which are as follows:

- To strive continuously to enhance customer-experience through innovative product offerings, dedicated relationship management and superior service delivery while striving to interact with customers in the most convenient and cost effective manner.
- To be transparent in the way of dealing with customers and to act with integrity.
- To invest in and build quality human capital in order to achieve its mission.

Values- The insurer believes in Transparency, Value to customers, Delivery on promise, Customer-friendly and Profit to stakeholders.

### XIII. **IndiaFirst Life Insurance** ([www.indiafirstlife.com](http://www.indiafirstlife.com))

IndiaFirst Life Insurance is among the young life insurance companies in India which commenced its business operations in March, 2010. It is a joint venture company having three promoters - Bank of Baroda, Andhra Bank and Legal & General, whose capital contribution is in the ratio of 44%, 30% and 26% respectively. As the name suggests, the insurance company believes in putting customers at the first place in all aspects. The three partners together have brought a combination of domain expertise, customer knowledge, product innovation and nationwide reach.

#### About the Promoters

**i) Bank of Baroda-** It is one of the largest public sector banks in the country with a huge network of over 3050 branches spread over the country and over 70 branches spread across 22 countries. This behemoth financial institution is over 100 years old and has been built on financial prudence, corporate governance and trust of valuable customers.

**ii) Andhra Bank-** This financial institution has been serving the Indian customer for over 85 years and currently has a network of over 1557 branches. The bank has developed best in class deposit

and lending schemes for its valued customers. Both the banks are nationalized and provide best in class products and services to their customers.

**iii) Legal & General-** It is one of UK's leading financial institutions with a heritage of over 150 years which provides life assurance, pensions, investments and general insurance plans to over 5.5 million customers across UK. It brings rich fund management and insurance experience to India.

Vision- It wants to “become a life insurance and pension business leader in providing significant value for all stakeholders through true customer delight.”

Culture and Values- The insurer believes in the following values which are inculcated into the minds of the employees - Being helpful, Thinking new, Doing more and Honesty.

#### XIV. **ING Vysya Life Insurance Co. Ltd. ([www.inglife.co.in](http://www.inglife.co.in))**

The life insurer, headquartered in Bangalore, commenced its business in 2001. It is a joint venture between Vysya Bank and ING Group of Holland, the world's 4th largest financial services group, with presence across 50 countries, and a heritage of over 150 years. It has a huge team of advisors, sales force exceeding 21,000 people, working from 140 branches located in 74 major cities across the country and over 3,000 employees. It also distributes products in close cooperation with the ING Vysya Bank network. It serves over one million policy holders in the country. The Company has a customer base of over 4,50,000. In order to be popular with customers, it provides customized products for people of different ages. To facilitate customers in choosing the right plan, it has developed the Life Maker which is a simple method that helps to make the right choice.

Mission of the insurer- The long-term goal is ‘To set the standard in helping our customers manage their financial future.’

Values- The business of the insurer is driven by the principles of Optimism, Knowledgeable, Trustworthy and Transparent.

#### XV. **Kotak Life Insurance ([www.insurance.kotak.com](http://www.insurance.kotak.com))**

The company is a 74:26 joint venture between Kotak Mahindra Bank Ltd., its affiliates and Old Mutual plc, thereby having a combination of local advantages and international expertise. The company covers over 3 million lives and is one of the fastest growing insurance companies in India.

About the Partners

**i) Kotak Mahindra Bank Ltd.-** Kotak Mahindra group, engaged in providing different types of financial services, was established in 1985. In February 2003, Kotak Mahindra Finance Ltd. (KMFL), the group's flagship company, received banking license from the Reserve Bank of India (RBI). With this, KMFL became the first non-banking finance company in India to become a bank - Kotak Mahindra Bank Ltd. The bank, headquartered in Mumbai, is among the fastest growing banks in the country with revenues of around Rs.11,000 crores in 2011 and net income of more than Rs.1500 crores in the same year. Some of the main products in the bank's portfolio include Deposit accounts, Loans, Investment Services, Business Banking Solutions, Treasury operations etc. Recently, in 2012 the bank acquired the non-performing portfolio of Barclays Bank's credit card business in India.

**ii) Old Mutual Plc** is an international long-term savings, protection and investment group. Originating in South Africa in 1845, the group provides life assurance, asset management, banking and general insurance to more than 15 million customers in Europe, America, Africa and Asia. Old Mutual plc is listed on the London Stock Exchange and the Johannesburg Stock Exchange, among others. In the year ended 31st December 2010, the group had £309 billion of funds under management from core operations.

#### XVI. **Life Insurance Corporation of India ([www.licindia.com](http://www.licindia.com))**

LICI is the most well known stalwart in this field. To discuss life insurance in India means discussing LICI from the year 1956 to 2000. So, LICI has been elaborately discussed in many chapters before as and when required. Therefore, in this section, only few relevant points have been mentioned about this only public sector giant:

Long-term goals- The mission statement of the insurer says that it wants to “Explore and enhance the quality of life of people through financial security by providing products and services of aspired attributes with competitive returns, and by rendering resources for economic development.”

The vision statement, on the other hand, mentions that it exists with the purpose of becoming “A trans-nationally competitive financial conglomerate of significance to societies and Pride of India.”

Awards and Accolades- The life insurer has been showered with awards in different years by different bodies. Some of the latest ones include:

*Won in 2011-12-*

- Reader's Digest Trusted Brand Award, 2011

- Asian leadership Awards, 2011
- ET Brand Equity's Most Trusted, 2011
- Golden Peacock Innovative Product/Services Award, 2011
- CNBC Awaaz Consumer Award – Most Preferred Brand of Life Insurance Policies (2010-11)

*Won in 2010-11:*

- CNBC Awaaz Consumer Award
- Power Brand Award
- Global Youth Marketing Award
- World Brand Congress Award for Brand Excellence
- World HRD Congress Award

#### XVII. **Max New York Life Insurance Co. Ltd.** ([www.maxlifeinsurance.com](http://www.maxlifeinsurance.com))

Max New York Life Insurance started its operation in 2000, is a joint venture between Max India Limited, a multi-business corporate, and New York Life International, a global expert in life insurance. It is the first life insurance company in India to be awarded the ISO 9001:2000 Certification.

Max New York Life Insurance has a network of offices spread over close to 1500 cities all over India. Apart from the agent channels, the insurer is using several options to tap its business which include the franchisee model, direct sales force involving group insurance and telemarketing opportunities, bancassurance and corporate alliances. It has more than 35000 expert advisors and more than three lakhs of satisfied customers. This company is the first among life insurers to be awarded the CII-EXIM Bank's Commendation Certificate for Business Excellence and three times in a row.

In 2012, the name has been changed to **Max Life Insurance**, because the new foreign partner is Mitsui Sumitomo Insurance Company Limited, after the exit of its old partner. The new partner is a member of MS & AD Insurance Group, which is currently amongst the top ten general insurers in the world. It has a customer base exceeding 30 lakh customers. In 2011-12, the insurer became the largest non-bank private life insurer. For the distribution of policies across 1100 cities in the country, it relies on three pillars - agency distribution, bancassurance and partnership distribution.

## About the Partners

i) **Max India Limited**, the Indian partner, is a conglomerate having its spread in several areas like Clinical Research, IT and Telecom Services, and Specialty plastic product businesses.

ii) **New York Life** is a Fortune 100 company that has more than 150 years of experience in business.

Vision- The long-term objective of the insurer is “To become the most admired life insurance company in India”.

Mission- It aims to be “Amongst top five private life insurance companies by profitable new business sales.”

Innovations to the insurer’s credit-

Though the insurer is relatively new in the industry, Max New York Life Insurance (presently Max Life Insurance) has been credited with the following innovations:

- First company to provide free look-in period of 15 days to the customer, which was later made mandatory by the regulator
- First company to start toll free line for agent service
- First and the only life insurance company in India to implement Lean methodology of service excellence in service industry
- First life insurance company in India to provide various services to the agents and customers over phone
- First Indian life insurance company to start service center at the Regional level
- First life insurance company in India to be awarded ISO 9001:2008 certifications

## Awards and Accolades-

Some of the recent prizes won by the insurer include:

- QCI DL Shah Awards for Best Six Sigma Project on economics of Quality –2012
- CIO 100 Technology Award 2008 - 2011
- 'Innovation of the Year' Award 2009
- CII National Six Sigma recognition for Best Six Sigma Project - 2009

- Golden Peacock Innovation Award 2008

#### XVIII. **Met Life India Insurance Co. Ltd.** ([www.metlife.co.in](http://www.metlife.co.in))

This company is a joint venture between Met Life Group and many Indian partners. The life insurance business was commenced in India in 2001. The insurer aims to serve its customers by offering a range of innovative products to individuals and group customers through its 12 Bank partners across retail and group business, a strong Broker network besides an Agency force of over 30,000 financial advisors.

##### About the Partners

i) The **Indian partners** include many names like J&K Bank, Dhanalakshmi Bank, Karnataka Bank, Karvy Consultants, Geojit Securities, Way2Wealth, and Mini Muthoothu.

ii) **Met Life Group** is among the well-known groups operating in America and Asia with an experience of around 140 years in the financial services industry. Met Life is the number one life insurer in the U.S. with approximately US \$2.8 trillion of life insurance in force. Such good is the reputation of the insurer that it insures 88 of the top one hundred FORTUNE 500 companies. The products that are provided by Metlife group includes life insurance, annuities, automobile and home insurance, retail banking, group insurance, reinsurance and retirement and savings products and services to corporations and other institutions. It has a huge customer base of more than 70 million customers around the world.

Values- The life insurer believes in the following principles: Personal responsibility, People count, Partnership, Financial strength, Integrity and Honesty and Innovation.

#### XIX. **Reliance Life Insurance** ([www.reliancelife.co.in](http://www.reliancelife.co.in))

This insurer is solely managed by Reliance. In other words, it does not have a foreign partner. It is an associate company of Reliance Capital Ltd., a part of Anil Dhirubhai Ambani Group. Reliance Capital is one of India's leading private sector financial services companies, and ranks among the top ten private sector financial services and banking companies, in terms of net worth. The business of Reliance Capital ranges from asset management, mutual funds, stock broking, life and general insurance, proprietary investments, to private equity mainly.

The insurance company has more than 1200 branches and over 1, 89,000 advisors in order to reach closer to the customer and deliver the right product to each and every customer. It strives to fulfill the following three goals:

- Emerging as transnational life insurer of global scale and standard
- Create best value for Customers, Shareholders and all Stake holders

- Achieve impeccable reputation and credentials through best business practices.

Vision- The long-term objective of the insurer is “Empowering everyone live their dreams”.

Mission- The reason behind the enterprise’s existence as explained by the mission statement is to “Create unmatched value for everyone through dependable, effective, transparent and profitable life insurance and pension plans.”

Achievements of the insurer-

- It is the largest private insurer in terms of policy count as on 31st March, 2011 and the fourth largest private player in terms of Individual Premium
- It is amongst the fastest growing Companies for four years in a row
- The company has achieved a growth rate of 21% in comparison to 13% for the private industry
- It is one of the fastest to reach the 7 million policy mark

Awards and Accolades-

The insurer has won several awards, some of which are given below:

- Winner of “Best Non-Urban Coverage” Award at Indian Insurance Awards 2011
- Won the Celent Model Insurer Award 2010 in the area of Service
- Won the CMO Asia Award for “Best Campaign-Financial Category” and “Brand Excellence” - 2010
- It was amongst the top three most trusted service brands in the Insurance category as per the Brand Equity’s ‘Most Trusted Service Brands 2011’ Survey
- Awarded the Jamnalal Bajaj Uchit Vyavahar Puraskar 2007- Certificate of Merit in the Financial Services category by Council for Fair Business Practices (CFBP).
- The Company won the DL Shah Quality Council of India Commendation Award in the services category in February 2008 for its work on promoting 'self help channels for service'.

## XX. **Sahara India Life Insurance** ([www.saharalife.com](http://www.saharalife.com))

This insurer, headquartered at Lucknow, is promoted by Subrata Roy-led Sahara Group. It is the insurance arm of the Indian business conglomerate, Sahara India Pariwar, which is considered to be among the largest families comprising of more than six lakh members. It started its operations on October 30, 2004 after being granted license to operate as a life insurer

in India by Insurance Regulatory and Development Authority on February 6, 2004. With this approval, the insurer became the first wholly and purely Indian company, without any foreign collaboration to enter the Indian Life insurance market.

## XXI. **Shriram Life Insurance** ([www.shriramlife.com](http://www.shriramlife.com))

Shriram Life Insurance is a joint venture between the Shriram Group and Sanlam Group of South Africa.

### About the Partners

**i) Shriram Group-** It is one of the largest and well-respected financial services conglomerates in India. The Group's main line of activities include chit fund, truck financing, consumer durable financing, stock broking, insurance broking and life insurance. It has a customer base of 30 lakh chit subscribers and investors and operates through a network of 630 offices all over the country. The Group has the largest agency force in the private sector consisting of more than 75,000 loyal and dedicated agents.

**ii) Sanlam Life Insurance Limited-** It is a part of the Sanlam Group and is one of the largest providers of life insurance in South Africa with 3.2 million individual policies under administration. It has a significant presence across South Africa, United Kingdom and Namibia and is a major provider of life insurance, retirement annuities, saving and investment products, personal loans, home loans and trust services to individuals. The shareholder's funds of Sanlam Life equates to US\$ 4.4 billion.

The Sanlam Group was established in 1918 and has a leadership position in financial services in South Africa. Demutualized in 1998, the group is listed on the JSE Securities Exchange in Johannesburg and on the Namibian Stock Exchange. It has a current market capitalization of US\$ 5.4 billion. The Group operates in the areas of group schemes, retirement funds, short-term insurance, asset management and other financial services. It has an employee strength of 8,000 and has shareholder funds in excess of US\$ 4.6 billion.

### Objective-

The Shriram Life Insurance Company is set out with the objective of reaching out to the common man with a host of products and services that would be helpful to him in his path to prosperity.

### Values-

- Efficiency in operations

- Integrity and
- A strong focus on catering to the needs of the common man, by offering him high quality and cost-effective products and services.

## XXII. **SBI Life Insurance** ( [www.sbilife.co.in](http://www.sbilife.co.in))

It is a joint venture between the State Bank of India and BNP Paribas Cardif of France. SBI owns 74% of the total capital and BNP Paribas Cardif, the remaining 26%. SBI Life Insurance extensively leverages the State Bank Group relationship as a platform for cross-selling insurance products along with its numerous banking product packages such as housing loans and personal loans. SBI's access to over 100 million accounts across the country provides a vibrant base for insurance penetration across every region and economic strata in the country, thus ensuring true financial inclusion. Agency Channel, comprising the most productive force of over 80,000 Insurance Advisors, offers door to door insurance solutions to customers.

### About the Partners

**i) State Bank of India-** Along with its five associate Banks, the State Bank Group has an unrivalled strength of over 18,000 branches across the country, arguably the largest in the world. It is the largest bank in the banking industry.

**ii) BNP Paribas Cardif -** It is the life and property & casualty insurance arm of BNP Paribas, one of the strongest banks in the world. BNP Paribas Group, having presence in more than 80 countries ranks highly in Retail Banking, Investment Solutions and Corporate & Investment Banking. BNP Paribas Cardif is one of the world leaders in creditor insurance and its life and non-life insurance units have received an AA rating from Standard & Poor's. The insurer has crossed Rs.10,000 crores in gross written premium during the financial year 2009-10.

Vision-The company aims to become "The most trusted and preferred life insurance provider".

Mission-The objective behind the organization's existence is - "To emerge as the leading company offering a comprehensive range of life insurance and pension products at competitive prices, ensuring high standards of customer satisfaction and world class operating efficiency, and become a model life insurance company in India in the post liberalization period".

Values- The organizational members believe in the following values: Trustworthiness, Ambition, Innovation, Dynamism and Excellence.

Awards and Accolades- The subsidiary of the State Bank of India has been recently felicitated with some of the following awards:

- SBI Life won the coveted Bloomberg UTV Financial Leadership Award 2011 - "Life Insurer of the year".
- Won the most coveted NDTV Profit Business Leadership Award 2010.
- Globally topped the prestigious Million Dollar Round Table (MDRT) 2010 for having the maximum number of MDRT members.
- Awarded the Gold Shield by Institute of Chartered Accountants of India (ICAI) for Excellence in Financial Reporting (2009-10).
- Won the 'ICS Quality Champion Award 2010' for Continual Quality Improvement.
- Adjudged Best Life Insurer 2010 - Runner Up by Outlook Money.
- Bagged the coveted personal finance award-Outlook Money NDTV Profit "Best Life Insurer 2008".
- Rated as the 'The Most Trusted Private Life Insurer' according to a survey conducted by Brand Equity in association with AC Nielsen ORG-MARG and the Economic Times Intelligence Bureau in the financial year 2007-08.

### XXIII. **Star Union Dai-Ichi Life (SUDI) ([www.sudlife.in](http://www.sudlife.in))**

It is a joint venture between Bank of India (BOI) and Union Bank of India, two leading public sector banks in the country and the Dai-ichi Mutual Life Insurance Company, leading Japanese company in the life insurance sector. The company was issued license for undertaking life insurance business in India by the Insurance Regulatory and Development Authority (IRDA) on December 26, 2008. The company has best insurance, IT, finance and investment resources to ensure that it soon earns a prominent position in the insurance sector. The Company has a capital stake of 48% by BOI, 26% by Union Bank and 26% by Dai-ichi Life. SUDI, with the strength of domestic partners in the Indian financial sector coupled with Dai-ichi Life's strong domain expertise is expected, to be a strong player in the Indian Life Insurance market in a short time.

About the Partners:

i) Bank of India and Union Bank- They have a strong nationwide network of more than 5400 offices, which shall provide distribution outlets with a wide reach. More than 48 million strong banking

customers of the two banks provide ready scope for cross selling of insurance products. The two banks have strong brand equity, and command high level of trust among their customers and people at large. Additionally, the Regional Rural Banks sponsored by the two banks provide more than 1400 branches to tap the life-insurance business in the rural areas.

ii) Dai-ichi Life- It is a leading player in the Life Insurance Segment in Japan and is one of the top ten life insurers in the world and the second largest Life Insurance Company in Japan. Established in 1902, it has more than a century of experience in life insurance business.

Vision- The long-term goal of the insurer is “To be a company making distinctive contribution to business and society through innovative products, high standards of corporate governance and consistently generating wealth for all stakeholders.”

Mission- The reason behind this organization’s existence is “To emerge as a leading insurance company and well recognized brand in the life and pension segments in India, providing a range of products of value to all segments of population, along with high standards of customer service based on best available technological solutions, in a fair and transparent manner.”

#### XXIV. **Tata AIG Life (presently renamed as Tata AIA Life) ([www.tata-aig.com](http://www.tata-aig.com))**

The insurer is a joint venture company, formed by Tata Sons and AIA Group Limited (AIA). Tata AIG Life combines Tata’s pre-eminent leadership position in India and AIA's presence as the largest, independent listed pan-Asia life insurance group in the world spanning fifteen markets in the Asia Pacific. Tata Sons holds a majority stake (74%) in the company and AIA holds 26% through an AIG Group company. Tata AIG Life Insurance Company Limited was licensed to operate in India on February 12, 2001 and it started operations on April 1, 2001. The recent renaming of the insurer has been done to create a uniform identity of AIA-owned companies after AIA went public in 2010 as a result of which it emerged as the largest independently publicly listed pan-Asian life insurance group in the world.

##### About the Partners

**i) Tata Group-** The group, being a conglomerate is present in seven business sectors ranging from communications and information technology, engineering, materials, services, energy, consumer products and chemicals. The group has operations in more than 80 countries across six continents, and its companies export products and services to 85 countries. Tata companies employ over 425,000 people worldwide. The Tata brand name is respected in India for 140 years for its adherence to strong values and business ethics. There are 28 publicly listed Tata enterprises and they have a combined market capitalization of about \$74.15 billion (as on October 5, 2011), and a shareholder base

of 3.5 million. The major Tata companies are Tata Steel, Tata Motors, Tata Consultancy Services (TCS), Tata Power, Tata Chemicals, Tata Global Beverages, Indian Hotels and Tata Communications.

**ii) AIA-** The AIA Group Limited and its subsidiaries comprise the largest independent publicly listed pan-Asian life insurance group in the world. It has wholly-owned main operating subsidiaries or branches in 14 markets in Asia Pacific - Hong Kong, Thailand, Singapore, Malaysia, China, Korea, the Philippines, Australia, Indonesia, Taiwan, Vietnam, New Zealand, Macau and Brunei and India (a 26% joint venture shareholding).

AIA was first established in Shanghai over 90 years ago. It is a market leader in the Asia Pacific region (ex-Japan) based on life insurance premiums and holds leading positions across the majority of its markets. It had total assets of US\$115,782 million as of 31st May, 2011. AIA meets the savings and protection needs of individuals by offering a range of products and services including retirement planning, life insurance and accident and health insurance. The group also provides employee benefits, credit life and pension services to corporate clients. Through an extensive network of agents and employees across Asia Pacific, AIA serves the holders of over 23 million individual policies and over 10 million participating members of group schemes. AIA Group Limited is listed on the Stock Exchange of Hong Kong.

Long-term Goals- Vision statement of the insurer mentions that it wants “To be the most trusted life insurance company that values customers’ financial well-being, consistently delivering best-in-class solutions and respected by all.”

## CONCLUSION

This chapter gives an overview about the progress of the life insurance industry after its opening up to the private players in 2000. It throws light on the developments that happened after the deregulation in the sector. Initially, the progress in macro-level indicators of life insurance penetration and density levels reflected that the insurance sector reform was truly a positive move by the government. But, in the later part some more probes has to be made to confirm if the objectives behind opening up of the sector are being fulfilled or not. Adequate measures are required by the regulator. The cross-country comparison is very de-moralising at present but gives opportunity for huge improvement in future.

In terms of business growth, the last decade has reflected aggressiveness of the private players. Still the public sector behemoth LIC held majority of the market share. In fact, in the later part LIC has controlled the declining market share to a great extent

The holding structure of life insurers reveal that the business is mostly in the form of a joint venture between two or more partners. The basic reason may be to generate a synergy by combining the strength of both (or all) the partners. The progress of the industry justifies the Government's decision to open the sector. LIC is incomparable in this sector because of its sound footing still the declining market share and infusing huge capital to maintain its hold over the sector reflects that it is also under competitive threat. The private players are just novices in the sector and needs time to prove their capabilities. A serious probe into the performance and efficiency of the life insurers is utmost required for a better understanding of the sector.

# **Chapter 6: Financial Soundness of Life Insurers**

6.1 Financial Performance

6.2 CARAMELS Framework

6.3. Financial Position of Individual Life Insurance Firms

6.4 Ranking based on Financial Performance

## 6.1 FINANCIAL PERFORMANCE

The performance measurement is an effective control mechanism for any firm. The financial position of a firm depicts the soundness with which it is operating its business. Insurance sector is one of the prime sectors in the financial system of a country. The life insurance sector has remarkable contribution to the growth of the country with special mention to Life Insurance Corporation of India. Such apex institutions serve as the backbone for a country. The financial soundness of these individual players reflects the growth of the country. The individual firms therefore try their utmost to keep proper check on the financial performance of the firm. The balance sheet and the profit and loss statement are the two major sources for evaluating financial performance. The insurance companies prepare shareholders account, policy holders' account and balance sheet for this purpose. The Government maintains their vigil on the individual players through Insurance Regulatory and Development Authority (IRDA). IRDA has made it mandatory for the insurance firm to disclose all relevant information for the benefit of the public at large. Solvency ratio is calculated and disclosed as a measure of financial strength.

Insurance penetration and Insurance density are the prime parameters used throughout the globe. All these measures are based on ratio analysis. So, ratio analysis has been accepted as a strong analytical and control mechanism without any qualm. Many researches are undergoing based on these parameters. A number of new methods have been developed for judging the performance of a firm based on the earlier literature. International monetary fund (IMF) has recommended certain indicators to understand the stability and financial prudence of the financial sector at large and individual entities specifically for different types of financial institutions viz. banks, insurance companies, non-banking finance companies etc. These indicators are termed as Financial Soundness Indicators (FSIs). FSIs in turn provide important input for Financial Stability Assessments (FSAs). FSAs are used for drawing broad policies and as a control mechanism.

CAMELS Framework is a renowned ratio based analytical tool suggested for the banking sector. The acronym CAMELS stands for **C**apital adequacy, **A**sset quality, **M**anagement Soundness, **E**arnings and Profitability, **L**iquidity and **S**ensitivity to Risk. For the insurance sector, it is known as CARAMELS framework (i.e. **C**apital Adequacy, **A**sset Quality, **R**einsurance and **A**ctuarial Issues, **M**anagement Soundness, **E**arnings and Profitability, **L**iquidity and **S**ensitivity to Risk).

## 6.2 CARAMELS FRAMEWORK

The different Financial Soundness Indicators (FSIs) covered in the CARAMELS framework have been discussed below. The various aspects that are studied in this model are Capital Adequacy,

Asset Quality, Reinsurance and Actuarial Issues, Management Soundness, Earnings and Profitability, Liquidity and Sensitivity to Risk.

The financial stability and soundness of an insurance sector and the individual insurers has been analyzed using the CAMELS framework as recommended by Das, Davies and Podpiera of the IMF (2003). The proposed FSIs have been classified into two sets on the basis of importance, necessity and data availability. The two broad categories are:

(i) **Core set of Indicators** are for regular monitoring of insurance companies. Thus, it covers those aspects for which data are readily available and are of vital importance for an insurance company, and

(ii) **Encouraged set of indicators** which are optional to the industry and computation of which depends upon the availability of data. So, they are of less importance compared to the former.

It should be mentioned here that they have included certain ratios in the two categories, but they have also kept the list open-ended in order to help and adjust with the data disclosure practices in conversant with different countries. So, for determining the ratios to be considered for measuring financial soundness, the overall industry disclosure practices should be taken into consideration with due priority.

(i)Core Set of Indicators

This list of ratios helps in understanding the financial soundness of the insurers. A continuous monitoring of this set of indicators is extremely crucial in order to adopt corrective actions, as and when required. A detailed list of indicators under this category is given in table below:

**Table 6.1:Core Set of FSIs for a Life Insurance Industry**

<b>Indicators</b>	<b>Sub-Indicators</b>
Capital Adequacy	Net Premium/Capital, Capital/ Total Assets, Capital/Technical Reserves
Asset Quality	(Real Estate + Unquoted Equities+ Debtors)/ Total Assets, Debtors/ (Gross Premium + Reinsurance Recoveries), Equities/Total Assets, Non-performing Loans to Total Gross Loans, Investment Income/ Net premiums

Reinsurance and Actuarial Issues	Risk Retention Ratio (i.e, Net Premiums / Gross Premiums), Net Technical Reserves/Average of Net Claims paid in last three years, Net Technical Reserves/Average of net Premium Received in last three years
Management Soundness	Gross Premium/Number of Employees, Assets per Employee (Total Assets/ Number of employees)
Earnings and Profitability	Loss Ratio (Net Claims/Net Premium), Expense Ratio (Expenses/Net Premium), Combined Ratio = Loss Ratio + Expense Ratio, Revisions to Technical Reserves/ Technical Reserves, Investment Income/ Investment Assets, Return on Equity (ROE), Liquidity Assets/Current Liabilities
Liquidity	Net Open Foreign Exchange position/ Capital
Sensitivity to market Risk	Duration of Assets and Liabilities, Net open foreign exchange position/Capital. Sensitivity to market

Source: Das, Davies and Podpiera (2003)

#### (ii) Encouraged Set of Indicators

According to the three researchers of IMF, the ratios falling under this category are not to be computed compulsorily. Instead, their calculation is desirable depending on disclosure of relevant data by the insurers. The table below gives the list of ratios that come under this category.

**Table 6.2: Encouraged Set of FSIs for a Life Insurance Industry**

<b>Indicator</b>	<b>Sub-Indicators</b>
Capital Adequacy	Cover of Solvency Margin, Risk-based capital adequacy ratios
Asset Quality	Asset/liability position in financial derivatives to total capital, Investments; geographical distribution, Investments; sector
Reinsurance and	Underwritten business; geographical distribution, Underwritten business; sector distribution, Underwritten business; distribution by
Management	Operating Expenses/ Gross Premium, Personal Expenses/ Gross Premium
Earnings and Profitability	Earning per Employee (Net Profit/ Number of employees), Return on Assets, Return on Revenue
Liquidity	Liquid Assets/ Total Assets, Liquid Liabilities/ Total Liabilities

Market based	Market/Book value, Price/Earnings Ratio, Price/Gross Premium
Group Exposure	Group Debtors/Total Assets, Group premium claims/Total of

*Source: Das, Davies and Podpiera (2003)*

The relevance of ratios is subjective in nature. The authors mentioned that the indicators may differ from one country to another. The availability of data and financial environment of the country should be the driving factor while deciding on the indicators and their importance.

### *Basis for analysis of Individual Companies*

The information for calculating core set of FSIs should be available from the published reports, but under Indian reporting practice some of the required information could not be traced for computing the absolute ratios. Those were neither available in the IRDA Annual Reports nor the private life insurers reports. Hence, we could not compute all the ratios mentioned in the framework as it is.

Keeping the broader aspects in mind the ratios which have been considered for the study are fulfilling the requirement of the major indicators. The ratios that have been considered for study within CAMELS framework are as follows:

- (i) For measuring Capital Adequacy: Net Premium / Capital (NP to Capital)
- (ii) For measuring Asset Quality: Investment Income / Net Premium (II to NP)
- (iii) For measuring Reinsurance / Risk Retention and Actuarial issues: Net Premium / Gross Premium (NP to GP)
- (iv) Management Soundness: Operating Expenses / Gross Premium (OE to GP) Commission / Net Premium (Comm. to NP)
- (v) For measuring Earnings and Profitability: Investment Income / Investment Assets (II to IA)
- (vi) For measuring Liquidity: Liquid Assets / Total Assets (LA to TA) Current Assets / Current Liabilities (CA to CL) Liquid Liabilities / Total Liabilities (LL to TL)

For measuring sensitivity to risk - ratios could not be computed due to non-availability of necessary information in the Annual Reports explaining those ratios.

A very brief discussion about the different ratios calculated is given below:

### Net Premium to Capital:

This ratio measures capital adequacy of life insurance firms. It determines how effectively the capital has been utilised for the purpose of generating net premium. Higher is the ratio, better is the position. It, therefore, focuses on the capital utilization effectiveness of an insurer.

### Investment Income to Net Premium:

The ratio tells how many times the investment income is to the net premium. It is important to mention here that if we go through the revenue account (also known as the policy holders' statement), we see that the investment income in the case of an insurance business includes not just the interest and dividends but also the profits or losses arising on sale of investments and the gain or loss arising out of revaluation of assets and liabilities. It is a measure of the asset quality of life insurers and is a measure of their portfolio quality. Higher is the ratio, better is the ranking.

### Net Premium to Gross Premium:

It is a measure of risk-retention by an insurer. In other words, the value of this ratio reflects the extent of re-insurance done by the insurer.

$$\text{Net Premium} = \text{Gross Premium} + \text{Reinsurance Accepted} - \text{Reinsurance Ceded Operating Expenses to Gross Premium}$$

This is one of the measures of management soundness. It determines the percentage of gross premium that goes towards meeting the operating expenses of an insurer. Lower is the ratio, better is the management efficiency and therefore better is the ranking.

### Commission to Net Premium:

It is another measure to determine the effectiveness of product distribution management which shows the percentage of net premium collection that goes towards meeting commission expenses of the insurer. Lower is the ratio, better it is because it implies a lower cost ratio. The ratio indirectly measures how effectively the distribution channels have been managed by the insurers.

### Investment Income to Investment Assets:

The ratio measures the investment yield. In other words, it measures the return obtained from investment assets – of both policyholders and shareholders. The investment income is the sum total of investment income from the investments of both policyholders and shareholders, the figures for which are obtained from the respective statements. For the calculation of investment assets, the average of opening and closing balance of investments is used. Since, it is an income ratio, it implies higher is the ratio, better is the ranking.

#### Liquid Assets (or Current Assets) to Total Assets:

This is a measure of the liquidity of an insurer. It determines the percentage of total assets that are held by an insurer in the form of liquid assets (which includes cash and advances). It is an important ratio because it determines the preparedness of an insurer to meet its short-term liabilities. Higher is the ratio, better is the liquidity position from the view point of the policy holders, and thereby better is the ranking.

#### Current Assets to Current Liabilities:

It is a traditional measure of liquidity which gives an idea about the matching between short-term assets and liabilities. The value of current liabilities for the purpose of this ratio equals the sum of current liabilities and provisions. It is already known to us from the basics of finance that too much of liquidity is not good as it affects profitability. However, for an insurance business, it is always good to have a moderate level of liquidity so that sudden liabilities in the form of death or surrender claims can be easily paid to the claimant. It is to be remembered that the reputation of any insurance company depends a lot on its claims settlement ratio and the pace with which it settles its claims. Therefore, higher is the ratio, better is the insurer's ranking.

#### Liquid Liabilities to Total Liabilities:

The above ratio is a measure of the percentage of liquid liability to that of total liability. It must be noted that asset-liability management is very important in any form of business. It is the expertise of a finance manager of any insurance company to plan in such a way that it matches the assets with liabilities to the extent possible. In other words, the insurance company should be in a position to meet its long-term and short-term liabilities with ease which is possible only if commensurate amount of assets are maintained. Hence, it is important not just to look at the liquid asset and liquid liability ratio in isolation, but also to study the trend in the

direction of their movement. With regard to this ratio, lower is the value, better is the situation. A simple reason is that if the ratio is high, it implies higher amount of assets would be required which will affect the company's profitability.

### 6.3 FINANCIAL POSITION OF LIFE INSURANCE FIRMS

The financial position of the life insurers has been discussed in this section. The ratios mentioned above has been calculated and depicted in the form of a table. The financial soundness covering various aspects of various life insurers has been judged individually. The study has mainly concentrated on the period 2007-08 to 2015-16. However, the study has also revealed the ratios for the private sector companies since inception for better understanding of their financial position. The life insurers have been arranged in an alphabetical manner, as follows:

#### 6.3. I Aviva Life Insurance

The ratios that were calculated in respect of Aviva Life Insurance are given below:

**Table 6.3a: Ratios for Aviva Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	0.992	1.325	0.077	0.388	0.036	0.041	0.684	(0.832)	(0.182)
2009-10	0.993	1.250	0.067	0.299	0.044	0.036	1	3	0.596
2010-11	0.998	4.24	0.058	0.379	0.545	0.96	0.875	0.235	0.839
2011-12	0.987	2.60	0.035	0.310	0.014	0.941	0.399	0.011	0.051
2012-13	0.979	2.64	0.044	0.334	0.610	0.946	0.474	0.007	0.033
2013-14	0.968	0.848	0.042	0.414	0.570	0.962	0.398	0.109	0.613
2014-15	0.964	0.618	0.041	0.305	0.748	0.966	0.547	0.092	0.454
2015-16	0.956	0.361	0.036	0.309	0.816	0.954	0.351	0.027	0.179
2016-17	0.948	0.992	0.025	0.332	0.785	0.971	0.346	0.014	0.839
2017-18	0.518	0.569	0.046	0.332	0.594	0.963	0.371	0.162	1.767

*Source:calculated*

**Table 6.3b : Ratios for Aviva Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2001-02	0.994	0.086	0.157	3.594	0.078	0.073	0.857	0.105	0.86
2002-03	0.995	0.334	0.239	1.221	0.137	0.071	1.331	0.163	0.239
2003-04	0.988	0.783	0.183	0.567	0.168	0.092	1.243	0.171	0.083
2004-05	0.994	1.301	0.173	0.425	0.094	0.125	0.562	0.683	0.18
2005-06	0.993	1.504	0.157	0.373	0.110	0.086	1.026	0.402	0.091
2006-07	0.992	1.877	0.116	0.356	0.100	0.080	1.032	0.561	0.091

*Source:calculated*

*Inferences:*

i. Re-insurance: Net premium to gross premium - the risk retention was higher in year 2010-2011. So, overall it can be said that in aspect of risk retention, almost the entire risk is covered by the life insurer without going for re-insurance. The ratio has a value of one (or close to one) in all, but one. In 2004-05, the risk-retention percentage went down to 98.8%.In 2017-18 it reveals very alarming situation which needs serious attention.

ii. Capital Utilisation Efficiency: Net premium to capital - the ratio has been increasing which shows the greater utility efficiency of capital. The capital utilisation efficiency is found to be improving over time. It is evident that with an increase in the managerial experience in the industry along with the expansion of distribution network, the capital has been put to use more effectively.

iii. Management Soundness- Commission to net premium - the expenses ratio has been found decreasing which is better for firm's management efficiency ratio. In terms of management soundness, the first factor that has been studied is the commission to net premium ratio. The overall trend is very positive for the company. The distribution management is an area of strength for the insurer.

iv. Operating expenses to gross premium - the performance of ratios decreased year by year. Huge amount of operating expenses are incurred by insurers in the initial years of their business. The OE to GP ratio showed a positive trend for the insurer during the period of its business.

*Liquidity:*

v. Liquid asset - liquid assets ratio indicates a fall in 2011-2012 which states that the company will not stand with any fall in balances.

vi. Liquid liabilities - the liquid ratios of aviva life insurance was low in 2015-2016

vii. Current liabilities - the liability of firm increased 0.875% in the year 2010-2011 & fall to 0.345% in the year 2016-2017.

Overall, it reveals that asset-liability management was good as the direction of movement of the two is the same. Hence, when the liquid liabilities increased, the liquid assets also went up or down accordingly. The third ratio that was studied is the current ratio where during the initial years, it showed an increase

viii. Profitability: Investment income to investment asset - the ratios increased in the year 2013-2014 i.e 0.109%. In this case a wide variation was observed. Hence, portfolio management is an issue to be handled properly by the insurer.

ix. Investment income to Net Premium - the ratios increased in 2017-2018 which is good for firm. , the trend was optimistic for the insurer. Perhaps if more investments are made in debt securities, the fluctuation will come down.

### 6.3.II Bajaj Life Insurance Company Limited

The trends observed from the different financial ratios of Bajaj Allianz Life Insurance are as follows:

**Table 6.4a: Ratios for Bajaj Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	0.999	64.442	0.154	0.206	0.036	0.072	0.485	0.345	0.074
2008-09	0.998	70.341	0.099	0.177	0.030	0.046	0.632	(1.097)	(0.295)
2009-10	0.998	75.58	0.085	0.155	0.016	0.033	0.474	2.480	0.881
2010-11	3.653	1.075	0.133	1.357	0.307	0.600	1.068	0.023	0.488
2011-12	1.243	1.026	0.140	0.409	0.187	0.043	0.407	0.019	0.560
2012-13	1.332	1.181	0.051	0.555	0.024	0.047	0.436	0.019	0.573
2013-14	1.435	1.211	0.066	3.570	0.172	0.157	1.000	0.018	0.634
2014-15	1.499	1.312	0.103	4.892	0.370	0.154	1.000	0.019	0.786
2015-16	1.591	1.330	0.117	6.792	0.216	0.042	0.354	0.023	1.076
2016-17	1.612	1.505	0.103	5.538	0.472	0.035	0.292	0.025	1.306
2017-18	1.715	1.600	0.058	7.918	0.413	0.167	0.089	0.110	1.560

**Table 6.4b : Ratios for Bajaj Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2001-02	0.985	0.047	0.334	3.517	0.133	0.098	1.233	0.092	1.479
2002-03	0.992	0.460	0.181	0.965	0.138	0.105	1.108	0.111	0.224
2003-04	0.993	1.467	0.230	0.600	0.190	0.13	1.119	0.093	0.083
2004-05	0.996	6.664	0.146	0.214	0.114	0.132	0.792	0.057	0.017
2005-06	0.998	20.823	0.109	0.155	0.100	0.100	0.944	0.074	0.013
2006-07	0.998	35.48	0.177	0.201	0.069	0.108	0.617	0.264	0.057

*Inferences:*

i.Re-insurance:Net premium to gross premium - the risk retention was higher in year 2010-2011. So, overall it can be said that in aspect of risk retention, almost the entire risk is covered by the life insurer without going for re-insurance. In 2017-18, it has maintained the same earlier trend.

ii. Capital Utilisation Efficiency:Net premium to capital - the ratio has been increasing which shows the greater utility efficiency of capital till the end of the year 2010 but it has fallen down drastically in the year 2010-11 and continued similar position. The reason behind this abrupt change may be fall in the demand for ULIP policies due to a bullish trend in the share market.

iii. Management Effectiveness: Commission to net premium - the expenses ratio has been found decreasing which is better for firm's management efficiency ratio. The overall trend is very positive for the company. The distribution management is an area of strength for the insurer. The year 2015-16 reflected highest commission as compared to premium which has been recovered in the later years.

iv. Operating expenses to gross premium- the performance of ratios decreased year by year in the initial part but gradually it has started to increase which is not a very good situation for the company. Huge amount of operating expenses are incurred by insurers in the initial years of their business. The OE to GP ratio does not show showed a healthy trend for the insurer during the period of study.

*Liquidity:*

v. Liquid asset to liquid liabilities- liquid assets ratio indicates moderate position which allows the company will not stand with any fall in balances.

vi. Liquid liabilities to total liabilities – In cohesion to the the earlier ratio the liquid liabilities are also low compared to total liabilities which is a healthy symptom.

vii. Current assets to current liabilities – there has been continuous ups and down in this ratio. The current asset of the firm is at times very low in terms of current assets. Only in the year 2014-15 and 2015-16 it was perfect.

Overall it may be said that asset-liability management was fair as the direction of liquid assets and liquid liabilities movement was almost same. However, the third ratio is not very satisfactory and sometimes is much below expectation

Profitability:

viii. Investment in asset - the ratios was not at all satisfactory in the initial years but later it has increased gradually and the in 2016-17 it is around 11% which is satisfactory. But, portfolio management needs a lot of attention.

ix. Investment in income - the ratios increased since last three years which is commendable. So, the trend was optimistic for the insurer. Perhaps if more investments are made, it will increase the fund base of the insurer.

### 6.3.III Bharti AXA Life Insurance

The financial ratios of the company are depicted as under:

**Table 6.5: Ratios for Bajaj Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2006-07	0.998	0.052	0.072	11.069	0.127	0.163	0.509	0.050	0.747
2007-08	0.998	0.323	0.107	2.491	0.150	0.164	0.456	0.055	0.068
2008-09	0.997	0.538	0.108	1.570	0.261	0.122	0.842	(0.125)	(0.051)
2009-10	0.997	0.590	0.095	0.986	0.127	0.071	0.841	1.610	0.305
2010-11	56.089	29.123	8.877	75.946	1.102	4.006	109.494	15.576	34.216
2011-12	63.872	80.260	0.755	32.760	3.425	31.366	34.783	1.222	2.329
2012-13	72.748	104.836	2.459	29.226	1.999	34.831	20.074	7.993	13.384
2013-14	76.794	111.914	3.194	28.053	2.254	40.027	19.764	8.086	14.579
2014-15	82.621	97.188	2.478	32.514	1.313	43.801	18.686	8.514	17.429

2015-16	90.882	73.704	2.823	9.365	1.008	45.232	16.013	8.085	19.834
2016-17	86.660	70.233	3.436	37.779	1.293	45.390	15.220	8.725	22.004
2017-18	71.799	55.375	1.835	31.141	1.147	48.731	23.402	6.137	22.397

*Source:calculated*

Inferences:

i.Re-insurance:Net premium to gross premium - From the year 2010-2011 there is continuous increase in the ratio but after the year 2016-17 there is a continuous fall in the ratios which indicates risk retention of the company has gone down.Overall it can be said that in aspect of risk retention, almost the entire risk is covered by the life insurer without going for re-insurance.

ii. Capital Utilisation Efficiency:Net premium to capital - From the year 2010-2011 there is continuous increase in the ratio but after the year 2014-15 there is a continuous fall in the ratios which poses a threat to it's position and should be addressed at the earliest.

iii. Management Effectiveness: Commision to net premium - From the year 2010-2011 there is cin the ratio that can be seen which generally indicates that the management efficiency ratio of the company, since lower ratio means company is performing better. It is necessary for the management to take adequate measures so that commission ratio can be effectively brought down.

iv. Operating expenses to gross premium- = From the year 2010-2011 there is continuous increase and decrease in the ratio which generally indicates that the management efficiency ratio of the company, since lower ratio means company is performing better.

Liquidity:

v. Liquid asset to liquid liabilities- From the year 2010-2011 there are increases and decreases in the ratio, but the changes in the ratio is between 1 to 2 percent.A moderate ratio is ideal for the company.

vi. Liquid liabilities to total liabilities – From the year 2010-2011 there is a continuous rise in the ratio. A moderate ratio should be appreciated.

vii. Current assets to current liabilities – From the year 2010-2011 there is continuous decline in the ratio but in the year 2017-18 there is a rise in the ratio.

Profitability:

viii. Investment income to investment asset - These type of ratio generally indicates the profitability ratio of the company. From the year 2010-11 there is increase and decrease in the ratio that can be seen. Generally, here higher the ratio the higher will be the profit of the company and vice-versa.

ix. Investment income to net premium - These type of ratio generally indicates the profitability ratio of the company. From the year 2010-11 there is continuous fall in the ratio that can be seen, which cannot be appreciated.

#### 6.3.IV Birla Sun Life Insurance Company Limited

The ratios are enumerated as under:

**Table 6.6a: Ratios for Birla Sun Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	0.990	2.529	0.104	0.206	0.065	0.068	0.852	1.049	0.158
2008-09	0.988	2.403	0.107	0.273	0.063	0.067	0.815	(0.811)	(0.141)
2009-10	0.985	2.755	0.095	0.241	0.041	0.045	0.819	3.183	0.743
2010-11	0.985	2.284	0.068	0.212	0.274	0.058	11.111	29.520	0.267
2011-12	0.980	2.302	0.070	0.201	0.282	0.052	11.219	28.327	0.280
2012-13	0.998	2.267	0.071	0.215	0.296	0.052	11.167	29.247	0.260
2013-14	1.001	2.248	0.071	0.201	0.282	0.056	10.702	29.256	0.268
2014-15	0.987	2.314	0.069	0.223	0.293	0.053	10.847	30.457	0.290
2015-16	1.011	2.242	0.066	0.233	0.289	0.052	10.660	28.988	0.278
2016-17	0.978	2.287	0.069	0.202	0.272	0.054	11.146	29.547	0.299

Source: calculated

**Table 6.6b : Ratios for Birla Sun Life Insurance Company Limited**

Year	Net premium	Net premium to capital	Commission to net premium	Operating expenses	Liquid assets to	Liquid liabilities to	Current asset to	Investment income to	Investment income to
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	to gross premium			to gross premium	total assets	total liabilities	current liabilities	investment asset	net premium
2001-02	0.948	0.180	0.164	1.704	0.105	0.138	0.590	0.518	1.916
2002-03	0.972	0.777	0.211	0.619	0.142	0.147	0.666	0.120	0.075
2003-04	0.986	1.827	0.147	0.269	0.092	0.090	0.731	0.182	0.036
2004-05	0.985	2.576	0.143	0.194	0.052	0.072	0.622	0.380	0.063
2005-06	0.983	2.682	0.129	0.194	0.044	0.061	0.659	0.754	0.273
2006-07	0.982	2.584	0.116	0.213	0.056	0.071	0.715	0.668	0.121

*Source: calculated*

Inferences:

i. Risk Retention: Net premium to gross premium - the risk retention was higher in year 2015-2016.

ii. Capital Utilisation Efficiency : Net premium to capital - the ratio has been increasing which shows the greater utility efficiency of capital.

iii. Management Effectiveness: Commission to net premium - the expenses ratio has been found decreasing which is better for firm's management efficiency ratio.

iv. Operating expenses to gross premium- = The ratios increased year by year. So, the performance is not satisfactory.

Liquidity:

v. Liquid asset to liquid liabilities- This ratio was stable through out the period which is a good sign.

vi. Liquid liabilities to total liabilities – This ratio has very minimal fluctuations throughout the period.

vii. Current assets to current liabilities – The current ratio drastically increased from the year 2010-11 which is a positive sign for the company.

Profitability:

viii. Investment income to investment asset - These type of ratio generally indicates the profitability ratio of the company. In 2008-09 there is a negative growth which is not good but later it recovered. It

had to never look back after 2010-11 as there is huge increase in the ratio and which has been steadily maintained thereafter.

ix. Investment income to net premium - These type of ratio generally indicates the profitability ratio of the company. A low ratio means the company is more dependent on it's premium income than on investment.

### 6.3.V. Exide Life Insurance Company Limited

The financial performance of Exide, formerly known as ING Vysya Life Insurance Company is given below:

**Table 6.7a: Ratios for Exide (ING) Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	0.995	1.460	0.092	0.348	0.095	0.083	0.879	0.187	0.128
2008-09	0.995	1.408	0.077	0.322	0.099	0.078	0.976	(3.120)	(0.211)
2009-10	0.998	1.608	0.074	0.284	0.046	0.046	0.831	0.802	0.63
2010-11	0.776	1.167	0.076	0.225	0.118	0.019	0.978	0.197	0.007
2011-12	0.904	1.146	0.065	0.259	0.100	0.009	1.083	0.333	0.012
2012-13	0.859	1.188	0.067	0.235	0.086	0.022	1.384	0.531	0.020
2013-14	0.715	1.144	0.072	0.190	0.071	0.006	1.410	0.504	0.021
2014-15	0.643	1.159	0.062	0.165	0.085	0.013	1.590	0.719	0.031
2015-16	0.697	0.9	0.074	0.210	0.139	0.004	1.623	0.727	0.043
2016-17	0.240	0.325	0.178	0.216	0.116	0.022	1.440	0.744	0.157

*Surce: calculated*

**Table 6.7b: Ratios for Exide (ING) Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2001-02	0.995	0.038	0.324	5.518	0.096	0.123	0.594	0.103	1.94
2002-03	0.998	0.125	0.305	2.729	0.230	0.111	1.366	0.126	0.484
2003-04	0.998	0.361	0.226	1.118	0.393	0.099	2.397	0.179	1.156

2004-05	0.996	1.040	0.122	0.432	0.365	0.227	1.202	0.059	0.028
2005-06	0.994	0.863	0.163	0.496	0.163	0.141	0.833	0.170	0.139
2006-07	0.996	1.020	0.134	0.429	0.100	0.118	0.628	0.129	0.105

*Source: calculated*

Inferences:

i. Risk Retention: Net premium to gross premium - There is a gradual increase and decrease of the net premium. From 2016-2017, there is a gradual fall in the net premium.

ii. Capital Utilisation Efficiency : Net premium to capital - There is a gradual increase in capital. It has been increasing till 2014, and then it has remained constant from 2015 onwards.

iii. Management Effectiveness: Commission to net premium - There is a gradual change in the commission of expense. It has been falling from 2014 onwards.

iv. Operating expenses to gross premium- = There is not much change in the operating expenses, but there has been an increase and decrease over the years. There are very slight changes over the years.

Liquidity:

v. Liquid asset to liquid liabilities- There has been change in the liquid asset of the company. In some years it is increasing and in some years it has been decreasing.

vi. Liquid liabilities to total liabilities – The company has very minimum liquid liabilities which signifies less chances of sudden flow of fund.

vii. Current assets to current liabilities – The current ratio drastically increased from the year 2010-11 which is a positive sign for the company. The ratio is more than 1 from last few years.

Profitability:

viii. Investment income to investment asset - The investment income has been increasing over the years.

ix. Investment income to net premium – The investment income is very less compared to the net premium .

### 6.3.VI Future Generali Life Insurance Company Limited

The different ratios are depicted as under:

**Table 6.8: Ratios for Future Generali Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	1	0.003	0.072	13.291	0.129	0.075	1.532	0.040	9.193
2008-09	1	0.316	0.149	1.782	0.153	0.115	0.783	0.094	0.100
2009-10	1	0.762	0.242	0.815	0.163	0.080	1.066	0.272	0.121
2010-11	0.926	1.429	0.080	0.249	0.675	0.951	0.562	0.452	0.011
2011-12	0.966	1.273	0.035	0.217	0.749	0.946	0.688	0.529	0.017
2012-13	0.958	1.359	0.044	0.198	0.636	0.959	0.807	0.779	0.026
2013-14	0.952	1.207	0.050	0.224	0.480	0.938	0.934	0.971	0.040
2014-15	0.946	1.113	0.057	0.229	0.415	0.964	0.426	1.219	0.059
2015-16	0.947	1.223	0.056	0.232	0.336	0.966	0.300	1.238	0.064
2016-17	0.946	1.405	0.057	0.247	0.376	0.971	1.029	1.486	0.071
2017-18	0.947	1.608	0.056	0.219	0.282	0.970	0.347	1.751	0.082

*Source: calculated*

Inferences:

i. Risk Retention: Net premium to gross premium - The ratio is 1 or almost equal to 1 which indicates that there is very less dependence on reinsurance.

ii. Capital Utilisation Efficiency : Net premium to capital - There is a drastic increase in the ratio since 2010-11 and the ratio is good enough for the company.

iii. Management Effectiveness: Commission to net premium – The ratio is quite low which resembles that the cost management was very effective.

iv. Operating expenses to gross premium – The ratio is very satisfactory as the operating expenses are very less as compared to gross premium.

## Liquidity:

v. Liquid asset to liquid liabilities- The proportion of liquid assets in total assets of the firm has been decreasing gradually which may pose threat to the liquidity.

vi. Liquid liabilities to total liabilities – The company has very high proportion of liquid liability in the total liability of the firm

vii. Current assets to current liabilities – The decreased gradually in all the years and drastically in 2016-17 which is not a very good sign.

## Profitability:

viii. Investment income to investment asset - The investment income has been increasing over the years.

ix. Investment income to net premium – The investment income is very less compared to the net premium .

### 6.3.VII HDFC Life Insurance Company Limited

The financial position over the years is reflected below:

**Table 6.9a: Ratios for HDFC Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	0.792	0.992	0.073	0.208	0.089	0.060	1.372	0.252	0.122
2008-09	0.073	0.992	0.077	0.316	0.083	0.072	1.056	(0.547)	(0.306)
2009-10	0.534	0.993	0.076	0.215	0.036	0.055	0.621	1.368	0.828
2010-11	0.99	3.53	0.08	0.22	0.01	0.94	1.39	0.29	0.83
2011-12	0.99	4.04	0.05	0.17	0.01	0.87	0.81	0.55	1.25
2012-13	0.99	4.59	0.06	0.12	0.02	0.65	0.86	0.43	1.02
2013-14	1.00	5.65	0.06	0.12	0.004	1.24	0.78	1.11	3.24

2014-15	0.99	5.41	0.04	0.12	0.003	1.32	0.98	1.33	3.71
2015-16	1.00	5.70	0.04	0.10	0.010	0.38	0.90	0.98	0.83
2016-17	0.99	5.12	0.04	0.11	0.001	0.56	0.75	0.02	0.11

*Source: calculated*

**Table 6.9b: Ratios for HDFC Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2001-02	0.958	0.193	0.206	1.233	0.131	0.071	1.611	0.211	0.795
2002-03	0.968	0.665	0.137	0.469	0.170	0.078	1.766	0.106	0.128
2003-04	0.973	1.139	0.134	0.330	0.148	0.066	1.910	0.139	0.153
2004-05	0.98	2.109	0.109	0.254	0.105	0.6	1.048	0.066	0.054
2005-06	0.985	2.498	0.078	0.202	0.131	0.082	1.440	0.382	0.248
2006-07	0.996	1.020	0.134	0.202	0.99	0.067	1.364	0.152	0.087

*Source: calculated*

Inferences:

i. Risk Retention: Net premium to gross premium - The ratio is 1 or almost equal to 1 which indicates that there is very less dependence on reinsurance except three years year ending 2008, 2009 and 2010.

ii. Capital Utilisation Efficiency : Net premium to capital - There is a drastic increase in the ratio since 2010-11 and the ratio is favourable for the company.

iii. Management Effectiveness: Commission to net premium – The ratio is quite low which resembles that the cost management was very effective.

iv. Operating expenses to gross premium – The ratio is very satisfactory as the operating expenses are very less as compared to gross premium.

## Liquidity:

v. Liquid asset to liquid liabilities- The proportion of liquid assets in total assets of the firm has been decreasing gradually and has become almost nil in recent years. This will pose threat to the liquidity of the firm.

vi. Liquid liabilities to total liabilities – The proportion of liquid liability in the total liability of the firm is very low.

vii. Current assets to current liabilities – The ratio decreased gradually in all the years after 2010-11 so utmost attention should be given to the liquidity position of the firm

## Profitability:

viii. Investment income to investment asset - The investment income has been decreasing over the years.

ix. Investment income to net premium – The ratio was satisfactory from 2010-11 to 2014-15 but is seen to fall after that.

### 6.3.VIII ICICI Prudential Life Insurance Company Limited

The ratios for ICICI Prudential Life Insurance Company is as follows

**Table 6.10a: Ratios of ICICI Prudential Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	0.998	0.097	0.060	0.215	0.157	0.101	0.666	0.139	0.216
2008-09	0.998	0.107	0.046	0.178	0.109	0.690	0.635	-0.093	-0.401
2009-10	0.997	0.115	0.036	0.155	0.578	0.959	0.383	0.137	1.067
2010-11	0.996	0.125	0.031	0.122	0.842	0.141	0.424	0.032	0.350
2011-12	0.993	0.097	0.043	0.143	0.088	0.104	0.578	0.00002	-0.010
2012-13	0.991	0.094	0.057	0.151	0.126	1.000	0.798	0.004	0.461
2013-14	0.988	0.086	0.050	0.155	0.235	0.667	0.720	0.005	0.750
2014-15	0.990	0.106	0.036	0.128	0.668	0.532	0.837	0.008	1.235
2015-16	0.991	0.133	0.032	0.117	0.083	0.731	0.832	0.00005	0.001

2016-17	0.991	0.154	0.034	0.124	0.652	0.616	0.846	0.00004	0.007
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Source: calculated

**Table 6.10b: Ratios of ICICI Prudential Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2001-02	0.999	0.612	0.124	0.729	0.093	0.077	0.827	0.162	0.213
2002-03	0.999	0.982	0.090	0.416	0.070	0.069	0.748	0.115	0.088
2003-04	0.998	1.462	0.097	0.290	0.054	0.072	0.592	0.101	0.064
2004-05	0.998	2.551	0.075	0.195	0.054	0.081	0.699	0.213	0.086
2005-06	0.998	3.590	0.067	0.170	0.066	0.060	0.587	1.021	0.339
2006-07	0.997	6.017	0.067	0.192	0.039	0.058	0.671	0.482	0.128

Source: calculated

Inferences:

i. Risk Retention: Net premium to gross premium - The ratio is 1 or almost equal to 1 which indicates that there is very less dependence on reinsurance.

ii. Capital Utilisation Efficiency : Net premium to capital - There is a decrease in the ratio which is not a good sign for the company.

iii. Management Effectiveness: Commission to net premium – This ratio symbolizes that the management was very effective as the expense ratio is fair enough and also stable over the years.

iv. Operating expenses to gross premium – The ratio is very satisfactory as the operating expenses are very less as compared to gross premium.

Liquidity:

v. Liquid asset to liquid liabilities- The proportion of liquid assets in total assets of the firm has been decreasing gradually.

vi. Liquid liabilities to total liabilities – The proportion of liquid liability in the total liability of the firm is good enough.

vii. Current assets to current liabilities – The ratio is steady but the ratio is low compared to many other firms.

Profitability:

viii. Investment income to investment asset - The investment income is very low over the years.

ix. Investment income to net premium – The ratio has been fluctuating and is very low in recent past.

### 6.3.IX. IDBI Federal Life Insurance Company Limited

The ratios calculated for IDBI Federal Life Insurance Company Limited are as under

**Table 6.11: Ratios of IDBI Federal Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	1	0.060	0.031	0.843	0.194	0.097	1.777	0.045	0.56
2008-09	0.999	0.710	0.049	0.374	0.158	0.130	1.025	(0.037)	(0.03)
2009-10	0.996	1.267	0.078	0.260	0.147	0.124	1.002	0.236	0.13
2010-11	0.996	1.267	0.039	0.003	0.080	0.670	0.212	0.719	1.415
2011-12	0.994	1.153	0.055	0.002	0.033	0.704	0.117	0.520	1.284
2012-13	1	0.915	0.087	0.002	0.027	0.731	0.089	0.352	1.193
2013-14	1	0.998	0.110	0.002	0.029	0.765	0.101	0.377	1.366
2014-15	1	1.023	0.103	0.002	0.024	0.794	0.095	0.344	1.430
2015-16	1	1.326	0.068	0.003	0.027	0.826	0.091	0.370	1.488
2016-17	0.856	1.539	0.072	0.004	0.021	0.847	0.089	0.290	1.147
2017-18	0.467	1.942	0.065	0.004	0.025	0.874	0.094	0.352	1.360

Source: calculated

Inferences:

i. Risk Retention: Net premium to gross premium - The ratio is 1 or almost equal to 1 which indicates that there is very less dependence on reinsurance for almost all the years. But in the recent past it has decreased which symbolizes the company's dependence on reinsurance.

ii. Capital Utilisation Efficiency : Net premium to capital – This ratio has been increasing over the years which is a good indicator.

iii. Management Effectiveness: Commission to net premium – This ratio symbolizes that the management was very effective as the expense ratio is quite low.

iv. Operating expenses to gross premium – The ratio is very satisfactory as the operating expenses are very less as compared to gross premium.

#### Liquidity:

v. Liquid asset to liquid liabilities- The proportion of liquid assets in total assets of the firm has been decreasing gradually.

vi. Liquid liabilities to total liabilities – The proportion of liquid liability in the total liability of the firm have been gradually increasing.

vii. Current assets to current liabilities – The ratio is very low and therefore reflects the asset-liability management is not proper for the company.

#### Profitability:

viii. Investment income to investment asset - The investment income is very low over the years.

ix. Investment income to net premium – The ratio is increasing year on year.

### **6.3.X Kotak Life Insurance Company Limited**

The different ratios calculated for Kotak Life Insurance Company Limited are as under:

**Table 6.12a: Ratios of Kotak Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	0.983	3.462	0.093	0.251	0.067	0.066	0.924	0.467	0.167
2008-09	0.984	4.522	0.098	0.259	0.053	0.054	0.903	(0.396)	(0.138)
2009-10	0.994	5.588	0.059	0.200	0.028	0.038	0.697	0.988	0.377
2010-11	0.990	0.560	0.030	0.200	0.670	1.000	0.560	0.560	0.010
2011-12	0.990	5.760	0.020	0.190	0.740	1.000	0.680	0.560	0.010
2012-13	1	5.750	0.030	0.180	0.770	1.000	0.420	0.610	0.020
2013-14	0.720	0.740	0.030	0.120	0.020	0.030	1.000	0.300	9.390
2014-15	0.630	0.210	0.300	0.640	0.500	0.230	0.430	7.950	1.560
2015-16	0.920	1.050	0.070	0.24	0.200	1.000	0.560	0.600	0.010
2016-17	0.430	7.780	0.080	0.082	0.770	0.400	0.710	1.150	0.020
2017-18	0.830	10.07	0.060	0.065	0.930	0.780	4.530	0.460	0.060

Source: calculated

**Table 6.12b: Ratios of Kotak Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2001-02	0.972	0.073	0.246	4.879	0.202	0.072	2.798	0.135	1.90
2002-03	0.985	0.304	0.192	1.522	0.200	0.089	2.246	0.125	0.33
2003-04	0.974	0.974	0.131	0.596	0.186	0.110	1.161	0.129	0.104
2004-05	0.985	2.174	0.085	0.239	0.113	0.067	1.358	0.136	0.051
2005-06	0.982	2.499	0.097	0.216	0.074	0.061	1.081	0.463	0.22
2006-07	0.979	2.880	0.084	0.247	0.086	0.073	1.043	0.297	0.133

Source: calculated

Inferences:

i. Risk Retention: Net premium to gross premium - The ratio is 1 or almost equal to 1 which indicated that there was very less dependence on reinsurance for almost all the years. But in the recent past it has decreased which symbolizes the company's dependence on reinsurance.

ii. Capital Utilisation Efficiency : Net premium to capital – This ratio has been increasing over the years which is a good indicator. But there was sudden fall during year ending 2014 to 2016.

iii. Management Effectiveness: Commission to net premium – This ratio symbolizes that the management was very effective as the expense ratio is quite low.

iv. Operating expenses to gross premium – The ratio is very satisfactory as the operating expenses are very less as compared to gross premium.

#### Liquidity:

v. Liquid asset to liquid liabilities- The proportion of liquid assets in total assets of the firm has been fluctuating all along. But it is quite high in the recent past.

vi. Liquid liabilities to total liabilities – The proportion of liquid liability in the total liability of the firm have been fluctuating severely and is low in the recent past.

vii. Current assets to current liabilities – The ratio was very low. However, in 2016-17 it has improved a lot.

#### Profitability:

viii. Investment income to investment asset - The investment income is very low over the years and veryb fluctuating

ix. Investment income to net premium – The ratio does not follow any trend and has decreased drastically in year ending 2014.

### **6.3.XI Life Insurance Corporation of India**

The financial performance of LIC is given below:

**Table 6.13a: Ratios of Life Insurance Corporation of India**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	0.999	29941.12	0.064	0.055	0.015	0.677	0.042	0.101	0.377
2008-09	0.999	31437.31	0.064	0.057	0.015	.131	0.017	0.069	0.272
2009-10	0.999	152766.11	0.065	0.065	0.043	.834	0.019	0.153	0.604
2010-11	0.750	0.242	0.136	1.556	0.284	0.036	0.258	90.455	2.995
2011-12	0.750	0.410	0.144	1.235	0.650	0.267	0.268	101.936	2.404
2012-13	0.750	0.555	0.172	1.070	0.808	0.043	0.168	2.967	0.069
2013-14	0.757	0.680	0.082	0.776	0.526	0.034	0.333	3.358	0.105
2014-15	0.750	1.474	0.048	0.374	0.106	0.032	0.601	11.003	0.056
2015-16	0.750	1.845	0.036	0.353	0.417	0.033	0.417	2.305	0.068
2016-17	0.750	2.290	0.030	0.360	0.972	0.036	0.029	49.377	1.529

Source: calculated

**Table 6.13b: Ratios of Life Insurance Corporation of India**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2001-02	0.999	9969.19	0.091	0.085	0.057	0.023	5.541	0.145	0.479
2002-03	0.999	10920.47	0.092	0.084	0.053	0.028	5.484	0.126	0.476
2003-04	0.999	12626.13	0.091	0.080	0.053	0.031	4.747	0.114	0.473
2004-05	0.999	14171.60	0.088	0.088	0.056	0.038	4.823	0.111	0.483
2005-06	0.999	18151.84	0.077	0.066	0.061	0.048	5.405	0.099	0.441
2006-07	0.999	25556.45	0.071	0.055	0.065	0.054	7.515	0.095	0.358

Source: calculated

Inferences:

i. Risk Retention: Net premium to gross premium - The ratio is 1 or almost equal to 1 which indicated that there was very less resort to reinsurance for almost all the years. But it decreased from 2010-11. The risk retention is lowest in 2012-2013. It has been again increased to 0.75 in 2016-2017 which shows that risk retention was good in 2012-2013.

ii. Capital Utilisation Efficiency : Net premium to capital – This ratio reflects the soundness of the company and proves that it is the true market leader.

iii. Management Effectiveness: Commission to net premium – The expenses ratio has been found decreasing which is a good indicator of firm's management efficiency

iv. Operating expenses to gross premium – The ratio indicates the performance of LIC is well and good as operating expense ratio is decreasing year by year.

#### Liquidity:

v. Liquid asset to liquid liabilities- The liquid assets ratio is not stable throughout but has increased in the later part of the study.

vi. Liquid liabilities to total liabilities – The proportion of liquid liability in the total liability of the firm is very low all throughout.

vii. Current assets to current liabilities – The current ratio of the company has been increasing and it has been highest in 2014-2015.

#### Profitability:

viii. Investment income to investment asset - The overall operating ratio has been increasing from 2010-2011 and 2011-2012 after we can see a fall till 2015-2016. Again it has been raised to 1.53 approx in 2016-2017.

ix. Investment income to net premium – The profitability ratio indicates that it has been very good in 2011-2012 . Then it had a fall which was recovered to some extent in 2016-17.

### **6.3.XII Max Life Insurance Company Limited**

The ratios computed for Max New York Life Insurance are given below:

**Table 6.14a: Ratios of Max Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	0.991	2.608	0.143	0.319	0.071	0.098	0.637	0.161	0.091
2008-09	0.990	2.143	0.103	0.417	0.073	0.077	0.822	(0.084)	(0.048)
2009-10	0.987	2.611	0.088	0.310	0.046	0.059	0.699	0.423	0.423
2010-11	0.511	0.740	0.182	0.103	0.660	0.437	0.383	2.381	0.569
2011-12	0.622	0.455	0.145	0.224	0.721	0.486	0.338	2.365	1.048
2012-13	0.668	0.474	0.123	0.217	0.736	0.454	0.481	2.313	1.186
2013-14	0.648	0.479	0.130	0.208	0.679	0.435	0.400	2.836	1.386
2014-15	0.695	0.539	0.161	0.195	0.624	0.485	0.367	2.614	1.516
2015-16	0.678	0.533	0.110	0.198	0.621	0.504	0.303	2.961	1.607
2016-17	0.624	0.538	0.131	0.177	0.567	0.485	0.281	4.291	2.564
2017-18	0.615	0.558	0.142	0.166	0.571	0.504	0.293	3.980	2.399

Source: calculated

**Table 6.14b: Ratios of Max Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2001-02	0.991	0.155	0.307	2.179	0.109	0.096	1.119	0.117	0.036
2002-03	0.984	0.373	0.195	1.159	0.109	0.108	0.572	0.097	0.16
2003-04	0.985	0.613	0.190	0.756	0.128	0.123	0.619	0.088	0.082
2004-05	0.988	0.877	0.159	0.596	0.100	0.110	0.579	0.075	0.065
2005-06	0.989	1.399	0.172	0.431	0.098	0.102	0.702	0.120	0.090
2006-07	0.990	2.028	0.154	0.342	0.090	0.103	0.719	0.113	0.072

Source: calculated

Inferences:

i. Risk Retention: Net premium to gross premium - Initially, the ratio is 1 or almost equal to 1 which indicated that there was very less resort to reinsurance for almost all the years. But it decreased from 2010-11.

ii. Capital Utilisation Efficiency : Net premium to capital – This ratio was satisfactory till 2009-10 but gradually decreased since then.

iii. Management Effectiveness: Commission to net premium – The expenses ratio has been found quite low but is still high compared to many other countries.

iv. Operating expenses to gross premium – The ratio indicates effective management of expenses.

#### Liquidity:

v. Liquid asset to liquid liabilities- The liquid assets to total assets have increased over the years.

vi. Liquid liabilities to total liabilities – The proportion of liquid liability in the total liability of the firm has increased during the study period.

vii. Current assets to current liabilities – The current ratio of the company has been decreasing which is not very healthy for the firm.

#### Profitability:

viii. Investment income to investment asset - The ratio has been increasing from 2010-2011. The ratio has increased over the years.

ix. Investment income to net premium – The profitability ratio indicates that it has been very good in the recent past.

### **6.3.XIII PNB Met Life Insurance Company Limited**

Following are the ratios for PNB Met Life Insurance Company Limited:

**Table 6.15a: Ratios of PNB Met Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	0.990	1.509	0.232	0.368	0.106	0.117	0.624	0.155	0.072
2008-09	0.990	1.252	0.177	0.317	0.076	0.073	0.723	0.067	0.024
2009-10	0.988	1.412	0.117	0.269	0.036	0.052	0.537	0.251	0.096
2010-11	0.926	1.429	0.080	0.249	0.675	0.951	0.562	0.452	0.011
2011-12	0.966	1.273	0.035	0.217	0.749	0.946	0.688	0.529	0.017
2012-13	0.958	1.359	0.044	0.198	0.636	0.959	0.807	0.779	0.026
2013-14	0.952	1.207	0.050	0.224	0.480	0.938	0.934	0.971	0.040
2014-15	0.946	1.113	0.057	0.229	0.415	0.964	0.426	1.219	0.059
2015-16	0.947	1.223	0.056	0.232	0.336	0.966	0.300	1.238	0.064
2016-17	0.946	1.405	0.057	0.247	0.376	0.971	1.029	1.486	0.071
2017-18	0.947	1.608	0.056	0.219	0.282	0.970	0.347	1.751	0.082

Source: calculated

**Table 6.15b: Ratios of PNB Met Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2001-02	0.979	0.004	0.340	13.604	0.100	0.023	4.225	0.060	12.66
2002-03	0.986	0.071	0.214	3.848	0.164	0.087	1.456	0.097	1.105
2003-04	0.986	0.177	0.237	1.554	0.156	0.083	1.370	0.088	0.297
2004-05	0.973	0.338	0.183	1.170	0.176	0.103	1.106	0.073	0.122
2005-06	0.990	0.868	0.198	0.784	0.137	0.113	0.732	0.125	0.108
2006-07	0.991	0.921	0.215	0.471	0.095	0.128	0.496	0.116	0.08

Source: calculated

Inferences:

i. Risk Retention: Net premium to gross premium - The ratio is 1 or almost equal to 1 which indicated that there was very less resort to reinsurance for almost all the years.

ii. Capital Utilisation Efficiency : Net premium to capital – This ratio is moderate but need further control.

iii. Management Effectiveness: Commission to net premium – The expenses ratio has decreased over the years..

iv. Operating expenses to gross premium – The ratio has increased which indicates effective management of expenses.

#### Liquidity:

v. Liquid asset to liquid liabilities- The liquid assets to total assets have decreased over the years.

vi. Liquid liabilities to total liabilities – The proportion of liquid liability in the total liability of the firm has increased during the study period.

vii. Current assets to current liabilities – The current ratio of the company has been quite low during the period of study.

#### Profitability:

viii. Investment income to investment asset - The ratio has been increasing from 2013-2014. The ratio has increased over the years.

ix. Investment income to net premium – The profitability ratio indicates that it is not at all satisfactory.

### **6.3.XIV Reliance Life Insurance Company Limited**

The financial position of Reliance Life Insurance Company is enumerated below:

**Table 6.16a: Ratios of Reliance Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	0.996	2.800	0.086	0.320	0.131	0.122	0.831	(0.138)	(0.017)
2008-09	0.996	4.229	0.121	0.390	0.080	0.074	0.805	(1.570)	(0.194)
2009-10	0.997	5.657	0.095	0.248	0.044	0.043	0.859	4.261	0.528
2010-11	1.988	5.671	0.384	0.493	0.847	6.080	0.861	0.513	0.991
2011-12	1.959	5.642	0.329	0.466	0.489	0.735	0.795	0.337	0.845
2012-13	1.573	4.663	0.328	0.393	0.511	0.998	0.476	0.307	0.823
2013-14	1.007	3.382	0.256	0.318	0.514	1.622	0.382	0.459	1.451
2014-15	1.006	3.580	0.238	0.326	0.777	1.239	0.358	0.641	1.538
2015-16	0.994	3.838	0.190	0.320	0.915	2.629	0.815	0.905	1.733
2016-17	1.006	3.676	0.177	0.317	1.033	3.508	0.713	0.713	1.216
2017-18	1.007	3.366	0.251	0.195	0.800	5.329	1.246	0.805	1.493

Source: calculated

**Table 6.16b: Ratios of of Reliance Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2001-02	1	0.002	0.250	40.10	0.946	0.072	13.15	0.017	7.36
2002-03	0.929	0.048	0.278	5.252	0.102	0.083	1.231	0.094	1.61
2003-04	0.969	0.188	0.182	1.680	0.109	0.071	0.989	0.133	0.401
2004-05	0.986	0.484	0.075	0.721	0.095	0.064	0.936	0.107	0.101
2005-06	0.991	0.671	0.064	0.517	0.142	0.105	0.925	0.397	0.243
2006-07	0.995	1.507	0.099	0.427	0.138	0.143	0.705	0.210	0.048

Source: calculated

Inferences:

i.Risk Retention: Net premium to gross premium - The ratio is 1 or almost equal to 1 which indicated that there was very less resort to reinsurance for almost all the years.

ii. Capital Utilisation Efficiency : Net premium to capital – This ratio is moderate but need further control.

iii. Management Effectiveness: Commission to net premium – The expenses ratio has decreased over the years..

iv. Operating expenses to gross premium – The ratio has decreased which indicates effective management of expenses.

#### Liquidity:

v. Liquid asset to liquid liabilities- The liquid assets to total assets have decreased over the years.

vi. Liquid liabilities to total liabilities – The proportion of liquid liability in the total liability of the firm has increased during the study period.

vii. Current assets to current liabilities – The current ratio of the company has been quite low during the period of study.

#### Profitability:

viii. Investment income to investment asset - The ratio has been increasing from 2013-2014. The ratio has increased over the years.

ix. Investment income to net premium – The profitability ratio indicates that it is not very satisfactory in comparison to the other companies.

### **6.3.XV Sahara Life Insurance Company Limited**

The following are the ratios reflecting financial performance of Sahara Life Insurance company limited:

**Table 6.17a: Sahara Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	0.999	0.619	0.143	0.165	0.039	0.034	1.115	0.131	0.201
2008-09	0.999	0.890	0.117	0.192	0.069	0.032	2.046	0.091	(0.124)
2009-10	0.999	1.080	0.095	0.148	0.051	0.030	1.695	0.615	0.827
2010-11	0.75	0.136	0.105	0.098	0.44	0.815	0.97	0.47	0.134
2011-12	0.933	0.159	0.095	0.25	0.5	0.023	1.044	0.37	0.104
2012-13	0.933	0.144	0.102	0.42	0.59	0.05	0.74	6.33	0.15
2013-14	0.933	0.115	0.0903	0.53	0.8	0.014	0.25	6.32	0.2
2014-15	0.918	0.085	0.014	0.48	0.8	0.29	1.22	50.29	0.29
2015-16	0.913	0.084	0.053	0.57	0.28	0.29	3.95	47.3	0.28
2016-17	0.921	0.077	0.051	0.7	0.3	0.21	3.4	40.58	0.28

Source: calculated

**Table 6.17b: Ratios of Sahara Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2004-05	1	0.177	0.024	0.064	0.065	0.012	5.105	0.080	0.406
2005-06	1	0.177	0.137	0.405	0.060	0.021	2.631	0.630	0.322
2006-07	0.999	0.325	0.131	0.302	0.047	0.034	1.282	0.091	0.278

Source: calculated

Inferences:

i.Risk Retention: Net premium to gross premium - The ratio is 1 or almost equal to 1 which indicated that there was very less resort to reinsurance for almost all the years. It has gradually decreased in the later years.

ii.Capital Utilisation Efficiency : Net premium to capital – The Ratio has been decreasing which indicated the greater financial strength of the company.

iii. Management Effectiveness: Commission to net premium – The expenses ratio has decreased over the years which is a good sign.

iv. Operating expenses to gross premium – The ratio has increased which is a threat to management efficiency.

Liquidity:

v. Liquid asset to liquid liabilities- The liquid assets to total assets is very low over the years.

vi. Liquid liabilities to total liabilities – The proportion of liquid liability in the total liability of the firm is very low during the study period.

vii. Current assets to current liabilities – The current ratio of the company has been quite high during the later period of study.

Profitability:

viii. Investment income to investment asset - The ratio has been increasing drastically from 2014-15.

ix. Investment income to net premium – The profitability ratio indicates that it is not very satisfactory.

### 6.3.XVI SBI Life Insurance Company Limited

The financial position of SBI life insurance company limited is given below:

**Table 6.18a: SBI Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	0.998	5.611	0.072	0.079	0.027	0.045	0.608	0.148	0.103
2008-09	0.999	7.202	0.065	0.086	0.027	0.068	0.399	-0.259	-0.227
2009-10	0.998	10.080	0.075	0.065	0.027	0.049	0.554	0.621	0.593
2010-11	1	12.909	0.052	0.071	0.199	0.451	0.224	7.599	0.236
2011-12	1	13.081	0.040	0.079	0.720	0.485	1.495	1.751	0.060

2012-13	1	10.382	0.055	0.112	0.629	0.371	1.474	9.315	0.449
2013-14	1	10.657	0.052	0.116	0.627	0.325	1.654	11.922	0.630
2014-15	1	12.780	0.047	0.093	0.569	0.296	1.523	33.422	1.815
2015-16	1	15.665	0.046	0.094	0.484	0.350	0.923	24.561	1.220
2016-17	0.101	2.102	0.373	0.079	0.028	0.024	0.969	0.011	0.506

*Source: calculated*

**Table 6.18b: SBI Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2001-02	1	0.117	0.013	0.768	0.204	0.039	5.227	0.112	0.873
2002-03	1	0.579	0.026	0.322	0.136	0.055	2.408	0.129	0.263
2003-04	0.999	1.289	0.042	0.254	0.165	0.098	1.604	0.08	0.100
2004-05	0.997	1.712	0.039	0.207	0.093	0.099	0.912	0.071	0.084
2005-06	0.998	2.525	0.065	0.177	0.095	0.098	0.957	0.126	0.167
2006-07	0.998	5.847	0.067	0.11	0.06	0.078	0.761	0.116	0.092

*Source: calculated*

Inferences:

i. Risk Retention: Net premium to gross premium - The ratio is 1 or almost equal to 1 which indicated that there was very less resort to reinsurance for almost all the years. But it has decreased drastically in the year ending 2017.

ii. Capital Utilisation Efficiency : Net premium to capital – The ratio has been increasing rapidly upto 2015-16 but decreased drastically in 2016-17.

iii. Management Effectiveness: Commission to net premium – The expenses ratio has decreased over the years except 2016-17.

iv. Operating expenses to gross premium – The ratio has declined over the years which is favourable for the management.

## Liquidity:

- v. Liquid asset to liquid liabilities- The liquid assets to total assets has been decreasing over the years.
- vi. Liquid liabilities to total liabilities – The proportion of liquid liability in the total liability of the firm is very low during the study period.
- vii. Current assets to current liabilities – The current ratio of the company has been quite low. From year ending 2012 to 2015 it had increased but it has again started decreasing.

## Profitability:

- viii. Investment income to investment asset - The ratio has been increasing drastically from 2014-15 but 2016-17 it has decreased drastically.
- ix. Investment income to net premium – The profitability ratio indicates that it is not very satisfactory.

### 6.3.XVII Shriram Life Insurance Company Limited

The financial status of Shriram life insurance company limited is stated below:

**Table 6.19: Shriram Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2005-06	0.999	0.082	0.347	0.638	0.083	0.116	0.716	0.028	0.351
2006-07	0.999	1.472	0.196	0.133	0.137	0.145	0.94	0.816	0.061
2007-08	1	2.863	0.125	0.142	0.117	0.12	0.981	0.103	0.045
2008-09	0.999	3.485	0.129	0.155	0.097	0.104	0.938	0.176	0.074
2009-10	0.999	4.885	0.109	0.203	0.048	0.072	0.666	0.366	0.13
2010-11	0.370	1.810	0.294	0.203	0.131	0.624	1.012	0.213	0.013
2011-12	0.313	1.469	0.161	0.160	0.112	0.628	1.026	0.068	0.005

2012-13	0.736	1.080	0.262	0.508	0.537	0.782	1.030	-0.029	-0.003
2013-14	0.324	1.085	0.251	0.282	0.181	0.669	1.047	0.001	0.00006
2014-15	0.345	1.166	0.166	0.316	0.804	3.208	1.033	0.059	0.00006
2015-16	0.403	1.690	0.137	0.415	0.530	0.791	1.057	0.110	0.00009
2016-17	0.415	2.293	0.151	4.563	0.778	0.900	1.021	0.087	0.00006
2017-18	0.436	2.491	0.161	22.177	0.919	0.895	1.028	0.084	0.00006

*Source: calculated*

Inferences:

i. Risk Retention: Net premium to gross premium - The ratio is 1 or almost equal to 1 which indicated that there was very less resort to reinsurance for almost all the years. But it has decreased since 2010-11.

ii. Capital Utilisation Efficiency : Net premium to capital – The ratio has been increasing which is a good symptom of financial health.

iii. Management Effectiveness: Commission to net premium – The expenses ratio has decreased over the years.

iv. Operating expenses to gross premium – The ratio has declined over the years which is favourable for the management. But in 2015-16 it has increased and the situation aggravated further in 2016-17.

Liquidity:

v. Liquid asset to liquid liabilities- The liquid assets to total assets has been decreasing over the years.

vi. Liquid liabilities to total liabilities – The proportion of liquid liability in the total liability of the firm is very low during the study period.

vii. Current assets to current liabilities – The current ratio of the company has been quite low but steady.

Profitability:

viii. Investment income to investment asset - The ratio has been very low throughout

ix. Investment income to net premium – The profitability ratio indicates that it is not very satisfactory.

### 6.3.XVIII Tata AIA Life Insurance Company Limited

The financial ratios of Tata AIA insurance company limited is given below:

**Table 6.20a: Tata AIA Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2007-08	0.993	2.337	0.113	0.343	0.059	0.082	0.627	0.180	0.146
2008-09	0.995	1.8	0.088	0.390	0.073	0.077	0.773	0.322	0.257
2009-10	0.997	1.813	0.081	0.294	0.034	0.048	0.617	0.740	0.607
2010-11	0.901	0.401	0.042	0.24	0.88	0.0076	0.092	2.71	0.45
2011-12	0.913	0.32	0.034	0.85	0.77	0.0024	0.143	15.136	3.6
2012-13	0.928	0.25	0.404	0.65	0.87	0.013	0.098	13.618	4.55
2013-14	0.926	0.21	0.38	0.64	0.911	0.012	0.058	15.422	7.051
2014-15	0.936	0.221	0.281	1.011	0.923	0.016	0.047	23.35	10.594
2015-16	0.923	1.1	0.444	0.161	0.93	0.02	0.037	16.4	1.798
2016-17	0.931	0.32	0.77	0.39	0.86	0.03	0.15	1.85	0.58

**Table 6.20b: Tata AIA Life Insurance Company Limited**

Year	Net premium to gross premium	Net premium to capital	Commission to net premium	Operating expenses to gross premium	Liquid assets to total assets	Liquid liabilities to total liabilities	Current asset to current liabilities	Investment income to investment asset	Investment income to net premium
2001-02	0.997	0.115	0.271	1.910	0.274	0.064	3.646	0.077	0.393
2002-03	0.989	0.438	0.184	0.782	0.198	0.115	1.247	0.088	0.134
2003-04	0.984	1.087	0.167	0.454	0.205	0.117	1.291	0.071	0.056
2004-05	0.983	1.522	0.184	0.398	0.165	0.133	0.990	0.066	0.049
2005-06	0.985	1.940	0.159	0.330	0.110	0.094	1.003	0.217	0.164

2006-07	0.992	2.479	0.141	0.261	0.079	0.085	0.832	0.153	0.124
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Inferences:

i. Risk Retention: Net premium to gross premium - The ratio is 1 or almost equal to 1 which indicated that there was very less resort to reinsurance for almost all the years.

ii. Capital Utilisation Efficiency : Net premium to capital – The ratio has been decreasing which is a bad symptom of financial health.

iii. Management Effectiveness: Commission to net premium – The expenses ratio has been very low over the years.

iv. Operating expenses to gross premium – The ratio has been fluctuating over the years which is not favorable for the management.

Liquidity:

v. Liquid asset to liquid liabilities- The liquid assets to total assets has been decreasing over the years.

vi. Liquid liabilities to total liabilities – The proportion of liquid liability in the total liability of the firm is very low during the study period.

vii. Current assets to current liabilities – The current ratio of the company has been quite low.

Profitability:

viii. Investment income to investment asset - The ratio has been increasing except in 2016-17.

ix. Investment income to net premium – The ratio was gradually improving over the years. But since 2015-16 the trend is downward.

#### **6.4 Ranking of Life Insurers on the basis of Ratios**

This section emphasizes on comparison of the life insurers operating in India based on their financial performance. Those companies which existed between financial year 2007-08 and 2015-16 have been studied here. Though the ratios has been calculated since its inception to date based on data availability but to give an uniform size to the data set, a window of 8 years has been considered. The reason behind this was to include as much company as possible. Few companies like Edelweiss

Tokyo life insurance company, India First life insurance Company, Aegon Life Insurance Company, Canara HSBC etc. has not been included in this study as they are novices in the field.

The comparison has been made using ranking method based on the calculated ratios. Equal weight has been given to all the ratios. So the ranking was possible for only those eighteen companies as mentioned in the earlier section. All nine ratios used in the CAMEL Framework (section 6.3) have been used to meet the purpose of the study.

The methodology adopted for the study is as follows:

- (a) In the first part the insurance companies has been ranked for each individual year. To get the average ranking of all the years the cumulative rank of all the years has been divided by the number of years. This gives us an idea of overall ranking based on each year's performance.
- (b) Another method of understanding overall rank is by finding the average rank company wise. For this the total rank of each company has been calculated for the ratio and then divided by the total number of ratios, i.e. 9.
- (c) To sum up final ranking has been done based on the value of average rank. The company with the minimum average rank is given the first rank and the next placed insurers are given the rank of two, three, four, and so on.

Following the above mentioned process the ranking of the insurers is as follows:

**Table 6.21: Rank of Life Insurance Companies**

Company	Ratio wise ranking (Step I)									Average Rank (Step II)	Final Rank (Step III)
	Net Profit/Gross Profit	Net Profit/Capital	Commission/Net Profit	Operating Exp./Gross Profit	Liquid Assets/Total Assets	Liquid Liabilities/Total Liabilities	Current Assets/Current Liabilities	Inv. Income/Inv. Assets	Inv. Income/Net Profit		
<b>AVIVA</b>	11.6	11	15.4	6.4	8.6	11.3	11.3	6.2	8.9	10.08	8
<b>BAJAJ</b>	4.3	7.2	7.7	6.2	9.7	11.8	11.8	13.5	8.5	8.97	12
<b>BHARTI</b>	3.5	5.5	2.4	1.2	2.7	3.8	3.8	6.1	4.6	3.73	18
<b>BIRLA</b>	11.5	6.4	8.8	11.3	13.1	4	4	3.2	9.9	8.02	16
<b>INGEXIDE</b>	14	11.2	9.6	9.4	12.8	4.8	4.8	11.5	14	10.23	6

<b>FUTUR E</b>	9	11.3	10.3	7	7.5	8.1	8.1	9.5	12	9.20	11
<b>HDFC</b>	6.4	6.7	12.5	13.4	15.5	6.8	6.8	9.9	7.5	9.50	10
<b>ICICI</b>	8.5	17.5	15.9	14.2	8.4	11.3	11.3	16	10.8	10.66	3
<b>IDBI</b>	6.3	11.9	11.1	14.3	12.6	12.8	12.8	12.2	6.1	11.12	2
<b>KOTA K</b>	12.2	7.6	12.6	11.8	10	9.8	9.8	8.9	11.4	10.46	4
<b>LIC</b>	11.5	7.9	11.7	7.9	11.3	15.5	15.5	6.3	7.7	12.59	1
<b>MAX</b>	16.3	12.4	5.7	10	8.5	12.6	12.6	7	6.7	10.20	7
<b>PNBM ET</b>	13.1	9.5	9	8.6	9.2	10.8	10.8	9.1	13.6	10.41	5
<b>REL</b>	7.1	4.2	4.1	6.5	7.7	10.2	10.2	11.8	7.8	7.73	17
<b>SAHA RA</b>	5.5	16.4	8.5	9.1	10.2	5.5	5.5	6.2	9.9	8.53	15
<b>SBI</b>	7.3	2.9	12.6	17	12.6	8.9	8.9	6.7	9.2	9.57	9
<b>SHRIR AM</b>	11.7	7.3	4	9.9	2.8	6.1	6.1	13.6	15.7	8.58	14
<b>TATA</b>	6.2	13.4	6.9	5.6	6.7	16.1	16.1	4.2	4.5	8.86	13

*Source: Calculated*

Therefore, the overall results reveal that LIC is found to be the best so it has been assigned the rank of one. Among the private insurers, the leading ones on the basis of their ranks are-ICICI Pru, IDBI Life, Kotak Life, Exide Life, PNB Met Life and Max Life Insurance Company.

This study aimed to find out the financial strengths and weaknesses of the Indian life insurance companies. Various financial ratios have been used for understanding the financial soundness of the life insurers. The key aspects addressed are capital adequacy, asset quality, reinsurance and actuarial issues, management soundness, earnings/ profitability and liquidity. Liquidity has been a big drawback for most of the insurers under study. The study also found that there is a great asymmetry in the results during the period of nine years. Investment yield is a major problem for some insurers which requires serious attention by the regulator and the respective firm. The reinsurance and cost control is improving as the companies are getting matured over the years. So, overall we may see that the sector as a whole is improving gradually which is a positive symptom for the industry.

## **Chapter 7: Research Methodology**

7.1 Introduction

7.2 Data Envelopment Analysis (DEA) Technique

7.3 Application of DEA

7.4. Research Design

7.5. Dynamic Panel Approach to Technical Efficiency



## 7.1 INTRODUCTION

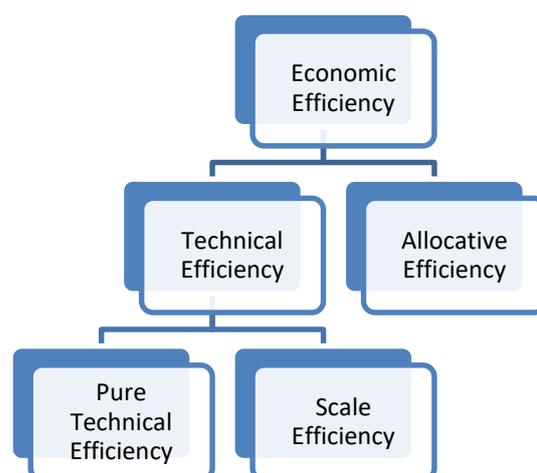
The study uses Data Envelopment Analysis (DEA) to measure the relative efficiency of life insurers in India. Relative efficiency determines the efficiency position of an insurer with respect to another. There are various industries like banking, insurance, power & electricity, non-banking finance companies, microfinance, education and even medical institutions on which efficiency studies have been applied by researchers.

However, efficiency analysis has not gained much importance in research studies in India. So there was a dearth of research articles in this particular area. So in absence of rich literature in the field of life insurance, particularly by applying efficiency determination, this study was found to be most necessary.

## 7.2 DATA ENVELOPMENT ANALYSIS (DEA) TECHNIQUE

The main focus of this research is to measure and examine the efficiency of Life Insurance firms operating in India. The concept of efficiency is primarily an engineering concept, commonly used to describe the level of performance of a production unit in terms of its utilization of resources in generating outputs. Modern approach towards efficiency measurement is starting from the concept of efficiency of Farrell's (1957). Michael J. Farrell, greatly influenced by Koopman's (1951) formal definition and Debreu's (1951) measure of technical efficiency, has introduced a method to decompose the overall efficiency of a production unit into its technical and allocative components. However, the different efficiency concepts are.

### Different Concepts of Efficiency



Economic efficiency or overall efficiency means producing the “right” (Allocative Efficiency) amount in the “right” way (Technical Efficiency). Technical efficiency and allocative efficiency together form economic efficiency also called as x-efficiency. Overall efficiency i.e., economic efficiency refers to a situation in which (with the given state of technology) it is impossible to generate a larger welfare total from the available resource. It means when more output cannot be obtained without increasing the amount of inputs. Production proceeds at the lowest possible per-unit cost. Profit maximization requires a firm to produce the maximum output using a given level of the inputs employed (i.e. be technically efficient), use the right mix of input in light of the relative price of each input (i.e. input allocative efficiency) and produce the right mix of output given the set of prices (i.e. output allocative efficiency). However, an organization will only be economically efficient if it is both technically and allocatively efficient.

**Allocative efficiency** refers to whether inputs, for a given level of output and set of input prices are chosen to minimize the cost of production. It refers to the ability to combine inputs and outputs in the optimal proportion in the light of prevailing prices. It refers to the allocation of resources that allows the maximum possible benefit or utility from the available resource.

**Technical Efficiency** – The most common efficiency concept is technical efficiency: the conversion of inputs into outputs. Technical efficiency considers the technological aspect of production. It is therefore, a measure of how well the transformation process (from input to output) is performing. In other words, it refers to the ability to avoid waste by producing as much output as input usage allows or by using as little input as output allows.

Koopmans defined technical efficiency as a feasible input/output vector where it is technologically impossible to increase any output without simultaneously reducing another output. This analogy holds for a reduction in any input or both a reduction in any input and an increase in any output. Farrell measured technical inefficiency as the maximum equi-proportional reduction in all inputs consistent with equivalent production of observed output.

Thus, technical efficiency measurement can have output orientation and input orientation. Input-oriented efficiency means minimization of inputs with producing at least the given level of outputs. Output-oriented efficiency means maximization of outputs with using a given level of inputs. Managerial practice and the scale or size of operation affect technical efficiency, which is based on

engineering relationship but not on price on costs. Technical efficiency therefore consists of pure technical efficiency and scale efficiency. Present study deals with technical efficiency which is based on input-output configuration.

### **Efficiency Measurement Techniques**

There are basically two efficiency measurement techniques: Accounting Measures and economic measures.

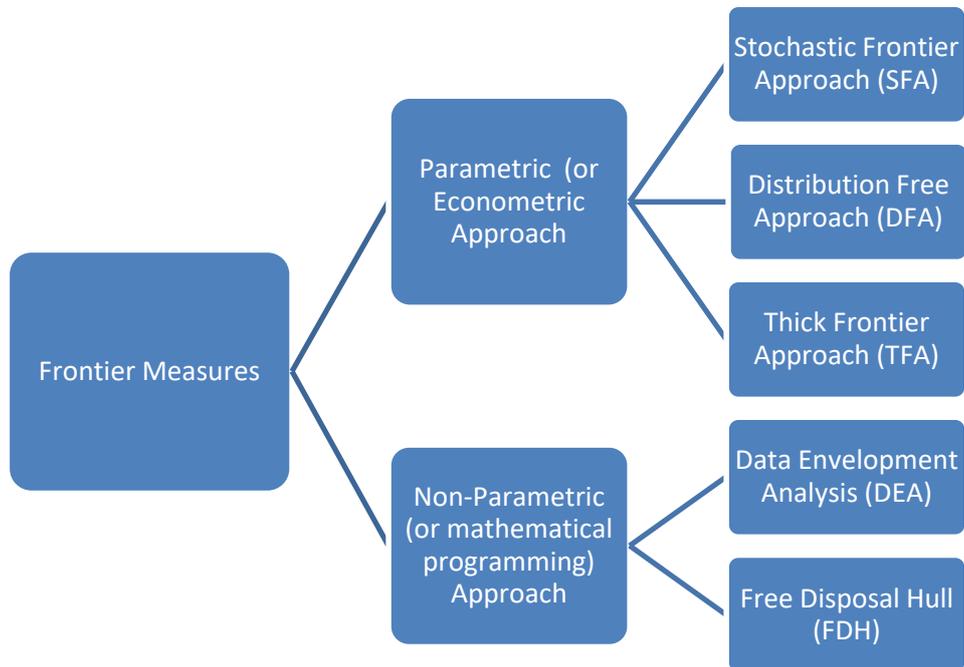
#### **Accounting Measures of Efficiency**

The Earliest technique to assess the performances of business units is ratio analysis which examines the financial statements of individual firms and comparing them with a benchmark. These ratios are popular in financial analysis and even in economic literature only because of easy understanding. But analysis based on ratio is suffering from accounting biases. That is, accounting practices and norms in different environment differ significantly and hence ratios computed from two business units operating in differing economic environment may not be suitable for drawing economic conclusions. Besides, this technique fails to take into account the fact that banks produce multiple outputs from multiple inputs and consistent aggregation is not possible (See, for example, Barnes<sup>6</sup>, 1987; Smith<sup>7</sup>, 1990). The short coming of such a descriptive and static analysis of the data is overcome by later researchers with the use of parametric and non-parametric techniques.

#### **Economic Measures of Efficiency**

Economic measures estimate various efficiencies with broadly two types of approaches- parametric and non-parametric. Parametric and non-parametric techniques are actually frontier techniques which are highly accepted and widely used in the field of efficiency studies. The frontier techniques have the advantages that convey the information of many operational ratios in a single index, thus permitting ranking of decisions-making units (DMUs) and summarizing of multiple possibly qualitative characteristic in a quantitative way. The various modern techniques of efficiency measurement are as follows:

## Frontier Approaches for Measuring of Efficiency



The parametric and non-parametric technique differs mainly in how they handle random error and their assumption regarding the shape of the efficient frontier. The parametric stochastic frontier approach (SFA) and the non-parametric data envelopment analysis (DEA) are the most used tools to measure efficiency, taking into account that the literature considers both techniques as equally satisfactory. As stated by Berger and Humphrey (1997), there is no consensus on the preferred method for determining the best-practice frontier against which relative efficiencies are measured. Berger and Mester (1997) find that in general the choice of measurement technique and functional form does not make a substantial difference in determining the average efficiency for the banking sector or ranking of individual banks. We prefer to the DEA approach as we consider it to be a more appropriate tool in our analysis since it does not require an assumption of a functional form for the frontier relation to given specification of inputs and outputs of the sample composed of banks of different sizes, types and ages. Thus, DEA is an appropriate technique for this study as it fulfills the objective of estimating and examining technical efficiency of the Indian Bank and ranking them. It also enables to give an insight into efficiency of the banks.

### Data Envelopment Analysis

Data Envelopment Analysis (DEA) is a non-parametric performance assessment methodology originally designed by Charnes, Cooper and Rhodes (1978) to measure the relative efficiencies of organizational units or decision making units (DMUs). This technique aims to measure how efficiently a DMU uses the resources available to generate a set of outputs. The DEA approach applies linear programming technique to observe inputs consumed and outputs produced by decision-making units and constructs an efficient production frontier based on best practices. Each DMU's efficiency is then measured relative to this frontier.

DEA is defined by Giokas (1997) as follows:

*“DEA measures relative efficiency [of DMUs] by estimating an empirical production function which represents the highest values of outputs/benefit that could be generated by inputs/resources as given by a range of observed input/output measures during a common time period”*

DEA is a non-parametric linear programming based data analytic technique for measuring and evaluating relative efficiency of a homogeneous set of units termed as decision making units (DMUs) which use variety of identical inputs to produce variety of identical outputs. DEA is a relatively new “data oriented” approach for evaluating the performance of a set of peer entities called decision making units (DMUs) which convert multiple inputs into multiple outputs. DEA is an optimization method of mathematical programming to generalize the Farrell's (1957) single-outputs single-inputs technical efficiency measure to multiple-output and multiple-inputs case by constructing a frontier of the best practice DMUs established mathematically by the ratio of weighted sum of outputs to weighted sum of inputs from the identical inputs outputs data set available from the DMUs under evaluation and to estimate efficiency of an DMU relative to the constructed frontier. Thus, DEA is a mathematical linear programming approach to frontier analysis. The estimated frontier of the best practice DMUs is also referred to as efficient or envelopment surface, In DEA literature, DMUs lie on the frontier are technically efficient having efficiency score equal to 1 and the DMUs lie off the frontier are technically inefficient having efficiency score between 0 and 1.

### **Importance of DEA in Banking Efficiency Measurement**

DEA with 30 years of journey since 1978 is now a very popular and well accepted methodology in the field of efficiency measurement and improvement of the units using multiple inputs to produce multiple outputs. DEA was firstly applied by Sherman and Gold (1985) for assessing the efficiency of

bank branches and, thereafter, it proved a very promising tool for monitoring the efficiency in banking industry. Of the 122 studies reviewed in the extensive survey carried out by Berger and Humphrey (1997) on efficiency of depository financial institutions in 21 countries, 62 studies (i.e., just over 50%) employed DEA to examine the efficiency of the banking sector. The connotation of this reference is that over the years, DEA has emerged as a well accepted and popular technique for evaluating the efficiency of the banking system. Its popularity as an accepted method of efficiency analysis can also be realized from huge DEA bibliography database also

### **Strengths and weaknesses of DEA**

#### **Strengths**

- ✚ DEA produces a single score for each unit rather than population average, which makes the comparison easy. DMUs are directly compared against a peer or combination of peers.
- ✚ Its main strength lies in its ability to handle multiple inputs and outputs situation effectively i.e. to capture the multidimensional nature (of inputs/outputs) in the production process which is the prevalent characteristics of many units under evaluation.
- ✚ It places no restrictions on the functional form of the production relationship. That is it doesn't require an assumption of a functional form relating inputs to outputs.
- ✚ DEA modeling allows the analyst to select inputs and outputs in accordance with a managerial focus.
- ✚ Furthermore, the technique works with variables of different units (unit's invariance) without the need for standardization. There is as such no limit to the number of inputs and outputs. This is not possible through traditional ratio analysis.
- ✚ There is no requirement for any *a priori* views or information regarding the assessment of the efficiency of DMUs. The weights for outputs and inputs are obtained by calculating the DEA models, rather than being given artificially
- ✚ Another advantage of DEA that attracts analysts and management is its ability to identify the potential improvement for inefficient units by providing both the sources and the amount of inefficiency such as pure technical and mix inefficiencies. Moreover, the reference set used to benchmark these inefficiencies are also identified. A deficiency of the econometric approaches is their inability to identify sources and estimates the inefficiency amounts

associated with these sources. Hence, no clue as to corrective action is provided even when the inefficiencies are present.

### **Weaknesses**

- ✚ The lack of allowance for statistical noise is widely regarded as the most serious limitation of DEA because this puts a great deal of pressure on users of this technique to collect data on all relevant variables and to measure them accurately.
- ✚ DEA is good at estimating “relative” efficiency of a DMU but not “absolute” efficiency. In other words, it can tell you how well you are doing compared to your peers but not compared to a “theoretical maximum.”
- ✚ Since DEA is a nonparametric technique, statistical hypothesis tests are difficult.
- ✚ Results are sensitive to the selection of inputs and outputs.

### **DEA Models**

There is variety types of DEA models developed in the DEA literature since 1978. There are two approaches in DEA models: radial and non radial. Differences exist in the characterization of input or output items. In DEA literature, two models namely CCR model (named after Charnes, Cooper and Rhodes, 1978) and BCC model (named after Banker, Charnes and Cooper, 1984) are called basic DEA models. These models which are radial measure of efficiency are of two types – input oriented and output oriented.

Input oriented technical efficiency aims at reducing input amounts as much as possible while keeping at least the present output levels and output oriented technical maximizes the output level while using at least the present input levels.

### **CCR and BCC Models**

The study has utilized two most popular and widely used basic DEA models-input oriented CCR model and input oriented BCC models to estimate the bank wise level of relative technical efficiency. CCR model measures the efficiency called overall technical efficiency (OTE) and BCC model measures efficiency called pure technical efficiency (PTE). OTE and PTE allow to measure scale efficiency (SE).  $SE = OTE/PTE$ . So, using these CCR and BCC models the study has estimated three types of efficiencies: OTE, PTE and SE for individual banks.

The CCR model assumes constant returns to scale so that all observed production combinations can be scaled up or down proportionally. This constant returns-to-scale DEA frontier is derived simply by the ray through the origin passing through point B. The DEA-BCC model, on the other hand, allows for variable returns to scale and is graphically represented by the piecewise linear convex frontier. The areas to the right of the two frontiers represent production possibility set (PPS). CCR and BCC models define different production possibility sets and efficiency results.

The important aspects of DEA methodology based on CCR & BCC models are:

- Reference set and improvement in efficiency i.e. projection of inefficient DMUs.
- Returns-to-Scale and
- Decomposition of technical efficiency

### Mathematical Formulation CCR and BCC Models

Graphical presentation can not be used for frontier analysis in case of multiple inputs and multiple outputs. Hence a general mathematical linear programming based formulation of the frontier analysis was developed by Charnes et al. (1978) after 20 years of frontier analysis technique described by Farrell in 1957. The authors also coined the name Data Envelopment Analysis.

#### CCR Model

Assuming that there are n MDUs to be evaluated [DMU<sub>j</sub> (j = 1, 2...n)]. Each DMU consumes m different inputs of identical nature for all DMUs [x<sub>ij</sub> (i = 1, 2 ...,m)] to produces 's' different outputs of identical nature for all DMUs [y<sub>rj</sub> (r = 1, 2 ...,s)]. x<sub>ij</sub> and y<sub>rj</sub> are assumed to be positive i.e. x<sub>ij</sub> ≥ 0 and y<sub>rj</sub> ≥ 0 and further assumption is that each DMU has at least one positive input and one positive output value. Given the data, the efficiency of DMU<sub>k</sub> can be measured by the following programming

$$\text{Min } \theta_k - \epsilon \left( \sum_{i=1}^{ms} s_i^- + \sum_{r=1} s_r^+ \right) \tag{1}$$

$$(\theta, \lambda_j, s_i^-, s_r^+)$$

Subject to

$$\sum_{j=1}^n x_{ij} \lambda_j + s_i^+ = \theta_k x_{ik} \quad i = 1, 2, \dots, m.$$

$$\sum_{j=1}^n y_{rj} \lambda_j - s_r^+ = y_{rk} \quad r = 1, 2, \dots, s.$$

$$\lambda_j \geq 0 \quad j = 1, 2, \dots, n.$$

$$s_i^+, s_r^+ \geq 0 \text{ for all } i \text{ and } r.$$

$x_{ij}$  = Amount of input of  $i$  utilized by the  $j^{\text{th}}$  DMU

$y_{rj}$  = Amount of output of  $r$  produced by the  $j^{\text{th}}$  DMU

$x_{ik}$  = Amount of input of  $i$  utilized by DMU $_k$

$y_{rk}$  = Amount of output of  $r$  produced by DMU $_k$

$\theta_k$  = efficiency score of DMU 'k' being evaluated

$\lambda_s$  represent the dual variables which identify benchmarks for inefficient units.

Slack variables -  $s_i^-$  (input slacks),  $s_r^+$  (output slacks)

Here  $\epsilon > 0$  is non-Archimedean element defined to be smaller than any real number and to be accommodated without having to specify the value of  $\epsilon$ .

Above mathematical formulation is the input oriented CCR model (envelopment form) used in this study to estimate OTE. Note that the above mathematical program yields an efficiency score ( $\theta$ ) of a particular DMU $_k$  only. To get the efficiency score of other DMUs it is required to repeat this process for each DMU i.e., 'n' optimization one for each DMU $_j$ . DMUs for which  $\theta < 1$  are inefficient, while DMUs for which  $\theta = 1$  are on frontier line and efficient. Some frontier points or boundary points may be 'weakly efficient' because of presence of non zero slacks in inputs and/or outputs.

**CCR efficient** – a DMU is CCR efficient if the optimal solution of the above two-phase procedure satisfies both (i)  $\theta = 1$  and (ii) all slacks are zero. So, DMUs which satisfy both the conditions are also called CCR efficient or strongly efficient or Pareto-Koopmans efficient.

**CCR inefficient** – a DMU is said to be CCR inefficient –

Case I: if and only if both (i)  $\theta < 1$  (ii)  $s_i^- \neq 0, s_r^+ \neq 0$  for some  $i$  and  $r$ . or all slacks are non zero.

Case II: if and only if both (i)  $\theta = 1$  (ii)  $s_i^- \neq 0, s_r^+ \neq 0$  for some  $i$  and  $r$ . This case is also termed as weakly efficient in DEA.

So there are two sources of inefficiencies: purely technical inefficiency represented by the radial measure (1- efficiency score obtained) and mix inefficiency represented by the input and output slack values.

## BCC Model

The BCC (ratio) model is one of the most important extensions of CCR model. It measures technical efficiency rather pure technical efficiency. BCC model differs slightly yet remarkable from CCR model with an additional constraint.

$$\sum_{j=1}^n \lambda_j = 1 \quad (2)$$

in the above CCR envelopment model. This constraint is called convexity constraint in mathematics literature. It imposes of assessing the efficiency under VRS.

A DMU is BCC efficient if the optimal solution of the above two-phase procedure satisfies both (i)  $\theta = 1$  and (ii) all slacks are zero. Otherwise, DMU is BCC inefficient.

### Super-efficiency Model (SEM)

The study has also utilized input oriented super efficiency model under CRS assumption for ranking purpose as proposed by Andersen and Petersen<sup>18</sup> (1993). The basic DEA models – CCR & BCC mainly distinguish the DMUs into two groups – efficient DMUs (having score equal to one) and inefficient ones (having score less than one). But it is not possible by these conventional models for ranking efficient DMUs since efficiency score of all the efficient DMUs are equal to one. To overcome this limitation, Andersen and Petersen (1993) have introduced super-efficiency DEA model. This model was originally introduced with the objective of providing tie breaking procedure for ranking DMUs rated as efficient in conventional DEA model. This model allows effective ranking of efficient DMUs based on super-efficiency scores which are more than one or equal to one i.e. not same for efficient DMUs.

The super-efficiency model is almost identical to the basic DEA models with the exception that the efficient DMU being evaluated is excluded from the production possibility set (PPS). This exclusion or removal from the PPS is the main philosophy of this models and forms a new frontier above such frontier and thereby allowing the efficiency score of the efficient DMUs greater than or at least equal to the value of 1(one). An important consideration of SEM is that this exclusion does not influence the efficiency score of inefficient DMUs. This is the specialty of this model. Like CCR and BCC models SEM are of two approaches – input oriented and output oriented both under CRS and VRS assumption.

In this study input oriented SEM under CRS assumption is followed for effective ranking of efficient DMUs as determined by input oriented CCR model.

The efficient frontier consisting line segment connecting efficient DMUs- A, B and C is developed by the standard DEA models. If DMU B is excluded from the reference set effect is to construct a new frontier consisting dotted line segment connecting DMUs A and C. Super-efficiency score of DMU B becomes  $OB' / OB \geq 100\%$ . This reflects that the maximum proportional increase in inputs by B preserving efficiency (100%) is 20% if super efficiency score of B is 120%. Efficiency score of inefficient DMU like 'D' remains unchanged.

Input oriented SEM provides a means of evaluating the extent to which an efficient DMU is able to increase its inputs level without violating its status as an efficient DMU. Super-efficiency score therefore provides a measure of stability of the 'efficient' status of the efficient DMUs. The study follows the following input oriented formulation of SEM under CRS assumption as described by Anderson and Petersen (1993).

$$\text{Min } \theta_k - \epsilon \left( \sum_{i=1}^{ms} s_i^- + \sum_{r=1} s_r^+ \right) \quad (3)$$

( $\theta, \lambda$ )

Subject to

$$\sum_{j=1}^n x_{ij} \lambda_j + s_i^- = \theta_k x_{ik} \quad i = 1, 2, \dots, m.$$

$$\sum_{j=1}^n y_{rj} \lambda_j - s_r^+ = y_{rk} \quad r = 1, 2, \dots, s.$$

$$\lambda_j \geq 0 \quad j = 1, 2, \dots, n.$$

$$\lambda_k = 0$$

$$s_i^-, s_r^+ \geq 0 \text{ for all } i \text{ and } r.$$

Where  $\theta$  represents efficiency score of DMU 'k', an efficient one is excluded from the reference set by equating input and output weights to zero i.e. ( $\lambda_k = 0$ )

### **7.3 APPLICATION OF DATA ENVELOPMENT ANALYSIS (DEA) TECHNIQUE**

According to Berger and Humphrey (1997) at least five different efficiency techniques are commonly used by researchers. Simultaneously they also stated that there is no agreement on a preferred frontier model. They suggested that most efficiency studies were based on the Data Envelopment Analysis (DEA) technique. Hence this non-parametric test has been applied for the determination of relative efficiencies of the insurers.

Some of the salient points covered for efficiency analysis are as follows:

1. The efficiency analysis starts with defining the input and output variables.
2. Two main approaches may be adopted for efficiency measurement – (a) the Stochastic Frontier Approach (also known as "pertaining to chance" or the Econometric Approach), and (b) the Mathematical Approach.
3. The econometric approach has to make certain assumptions about the error term and also has to specify a functional form. As a result it enables discrimination between random changes and the company-specific non-random changes. The major drawback of this approach is that it causes two types of errors: (i) error in functional form specification and (ii) error relating to assumptions.
4. The mathematical programming approach is comparatively simpler approach as there is no requirement for assumptions regarding the random error term. So, the approach does not cover the effects of randomness. Eventually, it is not possible to discriminate between inefficiency due to company specific factors and those due to chance. So, this is a disadvantage of this method.
5. Data Envelopment Analysis (DEA) is one of the methods under the mathematical approach. It is non-parametric in nature as it does not make any assumptions about the population parameter. This technique can be easily applied because it does not need prior functional specification of the unknown technology (Fukuyama, 1993; Favero and Papi, 1995).

6. DEA approach is used to develop a production frontier by which the efficiency of firms is estimated (Casu and Molyneux, 2003). This approach effectively estimates the frontier by finding a set of linear estimates that bound (envelop) the observed data (Leong et.al, 2003). This technique creates a convex- shaped frontier using which relative efficiency measurement is done.

7. DEA is a benchmarking technique in the sense that 'best practice' firms lie on the frontier and 'envelop' other inefficient firms (Neal, 2004). The relative efficiency scores are determined for each unit by applying linear programming optimization technique. The term 'relative' means that it determines the efficiency of an unit with respect to the best-performing unit(s).

8. A firm is considered to be efficient in either of the two cases:

(a) If it cannot produce more outputs without increasing inputs, or

(b) If it cannot reduce its input without reducing its output.

9. The two basic models under the DEA technique have been applied in the initial part of the study. The first model was developed by Charnes, Cooper and Rhodes in 1978 which is known as CCR model. Then this model was modified in 1984 by Banker, Charnes and Cooper and is known as BCC model. The difference in the two models is that CCR model considers Constant Returns to Scale (CRS) whereas BCC model considers Variable Returns to Scale (VRS). According to both these models, a DMU is efficient if the technical efficiency is equal to one. Under the CRS assumption, the efficiencies are known as technical or total technical efficiency (TE). Under the VRS assumptions, the efficiencies are known as pure technical efficiency (PTE). A score of less than one implies inefficiency. PTE is sometimes known as controllable, managerial or X-inefficiency (Alexander and Jaforullah, 2005).

10. We know that the approach in DEA takes the form of either input-oriented or output-oriented model. The input oriented model compares the input used by an efficient firm to produce the same output. The output oriented model compares the output actually produced with the output produced by an efficient firm using the same input. In case there is inefficiency under input oriented model it implies that increasing the efficiency implies an equi-proportionate reduction in inputs to produce its output level as efficiently as the efficient units. On contrary, the output oriented model suggests equi-proportionate expansion of outputs, keeping the input unchanged so that the inefficient unit reaches the same level of efficiency as the technically efficient DMUs.

11. This approach finds out the best-practice firms against whom the efficiency level of other firms are determined. An efficient firm means the one(s) which is (are) positioned on the frontier (or the best practice frontier). This term “best practice frontier” had been given by Farrell (1957). In certain cases there can be several firms which attain a relative score of one. A score of one would mean 100% relative efficiency level. The relatively inefficient firms will attain a score between zero and one. So, lesser the score higher is the inefficiency and vice-versa.

12. In this approach, the efficiency (or inefficiency) level is mapped by the firm’s distance from the frontier. More the distance, far is the position of the firm with respect to the ‘best practice’ firm, thereby indicating lower efficiency level. A point on the frontier indicates that either (a) it produces maximum output using the same input (i.e. output maximization) (Coelli, Rao and Battese, 2005) or (b) it uses minimum inputs to produce the same output level (i.e. input minimization).

13. Therefore, the efficiency aspect covers the measure of technical efficiency which can be derived based on the assumption of returns to scale i.e. constant or variable. The efficiency result will depend on orientation of the model – whether it is input-oriented (which seeks input minimization) or output-oriented (which seeks output maximization).

14. The efficiency score will determine whether (a) minimum inputs have been used to produce the outputs or (b) maximum outputs have been produced using the inputs.

15. In the next part, in order to understand whether non-optimum utilization of scale contributes to inefficiency, scale efficiency (SE) has been computed. For computation of this efficiency form, the methodology applied by Coelli et. al (1998) is applied. For measuring Scale Efficiency (SE), measurement of technical efficiency under assumptions of both CRS (also called total technical efficiency) and VRS (called pure technical efficiency) is a priori requirement.

16. The relationship between three factors may be stated as follows:

Total Technical Efficiency (under CCR model)

$$= \text{Pure Technical Efficiency (under BCC model)} \times \text{Scale Efficiency.}$$

The two components Pure Technical Efficiency and Scale Efficiency are mutually exclusive and non-additive in nature.

The technical efficiency score under CRS is known as the “global” technical efficiency score. If there is a difference in the technical efficiency score under CRS and VRS, it implies existence of scale inefficiency, since it attains a score of less than one under scale efficiency measurement.

17. The results obtained from scale efficiencies can be used to draw inferences about the operating scale. If the scale efficiency attains a value of one, it implies operation under Constant Returns to Scale. So, the DMU is operating at the minimum point of the cost curve. With respect to scale, it is thought to be operating at the Most Productive Scale Size (MPSS). Nevertheless if the outcome does not show operation at CRS, it indicates the ill-effect of non-optimum scale utilization. Therefore, it represents a case of either increasing returns to scale (IRS) or decreasing returns to scale (DRS).

18. The existence of IRS implies that the firm size is very small and it is operating at the sub-optimal level. So, it is advisable to reduce cost by increasing the size. On contrary, DRS spots out that the firm size is too large and the resources are over-optimally used. Thus, reduction in output will help out in cost reduction.

The DEA technique is a very researcher-friendly approach as it is easy to understand and handle. This technique helps to deal with multiple input & multiple output cases with ease. The results of efficiency analysis points out the position of a Decision Making Unit (DMU) with respect to the best-performing peer(s) in the industry and thus can be effectively used in strategic decision-making.

In the next chapter, we determine the relative efficiency level of the public and private sector players for the application of DEA technique. The sample consists of 18 life insurers (as at the end of 2007-08). The total population comprises of LIC, the only public sector player and the remaining 23 private life insurers. The study is based on the output-oriented approach. So, the aim of this model is to maximize outputs using the same quantity of inputs. For the determination of efficiency scores, both CRS and VRS techniques have been used, which helped us to derive the scale efficiency (or inefficiency) result through the multiplicative relationship existing between the three factors as cited above.

#### **7.4. Research Design**

Based on the earlier section, the study has chosen certain input and output variables for efficiency analysis. The choice of these two is not arbitrary but based on the review of received literature consisting of various foreign and Indian articles. For a better insight about the choice of input and output variables, various research articles were studied.

The table below depicts the different variables used by different researchers for efficiency analysis of the insurance industry.

**Table 7.1: Input and Output Variables used in various Efficiency Studies on Insurance**

Sl.No.	Author(s) and Year	Variables		Area of work
		Input(s)	Output(s)	
01.	Abidin and Cabanda (2011)	Business and administration expenses, marketing expense	Premium income, net underwriting income and investment income	Non-Life
02.	Bawa and Ruchita (2011)	Equity capital, labour expenses (includes commission, agents' fee, referral and other expenditure)	Net premium	Health
03.	Boonyasai et. al (2002)	Labour, capital, materials	Premium Income, Investment Income	Life
04.	Chaffai and Quertani (2002)	Labour, physical capital and financial capital	Total premiums earned	Life, Non- life
05.	Cummins et. al (2002)	Operating expenses, capital, office workers	Reserves, invested assets, claims paid	Life, Non- life
06.	Cummins et. al (2003)	Labour, business services, financial capital	Incurred benefits, addition to reserves	Life, Non- life
07.	Cummins et. al (1996)	Operating expenses, capital	Reserves, invested asset, claims paid	Insurance companies
08.	Cummins and Zi (1998)	Labour, financial capital and materials	Benefit payments, addition to reserves	Life
09.	Davutyan and Klumpes (2008)	Labour, business services, equity capital	Present value of losses invested, premiums, invested assets	Life, Non- life
10.	Deacon (2001)	Total operating expense, total capital, total technical reserves, total borrowings from creditors	Net premium, total investment income	General insurance

11.	Diacon, Starkey and O'Brien (2002)	Total operating expenses, commissions, capital, technical reserves, total borrowings	Net premium, total investment income	Non-life
12.	Donny and Fecher (1997)	Labour	Net premiums	Life, Non- life
13.	Ennsfellner et al. (2004)	Net operating expenses, equity capital and technical provisions	Incurred benefits, changes in reserves, total invested assets	Health / Life
14.	Fukuyama (1997)	Asset value, number of workers and tied agents	Insurance reserves, loans	Life, Non- life
15.	Jenlin and Wen (2008)	Investment expenses and Underwriting expenses	Net investment income to total assets, Loss incurred to net premium	Non-Life
16.	Klumpes (2007)	Labour, business services, debt capital, equity capital	Premiums, investment income	Life, non-life
17.	Latif (2011)	Labour, operating expenses	Investment earnings	Non-Life Insurance
18.	Mansor and Radom (2000)	Claims, commission, salaries, expenses, other costs	New policy sales, premium, policies in force	Life
19.	Qiu and Chen (	Labour, equity capital, operating expenses	Annuity payment and benefit of death, injury and medical treatment, addition to reserve	Life
20.	Rai (1996)	Labour, Capital, Claims	Premium	Insurance firms
21.	Tone and Sahoo (2005)	Business services, labour, debt capital, equity capital	Real losses incurred (i.e claims settled)	Life
22.	Gamarra and Growitsch (2008)	Acquisition and administrative expenses, equity capital	Incurred benefits, addition to reserves, bonuses and rebates	Life
23.	Sinha (2006)	Operating expenses, commission expenses	Net premium income, number of products launched	Life
24.	Wende et. al (2008)	Operating expenses, equity capital, debt capital	Claims incurred, total invested assets	Property- liability
25.	Yao et. al (2007)	Labour, capital, payment and benefits	Premium, investment income	Life, Non- life

Source: Compiled

The table reflects that various inputs and outputs were applied by the researchers especially in foreign countries. Most of these variables could not be adopted in this study. The major reason behind it is that the variable(s) did not satisfy the basic stipulation of non-negativity of the input/output which is required for application of a linear programming problem. For instance investment income has been widely used by many researchers across the globe. In Indian context this variable could not be used as

it is a negative figure for many insurers particularly during the years of bullish trend in the market. The Indian life insurance industry is at an early stage compared to the developed economies of the world. The investment income is a negative figure because the increase or decrease in the valuation also comes under the head "Income from Investments" in both Policyholders' Account and Shareholders' Account. So, the commencement year of the sub-prime mortgage crisis or financial turmoil (i.e. 2007-08), most of the insurers reflected negative returns on investment. Hence, the investment income could not be applied. Many of the inputs and outputs used by foreign researchers could not be obtained in the IRDA Annual Reports because those figures were not disclosed. So, those could not be considered for the study. Thus, the review of foreign articles along with the Indian articles gave the clue for choice of input and output variables, all of which satisfied the basic conditions of non-negativity and data availability.

### **Input and Output Variables Used**

The choice of input and output variables revolves around some basic questions:

- (i) Which variables are to be considered for the purpose of DEA application?
- (ii) How many input and output variables are to be considered for the purpose of our study?

While finding the answer of the **first** question, i.e. the variables to be considered as inputs and outputs, two basic points were kept in mind:

- (i) The data set should be non-negative for the outputs and strictly positive for the inputs (Sarkis & Weinrach, 2001), and
- ii) There should be a significant positive relationship between the input and output variables (which can be verified from the correlation between the two variables).

The second question is equally important because DEA is sensitive to variable(s) selection. It is mentioned in efficiency studies that as more variables are added, there is a chance that some inefficient DMUs may become efficient (Smith, 1997). Hence, in order to retain the discriminatory power of the technique, a reasonable number of input and output variables are to be considered. As a solution to this problem, the following two thumb rules, given by Cooper et al. (2007) obtained in an article by Bala and Kumar (2011), are taken into consideration:

- $n \geq p \times q$ , where n is the number of DMUs, p is the number of inputs and q is the number of outputs
- $r = 3(p+q)$ , where r is the total number of observations.

In this study, the following inputs and outputs are considered after a thorough review of literature and consideration of the rules:

**Table 7.2: Inputs and Outputs**

Input Variables	Output Variables
<ul style="list-style-type: none"> <li>▪ Owner's Equity</li> <li>▪ Commission Expenses</li> <li>▪ Operating Expenses</li> </ul>	<ul style="list-style-type: none"> <li>▪ Net Premium</li> <li>▪ Benefits and Death Claims</li> <li>▪ Assets under Management</li> </ul>

Since the model uses three inputs and three outputs, we call it a three input-three output DEA model. Hence, the three inputs are Owner's Equity (Eq), Commission Expenses (COME) and Operating Expenses (OE) whereas the three outputs are Net Premium Income (PI), Benefits and Death Claims (DC) and Assets under Management (AUM).

**DEA Software: Estimation of Efficiency Scores**

We have used output oriented CCR, BCC and Super- efficiency model by using DEA software 'DEA –Solver Learning Version 3' design on the basis of the textbook "Data Envelopment Analysis : A Comprehensive text with models, application references and DEA- solver software".

**7.5 Technical Efficiency of Life Insurance Companies of India using Dynamic Panel Approach**

The study uses window analysis developed by Klopp (1985) to compare the performance of the major life insurance companies operating in India using a two output two input framework. The window approach evaluates firms on the basis of a panel of observations and thus is different from the conventional DEA. In the conventional DEA, technical efficiency for any particular decision-making unit (DMU) is measured by evaluating the DMU in the light of all the DMUs under observation for the

time period. The present study encompasses 18 life insurance companies for the period 2007-08 to 2012-13. The results available from the study suggest that there still exists a huge gap between the Life Insurance Corporation (LIC) of India and other life insurance companies in terms of technical efficiency. However, the gap is expected to come down in future with growing market share of the new entrants.

The performance of productive units is usually assessed in terms of technical efficiency. The concept of technical efficiency so often used in the efficiency/productivity related literature, actually emerged from the writings of T.C. Koopmans and M.J. Farrell. Koopmans (1951), defined technical efficiency in the following manner: A producer is considered technically efficient if (a) an increase in any output requires—(i) a reduction in at least one other output or (ii) an increase in at least one input and if (b) a reduction in any input requires—(i) an increase in at least one other input or (ii) a reduction in at least one output. Because of its Paretian implication, this approach is known as the Pareto- Koopmans efficiency approach.

Farrell (1957) laid the foundation for new approaches to efficiency and productivity studies at the micro level, providing invaluable insights on two issues: defining efficiency and productivity, and the calculation of the benchmark technology and the efficiency measures. The core of the contribution of Farrell comprised the following:

- (i) Introduction of efficiency measures based on radial uniform contractions or expansions from inefficient observations to the frontier,
- (ii) Specification of the production frontier as being the most pessimistic piecewise linear envelopment of the data,
- (iii) Construction of the frontier through solution of the systems of linear equations,

Obeying the two conditions on the unit isoquant:

- (i) that its slope is not positive;
- (ii) that no observed point lies between it and the origin.

The most immediate consequence of the Farrell measure of efficiency has been the decomposition of efficiency into technical efficiency, price (or allocative) efficiency and overall efficiency

corresponding to a firm. The radial contraction/expansion connecting inefficient observed points with (unobserved) reference points on the production frontier as the basis for the measures is the hallmark, and due to fundamental duality between Production and cost functions identical measures can also be defined using the latter. Thus, the Farrell approach enabled us to identify at least three efficiency measures:

(a) Technical efficiency: inputs needed at best practice to produce observed outputs relative to observed input quantities, maintaining observed input ratios;

(b) Price efficiency: costs of producing observed output at observed factor prices assuming technical efficiency, relative to minimised costs at the frontier;

(c) Overall efficiency: costs of producing observed output if both technical efficiency and price efficiency are assumed relative to observed costs.

### **Measurement of Technical Efficiency**

In the production approach, measurement of technical efficiency requires construction of production frontier. This is because efficiency is computed by measuring the distance of an observed point from an idealised production frontier. There are, however, two major competing paradigms for the construction of the frontiers: econometric and mathematical programming (DEA/FDH).

### **DEA Approach**

Data envelopment analysis (DEA) is a non-parametric linear programming tool generally used for performance evaluation of economic units. The USP of the method is that it requires very few prior assumption on input-output relationship. The DEA method enables extension of the single input-single output technical efficiency measure to the multiple output-multiple input case. In its constant returns to scale form, the DEA methodology was developed by Charnes et al. (1978). Banker et al. (1984) extended the approach to the case of variable returns to scale. The DEA approach constructs the production frontier from piecewise linear stretches resulting in a convex production possibility set.

### **Estimation of Technical Efficiency in the Radial DEA Model**

Let us consider a productive firm which produces a scalar output  $Y$  from a bundle of

$k$  inputs  $x=(x_1, x_2, \dots, x_k)$ . Let  $(x_i, y_i)$  be the observed input-output bundle of firm  $i$  ( $i=1,2, \dots,n$ ). The technology used by the firm is defined by the production possibility set.

$PPS = \{(x,y) : y \text{ can be produced from } x \}$

An input-output combination  $(x_0, y_0)$  is feasible if and only if  $(x_0, y_0) \in P_s$

In the input oriented approach (input minimisation subject to output constraint), the problem for any particular firm (under variable returns to scale) is:

Max  $\phi$

s.t.  $Y, \lambda, \theta, 1, 0$

$0 \leq \phi \leq 1$   
 $X_0 \geq \lambda X$   
 $\sum \lambda_j = 1$   
 $\lambda_j \geq 0$

Technical efficiency =  $1/\phi$

### **Intertemporal DEA: The Window Analysis**

In the conventional DEA technical efficiency for any particular decision-making unit.(DMU) is measured by evaluating the DMU in the light of all the DMUs under observation for the time period. This process is repeated for subsequent periods. In the case of Window Analysis, the basic idea is to treat each DMU as a different DMU for different time periods. One thus forms a panel of observations out of the DMU specific observations for different years. The panel is moving in nature i.e., as we progress, the observations relating to the initial years are dropped and those of later years are included. Each DMU is evaluated for the panel years against the panel so formed. The USP of this approach is that one can carry out a kind of sensitivity analysis as to how the efficiency scores change when we migrate from one panel to another as well as to consider the trend in efficiency within the panels. In spite of its elegance, the method has not been used in the Indian context so far.

### **Empirical Efficiency Estimation of Life Insurance Companies**

The study seeks to capture the inter-temporal efficiency trend of Indian life insurance companies for 2007-08 to 2012-13 using a two output-two input framework. Towards this end, the present study makes use of the Window approach developed by Klopp (1985).

### **Choice of Output/Input**

Defining outputs of insurance firms is a challenging task. Most of the life insurance cost studies focussing on economies of scale and scope, used premiums as proxies for outputs (e.g., Grace and Timme, 1992 and Gardner and Grace, 1993). However, some argued that premiums are not the quantity of outputs but the revenue (price times quantity) (Doherty, 1981; Yuengert, 1993).

As such, the outputs of life insurers may be measured by the services they provide to customers. In general, life insurers provide two principal services: risk bearing/risk pooling services and intermediation services. Life insurers collect premiums and annuity considerations from customers and redistribute most of the funds to those policyholders who sustain losses (the risk bearing/risk pooling service). Funds are collected in advance of paying benefits and held in reserves until claims are paid (the intermediation service).

In view of this, the present paper considers two output indicators: operating income and net premium income=(gross premium earned-reinsurance ceded+reinsurance accepted).

We have included premium income as one of the output indicators because in the early years the growth of premium income facilitates the new entrants to consolidate their business.

On the other hand, operating income is indicative of the intermediation service rendered by the life insurer.

In this study, total expenses related to insurance business have been taken as the proxy for the inputs used by the life insurers. The production relation, therefore, is: output(operating income, net premium income)=f (operating expenses, commissions paid).

Estimates have been made for the six-year period: 2007-08 to 2012-2013.

### **Choice of Window Length**

Suppose we have m number of DMUs with observations for n periods. Suppose also that k is the length of the window ( $k \leq n$ ). Then the length of the window is determined on the basis of the formula:

$k=(n+1)/2$  when n is odd and  $k=(n+1)/2 \pm 1/2$  when n is even.

For a detailed account on this, see Charnes and Cooper (1991).

In the present study  $n=6$ , so  $k=3.5$ . Thus, the window length has been taken as 3 for the estimation of technical efficiency.

In the later part, the three input three output model has been used for dynamic panel approach covering a period of nine years 2007-08 to 2015-16. As  $n=10$ , so  $k=5$  has been considered in this study. The results are in the next chapter.

# **Chapter8:Efficiency Analysis of Life Insurers**

## **In India**

8.1 Introduction

8.2Summary Statistics

8.3 Year wise Efficiency scores of Life Insurers

8.4 Super Efficiency

8.5. Year wise Rank of Life Insurers

8.6 Technical Efficiency through Dynamic Panel Approach

## 8.1 Introduction

This research work has applied Data Envelopment Analysis (DEA) to measure the efficiency of the life insurers. The outcome of this research work has been described in this chapter. In reference to the earlier chapter on research methodology the study has used a three input and three output model. The study used the DEA solver pro learner version to carry out the study. The software requires the names of the decision making units (DMUs ) i.e. the life insurance firms in abbreviation. These abbreviations used have been described in the later part of this study. The list of insurer considered for the study with abbreviations are as follows:

**Table 8.1: List of Insurers in Alphabetical Order**

<b>Sl.No.</b>	<b>Name of the Life Insurer</b>	<b>Abbreviation used</b>
1	Aviva Life Insurance Company	AVI
2	Bajaj Life Insurance Company	BAJ
3	Bharti Axa Life Insurance Comapny	BHA
4	Birla Sun Life Insurance Company	BSL
5	Future Genereli Life Insurance Company	FUT
6	HDFC Life Insurance Company	HDF
7	ICICI Prudential Life Insurance Comapny	ICI
8	IDBI Life Insurance Company	IDB
9	Exide Life Insurance Company(ING Vyasya)	INGEx
10	Kotak Life Insurance Company	KOT
11	Life Insurance Corporation of India	LIC
12	Max New York Life Insurance Company	MNY
13	PNB Met Life Insurance Company	PMET
14	Reliance Life Insurance Company	REL
15	Sahara Life Insurance Company	SAH
16	SBI Life Insurance Company	SBI
17	Shriram Life Insurance Company	SHR
18	Tata Life Insurance Company	TAT

Source:Compiled

The study has considered only 18 life insurers amongst 24 as only 18 companies were operating in the initial year of the study i.e. 2007-08. The other six insurers have joined subsequently. To get uniformity in the results the study thereby restricted to these 18 insurers mentioned above.

The chapter initially describes the statistical summary of input and output variables. In the next part the study has measured Technical Efficiency, Pure Technical Efficiency and Scale Efficiency using the CCR and BCC model. On applying the super efficiency model LIC was proved to be an outlier. Subsequently, the study analysed the efficiency of only the private sector companies baring LIC. As these were all static models, the study made an attempt to find dynamic panel approach in the last part of the study. The study made a pilot testing with two inputs and two outputs model using window analysis. Consecutively, three input and three output model was studied to analyze the efficiency of the life insurers. The results of the study have been analyzed and stated in the form of tables and discussion.

## 8.2 Summary Statistics

The statistics of six variables considered for the study are mentioned ( year-wise) as follows:

Table 8.2a: 2008 Statistics on Input/Output Data

	OE	COME	EQ	PI	DC	AUM
Max	830932	956810	77690494	14978999	9982	522984.8
Min	1004	4	18580	249	0	140.56
Average	113009.9	81413.67	4892351.3	1118535.3	675.3333	30091.06
SD	188091.8	215156.1	17673939	3379725.5	2259.934	119548.4

Source: Calculated

Table 8.2b: 2008 Correlation

	OE	COME	EQ	PI	DC	AUM
OE	1	0.964233	0.9404598	0.9579746	0.920469	0.927808
COME	0.964233	1	0.9906731	0.9956974	0.983098	0.987688
EQ	0.94046	0.990673	1	0.9980682	0.997556	0.999223
PI	0.957975	0.995697	0.9980682	1	0.992636	0.99531
DC	0.920469	0.983098	0.997556	0.9926356	1	0.998684
AUM	0.927808	0.987688	0.9992228	0.9953097	0.998684	1

Source: Calculated

Table 8.3a: 2009 Statistics on Input/Output Data

	OE	COME	EQ	PI	DC	AUM
Max	906429	1003324	84121356	15728804	11550	606487
Min	3973	1545	54184	15260	1	115.14
Average	140817.1	85451.67	5403976.1	1230023.7	803.7222	34946.23
SD	199599.3	224265.5	19109796	3538012	2613.186	138623.6

Source:Calculated

Table 8.3b: 2009 Correlation

	OE	COME	EQ	PI	DC	AUM
OE	1	0.960123	0.9427273	0.9592061	0.921224	0.932257
COME	0.960123	1	0.9957679	0.9981895	0.98726	0.993327
EQ	0.942727	0.995768	1	0.9976631	0.995767	0.99929
PI	0.959206	0.99819	0.9976631	1	0.98936	0.9946
DC	0.921224	0.98726	0.995767	0.9893601	1	0.997223
AUM	0.932257	0.993327	0.9992898	0.9946	0.997223	1

Source:Calculated

Table 8.4a: 2010 Statistics on Input/Output Data

	OE	COME	EQ	PI	DC	AUM
Max	1224582	1211031	111733502	18607731	13076	698153.5
Min	3700	2368	88420	25059	0	137.43
Average	156085.9	99291.44	7497606.61	1464843.6	907.7222	40508.72
SD	267190.1	270958.2	25321107.4	4180081.3	2959.382	159510.6

Source:Calculated

Table 8.4b: 2010 Correlation

	OE	COME	EQ	PI	DC	AUM
OE	1	0.983513	0.97999905	0.9862645	0.967024	0.971524
COME	0.983513	1	0.99789501	0.9986384	0.992925	0.995898
EQ	0.979999	0.997895	1	0.9988086	0.995631	0.998827
PI	0.986265	0.998638	0.99880863	1	0.991997	0.995505
DC	0.967024	0.992925	0.99563093	0.9919973	1	0.997369
AUM	0.971524	0.995898	0.99882673	0.9955055	0.997369	1

Source:Calculated

Table 8.5a: 2011 Statistics on Input/Output Data

	OE	COME	EQ	PI	DC	AUM
Max	1698028	128209367	2940	203473.4	10803	7168291
Min	3298	107086	150.71	243.41	0	201.32
Average	176618.6	8732066.06	1295.242	15993.97	898.9444	400535.6
SD	373357.2	29028070	767.0704	45709.72	2437.749	1641423

Source: Calculated

Table 8.5b: 2011 Correlation

	OE	COME	EQ	PI	DC	AUM
OE	1	0.99415381	0.563728	0.996339	0.984769	0.988476
COME	0.994154	1	0.525688	0.998967	0.985349	0.998321
EQ	0.563728	0.52568828	1	0.531822	0.476628	0.520278
PI	0.996339	0.99896678	0.531822	1	0.983521	0.994878
DC	0.984769	0.98534878	0.476628	0.983521	1	0.985412
AUM	0.988476	0.99832091	0.520278	0.994878	0.985412	1

Source: Calculated

Table 8.6a: 2012 Statistics on Input/Output Data

	OE	COME	EQ	PI	DC	AUM
Max	1491440	1403563	3052	202889.3	8856	914614.1
Min	3907	2220	150.71	225.95	4	298.95
Average	158235.2	101618.6	1336.083	15667	664.1667	54021.41
SD	327356.5	316423.5	780.8526	45595.21	2003.466	208743.9

Source: Calculated

Table 8.6b: 2012 Correlation

	OE	COME	EQ	PI	DC	AUM
OE	1	0.994769	0.570796	0.996033	0.985298	0.989528
COME	0.994769	1	0.547086	0.99919	0.991451	0.998626
EQ	0.570796	0.547086	1	0.547178	0.483914	0.535062
PI	0.996033	0.99919	0.547178	1	0.989054	0.996895
DC	0.985298	0.991451	0.483914	0.989054	1	0.991949

AUM	0.989528	0.998626	0.535062	0.996895	0.991949	1
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Source:Calculated

Table 8.7a: 2013 Statistics on Input/Output Data

	OE	COM E	EQ	PI	DC	AUM
Max	2003863	1476798	3200	208803.6	7829	1037656
Min	4026	1880	150.71	205.38	8	329.04
Average	335630.5	105558.2	1373.156	15656.07	649.6111	62068.95
SD	609508.3	333334.3	798.0556	47006.91	1781.01	236646.8

Source:Calculated

Table 8.7b: 2013 Correlation

	OE	COME	EQ	PI	DC	AUM
OE	1	0.573685	0.444748	0.584817	0.495522	0.540497
CO ME	0.573685	1	0.56979	0.999622	0.976783	0.998573
EQ	0.444748	0.56979	1	0.567653	0.499166	0.557031
PI	0.584817	0.999622	0.567653	1	0.976404	0.997666
DC	0.495522	0.976783	0.499166	0.976404	1	0.97843
AUM	0.540497	0.998573	0.557031	0.997666	0.97843	1

Source:Calculated

Table 8.8a: 2014 Statistics on Input/Output Data

	OE	COM E	EQ	PI	DC	AUM
Max	145678.2	138632.9	3403	236942.3	3962	1181000
Min	990	113.17	150.71	204.63	3	556.88
Average	42602.09	17978.37	1372.174	16539.8	432.6667	71349.98
SD	36900.59	32593.6	846.982	53564.36	925.001	269175.4

Source:Calculated

Table 8.8b: 2014 Correlation

	OE	COME	EQ	PI	DC	AUM
OE	1	0.301574	0.146654	0.10367	0.04106	0.12085
COME	0.301574	1	0.02423	0.10437	0.222491	0.11756
EQ	0.146654	0.02423	1	0.584254	0.474818	0.58317
PI	0.10367	0.10437	0.584254	1	0.928886	0.998725
DC	0.04106	0.222491	0.474818	0.928886	1	0.926861
AUM	0.12085	0.11756	0.58317	0.998725	0.926861	1

Source: Calculated

Table 8.9a: 2015 Statistics on Input/Output Data

	OE	COME	EQ	PI	DC	AUM
Max	135712.9	147995.3	3740	239667.7	3652	1359829
Min	1140	107.12	150.7	166.86	6	851.01
Average	43518.65	18967.23	1463.571	17877.16	383.0556	82740.72
SD	35640.18	34633.75	873.4167	54000.89	835.9968	309806.7

Source: Calculated

Table 8.9b: 2015 Correlation

	OE	COME	EQ	PI	DC	AUM
OE	1	0.274078	0.020033	0.08924	0.04593	0.1057
COME	0.274078	1	0.08493	0.10292	0.146462	0.11401
EQ	0.020033	0.08493	1	0.640488	0.521344	0.632792
PI	0.08924	0.10292	0.640488	1	0.952268	0.997533
DC	0.04593	0.146462	0.521344	0.952268	1	0.950125
AUM	0.1057	0.11401	0.632792	0.997533	0.950125	1

Source: Calculated

Table 8.10a: 2016 Statistics on Input/Output Data

	OE	COME	EQ	PI	DC	AUM
Max	145812.9	138636.1	3740	266444.2	3914	1527016
Min	1140	417.88	150.7	157.05	4	950.95
Average	49102.5	20984.8	1472.853	19989.64	320.5556	93873.1

SD	38832.68	33107.32	881.6958	60043.82	880.0683	347680.5
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Source: Calculated

Table 8.10b: 2016 Correlation

	OE	COME	EQ	PI	DC	AUM
OE	1	0.317553	0.042367	0.07085	0.04525	0.09535
COME	0.317553	1	0.08776	0.11919	0.09235	0.13277
EQ	0.042367	0.08776	1	0.630364	0.564791	0.624579
PI	0.07085	0.11919	0.630364	1	0.988154	0.997182
DC	0.04525	0.09235	0.564791	0.988154	1	0.990825
AUM	0.09535	0.13277	0.624579	0.997182	0.990825	1

Source: Calculated

It is observed in most of the years there is a high positive correlation between the Input and Output variables. This signifies that there is a strong relationship between the variables barring few exceptions.

### 8.3 Year wise Efficiency Scores of Life Insurers

The efficiency score of the life insurers according to the two basic models will help to understand the trend and year by year performance of the life insurers.

CCR Model:

This model is based on constant returns to scale. This model furnishes the technical efficiency scores of the life insurance companies. The findings of the study are as follows:

**Table 8.11: Efficiency Score as per CCR Model (2007-08 to 2015-16)**

Life Insurers	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average Score
AVI	0.8491	0.8364	0.8791	0.6517	0.9854	0.8080	0.0014	0.0014	0.0011	0.5570
BAJ	1	1	0.8887	1	1	1	1	1	1	0.9876
BHA	0.6221	0.6392	0.7298	0.6254	0.7494	0.7866	0.0097	0.0153	0.0037	0.4646
BSL	0.7186	0.7695	0.7447	0.6904	0.6997	0.7704	0.0073	0.0051	0.1046	0.5012

FUT	1	0.9779	1.0000	0.8745	0.3481	0.5477	0.0045	0.0021	0.0093	0.5294
HDF	0.8975	0.9143	0.8524	0.8438	0.7213	0.7119	0.0046	0.1244	0.1148	0.5761
ICI	1	1	1	0.8331	0.9262	0.7152	0.6500	0.8960	0.3770	0.8219
IDB	1	1	0.9917	0.8484	0.4766	0.4654	0.3000	0.2904	0.1457	0.6131
INGE x	0.7269	0.7960	0.7980	0.6104	0.5543	0.6406	0.2700	0.0024	0.0016	0.4889
KOT	0.8496	0.9528	1	0.9430	1	0.9865	0.0077	0.1014	0.1226	0.6626
LIC	1	1	1	1	1	1	1	1	1	1
MNY	1	1	1	1	0.4843	0.5807	0.0052	0.0067	0.0674	0.5716
PMET	0.6590	0.7543	0.7920	0.6714	0.9244	0.8032	0.0016	0.0019	0.0019	0.5122
REL	1	0.9263	0.9446	0.8949	0.7147	1	0.9300	0.7969	0.1382	0.8162
SAH	1	1	1	1	1	1	0.0055	0.1895	0.1002	0.6995
SBI	1	1	1	1	1	1	0.2500	0.2567	0.2354	0.7491
SHR	1	1	1	1	1	0.6689	0.5100	0.7550	1	0.8815
TAT	0.8972	0.9134	0.8756	0.7187	1	1	0.0058	0.0017	0.0178	0.6034
Average Score	0.9011	0.9156	0.9165	0.8448	0.8103	0.8047	0.2757	0.3026	0.2467	0.6687
No. Of Efficient Co.s	8	8	8	6	7	6	2	2	3	
No. of Inefficient Co.s	10	10	10	12	11	12	16	16	15	

*Source: Calculated*

From the above table it is evident that LIC has been the only company which has continued to be the most efficient one in all the years fallen under this study. Bajaj, Shriram and SBI are the private sector companies which did well during this period. In general we may infer that the performance of life insurance companies has drastically decreased during the last few years. The companies like Aviva, Bharti, IDBI, Birla, Tata, PNB Met life etc. should take drastic steps to improve their efficiency. The reason behind such in-efficiency may be understood individually from the Projection Data given in Appendix III of the study.

In the next section, the reference set of the companies are to be discussed, so that the companies may correctly benchmark their peers' performance to improve their own.

**Table 8.12: Reference Set For In-efficient Companies as per CCR Model (2007-08 to 2015-16)**

Life Insurer	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>AVI</b>	IDB REL SHR	BAJ IDB SBI	ICI KOT SAH	LIC SBI SHR	KOT	SBI TAT	LIC	LIC	LIC
<b>BAJ</b>	-	-	KOT SBI SHR	-	-	-	-	-	-
<b>BHA</b>	LIC SAH SBI	BAJ SBI	KOT MNY	SHR	KOT	TAT	LIC BAJ	BAJ LIC	LIC
<b>BSL</b>	BAJ REL SBI	BAJ SBI	KOT SBI SHR	LIC SBI SHR	KOT SBI	BAJ SBI TAT	LIC BAJ	BAJ LIC	LIC SHR
<b>FUT</b>	-	IDB SAH	-	MNY SHR	KOT SBI TAT	BAJ SAH SBI	LIC BAJ	BAJ LIC	LIC SHR
<b>HDF</b>	ICI IDB SBI	BAJ IDB SAH	KOT LIC SBI	LIC SBI SHR	LIC SBI TAT	BAJ TAT	LIC BAJ	BAJ LIC	LIC
<b>ICI</b>	-	-	-	BAJ SBI	KOT LIC SBI	BAJ TAT	LIC	LIC	LIC
<b>IDB</b>	-	-	KOT MNY SAH	MNY SHR	LIC SBI TAT	LIC SBI TAT	LIC	LIC	LIC
<b>INGEx</b>	MNY SAH SBI	ICI IDB SBI	ICI KOT LIC	LIC MNY SHR	KOT LIC SAH	BAJ LIC SBI	BAJ LIC	BAJ LIC	LIC
<b>KOT</b>	REL SBI SHR	BAJ IDB SBI	-	LIC SBI SHR	-	BAJ SBI TAT	BAJ LIC	BAJ LIC	BAJ LIC
<b>MNY</b>	-	-	-	-	KOT LIC SBI	LIC SBI TAT	LIC	LIC	LIC
<b>PMET</b>	BAJ MNY SHR	BAJ MNY SHR	FUT KOT SAH	LIC SBI SHR	KOT SAH	SBI TAT	LIC	LIC	LIC
<b>REL</b>	-	BAJ SHR	KOT MNY SHR	BAJ SBI SHR	KOT SBI SHR	-	BAJ LIC	BAJ LIC	LIC SHR
<b>SAH</b>	-	-	-	-	-	-	BAJ LIC	LIC	LIC SHR
<b>SBI</b>	-	-	-	-	-	-	BAJ	BAJ	BAJ

							LIC	LIC	LIC
SHR	-	-	-	-	-	BAJ LIC SBI	BAJ LIC	BAJ LIC	-
TAT	MNY SAH SBI	IDB LIC MNY	KOT LIC MNY	LIC MNY SHR	-	-	BAJ LIC	BAJ LIC	LIC

Source: compiled

LIC has been dropped out from the list as it is the only firm which is efficient in all the years. As the study proceeds it can be clearly identified that LIC i.e. Life Insurance Corporation of India is the major benchmark for all the private insurers in the future days to come. In reference to our earlier discussion, LIC has a first mover advantage. Along with it, LIC is one of those financial bodies which hold the pillar of the financial system of India.

#### BCC Model:

In the next part of the study, the BCC Model which is based on variables return to scale has been applied to compute the pure technical efficiency score of life insurers. The scores are mentioned below:

**Table 8.13: Efficiency Score as per BCC Model (2007-08 to 2015-16)**

Life Insurers	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average Score
AVI	0.9148	1	1	0.7040	1	0.8179	0.0136	0.0144	0.0108	0.6084
BAJ	1	1	1	1	1	1	1	1	1	1
BHA	0.6392	0.6784	0.7390	0.6262	1	1	0.0100	0.0158	0.0395	0.5276
BSL	0.7186	0.7708	0.8134	0.7461	0.7099	0.7709	0.1026	0.0676	0.1251	0.5361
FUT	1	0.9934	1	0.8883	0.3719	0.5586	0.0487	0.0221	0.0101	0.5437
HDF	0.8975	0.9406	1	0.9377	0.7314	0.9258	0.0493	0.1262	0.1167	0.6361
ICI	1	1	1	1	0.9753	0.9681	1	1	0.4352	0.9310
IDB	1	1	1	0.8576	0.5443	0.4998	1	1	1	0.8780
INGEx	0.7426	0.7987	0.8148	0.6858	0.5608	0.6594	0.3202	0.0243	0.0168	0.5137
KOT	0.8588	0.9546	1	0.9731	1	1	0.1135	0.1032	0.1241	0.6808
LIC	1	1	1	1	1	1	1	1	1	1
MNY	1	1	1	1	0.4911	0.5812	0.0532	0.0690	0.0687	0.5848
PMET	0.6682	0.7562	0.8915	0.7163	0.9574	0.8082	0.0164	0.0197	0.0204	0.5394
REL	1	0.9357	1	1	1	1	0.9643	0.8203	0.1383	0.8732
SAH	1	1	1	1	1	1	0.9998	1	0.9999	1

<b>SBI</b>	1	1	1	1	1	1	0.3623	0.3506	0.2386	0.7724
<b>SHR</b>	1	1	1	1	1	1	1	1	1	1
<b>TAT</b>	0.8975	0.9334	0.8782	0.7688	1	1	0.0596	0.0173	0.0181	0.6192
<b>Average Score</b>	0.9076	0.9312	0.9521	0.8836	0.8523	0.8661	0.4508	0.4250	0.3535	0.7358
<b>No. Of Efficient Co.s</b>	10	9	12	8	10	9	5	6	4	
<b>No. of Inefficient Co.s</b>	8	9	6	10	8	9	13	12	14	

Source: Calculated

The above table helps us to understand that as the industry is maturing, the companies are doing well under the variable returns to scale model. Still, the number of efficient companies has decreased over the years. Infusion of new capital by increasing the share of the foreign counterpart to 49% is an attributable cause for such abrupt changes in the efficiency position of the private insurers. LIC has also increased its capital base from 5 thousand Crores to 100 thousand crores which has been discussed in the earlier sections. The performance of LIC is strongly recommendable even after one and a half decade of liberalization of the insurance sector.

**Table 8.14: Reference Set For In-efficient Companies as per BCCModel (2007-08 to 2015-16)**

Life Insurer	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>AVI</b>	BAJ IDB LIC	-	-	MNY SBI SHR	-	SAH SBI TAT	BAJ LIC	BAJ LIC SHR	BAJ LIC SHR
<b>BHA</b>	FUT LIC SBI	BAJ IDB SHR	IDB KOT SHR	MNY SHR	-	BAJ SAH SBI	BAJ LIC	LIC SAH SHR	IDB LIC SAH
<b>BSL</b>	BAJ REL SBI	BAJ IDB SBI	KOT MNY SBI	MNY SBI SHR	KOT SBI	BAJ SAH SBI	BAJ LIC	BAJ LIC	BAJ LIC
<b>FUT</b>	-	IDB SAH	-	LIC SAH SHR	KOT SAH SBI	BAJ SAH SBI	BAJ LIC	BAJ LIC	BAJ LIC
<b>HDF</b>	ICI IDB	AVI BAJ	-	LIC MNY	LIC SBI	LIC SBI	BAJ LIC	BAJ LIC	BAJ LIC

	SBI	ICI		REL	TAT				
<b>ICI</b>	-	-	-	-	LIC SBI	LIC SBI	-	-	IDB LIC
<b>IDB</b>	-	-	-	LIC MNY SHR	KOT SAH SBI	LIC SAH SBI	-	-	-
<b>INGEx</b>	FUT SBI SHR	ICI IDB LIC	HDF ICI KOT	LIC MNY REL	KOT LIC SAH	BAJ LIC SAH	BAJ IDB LIC	BAJ LIC	BAJ LIC
<b>KOT</b>	REL SBI SHR	BAJ IDB MNY	-	LIC MNY SBI	-	-	LIC SAH SHR	BAJ LIC	BAJ LIC
<b>MNY</b>	-	-	-	-	BAJ LIC SBI	BAJ LIC SBI	BAJ LIC	BAJ LIC SHR	BAJ LIC
<b>PMET</b>	BAJ MNY SBI	BAJ MNY SAH	HDF MNY REL	MNY SBI SHR	BAJ KOT SHR	SAH SBI TAT	BAJ LIC SHR	BAJ LIC SHR	BAJ LIC SHR
<b>REL</b>	-	AVI BAJ SAH	-	-	-	-	BAJ LIC SAH	BAJ LIC SHR	BAJ LIC SHR
<b>SBI</b>	-	-	-	-	-	-	BAJ LIC	BAJ LIC	BAJ LIC
<b>TAT</b>	LIC MNY SBI	IDB LIC MNY	KOT LIC MNY	LIC MNY SBI	-	-	BAJ LIC	BAJ LIC	BAJ LIC

Source: compiled

It is evident in BCC model like CCR model, LIC was found to be amongst the efficient firms. Bajaj and Shriram are the efficient firms during all these years. All other companies were found to be inefficient during any of the year covered under this study. The inefficient firms need to benchmark them for better performance. Bajaj and LIC are the firms which appears as the best ones to be benchmarked by others. It should be noted that after 2013 SBI life is found to be inefficient. Shriram's performance is also remarkable as per this model. IDBI life has also performed well during the initial and later years though it was proved inefficient during 2011 to 2013. Sahara do not have any benchmark in 2014 and 2016 as their efficiency score is almost equal to 1 in these two years. The above table will help the private insurers to benchmark their efficient peers.

### **Scale Efficiency**

The scale efficiency scores of the life insurers are stated below:

**Table 8.15: Scale Efficiency Score (2007-08 to 2015-16)**

<b>Life Insurers</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>Average Score</b>
<b>AVI</b>	0.9282	0.8364	0.8791	0.9257	0.9854	0.9879	0.1029	0.0972	0.1019	0.6494
<b>BAJ</b>	1	1	0.8887	1	1	1	1	1	1	0.9876
<b>BHA</b>	0.9732	0.9422	0.9876	0.9987	0.7494	0.7866	0.9700	0.9684	0.0937	0.8300
<b>BSL</b>	1	0.9983	0.9155	0.9253	0.9856	0.9994	0.0712	0.0754	0.8361	0.7563
<b>FUT</b>	1	0.9844	1	0.9845	0.9360	0.9805	0.0924	0.0950	0.9208	0.7771
<b>HDF</b>	1	0.9720	0.8524	0.8999	0.9862	0.7690	0.0933	0.9857	0.9837	0.8380
<b>ICI</b>	1	1	1	0.8331	0.9497	0.7388	0.6500	0.8960	0.8663	0.8815
<b>IDB</b>	1	1	0.9917	0.9893	0.8756	0.9312	0.3000	0.2904	0.1457	0.7249
<b>INGEx</b>	0.9789	0.9966	0.9794	0.8901	0.9884	0.9715	0.8432	0.0988	0.0952	0.7602
<b>KOT</b>	0.9893	0.9981	1	0.9691	1	0.9865	0.0678	0.9826	0.9879	0.8868
<b>LIC</b>	1	1	1	1	1	1	1	1	1	1
<b>MNY</b>	1	1	1	1	0.9862	0.9991	0.0977	0.0971	0.9811	0.7957
<b>PMET</b>	0.9862	0.9975	0.8884	0.9373	0.9655	0.9938	0.0976	0.0964	0.0931	0.6729
<b>REL</b>	1	0.9900	0.9446	0.8949	0.7147	1	0.9644	0.9715	0.9993	0.9421
<b>SAH</b>	1	1	1	1	1	1	0.0055	0.1895	0.1002	0.6995
<b>SBI</b>	1	1	1	1	1	1	0.6900	0.7322	0.9866	0.9343
<b>SHR</b>	1	1	1	1	1	0.6689	0.5100	0.7550	1	0.8815
<b>TAT</b>	0.9997	0.9786	0.9970	0.9348	1	1	0.0973	0.0983	0.9834	0.7877
<b>Average Score</b>	0.9920	0.9830	0.9625	0.9546	0.9513	0.9341	0.4252	0.5239	0.6764	0.8225
<b>No. Of Efficient Co.s</b>	12	8	8	6	7	6	2	2	3	1
<b>No. of Inefficient Co.s</b>	6	10	10	12	11	12	16	16	15	17

Source: Calculated

The results have typically proved that scale inefficiency is the crux of the problem for the private insurers. Though large amount of capital has been invested in the private insurance companies but their income and assets are not as much as LIC. So we find that LIC is an overachiever in this industry. Thus this gives a cue to study the super efficiency score of the life insurers specially to understand where LIC lies as compared to its efficient counterparts in all these years.

In the next section the Technical Efficiency, Pure Technical Efficiency and scale Efficiency score of LIC vis-à-vis the private sector companies are enumerated as follows:

**Table 8.16: Technical Efficiency**

Year	LIC	Private Players	Overall
2007-08	1	0.8953	0.9011
2008-09	1	0.9106	0.9156
2009-10	1	0.9116	0.9165
2010-11	1	0.8356	0.8448
2011-12	1	0.7991	0.8103
2012-13	1	0.7932	0.8047
2013-14	1	0.2331	0.2757
2014-15	1	0.2616	0.3026
2015-16	1	0.2024	0.2467

**Table 8.17: Pure Technical Efficiency**

Year	LIC	Private Players	Overall
2007-08	1	0.9022	0.9076
2008-09	1	0.9272	0.9312
2009-10	1	0.9492	0.9521
2010-11	1	0.8767	0.8836
2011-12	1	0.8437	0.8523
2012-13	1	0.8582	0.8661
2013-14	1	0.4184	0.4508
2014-15	1	0.3912	0.425
2015-16	1	0.3154	0.3535

**Table 8.18: Scale Efficiency**

Year	LIC	Private Players	Overall
2007-08	1	0.9915	0.992
2008-09	1	0.9820	0.983
2009-10	1	0.9603	0.9625
2010-11	1	0.9519	0.9546
2011-12	1	0.9484	0.9513
2012-13	1	0.9302	0.9341
2013-14	1	0.3914	0.4252

2014-15	1	0.4959	0.5239
2015-16	1	0.6574	0.6764

Overall, it is evident that the year 2013-14, 2014-15 and 2015-16 were not at all satisfactory for the private players. This calls for a serious probe into the matter and adequate measures should be adopted immediately. In the history of insurance in India, we had observed many Indian Insurance companies going to liquidification and the foreign companies withdrawing themselves from the business. IRDA is a robust regulatory body and acting as a supervisor in this sector so this turbulence should be immediately arrested with caution. Infusion of fresh capital by the foreign counterparts may have contributed to huge scale inefficiency amongst the private players. Nevertheless, with increase in premium income and assets this problem may be solved in the future days to come.

Since LIC was found to be efficient in all the years under study, in the next part super efficiency scores amongst the insurers have been studied.

#### 8.4. Super Efficiency

In the next part of the study the super efficiency score has been depicted, as follows:

**Table 8.19: Super Efficiency Score as per CCR Model (2007-08 to 2015-16)**

Life Insurers	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average Score
AVI	0.8491	0.8364	0.8791	0.6517	0.9854	0.8080	0.0135	0.0140	0.0105	0.5609
BAJ	1.1124	1.0956	0.8887	2.6833	2.3990	4.5683	3.2389	3.5426	2.0318	2.3956
BHA	0.6221	0.6392	0.7298	0.6254	0.7494	0.7866	0.0097	0.0153	0.0374	0.4683
BSL	0.7186	0.7695	0.7447	0.6904	0.6997	0.7704	0.0734	0.0507	0.1046	0.5136
FUT	8.6684	0.9779	1.1614	0.8745	0.3481	0.5477	0.0454	0.0211	0.0093	1.4060
HDF	0.8975	0.9143	0.8524	0.8438	0.7213	0.7119	0.0463	0.1244	0.1148	0.5807
ICI	1.0530	1.2405	1.6052	0.8331	0.9262	0.7152	0.6464	0.8960	0.3770	0.9214
IDB	4.0762	1.7841	0.9916	0.8484	0.4766	0.4654	0.2966	0.2904	0.1457	1.0417
INGEx	0.7269	0.7960	0.7980	0.6104	0.5543	0.6406	0.2657	0.0239	0.0164	0.4925
KOT	0.8496	0.9528	1.1542	0.9430	1.0935	0.9865	0.0771	0.1014	0.1226	0.6978
LIC	4.8486	9.4605	5.5453	108.27	10.338	8.8471	29.3023	24.3635	57.3725	28.7053
MNY	1.0853	1.0908	1.0311	1.0202	0.4843	0.5807	0.0524	0.0665	0.0674	0.6087
PMET	0.6590	0.7543	0.7920	0.6714	0.9244	0.8032	0.0160	0.0191	0.0197	0.5177
REL	1.0531	0.9263	0.9446	0.8949	0.7147	1.2570	0.9380	0.7969	0.1382	0.8515
SAH	1.0991	3.4366	9.8124	4.1104	2.0229	1.7072	0.0546	0.1895	0.1002	2.5037
SBI	1.4982	1.4954	1.6363	1.5748	1.4099	1.2011	0.2450	0.2567	0.2354	1.0614
SHR	1.0924	1.0995	1.0469	1.3199	1.6320	0.6689	0.5097	0.7550	1.0192	1.0159

<b>TAT</b>	0.8972	0.9134	0.8756	0.7187	1.0927	1.2054	0.0584	0.0172	0.0178	0.6440
<b>Average Score</b>	1.7670	1.6213	1.7494	7.1214	1.5318	1.5151	1.9938	1.7524	3.4411	2.4993

Source: Calculated

The efficiency score of LIC in all the years is much above the private insurers and in 2011 it is exceptionally high. So, as expected we can see that LIC can be termed as super-efficient and not only efficient company. In the next part, we will study the super efficiency as per BCC model which is as follows:

**Table 8.20: Super Efficiency Score as per BCC Model (2007-08 to 2015-16)**

Life Insurers	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average Score
<b>AVI</b>	0.9148	2.0375	1.1705	0.7040	1.0127	0.8179	0.0136	0.0144	0.011	0.7440
<b>BAJ</b>	1.4639	1.2722	1.0338	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.0855
<b>BHA</b>	0.6392	0.6784	0.7390	0.6262	1.0260	1.0502	0.0100	0.0158	0.039	0.5360
<b>BSL</b>	0.7186	0.7708	0.8134	0.7461	0.7099	0.7709	0.1026	0.0676	0.125	0.5361
<b>FUT</b>	1.0000	0.9934	1.1658	0.8883	0.3719	0.5586	0.0487	0.0221	0.010	0.5621
<b>HDF</b>	0.8975	0.9406	1.3905	0.9377	0.7314	0.9258	0.0493	0.1262	0.117	0.6795
<b>ICI</b>	1.2553	1.4130	1.7325	1.0215	0.9753	0.9681	1.1784	1.0000	0.435	1.1088
<b>IDB</b>	1.0000	1.0000	1.1390	0.8576	0.5443	0.4998	1.0000	1.0000	1.000	0.8934
<b>INGEx</b>	0.7426	0.7987	0.8148	0.6858	0.5608	0.6594	0.3202	0.0243	0.017	0.5137
<b>KOT</b>	0.8588	0.9546	1.1770	0.9731	1.1376	1.0259	0.1135	0.1032	0.124	0.7186
<b>LIC</b>	154.99	166.42	145.43	1092.3	102.77	85.79	76.50	70.69	66.45	217.93
<b>MNY</b>	1.1545	1.1278	1.1303	1.2287	0.4911	0.5812	0.0532	0.0690	0.0687	0.6560
<b>PMET</b>	0.6682	0.7562	0.8915	0.7163	0.9574	0.8082	0.0164	0.0197	0.0204	0.5394
<b>REL</b>	1.0600	0.9357	1.0327	2.1145	1.1327	1.5172	0.9643	0.8203	0.1383	1.0795
<b>SAH</b>	1.1050	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0117
<b>SBI</b>	1.6481	1.5316	1.6387	1.5787	1.4250	1.2063	0.3623	0.3506	0.2386	1.1089
<b>SHR</b>	1.4735	1.3160	1.1139	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.1004
<b>TAT</b>	0.8975	0.9334	0.8782	0.7688	1.0957	1.2724	0.0596	0.0173	0.018	0.6601
<b>Average Score</b>	9.5828	10.271	9.1273	61.6210	6.5521	5.6361	4.6553	4.2966	3.989	12.859

The average score reflects a mixed trend during the period of study. Companywise we may see that LIC has scored very high as compared to its private counterparts. The other companies are lagging

much behind LIC. LIC has huge capital base and has been a monopoly since almost 50 years before liberalization affected the sector. It is one of the financial mammoth of our country. The private players were doing quite well upto 2013 but since then due to introduction of new capital and some other market fluctuations some private sector are found to be inefficient. SBI life gave a very good start but now it needs to look after the reasons behind such inefficiencies. The other private players should benchmark LIC to improve it's position.

Efficiency Score Excluding LIC

The study has also tried to exclude LIC as it is an outlier in the efficiency curve as it was found to be highly efficient. So, the next attempt was to find out the efficiency score of the private players without LIC. The results were as follows:

**Table 8.21: Technical Efficiency Score of only private players (2007-08 to 2015-16)**

Life Insurers	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average Score
AVI	0.8491	0.8364	0.8791	0.6584	0.9854	0.8080	0.0870	0.0761	0.1054	0.5872
BAJ	1	1	0.8887	1	1	1	1	1	1	0.9876
BHA	0.6429	0.6392	0.7298	0.6254	0.7494	0.7866	0.0678	0.0900	0.3193	0.5167
BSL	0.7186	0.7695	0.7447	0.7016	0.6997	0.7704	0.1593	0.1760	0.2094	0.5499
FUT	1	0.9779	1	0.8745	0.3481	0.5477	0.1176	0.0502	0.0344	0.5500
HDF	0.8975	0.9143	0.8657	0.9048	0.8208	0.7119	0.3563	0.6037	0.5355	0.7345
ICI	1	1	1	0.8331	0.9478	0.7152	1	1	1	0.9440
IDB	1	1	0.9917	0.8517	0.5409	0.5386	1	0.7954	1	0.8576
INGEx	0.7269	0.7960	0.8506	0.7183	0.6201	0.6654	0.4745	0.1334	0.1432	0.5698
KOT	0.8496	0.9528	1	0.9816	1	0.9865	0.4545	0.2972	0.3348	0.7619
MNY	1	1	1	1	0.7571	0.8749	0.3752	0.5315	0.4254	0.7738
PMET	0.6590	0.7543	0.7920	0.7103	0.9244	0.8032	0.1415	0.1537	0.1675	0.5673
REL	1	0.9263	0.9446	0.8949	0.7147	1	1	1	0.5647	0.8939
SAH	1	1	1	1	1	1	0.2605	0.8008	0.6670	0.8587
SBI	1	1	1	1	1	1	0.5275	0.6809	0.6842	0.8770
SHR	1	1	1	1	1	0.6752	0.7128	1	1	0.9320
TAT	0.8972	0.9146	0.8898	0.8200	1	1	0.2673	0.2270	0.2184	0.6927
Average Score	0.8965	0.9107	0.9163	0.8573	0.8299	0.8167	0.4707	0.5068	0.4947	0.7444
No. of efficient co.s	9	7	7	5	6	5	4	4	4	

No. of inefficient co.s	8	10	10	12	11	12	13	13	13	
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Source: Calculated

The scenario has changed to some extent when only private players were studied. Insurers like ICICI Prudential Life, IDBI Life gained efficiency in the later part of the study. This proves that these companies are also doing well.

**Table 8.22: Pure Technical Efficiency Score of only private players (2007-08 to 2015-16)**

Life Insurers	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average Score
AVI	0.9167	1	1	0.7040	1	0.8179	0.1511	0.1372	0.1551	0.6536
BAJ	1	1	1	1	1	1	1	1	1	1
BHA	0.6877	0.6784	0.7390	0.6262	1	1	0.0886	0.1227	0.3460	0.5876
BSL	0.7186	0.7708	0.8134	0.7461	0.7099	0.7709	0.4948	0.3786	0.6762	0.6755
FUT	1	0.9934	1	0.9533	0.3719	0.5586	0.1450	0.0810	0.0705	0.5749
HDF	0.8975	0.9474	1	1	1	0.9486	0.8146	1	0.9161	0.9471
ICI	1	1	1	1	1	1	1	1	1	1
IDB	1	1	1	0.9198	0.5443	0.5862	1	1	1	0.8945
INGEx	0.7426	0.8087	0.9114	0.7579	0.6377	0.6697	0.4762	0.2526	0.2531	0.6122
KOT	0.8588	0.9546	1	0.9967	1	1	0.5461	0.3457	0.4003	0.7891
MNY	1	1	1	1	0.9800	1	0.8489	0.8832	0.9465	0.9621
PMET	0.6682	0.7562	0.8915	0.7163	0.9574	0.8082	0.2617	0.2726	0.2885	0.6245
REL	1	0.9357	1	1	1	1	1	1	0.7358	0.9635
SAH	1	1	1	1	1	1	1	1	1	1
SBI	1	1	1	1	1	1	1	1	1	1
SHR	1	1	1	1	1	1	1	1	1	1
TAT	1	1	1	1	1	1	0.4921	0.4462	0.4392	0.8197
Average Score	0.9112	0.9321	0.9621	0.9071	0.8942	0.8918	0.6658	0.6423	0.6604	0.8297
No. of efficient co.s	10	9	13	9	11	10	7	8	6	
No. of inefficient co.s	7	8	4	8	6	7	10	9	11	

Source: Calculated

In terms of pure technical efficiency, the situation has drastically improved ICICI prudential was seen to the efficient in all the years studied. Bajaj Allianz, SBI Life, Sahara Life and Shriram Life are the

other companies which were found to be efficient. So, overall the number of efficient companies has increased.

**Table 8.23: Scale Efficiency Score of only private players (2007-08 to 2015-16)**

Life Insurers	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average Score
AVI	0.9262	0.8364	0.8791	0.9351	0.9854	0.9878	0.5757	0.5548	0.6795	0.8178
BAJ	1	1	0.8887	1	1	1	1	1	1	0.9876
BHA	0.9349	0.9422	0.9874	0.9987	0.7494	0.7866	0.7652	0.7334	0.9230	0.8690
BSL	1	0.9983	0.9155	0.9404	0.9857	0.9994	0.3220	0.4650	0.3097	0.7707
FUT	1	0.9844	1.0000	0.9173	0.9360	0.9806	0.8109	0.6198	0.4879	0.8596
HDF	1	0.9651	0.8657	0.9048	0.8208	0.7505	0.4374	0.6037	0.5845	0.7703
ICI	1	1	1	0.8331	0.9478	0.7152	1	1	1	0.9440
IDB	1	1.0000	0.9917	0.9259	0.9936	0.9188	1	0.7954	1	0.9584
INGEx	0.9787	0.9843	0.9333	0.9478	0.9724	0.9936	0.9965	0.5281	0.5659	0.8778
KOT	0.9893	0.9981	1.0000	0.9848	1	0.9865	0.8322	0.8598	0.8364	0.9430
MNY	1	1	1	1	0.7726	0.8749	0.4420	0.6018	0.4494	0.7934
PMET	0.9862	0.9975	0.8884	0.9916	0.9655	0.9938	0.5405	0.5638	0.5806	0.8342
REL	1	0.9900	0.9446	0.8949	0.7147	1	1	1	0.7674	0.9235
SAH	1	1	1	1	1	1	0.2605	0.8008	0.6670	0.8587
SBI	1	1	1	1	1	1	0.5275	0.6809	0.6842	0.8770
SHR	1	1	1	1	1	0.6752	0.7128	1.0000	1.0000	0.9320
TAT	0.8972	0.9146	0.8898	0.8200	1	1	0.5432	0.5087	0.4973	0.7856
Average Score	0.9831	0.9771	0.9520	0.9467	0.9320	0.9214	0.6921	0.7245	0.7078	0.8707
No. of efficient co.s	11	6	5	5	6	5	4	3	3	
No. of inefficient co.s	6	11	12	12	11	12	13	14	14	

Source: Calculated

The scale efficiency score was in alignment to the earlier studies. As it is quite evident that the private insurers are highly scale inefficient which may lead them to trouble in near future. So, they should try to manage their expenses well and optimize themselves by increasing sales. Creative resort to address the problem is the need of the hour for the private players.

## 8.5 Year wise Rank of Life Insurers

The rank of the Life insurers is an important factor of study. The rank of the insurers as per both the models is given below:

**Table 8.24: Rank of the Life Insurance Companies as per CCR Model (2007-08 to 2015-16)**

Life Insurers	2008	2009	2010	2011	2012	2013	2014	2015	2016
AVI	14	14	12	16	8	8	17	18	17
BAJ	1	1	11	1	1	1	1	1	1
BHA	18	18	18	17	11	10	18	17	13
BSL	16	16	17	14	14	11	10	12	10
FUT	1	9	1	9	18	17	15	14	18
HDF	11	12	14	11	12	13	14	9	9
ICI	1	1	1	12	9	12	4	3	4
IDB	1	1	9	10	17	18	6	6	6
IngEx	15	15	15	18	15	15	7	13	16
KOT	13	10	1	7	1	7	9	10	8
LIC	1	1	1	1	1	1	1	1	1
MNY	1	1	1	1	16	16	13	11	12
PMET	17	17	16	15	10	9	16	15	14
REL	1	11	10	8	13	1	3	4	7
SAH	1	1	1	1	1	1	12	8	11
SBI	1	1	1	1	1	1	8	7	5
SHR	1	1	1	1	1	14	5	5	1
TAT	12	13	13	13	1	1	11	16	15

Source: Calculated

From the above table we can infer that the position of Aviva, Bharti, Birla, HDFC, Exide(ING), PNB Met life were very critical in all the years. The performance of Shriram had gone down from 2012-13

but it improved in 2015-16. Bajaj has been found efficient in all the years except 2010, the reason may be low claim settlement by the company. However, it has recovered in future. The other private insurance companies are in a threat especially SBI Life, Max Life, Tata, Reliance need a serious introspection to improve their ranks in the future.

The rank as per BCC model is given below:

**Table 8.25: Rank of the Life Insurance Companies as per BCC Model (2007-08 to 2015-16)**

Life Insurers	2008	2009	2010	2011	2012	2013	2014	2015	2016
AVI	11	1	1	16	1	12	17	18	17
BAJ	1	1	1	1	1	1	1	1	1
BHA	18	18	18	18	1	1	18	17	13
BSL	16	16	17	14	14	14	11	12	9
FUT	1	10	1	11	18	17	15	14	18
HDF	13	12	1	10	13	11	14	9	11
ICI	1	1	1	1	11	10	1	1	6
IDB	1	1	1	12	16	18	1	1	1
INGEx	15	15	16	17	15	15	9	13	16
KOT	14	11	1	9	1	1	10	10	10
LIC	1	1	1	1	1	1	1	1	1
MNY	1	1	1	1	17	16	13	11	12
PMET	17	17	14	15	12	13	16	15	14
REL	1	13	1	1	1	1	7	7	8
SAH	1	1	1	1	1	1	6	1	5
SBI	1	1	1	1	1	1	8	8	7
SHR	1	1	1	1	1	1	1	1	1
TAT	12	14	15	13	1	1	12	16	15

Source: Calculated

Thus, it was quite evident that the life insurers with 1<sup>st</sup> rank were the efficient ones and the rest which were lagging behind being the inefficient ones. As per this model, we found a number of companies in the efficient zone which was a good sign for the insurance industry as a whole. From the year 2014 to the year 2016 the situation was not very favourable. The high claim settlement by the private life insurers might be a reason behind such inefficiency. The number of efficient companies had decreased gradually. The companies like SBI life, Sahara Life, Max Life and Kotak were the ones which had

entered the inefficiency zone from efficient ones. The reasons behind such inefficiencies should be seriously addressed.

**Table 8.26: Rank as per Super Efficiency(CCR) (2007-08 to 2015-16)**

Life Insurers	2008	2009	2010	2011	2012	2013	2014	2015	2016
AVI	14	14	12	16	8	8	17	18	17
BAJ	5	7	11	3	2	2	2	2	2
BHA	18	18	18	17	11	10	18	17	13
BSL	16	16	17	14	14	11	10	12	10
FUT	2	9	5	9	18	17	15	14	18
HDF	11	12	14	11	12	13	14	9	9
ICI	10	5	4	12	9	12	4	3	4
IDB	3	3	9	10	17	18	6	6	6
INGEx	15	15	15	18	15	15	7	13	16
KOT	13	10	6	7	6	7	9	10	8
LIC	1	1	1	1	1	1	1	1	1
MNY	8	8	8	6	16	16	13	11	12
PMET	17	17	16	15	10	9	16	15	14
REL	9	11	10	8	13	4	3	4	7
SAH	6	2	2	2	3	3	12	8	11
SBI	4	4	3	4	5	6	8	7	5
SHR	7	6	7	5	4	14	5	5	3
TAT	12	13	13	13	7	5	11	16	15

Source: Calculated

The rank based on super efficiency scores revealed a detailed and clear picture about the rank of the individual players in the market. The above table depicted year wise trend in the ranks of all life insurers considered for the study.

**Table 8.27: Rank as per Super Efficiency(BCC) (2007-08 to 2015-16)**

Life Insurers	2008	2009	2010	2011	2012	2013	2014	2015	2016
AVI	11	2	6	16	7	12	17	18	17
BAJ	4	6	11	6	8	7	3	2	2
BHA	18	18	18	18	6	5	18	17	13

<b>BSL</b>	16	16	17	14	14	14	11	12	9
<b>FUT</b>	9	10	7	11	18	17	15	14	18
<b>HDF</b>	13	12	4	10	13	11	14	9	11
<b>ICI</b>	5	4	2	5	11	10	2	3	6
<b>IDB</b>	9	8	8	12	16	18	3	6	2
<b>INGEx</b>	15	15	16	17	15	15	9	13	16
<b>KOT</b>	14	11	5	9	3	6	10	10	10
<b>LIC</b>	1	1	1	1	1	1	1	1	1
<b>MNY</b>	6	7	9	4	17	16	13	11	12
<b>PMET</b>	17	17	14	15	12	13	16	15	14
<b>REL</b>	8	13	12	2	4	2	7	4	8
<b>SAH</b>	7	8	13	6	8	7	3	8	2
<b>SBI</b>	2	3	3	3	2	4	8	7	7
<b>SHR</b>	3	5	10	6	8	7	3	5	2
<b>TAT</b>	12	14	15	13	5	3	12	16	15

Source: Calculated

The rank cleared the opinion that LIC was the number one rank holder throughout the period of the study. The private players did not have a very consistent trend. The rank of Bajaj and SBI life is quite satisfactory as compared to the other private players operating in this sector.

## 8.6 Technical Efficiency through Dynamic Panel Approach

The earlier models being static in nature do not give us a perfect view of the overall impact in all these years. So, to bring dynamism in the study a dynamic panel approach has been applied.

The first part of the study is a pilot study made using a two input- two output framework. The study seeks to capture the inter-temporal efficiency trend of Indian life insurance companies from 2007-08 to 2012-13 using Window approach developed by Klopp (1985). The last part of the study reflects the dynamic panel approach for all the nine years from 2007-08 to 2015-16 using a three input three output framework (same as made in the BCC and CCR models in the initial part of the study).

Choice of Output/Input for the pilot study:

The outputs of life insurers may be measured by the services they provide to customers. Life insurers provide two principal services: risk bearing/risk pooling services and intermediation services. Life

insurers collect premiums and annuity considerations from customers and redistribute most of the funds to those policyholders who sustain losses (the risk bearing/risk pooling service). Funds are collected in advance of paying benefits and held in reserves until claims are paid (the intermediation service).

In view of this, the present paper considers two output indicators: operating income and net premium income (i.e. gross premium earned *less* reinsurance ceded *plus* reinsurance accepted). The study has included premium income as one of the output indicators because in the early years the growth of premium income facilitates the new entrants to consolidate their business. On the other hand, operating income was indicative of the intermediation service rendered by the life insurer. In this study, total expenses related to insurance business have been taken as the proxy for the inputs used by the life insurers.

The production relation, therefore, is:

output(operating income, net premium income) = f (operating expenses, commissions paid). Estimates have been made for the six-year period: 2007-08 to 2012-2013.

Choice of Window Length:

Suppose we have m number of DMUs with observations for n periods. Suppose also that k is the length of the window ( $k \leq n$ ). Then the length of the window is determined on the basis of the formula:

$k=(n+1)/2$  when n is odd and  $k=(n+1)/2 \pm 1/2$  when n is even.

In the present study  $n=6$ , so  $k=3.5$ . Thus, the window length has been taken as 3 for the estimation of technical efficiency.

### **Descriptive Statistics of Outputs/Inputs**

Table 8.28 provide the descriptive statistics of the two outputs (benefits paid and net premium) and two inputs (Operating expenses and Commission expenses).

**Table 8.28: Descriptive Statistics of Operating Income (Output Indicator)(Figures in Rs lac)**

Statistical Measure	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Max	5657299	4299261	11264424	9579923	8442610	11753830
Min	1018	-523277	16831	3975	-43617	5810
Average	404508.5	178207.6	956046.1	665140.9	476724.7	804679.3
SD	1282220	1008683	2537879	2167831	1932143	2660907

Source: Calculated.

**Table 8.29: Descriptive Statistics of Net Premium Income (Output Indicator)(Figures in Rs lac)**

Statistical Measure	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Max	14978999	15728804	18607731	20347340	20288928	20880358
Min	249	15260	25059	24341	22595	20538
Average	1118535	1230024	1464844	1599210	1566700	1565607
SD	3379725	3538012	4180081	4570984	4559521	4700691

Source: Calculated.

**Table 8.30: Descriptive Statistics of Operating Expenses (Input Indicator)(Figures in Rs lakh)**

Statistical Measure	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Max	830932	906429	1224582	1698028	149144012	1670766
Min	1004	3973	3700	3298	390749	4026
Average	113009.9	140817.1	156085.9	177174.1	15835439	168441.9

SD	188091.8	199599.3	267190.1	373325.6	32730608	368359
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Source: Calculated.

**Table 8.31: Descriptive Statistics of Commission Expenses (Input Indicator)(Figures in Rs lakh)**

Statistical Measure	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Max	956810	1003324	1211031	1330868	1403563	1476798
Min	4	1545	2368	2208	2220	1880
Average	81413.67	85451.67	99291.44	100165.2	101618.6	105558.2
SD	215156.1	224265.5	270958.2	299318.4	316423.5	333334.3

Source: Calculated.

### Insurer-wise Technical Efficiency

Table 8.32 depicts the insurer-wise technical efficiency scores for each of the observed years. In this approach, apart from the beginning and closing years, each of the insurers is evaluated multiple times on the basis of the panels formed (2007-08 to 2010-11, 2008-09 to 2011-2012 and 2009-10 to 2012-13). For each insurer, we have three rows of efficiency scores. The first row presents the efficiency scores for the relative years in the light of the first panel (2007-08 to 2010-11), the second row presents the efficiency scores for the relative years on the basis of the second panel (2008-09 to 2011-12) and so on. The column views in the table enable us to consider the stability of efficiency scores across the panels. On the other hand, the row views enable us to determine the trend in efficiency scores with the same panel.

**Table 8.32 Insurer-wise Technical Efficiency Score (2007-08 to 2012-13)**

	2008	2009	2010	2011	2012	2013	Average	C-Average
Birla Life	0.499665	0.456436	0.496726				0.484276	
		0.400346	0.498743	0.540118			0.479735	

			0.498743	0.540118	0.587931		0.542264	
				0.540118	0.587931	0.645051	0.591033	0.524327
ICICI Life	0.665836	0.837191	1				0.834342	
		0.689367	1	1			0.896456	
			1	1	0.728007		0.909336	
				1	0.728007	0.883841	0.870616	0.877687
EXIDE	0.433285	0.488505	0.52994				0.48391	
		0.48416	0.548645	0.486461			0.506422	
			0.57084	0.50724	0.479108		0.519063	
				0.495538	0.473177	0.557769	0.508828	0.504556
LIC	1	1	1				1	
		1	1	1			1	
			1	1	0.94534		0.98178	
				1	0.945348	1	0.981783	0.990891
HDFC	0.72755	0.486557	0.591412				0.60184	
		0.419666	0.592264	0.677925			0.563285	
			0.592264	0.677925	0.561329		0.610506	
				0.677925	0.561329	0.770198	0.669817	0.611362
MAX	0.346154	0.368346	0.463009				0.392503	
		0.324208	0.400137	0.425631			0.383325	
			0.400137	0.425631	0.356756		0.394175	
				0.425631	0.356756	0.493455	0.42528	0.398821
RELIANCE	0.451884	0.348471	0.486647				0.429001	
		0.297767	0.45248	0.470193			0.406813	
			0.45248	0.470193	0.450653		0.457775	

				0.470193	0.450653	0.560637	0.493827	0.446854
BAJAJ	0.376722	0.537586	0.71559				0.543299	
		0.471421	0.719424	0.634054			0.6083	
			0.719424	0.634054	0.6195		0.657659	
				0.667081	0.6195	0.8958	0.72746	0.63418
SBI LIFE	0.895221	0.896971	1				0.930731	
		0.809034	1	1			0.936345	
			1	1	0.799657		0.933219	
				1	0.799657	0.980206	0.926621	0.931729
KOTAK	0.499887	0.477699	0.703067				0.560218	
		0.429682	0.617499	0.752297			0.599826	
			0.617499	0.79909	0.896701		0.771097	
				0.791451	0.896701	0.830355	0.839502	0.692661
TATA AIA	0.388594	0.417702	0.494571				0.433622	
		0.378879	0.473234	0.543921			0.465345	
			0.473234	0.551866	0.858385		0.627828	
				0.546392	0.858385	1	0.801592	0.582097
MET LIFE	0.244825	0.305818	0.4224				0.324348	
		0.286849	0.407861	0.955305			0.550005	
			0.407861	1	0.781274		0.729712	
				1	0.781274	0.70729	0.829521	0.608396
AVIVA	0.37751	0.477954	0.547594				0.467686	
		0.443662	0.548996	0.775501			0.589386	
			0.587633	0.829929	0.904693		0.774085	
				0.823561	0.903757	0.755931	0.82775	0.664727

SAHARA	0.730361	0.528136	0.735625				0.664707	
		0.904826	1	1			0.968275	
			1	1	0.994594		0.998198	
				1	0.874417	0.999999	0.958139	0.89733
SHRIRAM	0.946284	0.494677	0.502488				0.647816	
		0.654124	0.587472	0.913086			0.718227	
			0.587472	0.950526	0.677908		0.738635	
				0.908227	0.642258	0.656858	0.735781	0.710115
BHARAT	0.580495	0.33779	0.383954				0.434079	
		0.432134	0.415063	0.764306			0.537168	
			0.549598	0.964031	0.947732		0.820454	
				0.919492	0.906015	1	0.941836	0.683384
FUTURE	1	0.349306	0.179454				0.509587	
		0.927565	0.23477	0.342198			0.501511	
			0.256662	0.393585	0.428909		0.359719	
				0.404763	0.410166	0.566171	0.460367	0.457796
IDBI	1	0.748932	0.556975				0.768636	
		1	0.672936	0.563583			0.745506	
			0.734422	0.587355	0.567741		0.629839	
				0.560321	0.541451	0.511845	0.537872	0.670463

Average	0.620237	0.553105	0.619023	0.729756	0.692305	0.767523		
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### Life Insurer-wise Mean Efficiency Scores

In Table 8.33 represents the insurer-wise efficiency scores across and within panels for the different years under study. We now provide the information relating to two kinds of mean efficiency scores: averages through the window and averages by the years for each of the 18 life insurers. The efficiency averages through the window analysis are provided in Table 8.27. The efficiency averages by the years are provided in Table 8.27.

**Table 8.34 Efficiency Average Through Window**

	2008-2009-2010	2009-2010-2011	2010-2011-2012	2011-2012-2013
BIRLA	0.484276	0.479735	0.542264	0.591033
ICICI	0.834342	0.896456	0.909336	0.870616
EXIDE	0.48391	0.506422	0.519063	0.508828
LIC	1	1	0.98178	0.981783
HDFC	0.60184	0.563285	0.610506	0.669817
MAX	0.392503	0.383325	0.394175	0.42528
RELIANCE	0.429001	0.406813	0.457775	0.493827
BAJAJ	0.543299	0.6083	0.657659	0.72746
SBI LIFE	0.930731	0.936345	0.933219	0.926621
KOTAK	0.560218	0.599826	0.771097	0.839502
TATA	0.433622	0.465345	0.627828	0.801592
MET LIFE	0.324348	0.550005	0.729712	0.829521
AVIVA	0.467686	0.589386	0.774085	0.82775
SAHARA	0.664707	0.968275	0.998198	0.958139
SHRIRAM	0.647816	0.718227	0.738635	0.735781
BHARTI	0.434079	0.537168	0.820454	0.941836

FUTURE	0.509587	0.501511	0.359719	0.460367
IDBI FEDL	0.768636	0.745506	0.629839	0.537872

Source: Calculated

**Table 8.35: Efficiency Average by Year**

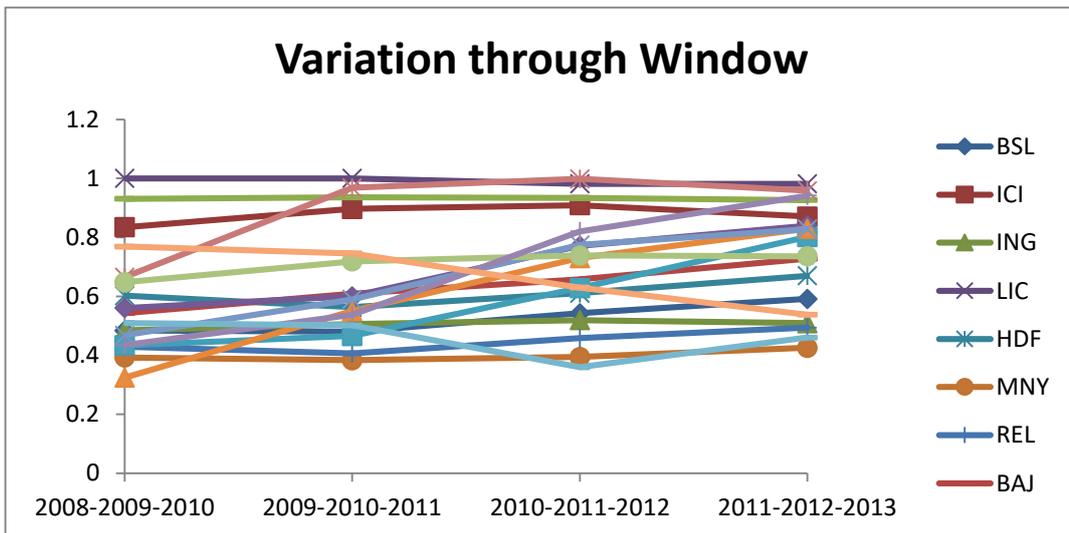
	2008	2009	2010	2011	2012	2013
BIRLA	0.499665	0.428391	0.498071	0.540118	0.587931	0.645051
ICICI	0.665836	0.763279	1	1	0.728007	0.883841
EXIDE	0.433285	0.486333	0.549808	0.496413	0.476143	0.557769
LIC	1	1	1	1	0.945344	1
HDFC	0.72755	0.453111	0.59198	0.677925	0.561329	0.770198
MAX	0.346154	0.346277	0.421094	0.425631	0.356756	0.493455
RELIANCE	0.451884	0.323119	0.463869	0.470193	0.450653	0.560637
BAJAJ	0.376722	0.504504	0.718146	0.645063	0.6195	0.8958
SBI LIFE	0.895221	0.853003	1	1	0.799657	0.980206
KOTAK	0.499887	0.45369	0.646022	0.780946	0.896701	0.830355
TATA	0.388594	0.398291	0.480346	0.547393	0.858385	1
MET LIFE	0.244825	0.296334	0.412708	0.985102	0.781274	0.70729
AVIVA	0.37751	0.460808	0.561408	0.809664	0.904225	0.755931
SAHARA	0.730361	0.716481	0.911875	1	0.934505	0.999999

SHRIRAM	0.946284	0.574401	0.559144	0.923946	0.660083	0.656858
BHARTI	0.580495	0.384962	0.449538	0.88261	0.926873	1
FUTURE	1	0.638436	0.223629	0.380182	0.419537	0.566171
IDBI	1	0.874466	0.654778	0.57042	0.554596	0.511845

Source: Calculated

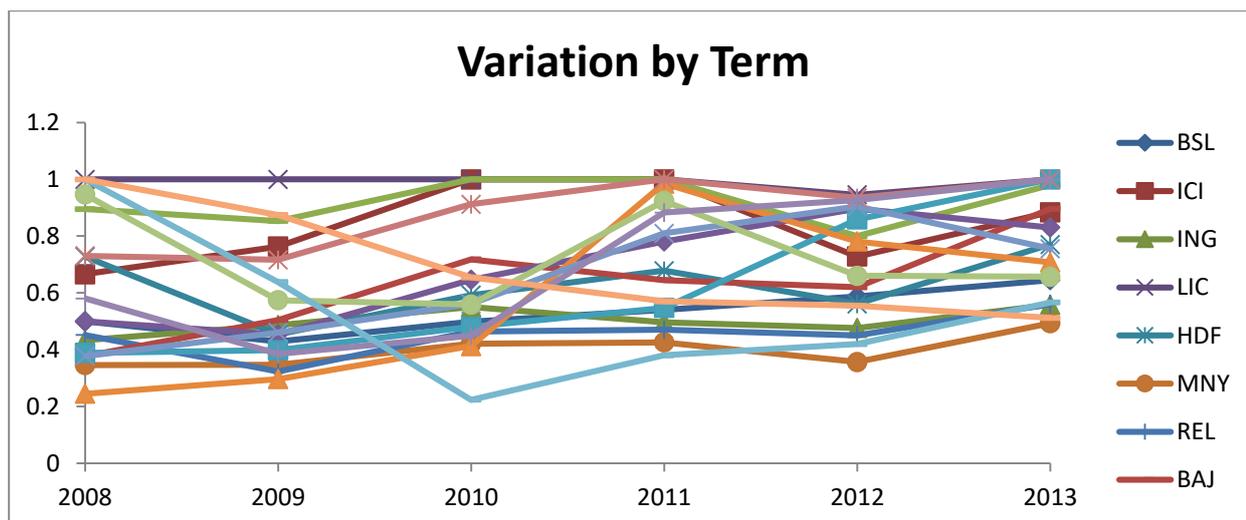
**Chart 8.1 Technical Efficiency Characteristics of Life Insurers:**

**Average through the Window Analysis**



**Chart 8.2: Technical Efficiency Characteristics of Life Insurers: Average by Years**

**Trends in Mean Technical Efficiency**



Tables 8.34 and 8.35 present the efficiency averages through the window analysis and the efficiency averages by years. If we consider the averages through the window then we find that the in-sample life insurers have exhibited an upward rising trend. Further inspection reveals that the upward move is due to the new life insurers. LIC exhibited a declining efficiency trend through the window.

If we consider the averages through the years then we find that for the initial three years, overall technical efficiency had exhibited an upward trend but the trend has been reversed in the next two years. Actually, the reversal of the trend is due to the new life insurers.

**Table 8.36: Technical Efficiency Characteristics of Life Insurers: Average through Window Analysis**

Particulars	2007-08 to 2009-2010	2008-09 to 2010-11	2009-10 to 2011-12	2010-11 to 2012-13
LIC	1	1	0.98178	0.981783
Others	0.559447	0.615055	0.674915	0.714461
All	0.583922	0.636441	0.691963	0.729313

Source: Calculated

**Table 8.37: Technical Efficiency Characteristics of Life Insurers: Average by Years**

Particulars	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
LIC	1	1	1	1	0.945344	1
Others	0.597898	0.526817	0.596613	0.713859	0.677421	0.753847
All	0.620237	0.553105	0.619023	0.729756	0.692305	0.767523

Source: Calculated

**Dynamic Panel Approach to Technical Efficiency (Three input-Three Output Framework)**

The summary of data description is given in the initial part of the chapter. So, the choice of Window length is given below:

Choice of Window Length

Suppose we have m number of DMUs with observations for n periods. Suppose also that k is the length of the window ( $k \leq n$ ). Then the length of the window is determined on the basis of the formula:

$k=(n+1)/2$  when n is odd and  $k=(n+1)/2 \pm 1/2$  when n is even.( Charnes and Cooper (1991))

In the present study  $n=9$ , so  $k=5$ . Thus, the window length has been taken as 5 for the estimation of technical efficiency.

**Table 8.38: Insurer-wise Technical Efficiency Score (2007-08 to 2015-16)**

	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average	C-Average
AVI	0.8480	0.8071	0.7062	0.2577	0.6777					0.6594	
		0.8364	0.7178	0.2632	0.6928	0.5679				0.6156	
			0.3112	0.0298	0.0173	0.0153	0.0135			0.0774	
				0.0298	0.0173	0.0153	0.0135	0.0129		0.0177	

					0.0169	0.0150	0.0131	0.0126	0.0105	0.0136	0.2768
BAJ	1	0.9951	0.7032	1	1					0.9397	
		1	0.7134	1	0.9707	1				0.9368	
			0.5253	1	0.9485	1	1			0.8948	
				1	0.9485	1	1	1		0.9897	
					0.9480	1	1	1	0.8195	0.9535	0.9429
BHA	0.5229	0.6010	0.6160	0.0860	0.3687					0.4389	
		0.6392	0.6366	0.0874	0.3871	0.3802				0.4261	
			0.1006	0.0075	0.0065	0.0059	0.0097			0.0260	
				0.0075	0.0065	0.0059	0.0097	0.0128		0.0085	
					0.0065	0.0058	0.0097	0.0128	0.0320	0.0133	0.1826
BSL	0.7186	0.7265	0.6154	0.3193	0.6432					0.6046	
		0.7695	0.6349	0.3218	0.6487	0.6278				0.6005	
			0.3599	0.0414	0.0429	0.1398	0.0733			0.1315	
				0.0414	0.0429	0.1398	0.0733	0.0435		0.0682	
					0.0419	0.1400	0.0734	0.0435	0.0837	0.0765	0.2963
FUT	1	0.6398	0.6554	0.1156	0.2871					0.5396	
		0.9779	0.6991	0.1174	0.2757	0.4025				0.4945	
			0.1189	0.0182	0.0093	0.0555	0.0454			0.0495	
				0.0182	0.0093	0.0555	0.0454	0.0179		0.0293	
					0.0091	0.0555	0.0454	0.0179	0.0076	0.0271	0.2280
HDF	0.8942	0.8590	0.7339	0.4175	0.6998					0.7209	
		0.9143	0.7455	0.4208	0.6939	0.6772				0.6904	
			0.4087	0.1025	0.0735	0.0815	0.0463			0.1425	
				0.1025	0.0735	0.0815	0.0463	0.1079		0.0823	
					0.0718	0.0797	0.0463	0.1079	0.1148	0.0841	0.3440
ICI	0.8467	1	1	0.5792	0.9262					0.8704	
		1	1	0.5792	0.9015	0.6967				0.8355	
			0.5920	0.1798	0.1409	0.1361	0.6415			0.3381	

				0.1798	0.1409	0.1361	0.6464	0.7831		0.3772	
					0.1377	0.1330	0.6464	0.7831	0.3097	0.4020	0.5646
IDB	1	1	0.7918	0.2424	0.3890					0.6846	
		1	0.8251	0.2473	0.3842	0.3484				0.5610	
			0.3475	0.0166	0.0132	0.0200	0.2966			0.1388	
				0.0166	0.0132	0.0200	0.2966	0.2313		0.1155	
					0.0129	0.0200	0.2966	0.2313	0.1089	0.1339	0.3268
INGEx	0.7208	0.7692	0.6915	0.3238	0.5305					0.6072	
		0.7960	0.6907	0.3238	0.4771	0.5597				0.5695	
			0.3215	0.2819	0.0775	0.0505	0.2657			0.1994	
				0.2819	0.0775	0.0505	0.2657	0.0202		0.1391	
					0.0776	0.0505	0.2657	0.0202	0.0164	0.0861	0.3202
KOT	0.8486	0.9045	0.9070	0.3731	1					0.8066	
		0.9485	0.9246	0.3744	0.9703	0.8804				0.8196	
			0.4511	0.1714	0.1056	0.0794	0.0762			0.1768	
				0.1714	0.1056	0.0794	0.0762	0.0892		0.1044	
					0.1058	0.0784	0.0760	0.0892	0.1124	0.0924	0.4000
LIC	1	1	0.9636	1	1					0.9927	
		1	0.9680	1	1	1				0.9936	
			1	1	1	1	1			1	
				1	1	1	1	1		1	
					1	0.9852	1	1	1	0.9970	0.9967
MNY	0.9226	0.9080	0.7656	0.3051	0.4673					0.6737	
		0.9524	0.8182	0.3059	0.4589	0.4895				0.6050	
			0.2965	0.1923	0.0484	0.0490	0.0524			0.1277	
				0.1923	0.0484	0.0490	0.0524	0.0612		0.0807	
					0.0484	0.0479	0.0512	0.0598	0.0674	0.0550	0.3084
PMET	0.6186	0.6846	0.5979	0.2872	0.7419					0.5860	
		0.7303	0.6335	0.2928	0.6585	0.6074				0.5845	

			0.3276	0.0555	0.0705	0.0247	0.0160			0.0988	
				0.0555	0.0705	0.0247	0.0160	0.0176		0.0368	
					0.0705	0.0247	0.0156	0.0172	0.0197	0.0296	0.2672
REL	1	0.8679	0.7160	0.6727	0.7147					0.7943	
		0.9187	0.7632	0.6727	0.6603	0.7476				0.7525	
			0.3603	0.6003	0.3738	0.5602	0.9273			0.5644	
				0.6003	0.3738	0.5602	0.9273	0.6637		0.6250	
					0.3745	0.5611	0.9380	0.6721	0.1194	0.5330	0.6538
SAH	0.9091	0.8993	0.7695	1	1					0.9156	
		1	1	1	1	0.8077				0.9615	
			0.6020	1	0.5861	0.2371	0.0546			0.4960	
				1	0.5861	0.2371	0.0546	0.1250		0.4006	
					0.5867	0.2373	0.0546	0.1250	0.0878	0.2183	0.5984
SBI	1	0.9976	1	1	1					0.9995	
		1	1	1	1	0.8353				0.9671	
			1	0.1859	0.1886	0.1536	0.2442			0.3545	
				0.1859	0.1886	0.1536	0.2442	0.2222		0.1989	
					0.1844	0.1520	0.2450	0.2223	0.2244	0.2056	0.5451
SHR	1	0.9482	0.7402	0.9899	1					0.9357	
		1.0000	0.7776	0.9899	1	0.5619				0.8659	
			0.4332	0.9217	0.9706	0.2414	0.5095			0.6153	
				0.9217	0.9706	0.2414	0.5095	0.6500		0.6586	
					0.9725	0.2419	0.5097	0.6505	0.7615	0.6272	0.7405
TAT	0.7830	0.8009	0.7014	0.2817	0.8747					0.6883	
		0.8569	0.7090	0.2849	0.8006	0.9444				0.7191	
			0.3101	0.0293	0.0267	0.0626	0.0584			0.0974	
				0.0293	0.0267	0.0626	0.0584	0.0156		0.0385	
					0.0261	0.0627	0.0584	0.0155	0.0178	0.0361	0.3159

Average	0.8685	0.8819	0.6629	0.4195	0.4488	0.3313	0.2965	0.2821	0.2174		
					0.0261	0.0627	0.0584	0.0155	0.0178	0.0361	0.3159

So, in this critical evaluation of efficiency it is revealed that none of the companies has reached the perfect efficiency combined score of 1. LIC has the highest score which was 0.9966. So, we may consider it to be efficient as it is very close to 1. Bajaj Allianz is just after LIC with a score of 0.94 which is in conversant to the earlier approaches to efficiency study. The other companies are lagging behind in dynamic approach so overall the entire industry has huge scope for improvement.

**Table 8.39: Average through Window (2007-08 to 2015-16)**

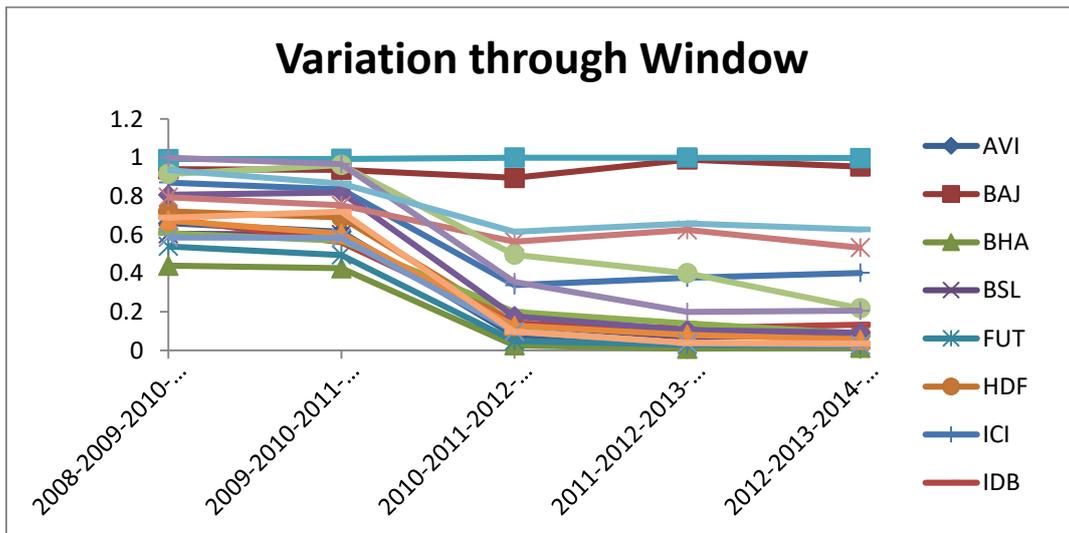
Company	2007-08 to 2011-12	2008-09 to 2012-13	2009-10 to 2013-14	2010-11 to 2014-15	2011-12 to 2015-16
AVI	0.6594	0.6156	0.0774	0.0177	0.0136
BAJ	0.9397	0.9368	0.8948	0.9897	0.9535
BHA	0.4389	0.4261	0.0260	0.0085	0.0133
BSL	0.6046	0.6005	0.1315	0.0682	0.0765
FUT	0.5396	0.4945	0.0495	0.0293	0.0271
HDF	0.7209	0.6904	0.1425	0.0823	0.0841
ICI	0.8704	0.8355	0.3381	0.3772	0.4020
IDB	0.6846	0.5610	0.1388	0.1155	0.1339
INGEx	0.6072	0.5695	0.1994	0.1391	0.0861
KOT	0.8066	0.8196	0.1768	0.1044	0.0924
LIC	0.9927	0.9936	1	1	0.9970
MNY	0.6737	0.6050	0.1277	0.0807	0.0550
PMET	0.5860	0.5845	0.0988	0.0368	0.0296
REL	0.7943	0.7525	0.5644	0.6250	0.5330
SAH	0.9156	0.9615	0.4960	0.4006	0.2183
SBI	0.9995	0.9671	0.3545	0.1989	0.2056
SHR	0.9357	0.8659	0.6153	0.6586	0.6272
TAT	0.6883	0.7191	0.0974	0.0385	0.0361

**Table 8.40: Average by Term (2007-08 to 2015-16)**

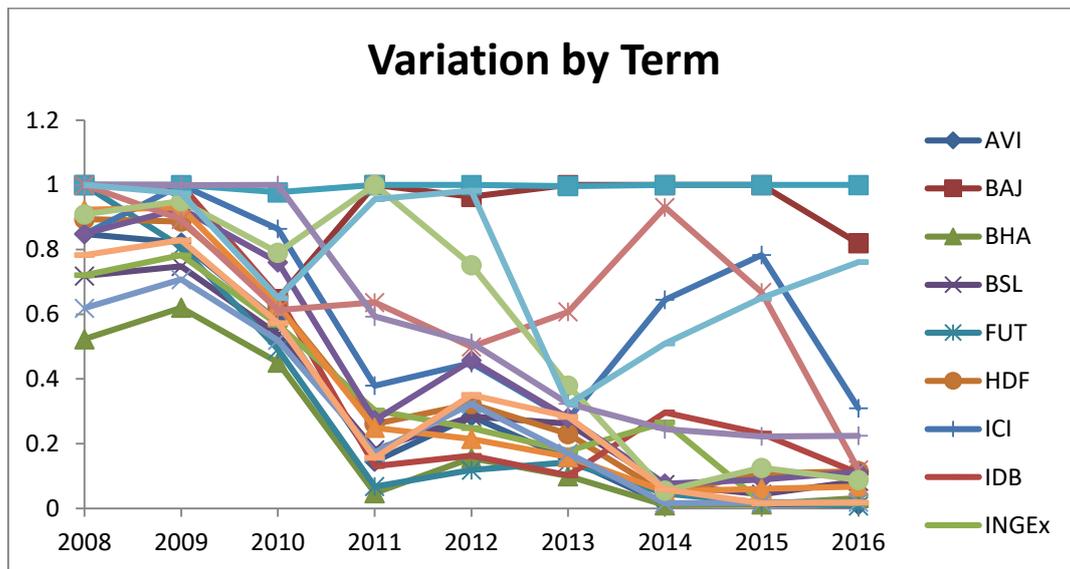
Company	2008	2009	2010	2011	2012	2013	2014	2015	2016
AVI	0.8480	0.8217	0.5784	0.1451	0.2844	0.1534	0.0134	0.0127	0.0105
BAJ	1	0.9975	0.6473	1	0.9631	1	1	1	0.8195
BHA	0.5229	0.6201	0.4511	0.0471	0.1551	0.0994	0.0097	0.0128	0.0320
BSL	0.7186	0.7480	0.5367	0.1810	0.2839	0.2619	0.0733	0.0435	0.0837
FUT	1	0.8088	0.4912	0.0673	0.1181	0.1423	0.0454	0.0179	0.0076
HDF	0.8942	0.8866	0.6294	0.2608	0.3225	0.2300	0.0463	0.1079	0.1148
ICI	0.8467	1	0.8640	0.3795	0.4495	0.2755	0.6447	0.7831	0.3097
IDB	1	1	0.6548	0.1307	0.1625	0.1021	0.2966	0.2313	0.1089
INGEx	0.7208	0.7826	0.5679	0.3029	0.2480	0.1778	0.2657	0.0202	0.0164
KOT	0.8486	0.9265	0.7609	0.2726	0.4575	0.2794	0.0761	0.0892	0.1124
LIC	1	1	0.9772	1	1	0.9963	1	1	1
MNY	0.9226	0.9302	0.6268	0.2489	0.2143	0.1589	0.0520	0.0605	0.0674
PMET	0.6186	0.7075	0.5197	0.1727	0.3224	0.1704	0.0159	0.0174	0.0197
REL	1	0.8933	0.6132	0.6365	0.4994	0.6073	0.9308	0.6679	0.1194
SAH	0.9091	0.9497	0.7905	1.0000	0.7518	0.3798	0.0546	0.1250	0.0878
SBI	1	0.9988	1	0.5930	0.5123	0.3236	0.2445	0.2223	0.2244
SHR	1	0.9741	0.6504	0.9558	0.9827	0.3217	0.5096	0.6503	0.7615
TAT	0.7830	0.8289	0.5735	0.1563	0.3509	0.2831	0.0584	0.0156	0.0178

**Chart 8.3: Technical Efficiency Characteristics of Life Insurers:**

**Average through the Window Analysis**



**Chart 8.4: Technical Efficiency Characteristics of Life Insurers: Average by Years**



**Table 8.41: Technical Efficiency Characteristics of Life Insurers: Average through Window Analysis**

Particulars	2007-08 to 2011-12	2008-09 to 2012-13	2009-10 to 2013-14	2010-11 to 2014-15	2011-12 to 2015-16
LIC	0.99	0.99	1	1	1
Others	0.7332	0.7062	0.2664	0.2336	0.2110
All	0.7477	0.7222	0.3072	0.2762	0.2547

Source: Calculated

**Table 8.42: Technical Efficiency Characteristics of Life Insurers: Average by Years**

Particulars	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
LIC	1	1	0.9772	1	1	0.9963	1	1	1
Others	0.8608	0.8749	0.6445	0.3853	0.4164	0.2921	0.2551	0.2398	0.1714
All	0.8685	0.8819	0.6629	0.4195	0.4488	0.3312	0.2965	0.2821	0.2174

Source: Calculated

Therefore, it has been revealed that under dynamic panel approach LIC could not secure to be efficient in all the windows due to its drop in the efficiency score in year ending 2010 and 2013. All other life insurers are lagging much behind.

### Conclusion

This chapter is the crux of this study. The efficiency of the life insurers has been measured in this chapter. The results indicated LIC as the super efficient company in the life insurance sector. The private players baring a few lagged much behind the market leader LIC. The private companies which have robust bancassurance channels can be seen doing better in terms of efficiency. The inefficiency aspect of most of the private participants has been revealed in the study. The study has also suggested the appropriate benchmark for the in-efficient companies.

The technical efficiency score, the pure technical efficiency score and the scale efficiency score can be all used together to understand the inefficiency of the private firms. This gives enough opportunity to the private players for improvement. The study clearly indicates that the inefficient firms are utmost sufferer due to their scale inefficiencies. The study can be an eye opener in this arena.

The inefficient firms should manage their inputs adequately to give maximum output. The resources of the inefficient companies need to be reallocated in order to arrest the situation. The window analysis has been used to compare the performance of the major life insurance companies operating in India. This results also suggests that there still exists a huge gap between the LIC and other life insurance companies in terms of technical efficiency. Among the private sector insurance companies, Bajaj Allianz Insurance performed much better than the other in-sample insurers. It is expected that the existing gap between LIC and the private sector life insurers would narrow down in future with growing market share of the new entrants as this would facilitate the onset of economies of scale.

# **Chapter 9: Findings, Analysis, Observations and Recommendations**

9.1 Introduction

9.2 Findings and Analysis

9.3. Observations

9.4 Recommendations

9.5 Scope for further study

## **9.1 Introduction**

This study revolves around the recent status of the life insurance industry in terms of efficiency. After one and a half decade of liberalization the insurance industry should be seen in a growth trajectory. This study is therefore unique in a sense that it has covered a long period of time along with most of the prominent companies in this sector. The outcome of the study gave useful insights on the future of the life insurance industry in India.

This study has reached to the efficiency measurement very gradually. In the initial part of the study the concept of insurance has been described in a vivid manner. The penetration of insurance to India was during the British rule. After much turmoil in the sector Indian companies came into existence and also suffered due to high mortality rate of Indians. After freedom there was huge hue and cry in the financial sector of India. Insurance was no exception to that. The importance of nationalization was discussed in this study. The post nationalization status of the sector was also highlighted using few key parameters like business in force, policies issued, assets under management etc. The LPG (Liberalisation, Privatisation and Globalisation) drive in India influenced the Insurance sector in the year 1999. Formation of IRDA and its relevance has been also covered in this study. The liquidity position of LIC before and after liberalization has been also studied. The CARMELS approach helped to understand the financial solvency of the companies in the post liberalization period. The research methodology adopted has been discussed thoroughly. The results derived from efficiency analysis have been depicted with adequate inferences. This chapter throws light on the findings and analysis, observations, recommendations and scope for further research.

## **9.2 Findings and Analysis**

The findings and analysis from this empirical study are enumerated below:

- I. A probe on the actuary report indicated the position of the life assurance companies. The companies were ranked based on the dividends paid by the Indian life assurance firms. Oriental and Empire of India were the best amongst others (Appendix III and V).

- II. The liquidity is an important aspect for the financial firms specially life insurance. Claim settlement is the ultimate reason for their existence. So, the liquidity of LIC had been studied during pre liberalization and post liberalization period. The study on liquidity structure indicates that LIC has maintained a strong liquidity position in the past twelve years as in the past. The company had sufficient current assets to meet the current liabilities. The profit position of the company is also considered to be quite satisfactory. It can be inferred that the profit of the firm remains unaffected even after opening up of the insurance sector. The study revealed that LIC has a strong footing both in terms of its working capital management and profitability even in this era of strong competition.
- III. The study used ratio analysis to measure the financial performance of life insurers in India in the post nationalisation period. The study covered 18 life insurers during the period. The companies were studied from inception to 2015-16. The study used CAMELS framework for analysing the various aspects of financial performance. Overall ranking of the life insurers were made based on the performance based on ratios. Chapter six of the study gives an overall view about the financial position of the life insurers individually and then collectively. The overall results reveal that LIC is found to be the best so it has been assigned the rank of one. Among the private insurers, the leading ones on the basis of their ranks are-ICICI Pru, IDBI Life, Kotak Life, Exide Life, PNB Met Life and Max Life Insurance Company.
- IV. This study aimed to find out the financial strengths and weaknesses of the Indian life insurance companies. Various financial ratios have been used for understanding the financial soundness of the life insurers. The key aspects addressed are capital adequacy, asset quality, reinsurance and actuarial issues, management soundness, earnings/profitability and liquidity. Liquidity has been a big drawback for most of the insurers under study. The study also found that there is a great asymmetry in the results during the period of nine years. Investment yield is a major problem for some insurers which requires serious attention by the regulator and the concerned firm. The reinsurance and cost control is improving as the companies are getting matured over the years. So, overall we may see

that the sector as a whole is improving gradually which is a positive symptom for the industry.

- V. The study is on efficiency analysis of the life insurers. In this study various models of Data Envelopment Analysis (DEA) were used. The study used CCR model and BCC Model, the two basic models in DEA. The technical efficiency and pure technical efficiency was studied using the basic models. The scale efficiency was also studied during the period. It was found that LIC was the efficient company during the period of study i.e.2007-08 to 2015-16. The other companies were Bajaj Allianz and Shriram Life. SBI Life was found to be efficient upto 2012-13. The company dripped from the efficient frontier in the recent past. The other companies were lagging behind in terms of efficiency. For the efficient companies their immediate benchmarks have been suggested for improving the performance of the private players. Overall in the last three years the companies are not doing very well in terms of efficiency.
- VI. The study revealed more than one company to be efficient in all the years considered for the study. So, a probe was made to measure the super efficiency of the companies. As expected, LIC was found to be the most efficient company with a very high score. Though the score of LIC had gone down in the last three years. So, in the next part of the study a probe was made to find the efficient companies baring LIC. Thus, the test of efficiency was made without taking LIC. The private sector companies like ICICI prudential, IDBI Life, Sahara Life were found to score good in most of the years covered under the study. The rank as per these study also shows that considering only the private players, the number of efficient firms has increased. This is because DEA is a measure of relative efficiency. So, those companies which were under the efficient frontier due to superb performance of LIC was seen to be on the efficient frontier when the study was conducted without LIC. The study also revealed that the private players mostly lag behind due to scale inefficiency.
- VII. All these models were static models so in the next part the study adopted a dynamic model for research. A pilot study was made using a two input-two output framework for a period of six years. The outcome was very helpful in analysing the overall efficiency of the life insurers during the period of the study. So, in the next part the study proceeded with a three

input- three output framework covering a period of nine years from 2007-08 to 2015-16. The result of the study was very disappointing for the insurance industry. The number of efficient firms had drastically decreased. LIC was found to be near to one with a score of 0.9967. So, this gives immense scope to the life insurers for improvement in their efficiency score.

- VIII. Overall the results indicated LIC as the super efficient company in the life insurance sector. The private players baring a few lagged much behind the market leader LIC. The private companies which have robust bancassurance channels can be seen doing better in terms of efficiency. The inefficiency aspect of most of the private participants has been revealed in the study. The study has also suggested the appropriate benchmark for the in-efficient companies.
- IX. The technical efficiency score, the pure technical efficiency score and the scale efficiency score can be all used together to understand the inefficiency of the private firms. This gives enough opportunity to the private players for improvement. The study clearly indicates that the inefficient firms are utmost sufferer due to their scale inefficiencies.
- X. The inefficient firms should manage their inputs adequately to give maximum output. The resources of the inefficient companies need to be reallocated in order to arrest the situation. The window analysis has been used to compare the performance of the major life insurance companies operating in India. This result also suggests that there still exists a huge gap between the LIC and other life insurance companies in terms of technical efficiency. Among the private sector insurance companies, Bajaj Allianz Insurance performed much better than the other in-sample insurers. It is expected that the existing gap between LIC and the private sector life insurers would narrow down in future with growing market share of the new entrants as this would facilitate the onset of economies of scale.

### **9.3 Observations**

The study helps to depict some important observations about the life insurance sector of India, which are as follows:

- I. The chapter on the historical development of the insurance industry in India indicates that the concept of insurance dates back to the history of mankind. The concept of insurance entered India with the Britishers mainly for the purpose of insuring businesses, goods etc. After the life insurance business was started by the foreign houses, it was realized that they practiced discrimination in their businesses. So, with increase in force of the nationalist movement and the call for Swadeshi, large number of Indian business houses also started the life insurance business. There was a jump in the quantum of business on one hand and an increase in the illegal and fraudulent practices on the other. With a view to develop sound business practices, several Acts were passed from time to time in the pre-Independence period. After the Indian independence, during the early years of the 1950s, when several lacunae were observed in the business practices of the life insurers, there was a call for nationalization of the life insurance industry which took effect in 1956 with the formation of LIC.
- II. The independence of India brought many financial sector reforms with it. After the Indian independence, during the early years of the 1950s, there was a call for nationalization of the life insurance industry which took effect in 1956 with the formation of the LIC. During the early 1950s, it was observed that the operation of the Indian insurance business had a number of lacunae and thereby the overall industry suffered. This situation supported H.D.Malaviya's opinion to the call for nationalization of insurance in India. So, on the 19<sup>th</sup> January, 1956 the Union Government announced the nationalization of this sector. They considered taking over the private enterprises those were operating during that time. This decision was followed by the formation of the Life Insurance Corporation of India on 01<sup>st</sup> September, 1956. So, from 1956 to 2000, LIC operated as a monopoly. LIC has made significant contribution towards the country's economic development and spread of insurance among the masses covering different corners of the country.

- III. The next financial sector reforms took shape in the 1990s with the advent of LPG. The Malhotra Committee was set up in 1994 to bring reforms in the insurance sector of the country. They recommended the opening up of the sector to the private and foreign players. Consequently, the industry was deregulated in 1999 with the passage of the IRDA Act and the formation of the IRDA.
- IV. Insurance Regulatory and Development Authority (IRDA) was formed exclusively for the insurance sector in order to regulate the insurance business of India. Since its inception IRDA has been playing a very important role for developing the insurance market. IRDA has been also entrusted with the duty of protecting the policyholders' interests. In adherence to these objectives, the regulator has been laying down several measures for the insurers like, mandatory business in the rural areas, better transparency by common declaration about the financial whereabouts of the insurers, encouraging insurers towards better solvency position, uniform reporting of financial reports, suggesting proper portfolio management, promoting confidence of public on the insurers, ensuring, licensing sales personnel for better quality of sales and avoiding mis-selling, spreading awareness about insurance among public, etc. The insurance regulator has been playing a very important role in ensuring the sound growth of the industry, protection of the policyholders' interests and development of the society.
- V. The insurance sector has undergone a rapid growth in the first decade after the liberalization. On studying the growth trajectory of the insurance sector it may be realized that few opportunities were the leading factors behind such growth. The various factors are the growth in the domestic market, changes in the demographic factors mainly due to education, rise in the overall household savings, increase in the middle class population and fall in the poor population, decreasing mortality rate due to medical advancements, dearth of social security schemes, ignorance about health insurance, increasing education expenses of the children and parents financial planning to support those, promotion of micro-insurance etc.

VI. The sector has been seen growing rapidly in most of the years. The dependence of private players on the ULIP policies brought a major set back during the turmoil in the financial market followed by the influence of sub prime crisis. The last three years under the study also did not pose very cosy picture. The prime challenges faced by the insurers are the high lapse ratios so customer retention and persistency is a problem for the insurers, training the agents and improving their quality of sales, reducing the possibilities of fraudulent practices, returning back to the growth trajectory in terms of business, exploring new distribution channels to reach customers, using bancassurance channels efficiently, spreading insurance amongst rural population, promoting micro insurance to tap the uninsured masses, portfolio management, earning profit by adhering to the stringent regulations by IRDA etc.

#### **9.4 Recommendations**

The findings and observations have enabled few recommendations to encourage overall performance and better industry prospects.

- I. The history of the life insurance teaches a lesson on how the Indian insurance companies turned towards liquidation. Assets – Liability management is therefore a major issue in insurance business. The liquidity structure of insurance companies should be very sound. Re-insurance has a big role to play here. The Indian insurance firms are not adopting re-insurance to a great extent which is not advisable.
- II. LIC has very sound position in terms of financial ratios. Most of the private sector companies should analyse their financial position and take necessary steps as applicable.
- III. The efficiency score of the life insurers over the years is not satisfactory in all the cases. The study has recommended the benchmark company as per order of preference in chapter 8. LIC has turned up to be the benchmark for almost all the companies in the later years followed by Bajaj Allianz.
- IV. On measuring the scale efficiency, it was revealed that the private sector companies are mostly scale inefficient. So, they should try to adopt Constant Returns to Scale (CRS) till they meet up their problem i.e. increase their output with same level of

input. The companies which had relatively good scale efficient scores should observe the pure technical efficiency scores.

- V. The companies with low pure technical efficiency scores suffer from managerial incompetence or faulty implementation of policies. This may turn up to be a serious issue in the future days to come. So, immediate action to arrest the situation has been highly recommended.
- VI. On analyzing the relative efficiency score of only the private players the study revealed that various private companies are also performing well, so the companies which are lagging much behind may benchmark these companies also as they are more easily approachable than LIC.
- VII. LIC being the market leader is at a superior position and therefore will act as an overall benchmark for all the private sector companies. Few companies like SBI Life, Birla, HDFC life were seen to perform very well in the first part of the study but in the last three years the study they were trailing much behind in terms of efficiency.
- VIII. The dynamic panel approach depicts the dynamic efficiency score of the life insurers in all the years under study. As the study did not reveal a very good score for the insurers in long run. So, the study reflects immense scope for improvement by the life insurers.
- IX. The spread of insurance business in rural India and among all social classes is truly unsatisfactory. IRDA should introduce incentives for insurers who fulfil the criteria of mandatory spreading rural business and social class.
- X. The insurance companies have already adopted telephonic verification about the policies sold through agency channels. Such measures will lead to maintain confidence of the masses towards insurers. The grievance redressal should be also made very simple so that anybody can approach without much effort.
- XI. “Free look-in period” should be vigorously campaigned so that common public become aware about their rights and read the policy document within these period of 15 days. In certain cases, specially remote areas this period should be extended to ensure it’s applicability.
- XII. The banks should be very diligent while selling insurance. Many customers may consider the premium to be as one time deposit. Well-trained people should be

entrusted with the job of selling insurance. Licensing may be made mandatory for the bank staff as well to sale insurance through bancassurance channels.

- XIII. The websites of the insurance firms should have all the years financial reports under mandatory disclosure. A summary of at least ten years should be on the first page of the website to build trust among the prospective buyers.
- XIV. The regulator may also maintain an archive of year wise annual reports of the insurers which will be of immense help to the various interested parties specially the researchers.
- XV. Traditional plans should be given importance by the private players to avoid impact of market turbulence to an extent.
- XVI. The respective channel should be penalized for policy lapses in order to reduce the policy lapse ratio.
- XVII. IRDA should take drastic steps for any fraudulent practices adopted by the insurance firms. The higher management should also impose proper vigilance on the distribution channels.
- XVIII. IRDA should increase its reach in all the states to ensure better control over the sector.
- XIX. Emphasis should be on selling life insurance products as insurance and not an investment product. IRDA should conduct awareness campaigns through advertisements, sponsored seminars in local languages and workshops even in the rural areas.
- XX. Portfolio management should be top priority for the insurers also like any investment company.
- XXI. Solvency ratio should not be the only measure about the effectiveness of the insurers. A detailed analysis of various financial aspects should be adopted.

The above points, if adhered by the insurers and regulator, will lead the life insurance sector towards financial health and the society towards financial security.

### **9.5 Scope for Further Study**

The scope for future research may be enumerated as follows:

(i) The study may be extended to some more years to understand the trend of life insurance industry in the future days to come.

(ii) Other techniques of efficiency analysis can be applied and the relationship among the scores obtained under the different methods can be determined.

(iii) After a few years, when there would be better dissemination of information in the website of the insurers and the IRDA, some other input and output variables may be used for efficiency measurement.

iv) Efficiency analysis can also be carried out using the application of recent DEA techniques.

The study has widely covered the important aspect of the life insurance sector of our country and will richly contribute to the existing literature on the subject.

