Chapter I

INTRODUCTION

On 19 January 1956, while broadcasting to the nation, the Finance Minister, C. D. Deshmukh announced, 'This afternoon the Government have promulgated an ordinance regarding life insurance. All life insurance companies, Indian as well as foreign, doing business in India came under Government management and control. This is the first and preparatory step towards the nationalisation of life insurance.'[1] On 1 September 1956, 154 Indian insurers, 16 non-Indian insurers and 75 provident societies – all together 245 insurers and provident societies were integrated. It led to the formation of the Life Insurance Corporation of India (LICI). With this, the public sector exclusivity started in the Indian life insurance industry. Jawaharlal Nehru described it as 'an important step in our march towards a socialist society.'[2]

At the time of Rajya Sabha proceedings on 7 December 1999, then Finance Minister, Y. Sinha emphasised the inclination of the Government towards the liberalisation of the insurance sector. In his speech, he mentioned that '[w]e are in favour of competition between the private sector and the public sector and that is exactly what we proposed to do in this respect.'[3] Later in the same month, the Indian Parliament passed the Insurance Regulatory and Development Authority (IRDA) Bill. It received presidential assent in January 2000. The IRDA Act marked the ending of public sector exclusivity and the beginning of market-driven competition in the Indian insurance sector. In this respect, the Finance Minister, Y. Sinha further stated, 'This Bill is not about the Privatisation of the LIC and the GIC. They have discharged their responsibilities very well.'[4] During LICI's monopoly status for more than four decades, the key insurance parameters such as total premium, sum assured, total asset, life fund

[1] Sadhak, *Life Insurance in India*, p. 84

[2] Quoted in Ibid.

[3] Rajya Sabha, *Supplement to the Synopsis of Debates* of 7 December 1999

[4] Ibid.

etc improved noticeably. This is what the argument of Y. Sinha reflects. He continued, 'but there is need to do more.'[5] This was because the Indian insurance sector could not sufficiently contribute to the improvement of insurance density, insurance penetration, insurance coverage etc. Also, the policymakers believed that the liberalisation-led competition would compel insurers to grab the huge untapped market and upgrading thereby their efficiency. Consequently, key ratios like insurance density, insurance penetration etc would improve.

It is pertinent to note that the first Prime Minister of independent India envisioned nationalisation as a significant step towards a socialist society. Paradoxically enough, this belief took a back seat within a few decades. The ideology of liberalisation-led competition attracted policymakers' attention during the last two decades of the twentieth century. Accordingly, the Malhotra Committee was set up to draw a revised account of the contemporaneous insurance industry. It recommended liberalisation of the sector and the setting up of a regulatory mechanism. Finally, the Indian insurance sector opted for liberalisation in 1999. The implementation of reform in this sector has raised certain questions: (1) could liberalisation bring the anticipated changes to the key insurance parameters? (2) is it the performance of the aged LICI or the young private insurers that describes the fate of the entire life insurance industry? and (3) what are the efficiency scores of life insurers during the post-reform period? The last question involves the issues of both scale and scope economies. This dissertation is an attempt to find out the answer to these questions.

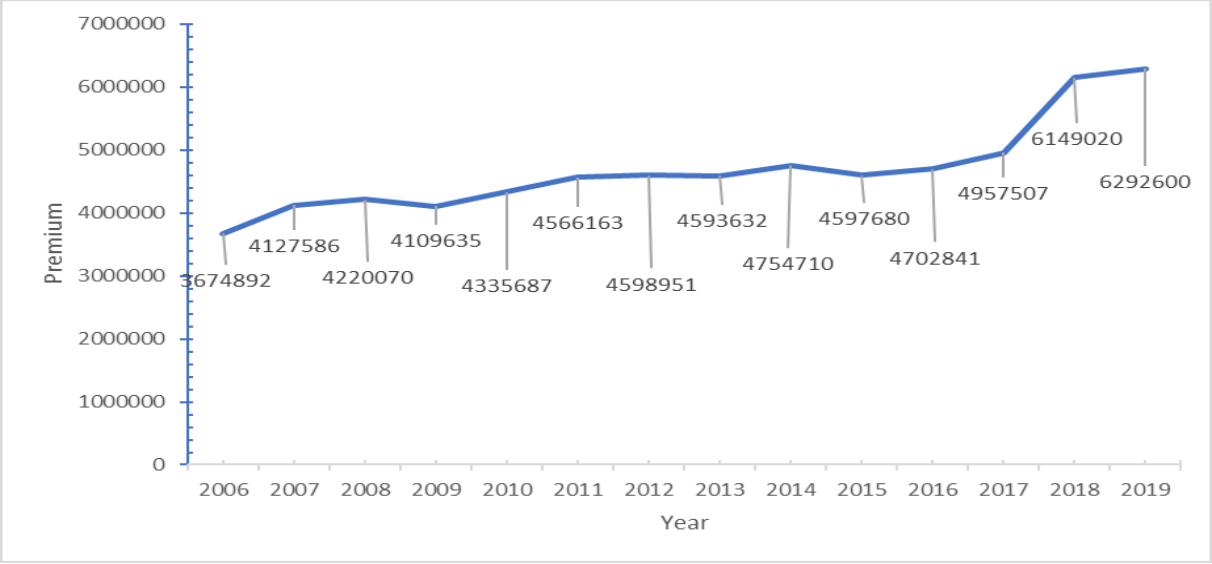
The present chapter discusses the current state and significance of the insurance industry. It also introduces key aspects of the dissertation. Section I covers the global scenario of the insurance industry. Section II describes the position of the insurance industry in India. Section III highlights the statement of objectives, research questions and research hypothesis followed by the limitations of the study. Section IV brings out the chapter-wise segmentation of the dissertation.

[5] Rajya Sabha, S*upplement to the Synopsis of Debates* of 7 December 1999

I

A resilient insurance industry contributes to various economic activities. Over the past few decades, this industry has grown spectacularly in emerging and developing countries. At the outset, it is important to focus on the essential parameters that indicate global insurance health. Due to the extraordinary impact of the Covid-19 crisis in 2020 and 2021, I exclude these years and restrict the present discussion till 2019. In 2019 the worldwide premium was $ 6.3 trillion. Within a decade, it registered a noticeable hike of 45.14 per cent. The trend of world insurance premium is presented in Figure 1.1 and it is seen to have increased steadily. From 2007 to 2017, premium strolled between $ 4,000,000 million to $ 5,000,000 million. But it registered a noticeable annual hike of 24.03 per cent in 2018. Indeed, global economic growth led to this spur in insurance demand in 2018.[6] Premium series attained a record height of $ 6,292,600 million in 2019.

Figure 1.1: World Insurance Premium (in millions of $) from 2006 to 2019



Source: Constructed on the basis of Swiss Re, Sigma World Insurance Reports (from 2007 to 2020)[7]

[6] Staib, *Sigma World Insurance*, p. 1

[7] Retrieved on 16 May 2021 from https://www.swissre.com/institute/research/sigma-research/World-insurance-series.html

Insofar as the premium in relative term is concerned, I analyse premium as the percentage of GDP, i.e., insurance penetration, and per capita premium, i.e., insurance density. In 2019, the total premium reached 7.2 per cent of the global GDP. It was highest in the last decade. As shown in Figure 1.2, the premium contribution of the insurance industry to the world GDP was not smooth throughout. It was 7.49 per cent in 2007 which continued falling for a few years followed but revived to 7.23 per cent in 2019. This hike may be attributed to the global growth that was supported mainly by China.[8] In 2019, China contributed a third of the global growth.[9] The insurance market of China represented 11 per cent of the global insurance market[10] and accounted for more than 50 per cent of the total emerging markets' premiums[11] in the same year. Also, wage and employment growth in the advanced markets[12] added to the insurance demand in 2019. Figure 1.2 presents yearly growth rates of insurance penetration and insurance density. These followed a mixed growth trajectory and showed a spike in 2019. The yearly growth rate of insurance penetration was negative for many years, mainly due to a comparatively lower growth rate of insurance premiums than the growth rate of GDP, particularly in the advanced markets. The premium growth rate was quite higher than the growth rate of GDP in the emerging markets but their share in the global insurance industry was low. In 2018, such a share was only 21 per cent.[13] The annual growth rates of insurance density were mostly positive during the last twelve years. The decadal average of insurance penetration was 6.44 per cent with a deviation of 0.371, whereas the average insurance density was $ 666.67. In 2019, insurance density reached $ 818.

[8] Staib, *Sigma World Insurance*, p. 3

[9] Ibid.

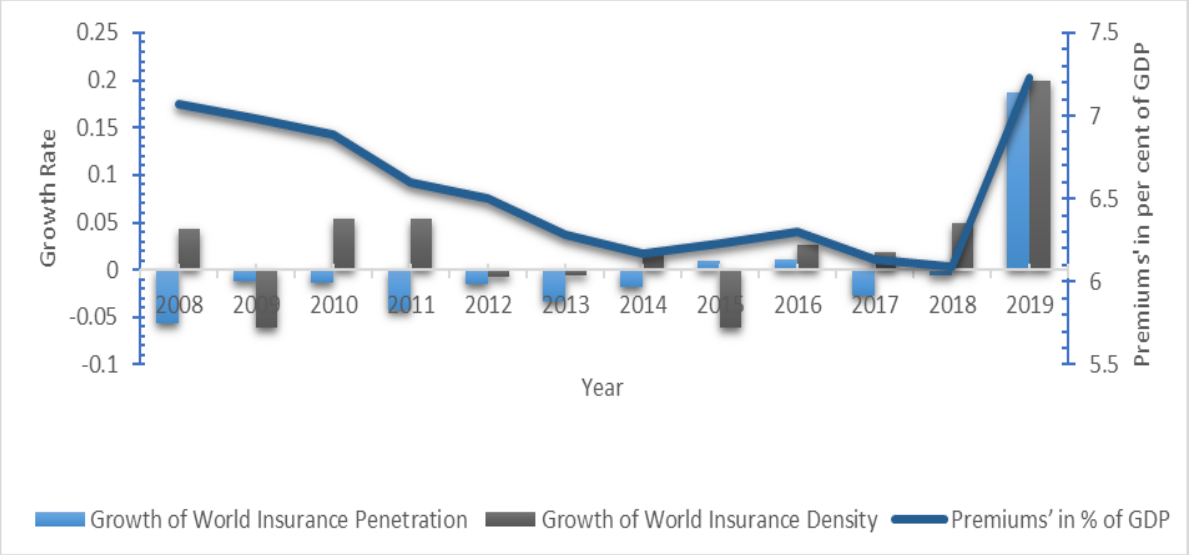
[10] Ibid., p. 9

[11] Ibid., p. 10

[12] Ibid., p. 1

[13] Ibid., p. 8

Figure 1.2: World Insurance Penetration and Annual Growth Rate of World Insurance Penetration and World Insurance Density



Source: Computed on the basis of Swiss Re Group, Sigma World Insurance Reports (from 2007 to 2020)[14]

For further insights, the global insurance market is classified into broad two categories — advanced markets and emerging markets. The advanced markets include the United States of America, Canada, the advanced economies of EMEA (Europe, Middle East and Africa) and the advanced Asia-Pacific economies. The emerging markets consist of Latin America, the Caribbean, the emerging economies of Europe and Central Asia, the emerging countries of the Middle East and Africa and emerging Asia.[15] The share of advanced markets is throughout high in the global insurance market. Considering the average of the previous nine years, the share of advanced markets is 4.44 times the share of emerging markets. In 2019, the emerging markets occupied 18.46 per cent of the global insurance market and the advanced markets occupied 81.54 per cent.[16]As a result, the global insurance market treads in tandem with the

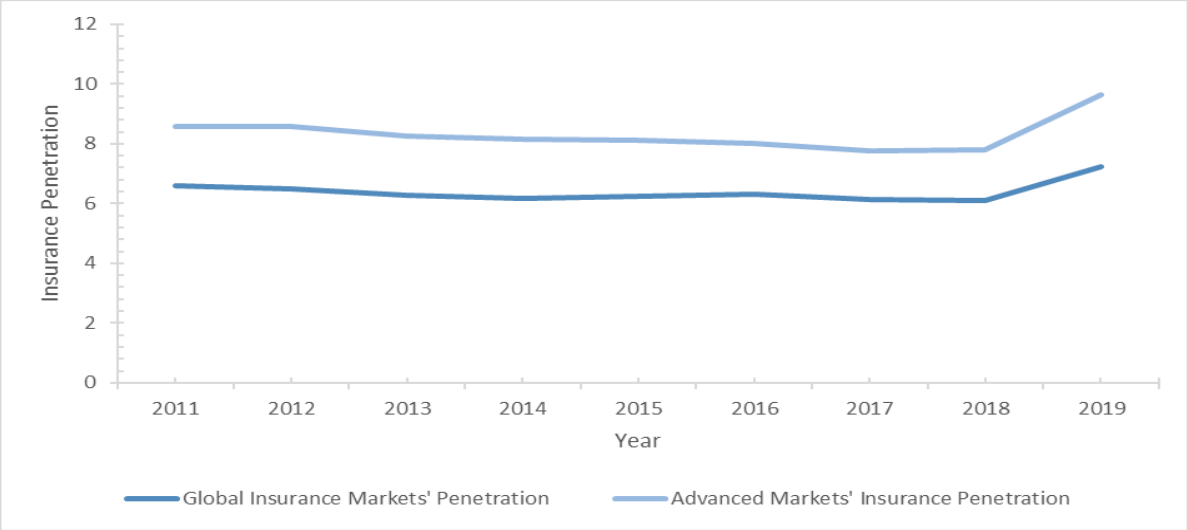
[14] Retrieved on 16 May 2021 from https://www.swissre.com/institute/research/sigma-research/World-insurance-series.html

[15] Classification is based on Swiss Re, *Sigma World Insurance Report 4/2020*, p. 13

[16] Ibid.

advanced insurance markets, as seen in Figure 1.3. It presents the parallel movement of the global insurance markets' penetration and the advanced markets' insurance penetration.

Figure 1.3: Insurance Penetration: Global Market and Advanced Markets



Source: Constructed on the basis of Swiss Re Group, Sigma World Insurance Reports (from 2011 to 2020)[17]

The insurance density of the global insurance market and the advanced markets also move in almost similar manner. In 2011, the world insurance density and the advanced markets' insurance density were $ 661 and $ 3711.6 respectively which increased to $ 818 and $ 4664 in 2019 respectively. The emerging markets draw significance from the fact that their share of the global insurance market is growing over the last few decades for a host of factors such as financial liberalization and integration,[18] economic growth, large untapped market, increasing financial literacy etc. Insurance penetration and density of the emerging markets also show an upward trend. In 2019, the emerging markets' insurance penetration and density were 3.25 and $ 175 respectively.

[17] Retrieved on 16 May 2021 from https://www.swissre.com/institute/research/sigma-research/World-insurance-series.html

[18] Arena, 'Does Insurance Market Activity Promote Economic Growth', p. 921

There is no doubt that the insurance industry facilitates a myriad of economic benefits. At the micro-level, it provides more than only risk-mitigating services. Its intermediation service adds to available investment opportunities to policyholders and shareholders. For investors, it is an integrated financial solution that ensures both health and wealth.[19] Its role in employment generation is also crucial. On the one hand, it recruits employees directly and, on the other hand, it creates demand for allied professionals like agents, brokers, sub-brokers, actuaries, underwriters etc. The scope of insurance relieves the entrepreneur from various risks and therefore, he/she can pursue his/her business interest more attentively. To discharge social responsibility, the insurance industry brings tailor-made products to suit the financial need of the disadvantaged section of society.

Also, at the macro level, the role of the insurance industry is irrefutable. It directly participates in the economy as an institutional investor supplying long-term funds. While highlighting such intermediary activities that promote economic development, Skipper (1997)[20] mentions its role as facilitating trade and commerce, mobilising savings, enabling efficient risk management, fostering efficient capital allocation etc. Numerous studies establish a direct relationship between the growth of the insurance sector and economic development. Thus, for example, the empirical finding of Arena (2008)[21] establishes the robust causal relationship between insurance market activity and economic growth. The insurance premium is used as a proxy for insurance activity. This study applies the Generalized Method of Moments (GMM) to estimate panel data consisting of a set of 55 countries from 1976 to 2004. The same model is adopted by Han *et al.* (2010)[22] to estimate a dynamic panel data set of 77 economies for the period from 1994 to 2005. They use insurance density as a proxy for

[19] Sinha, 'The Indian insurance industry', p. 38

[20] Skiper, 'Foreign insurers in emerging markets', p. 7

[21] Arena, 'Does Insurance Market Activity Promote Economic Growth', p. 938

[22] Han *et al*., 'Insurance Development and Economic Growth', pp. 183-99

insurance development. Their results indicate a positive correlation between insurance development and economic growth. The study by Ching *et al.* (2010)[23] also attempts to examine the causal relationship between the life insurance sector and economic growth. Total assets of the insurance industry and GDP are used as life insurance and economic growth indicators respectively. They conduct a study on the Malaysian insurance sector for the period from the first quarter of 1997 to the second quarter of 2008. They adopt the Johansen cointegration test and the Granger casualty test based on the Vector Error Correction Model (VECM). Their results indicate a long-run relationship between the life insurance sector and economic growth. These are surely indicative of the fact that the insurance sector has a positive impact on the economy.

However, Ward and Zurbruegg (2000)[24] are of the opinion that wider economic benefits of insurance are subject to national regulations, economic systems, social fabrics etc. Zhou *et al.* (2012)[25] empirically establish the importance of law environment and governance quality in facilitating the growth of insurance. In the Indian context, the study by Sadhak (2006)[26] indicates the importance of similar parameters. It states that the development of the life insurance industry gets influenced by the growth of population, social security, healthcare system, customs, changes in social practices etc. He further elaborates that the state of economy measured in terms of the growth of GDP, domestic savings, disposable income etc plays a prominent role in the development of the insurance market. Basically, it is a virtuous cycle. Insurance grows in a conducive economic environment and then, in turn, contributes to economic development. The significance of insurance emanates from its interdependent relationship with the economy.

[23] Ching *et al*., 'Causal Relation between Life Insurance Funds and Economic Growth', pp. 185-99

[24] Ward and Zurbruegg, 'Does Insurance Promote Economic Growth', p. 489

[25] Zhou *et al*., 'Insurance Stock Returns and Economic Growth', pp. 405-28

[26] Sadhak, 'Life Insurance and the Macroeconomy', pp. 1108-12

II

The structural efficiency of an economy hinges crucially on the efficiency of its financial intermediation. Financial intermediation is the significant component of the tertiary sector. In 2019-20, the tertiary sector as a whole contributed around 55 per cent of the total Gross Value Added (GVA) and around 21 per cent was contributed by financial, real estate and professional services.[27] Out of several economic activities, financial services, real estate and professional services had a larger contribution to GVA, as seen in Table 1.1.

Table 1.1: Provisional Share of Economic Activities to Estimated GVA for 2019-20

Economic Activities	Provisional Estimates (₹ in lakh crores)	Share (in %)
Agriculture, forestry and fishing	32.57	18
Mining and quarrying	3.93	2
Manufacturing	27.76	15
Electricity, gas, water supply and other utility services	4.87	3
Construction	13.85	7
Trade, hotels, transport, communication and services related to broadcasting	33.17	18
Financial, real estate and professional services	38.43	21
Public Administration, defence and other services	28.87	16
Total GVA at basic Price	183.43	100

Source: IRDAI, Annual Report 2019-20, p. 2[28]

[27] Retrieved on 21 May 2021 from https://statisticstimes.com/economy/country/india-gdp-sectorwise.php

[28] Retrieved on 20th May 2021 from https://www.irdai.gov.in/

Two forms of financial intermediation are most popular — banking and insurance. In 1980, the Indian insurance sector contributed 0.4 per cent to the global insurance market. This contribution increased to 1.7 per cent in 2019.[29] Growth in premium volume is, indeed, phenomenal in India. The total premium volume of the Indian insurance market was only $ 2 billion in 1980. But it reached $ 106 billion in 2019.[30] In 2019, the Indian insurance premium increased by 9.21 per cent. However, global insurance premiums recorded an increase of 2.34 per cent in 2019.[31] Thus, the Indian insurance industry is keeping yearly growth at a much higher rate than the global average.

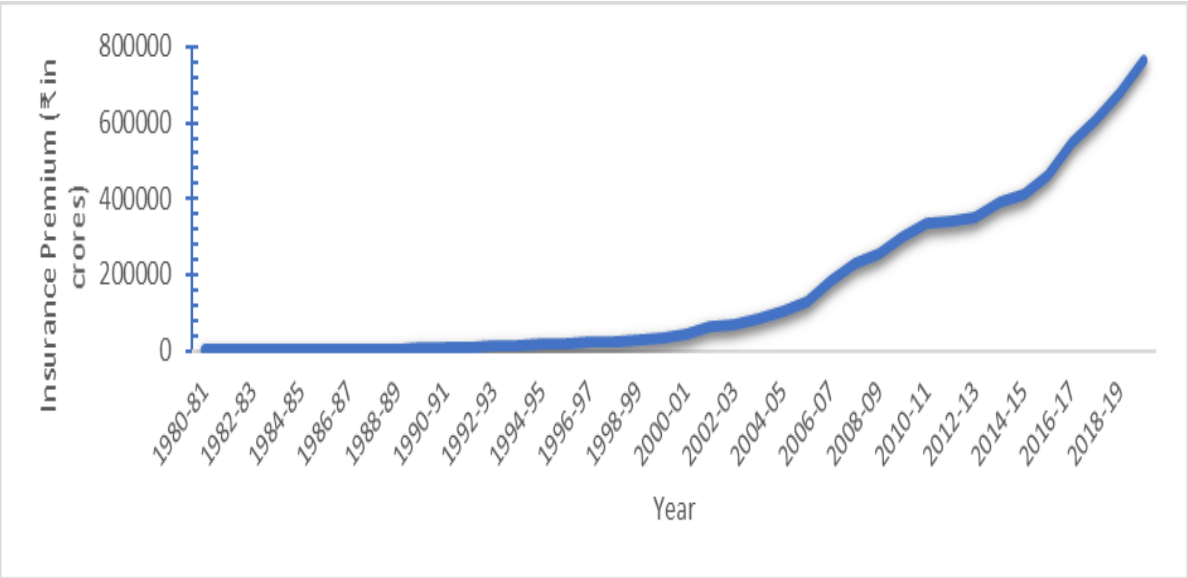
Premium is essential to the performance measures of the insurance industry. The notable feature of the post-reform landscape in India is unprecedented growth in premium. Over the last two decades, the rise in total premium has been approximately 16.78 times and over the last four decades, it is about 548 times. This growth in total premium is to be ascribed to the life insurance premium. On average, life insurance premium has been occupying approximately 81 per cent of total premium since reform. During the corresponding period of 20 years prior to reform, the share was about 63 per cent. Therefore, the significance of life insurance as a part of total insurance has increased considerably during the post-reform period. The impact of the reform is more discernible if the trend of insurance premiums is analysed for the last four decades. The trend line, as presented in Figure 1.4, appears much steeper after 1999-2000. Figure 1.4 presents the total premium during the pre-and post-reform period.

[29] Swiss Re, *Sigma World Insurance Report 4/2020*, p. 10

[30] Ibid.

[31] IRDAI, *Annual Report 2019-20*, p. 5

Figure 1.4: Indian Insurance Premium (₹ in crores) from 1980-81 to 2018-19



Source: Constructed on the basis of (a) Insurance: The Indian Experience by A. Samuel (from 1980-81 to 2000-01)[32] and (b) IRDAI Annual Reports (from 2001-02 to 2019-20)[33]

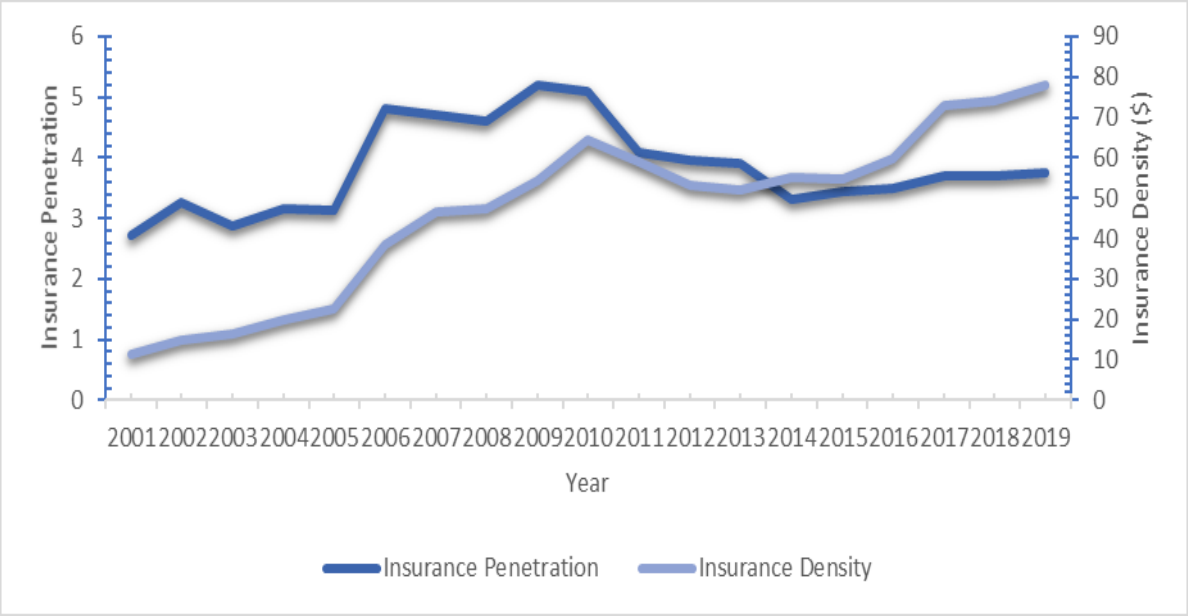
Along with the absolute premium, the concept of the relative premium — that is, insurance penetration and insurance density — is also crucial. Insurance penetration is calculated as the percentage of insurance premium (in US Dollars) to GDP (in US Dollars). It is presented in Figure 1.5. Insurance penetration was 1.93 per cent in 1999 and reached as high as 5.1 per cent within a decade. But in subsequent years, it staggered on account of the global financial crisis. It reduced to 3.3 per cent in 2014 and then started recovering. In 2019, the contribution of insurance premiums to GDP was 3.76 per cent. Figure 1.5 incorporates the trend of insurance density also. Insurance density is calculated as the ratio of premium to the total population, that is, per capita premium. Just after the reform, in 2001, it was $ 11.5. It increased by six times within a decade and reached $ 64.4 in 2010. The financial crisis, noted above, adversely affected its growth for about five years. From 2015 onwards the series moved up

[32] Retrieved on 9 February 2022 from https://rbidocs.rbi.org.in/rdocs/Publications/Pdfs/33958.pdf

[33] Retrieved from https://www.irdai.gov.in/

again. Insurance density was recorded at $ 78 in 2019. Indeed, the growing density ratio indicates a higher rate of coverage.

Figure 1.5: Insurance Penetration (in %) and Density (in $) since Liberalisation



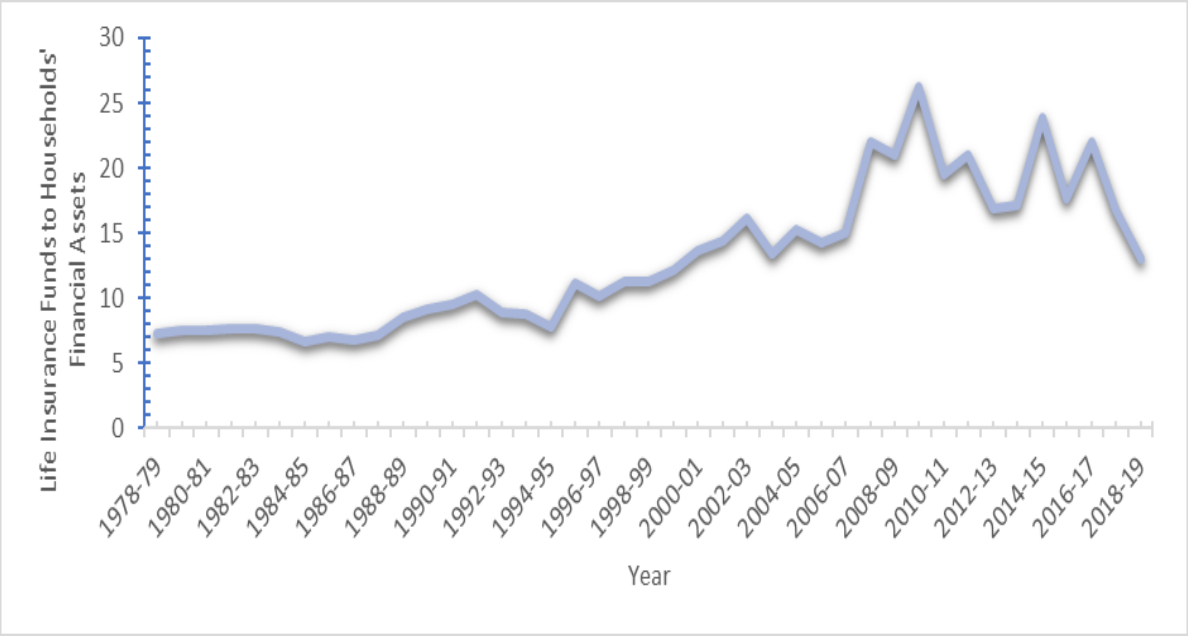
Source: Constructed on the basis of IRDAI, Annual Reports (from 2001-02 to 2019-20)[34]

Let me emphasise that, along with the stock of currency, bank deposits, non-banking deposits, provident funds, pension funds and securities, insurance funds are also vital constituents of the financial assets of the household sector. A growing portion of life insurance funds to the total financial assets of the household reflects its encroachment into the share of other components. Nowadays, people consider life insurance funds as a good investment option. On average, it occupies approximately 18 per cent of total household financial assets since the reform. For the corresponding period of twenty years before liberalisation, this share was approximately half of the present share. Such development during the post-reform period reflects the rising inclination of people towards life insurance over the alternative avenues of

[34] Retrieved from https://www.irdai.gov.in/

keeping wealth. Figure 1.6 presents the share of life insurance funds to households' financial assets during the last four decades.

Figure 1.6: Share of Life Insurance Funds in Households' Fin. Assets (1978-79 to 2018-19)



Source: Constructed on the basis of RBI, Handbook of Statistics on the Indian Economy 2018-19, p. 38[35]

Indian insurance industry generates large-scale occupation by employing people as agents, employees, distributors, service providers etc. The number of direct employees in this industry went up from 92,135 in 2010 to 1,35,308 in 2019.[36] Indirect employment in the form of contractual staffs and ancillary workers is substantially higher than direct employment. In 2019-20, the Indian life insurance industry provided livelihood to 22,78,465[37] individual agents and 978[38] corporate agents. Over the years, not only has this industry generated employment but it has improved the living standard of agents also by providing more commission per agent.

[35] Retrieved on 18 March 2022 from https://dbie.rbi.org.in/

[36] PwC, *Insurance Impact Assessment*, p. 13

[37] IRDAI, *Annual Report 2019-20*, p. 87

[38] IRDAI, *Handbook on Indian Insurance Statistics 2019-20*, p. 9

It was approximately ₹ 62,157[39] in 2009-10 which became more than double, approximately ₹ 1,35,271[40] in 2019-20. In addition, as 40 per cent of insurance offices are located in Tier-II or lower-tier cities, employment generation is taking place beyond urban areas.[41] Presently, the Indian insurance industry has been striving for inroads into un-insured and under-insured areas.

This industry, indeed, serves the need of corporate clients, on the one hand, and that of a disadvantaged section, on the other hand. It becomes possible on the strength of its innumerable products. Post-reform competition plays a pivotal role in bringing out various tailor-made products to the diverse customer base. The insurance industry assists corporate customers by covering catastrophic losses, providing credit insurance, facilitating credit etc. Retail customers get benefitted from a wide range of life insurance and non-life insurance products. There are, à la Holsboer (1999),[42] distinct segments of retail customers like children, students, young people, singles, young professionals, middle-income segment, women, single-parent households, part-time workers, mobile-workers, pre-retirees etc. Though such segregation is not yet very prominent in India's retail clientele, in the future, the industry is believed to cater to these specific categories in terms of product needs. Along with serving corporate and retail clients, this industry discharges its social responsibility too. It supports the financial inclusion strategy through the schemes like Pradhan Mantri Jeevan Jyoti Bima Yojana, Atal Pension Yojana etc. Evolving micro-insurance is also a part of its financial inclusion plan.

The Indian insurance industry accumulates funds under three broad categories: life fund, pension and general annuity fund and ULIP fund. By the mandate of the IRDA Act, 1999,

[39] Calculation is based on IRDAI, *Annual Report 2009-10*

[40] Calculation is based on IRDAI, *Annual Report 2019-20*

[41] PwC, *Insurance Impact Assessment*, p. 13

[42] Holsboer, 'Repositioning of the Insurance Industry', pp. 258-60

the accumulated fund is to be invested in central government securities, state government securities and other approved securities, infrastructure investment and so forth. Its colossal Assets Under Management (AUM) contribute to efficient resource allocation and capital formation. In the last five years, the AUM of the Indian life insurers has become almost double and reached ₹ 38,90,274 crores by 31 March 2020.

The insurance industry has thus emerged as an important segment in India's financial system so the question of its efficiency should not be lost sight of.

III

The Life Insurance Corporation of India (LICI) enjoyed monopoly power for more than four decades. Its key parameters such as the number of policies, sum assured, sum assured per policy, premium, life fund, total assets etc increased manifold during the nationalised regime. In fact, to flourish in a market with high potentials like the burgeoning middle class, disappearing joint families and increasing nuclear set-ups, improving financial literacy, growing domestic savings[43] etc, monopoly generated an added advantage. But the noticeable strides in many parameters should not be allowed to camouflage LICI's failures in the fields of life insurance density, life insurance penetration, life insurance coverage, tailored products, international footing etc. Before the reform, these parameters were unsatisfactory in comparison to those in other Asian countries.[44] Though LICI enjoyed monopoly status for more than four decades, still its performance should be questioned on these grounds.

The inadequate performance of LICI can be ascribed to the decay of its basic doctrines. The hierarchy of the insurance industry kept cushioning the culture like: 'Do not write business

[43] Chowdhury, 'Savings Behaviour of Households', pp. 226-43

[44] Life insurance penetration of Japan and South Korea was around 9 per cent in 1999, whereas India's life insurance penetration was staggering behind at 1.39 per cent. At the same time, Indian life insurance density was also miserably low. It was just $ 6.1 in comparison to $ 3101.4 and $ 760.5 of Japan and South Korea respectively.

which might invite a claim';[45] and 'Do not pay a claim unless you have to.'[46] Gupta (2000)[47] states that many audit manifestations supplement the above attitude. Hence, a risk-averse hierarchy was running a risk-business. It seems that with time the zeal of LICI to explore, innovate, out-perform and compete with foreign counterparts got blunted. The pro-reform lobby within the Government believed that liberalisation-led competition would jerk the not-so-awake LICI. Reform was expected to compel the LICI and the private insurers to perform efficiently, to offer a variety of products and services at fair prices and to grab the untapped market. The contemporary worldwide wave of liberalisation also influenced the opinion of policymakers. Keeping these objectives of the insurance reforms in view, the present dissertation seeks to measure the efficiency scores of India's life insurance companies during the post-reform period.

Efficiency measurement in the banking industry is of age-old research interest. Significant work has been done for foreign insurance industries too, but comparatively lesser work has yet been done in the Indian context. Besides, as the present study unfolds, we place the Econometric Frontier Approach over the Data Envelopment Approach. In the Indian context, the econometric method of efficiency measurement is the least adopted. Hence, this work draws its novelty from the chosen methodology also. In the economic literature, efficiency is assessed based on three measures, namely, scale efficiency, scope efficiency and X-efficiency. The present study primarily focuses on the measurement of scale efficiency and scope efficiency scores. In particular, this study has five objectives. Those are:

1. To assess whether reform could bring any structural breaks in the movements of the key life insurance parameters.

[45] Gupta, *The Present Situation of Insurance*, p. 318

[46] Ibid.

[47] Ibid.

2. To calibrate and compute a suitable model for the measurement of efficiency among life insurance companies.
3. To measure firm-level scale efficiency scores.
4. To measure sector-wise scale efficiency scores along with the scale efficiency of the entire life insurance industry.
5. To measure the scope efficiency for the entire life insurance industry, and also for both public and private sectors.

Based on the above research objectives, the following research questions are framed:

1. Did reform bring any structural change among the key life insurance parameters of the Indian life insurance industry?
2. What are the various approaches to measure efficiency and which is the most suitable model for the life insurance industry?
3. What are the scale efficiency scores of life insurance companies?
4. What are the scale efficiency scores of the public life insurance sector, the private life insurance sector and the entire life insurance industry?
5. Is the life insurance industry, as also both the public and private sectors, experiencing scope economies?

Based on these research questions, we formulate the following null hypotheses:

1. The reform did not bring any structural change among the key life insurance parameters.
2. Life insurance companies are not enjoying scale efficiency.
3. Neither the entire life insurance industry, nor individual sectors, enjoy scale efficiency.
4. Indian life insurance industry as a whole and both public and private sectors are not experiencing scope economies.

Data used in this study are secondary in nature. Data are collected from annual reports that have been published by the Insurance and Regulatory Development Authority of India (IRDAI) from the financial year 2003-2004 to the financial year 2018-19 and the Handbook on Indian Insurance Statistics from the financial year 2013-2014 to the financial year 2018-19. The data largely contain Policy-holders Account, Balance Sheet and Shareholders Account information as provided in the annual reports of the IRDAI and the Handbook on Insurance Statistics. Although the reform took place in the financial year 1999-00, IRDAI annual reports do not contain the required data till 2002-03. Hence, the study period starts from 2003-04 and ends in 2018-19. During this period, the global financial crisis occurred during 2008-10. It was a multinational economic crisis. However, the Indian financial sector escaped the direct adverse impact of this great recession because it was weakly integrated with the global market at that time. Insofar as the Indian insurance industry was concerned, presumably, the stringent guidelines of IRDAI kept the Indian insurers well-insulated. To find out the presence of structural breaks among key life insurance parameters, a long series of life insurance premium - from 1982-83 to 2018-19 - is used. Such data are collected from RBI documents[48] and IRDAI Annual reports.

As the present analysis concerns the post-reform period, the number of years under investigation is limited. Moreover, the financial years just after the reform could not be incorporated as the required information are not available. In addition, the year of inception of different life insurance companies is dissimilar, which leads to different stages of business development. Hence, on the basis of calculated efficiency scores, inter-company comparisons suffer. Moreover, since the data are secondary in nature, the truthfulness of the empirical findings depends to a considerable extent on the exactness of the published data. Also, this

[48] Samuel, 'Insurance: The Indian Experience', pp. 349-73

study deals with only one segment of the Indian insurance industry, namely, life insurance. Non-life insurance is not included. Better clarity about the insurance industry can be drawn only when both sectors, i.e., life and non-life insurance are studied in detail.

The present study adopts the translog model. It is formulated as a typical local approximation.[49] As it cannot reasonably approximate the cost behaviour far away from the sample range, it is not ideal for the estimation of scope economies. This is so because the measurement of scope economies requires the projection of a function at zero output level for different products by turn. Another issue related to the translog function is the number of variables. An addition of a single variable to the translog equation generates many parameters to be estimated. As the number of observations is restricted to 16, it requires us to eliminate a few variables for the estimation purpose.

IV

This dissertation consists of seven chapters. Chapter II narrates the genesis of insurance on foreign land, and also an account of Indian insurance activities from the seventeenth century till the end of the British Raj. To my knowledge, no study has yet analysed the scenario of pre-independence insurance, particularly in the twentieth century, in such detail. In addition, it attempts to cover salient features and drawbacks associated with two significant insurance acts, namely, the Indian Life Assurance Companies Act, 1912 and the Insurance Act, 1938.

Chapter III is devoted to the post-independent landscape of the Indian life insurance sector. It identifies three distinct phases – private ownership (1947-1956), state ownership (1956-1999) and co-existence of both (1999 onwards) - and attempts to elaborate on each phase. It aims to discuss phase-wise distinctive features. These three distinct phases are

[49] Allister and Manus, 'Resolving the Scale Efficiency Puzzle in Banking', pp. 389-405

characterised by three discrete structures. It is expected that the introduction of any structural change brings alterations in the associated parameters. The post-independent insurance sector opted twice for such structural changes, first, at the time of nationalisation, i.e., 1956, and second, at the time of liberalisation, i.e., 1999. But due to the paucity of data, Chapter III concentrates only on structural change that took place at the time of liberalisation. We adopt the Chow test and the dummy variable approach to examine the structural break.

Efficiency literature is growing rapidly. The application of diverse methods to different types of data sets belonging to different countries is enriching the literature. Chapter IV attempts to take the stock of such development. To limit the colossal job, it reviews the extant efficiency studies based upon the insurance industry only. It first deals with the concept embedded with efficiency in detail. Then it reviews the methodologies that are generally adopted to measure efficiency. Such methodologies can be grouped under two broad categories: the econometric approach and the linear programming approach. Several other indices and ratios are also proposed to date. It briefs efficiency studies based on the foreign insurance industry and the Indian insurance industry. The research gap is highlighted at the end.

After weighing both methodologies, the econometric approach is chosen in this study. It requires us first to identify the best suited functional form; second, to describe associated variables; third, to specify the functional relationship among adopted variables; fourth, to define various measures of efficiency and to explain how these measures of efficiency are to be calculated on the basis of specified functional relationship; and fifth, to select estimation methodology for the model. Chapter V describes these various steps. It is followed by a detailed description of the database.

The penultimate chapter of this dissertation comprises of estimation of the econometric model and the calculation of scale and scope efficiency scores. It presents and analyses

statistics that are relevant to goodness-of-fit and auto-correlation. It exhibits estimated values of parameters on the basis of which firm-wise and sector-wise efficiency scores are calculated. Calculated scores are compared to get further insights. Chapter VI attempts to highlight the relationship of scale efficiency score with output and asset size also. It incorporates scope efficiency calculation too. Finally, Chapter VII summarises the important findings of different chapters.