

CHAPTER IV

CONCENTRATION

This chapter analyses the effect of liberalization on the market structure in terms of concentration of life insurance industry. This chapter first discusses the concept of concentration and gives measurement in various indicators namely concentration ratio, herfindahl index and entropy. The later part of the chapter examines various other effects of liberalization such as penetration and density and the spread of insurance in rural areas.

4.1 Concentration-Concept:

Market concentration is commonly used to represent the level of market competition. Concentration may have far-ranging and long-lasting implications for financial sector efficiency, stability, competitiveness. (Demirguc-Kunt Asli and Ross Levine, 2000). The appropriate policies, regulations, and institutions are essential for long-run economic growth. Some argue that concentration will intensify market power and thereby stymie competition and efficiency. While excessive competition may create an unstable environment, insufficient competition and contestability in the insurance sector may breed inefficiencies. For these reasons, policymakers are concerned about concentration and adopt regulatory regime affecting the competitiveness in the industry. The presence or entry of large number of firms doesn't necessarily mean that the market is automatically competitive. The presence of foreign insurers also does not automatically mean that the market is more advanced in terms of product development. The question is whether it is contestable or not. Since the government has opted for liberalization from the monopoly regime of LIC to allow fresh entry, encouraging competitiveness is one

important objective of the liberalization of Indian insurance industry. Sen Subir and S Madheswaran (2006) and Sukla Sneha (2010) in each of their study analyzed the structure of Indian insurance industry after it went through liberalization phase. They carried out econometric analysis to select the best measure of concentration from a set of eight concentration ratios of the largest firms and herfindahl index .Their study witnessed the domination of the public entities even after five years of liberalization and also the coming up of private sector firms for profits. Their study restricted to the analysis of predicting the number of firms possibly in association or controlling the business. Shukla's finding has also shown that entry of large number of private players has changed the structure of the industry with a decline in concentration and increased competition in the life insurance industry.

The concept of industrial concentration has been extensively discussed and debated in the economic literature. Despite the many different approaches to its measurement, general agreement prevails about the constituting elements of concentration measures, i.e. the number of firms (fewness) and the distribution of firm sizes (inequality) in a given market (Bikker .J A. and K. Haaf, 2000). However, the classification of concentration measures in the literature is not systematic. The most frequently used measures of concentration in the empirical literature include k bank Concentration Ratio, Herfindahl-Hirschman Index , comprehensive industrial concentration index(CCI), Hall-Tideman Index and the Rosenbluth Index, Hannah and Kay Index, U index, Hause Indices and entropy measures.

4.2-Methodology:

Market share identifies the shares of specific firms within a market. This study measures market shares of life insurers. For this study, concentration ratios, Herfindahl Hirschman index (HHI) as well as Entropy (E) is calculated taking market shares in terms of a) total premium b) equity share capital and c) total assets respectively. The concentrations measures are calculated for each insurance company for each year from 2001-02 to 2009-10. The HHI and entropy is calculated for all the life insurance firms with and without LIC of India. Because LIC still plays dominant role in life insurance industry and so an index excluding its share may give a fair knowledge of competition among the private players after liberalization.

Concentration Ratio: It is the most frequently used measures of concentration in the empirical literature. The concentration ratio is the measure of the percentage market share in an industry held by the largest firms within that industry. For example, if 3 firms dominate a specific industry, holding 80% market share of the industry, the concentration ratio of the industry would thus be 80%. So the market share of the K firms in the market takes the form given below, giving equal emphasis to the k leading firms, but neglecting the many small firms in the market.

$$CR_k = \sum_{i=1}^k S_i$$

There are no rules for the determination of values of the k, so that the number of firms included in the concentration index is a rather arbitrary decision. The concentration ratio may be considered as one point on the concentration curve, and it is a one-dimensional measure ranging between

zero and unity. The index approaches zero for an infinite number of equally sized firms (given that the k chosen for the calculation of the concentration ratio is comparatively small as compared to the total number of firms) and it equals unity if the firms included in the calculation of the concentration ratio make up the entire industry.

For this study concentration ratio are calculated taking the value of k as 1 (CR1) and 4(CR4) respectively. CR1 is calculated to determine the share of top company. The Four Firm Concentration Ratio (CR4) calculates the market share of the top four companies in the industry. This calculation determines if an industry is an oligopoly, a monopoly or neither. A Four Firm Concentration Ratio below 40 percent shows there is monopolistic competition. A Four Firm Concentration Ratio above 60 percent shows there is an oligopoly.

Definition of HHI: The Herfindahl-Hirschman index (HHI) or simply herfindahl index is regarded as the most widely treated summary measure of concentration in the theoretical literature and often serves as a benchmark for the evaluation of other concentration indices. It measures the size of the firm in relation to the industry and so indicates the amount of competition among them. The Herfindahl-Hirschman Index (HHI) of competition therefore is a measure of the competitiveness of a market overall. It is not a measure specific to any one insurer, though it is a function of each insurer's market share. The herfindahl index stresses the importance of larger firms by assigning them a greater weight than smaller firms, and it incorporates each firms individually, so that arbitrary cut-offs and insensitivity to the share distribution are avoided.

$$HHI = \sum_{i=1}^n S_i^2$$

Where S_i is the market share of the firm i,

The HHI index ranges between $1/n$ and 1, reaching its lowest value (the reciprocal of the number of firms) when all firms in a market are of equal size, and reaching unity in the case of monopoly. So a decrease in the H indicates an increase in competition. The maximum value of HHI will be 1 when there is monopoly and the minimum value of HHI is $1/n$ if there are n firms of equal size.

Entropy: Entropy is similar to HHI except the weights assigned to smaller units in case of Entropy. It is defined as the reciprocal of

$$NE = \frac{(1)^{s_1}}{s_1} \frac{(1)^{s_2}}{s_2} \frac{(1)^{s_3}}{s_3} \dots \dots \dots \frac{(1)^{s_n}}{s_n} = \frac{1}{E}$$

OR

$$-\text{Log}E = \sum S_i \log\left(\frac{1}{S_i}\right)$$

The entropy (E) index is not restricted between 0 and 1, unlike most of the other measures of concentration presented above. The value of the Entropy varies inversely to the degree of concentration. It approaches zero if the underlying market is monopoly and reaches its highest value when market shares of all firms are equal and market concentration is lowest. For a given number of firms, the index falls with an increase in inequality among those firms and the weights the index attaches to market share decreases in absolute terms as the market share of a firm becomes larger.

Table 4.1: Market share and herfindahl index of all life insurance firms
(total premium)

$$HHI = \sum_{i=1}^n S_i^2$$

Insurers	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
LIC	0.9946	0.9799	0.9532	0.9067	0.8575	0.8245	0.7439	0.7092	0.7010
ICICI	0.0023	0.0075	0.0148	0.0285	0.0402	0.0510	0.0674	0.0692	0.0623
Max	0.0008	0.0017	0.0032	0.0050	0.0074	0.0097	0.0135	0.0174	0.0183
HDFC	0.0007	0.0027	0.0045	0.0083	0.0148	0.0184	0.0241	0.0251	0.0264
Birla	0.0006	0.0026	0.0081	0.0110	0.0119	0.0115	0.0163	0.0206	0.0207
Tata	0.0004	0.0015	0.0038	0.0060	0.0083	0.0088	0.0102	0.0124	0.0132
SBI	0.0003	0.0013	0.0034	0.0073	0.0102	0.0189	0.0279	0.0325	0.0381
Kotak	0.0002	0.0007	0.0023	0.0056	0.0059	0.0063	0.0084	0.0106	0.0108
Bajaj	0.0001	0.0012	0.0033	0.0121	0.0296	0.0278	0.0483	0.0479	0.0430
ING V.	0.0001	0.0004	0.0013	0.0041	0.0040	0.0046	0.0058	0.0065	0.0062
Met	0.0000	0.0001	0.0004	0.0010	0.0019	0.0032	0.0058	0.0090	0.0096
Reliance	0.0000	0.0001	0.0005	0.0013	0.0021	0.0065	0.0160	0.0222	0.0249
Aviva	--	0.0002	0.0012	0.0031	0.0057	0.0074	0.0094	0.0090	0.0090
Sahara	--	--	--	0.0000	0.0003	0.0003	0.0007	0.0009	0.0009
Shriram	--	--	--	--	0.0001	0.0012	0.0018	0.0020	0.0023
Bharti	--	--	--	--	--	0.0001	0.0006	0.0016	0.0025
Future	--	--	--	--	--	--	0.0000	0.0007	0.0020
IDBI	--	--	--	--	--	--	0.0001	0.0014	0.0022
Canara H	--	--	--	--	--	--	--	0.0013	0.0032
DLF Par	--	--	--	--	--	--	--	0.0000	0.0006
Aegon R	--	--	--	--	--	--	--	0.0001	0.0001
Star union	--	--	--	--	--	--	--	0.0002	0.0020
IndiaFirst	--	--	--	--	--	--	--	--	0.0008
Sum	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
HHI	0.9890	0.9600	0.9090	0.8230	0.7390	0.6840	0.5630	0.5130	0.5010

4.3-Results Analysis:

In terms of total premium, year wise market share of different life insurance firms is shown in table 4.1 and 4.2 respectively with their HHI. In all the years taken, LIC dominated the industry though its share was decreasing over the years. Till 2004-05, it occupied 90% of the total premium but was reduced to 70% in 2010. All the private life insurers have shown increasing market share over the years. ICICI, Bajaj, SBI,

and HDFC, has market share of 6 percent, 4 percent 3 percent and 2 percent in 2009-10 respectively. The herfindahl index of industry was reducing over the years with 0.989 in 2001-02 to 0.501 in 2009-10.

The herfindahl index of private industry was reducing over the years with 0.2392 in 2001-02 to 0.1096 in 2009-10. For the private firms, Met and Reliance have shown an increase in market share throughout the year from 2001-02 to 2009-10. However their market shares were comparatively low standing 3 and 8 percent respectively. ICICI started with 42 percent market share but reduced in successive years to 20% in 2009-10. It however, dominated the private insurance market throughout the years. SBI has shown increasing trend of market share except in 2005-06. Its market share increased significantly with a mere 5% in 2001-02 to 12 % in 2009-10. Bajaj has also increased its share from 2% in 2001-02 to 14 % in 2009-10.

Table 4.3 and 4.4: The entropy index of life insurance industry and that of private life insurance market (excluding LIC) are shown in table 4.3 and 4.4. The entropy of life insurers in terms of total premium was decreasing over the years, from 0.96 in 2001-02 to 0.26 in 2009-10. For private life insurers also, it was decreasing except in the year 2005-06 which increased to 0.1186 from 0.1159 in 2004-05. The chart representing HHI and entropy for life insurance industry and the private life insurers in terms of total premium is shown in chart 4.1 and 4.2 respectively. For the industry as well as private insurers, the HHI was greater than that of entropy index.

Table 4.2: Market share and herfindahl index for all private life firms
(total premium)

$$HHI = \sum_{i=1}^n S_i^2$$

Insurers	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
ICICI	0.4270	0.3732	0.3170	0.3059	0.2825	0.2908	0.2630	0.2381	0.2083
Max	0.1429	0.0863	0.0690	0.0535	0.0523	0.0551	0.0526	0.0598	0.0612
HDFC	0.1228	0.1330	0.0954	0.0889	0.1041	0.1050	0.0942	0.0863	0.0883
Birla	0.1037	0.1286	0.1723	0.1185	0.0835	0.0653	0.0635	0.0709	0.0694
Tata	0.0776	0.0726	0.0813	0.0643	0.0584	0.0503	0.0397	0.0426	0.0440
SBI	0.0539	0.0647	0.0723	0.0778	0.0713	0.1076	0.1090	0.1118	0.1273
Kotak	0.0278	0.0360	0.0483	0.0603	0.0412	0.0357	0.0328	0.0363	0.0361
Bajaj	0.0262	0.0618	0.0708	0.1296	0.2077	0.1581	0.1886	0.1647	0.1439
ING V.	0.0154	0.0189	0.0284	0.0439	0.0282	0.0260	0.0225	0.0224	0.0207
Met	0.0018	0.0071	0.0092	0.0106	0.0137	0.0181	0.0225	0.0310	0.0320
Reliance	0.0010	0.0058	0.0100	0.0138	0.0149	0.0369	0.0626	0.0765	0.0832
Aviva	--	0.0120	0.0261	0.0328	0.0398	0.0422	0.0367	0.0309	0.0300
Sahara	--	--	--	0.0002	0.0018	0.0019	0.0028	0.0032	0.0032
Shriram	--	--	--	--	0.0007	0.0067	0.0069	0.0068	0.0077
Bharti	--	--	--	--	--	0.0003	0.0023	0.0056	0.0084
Future	--	--	--	--	--	--	0.0000	0.0024	0.0068
IDBI	--	--	--	--	--	--	0.0002	0.0049	0.0072
Canara H	--	--	--	--	--	--	--	0.0046	0.0106
DLF Par	--	--	--	--	--	--	--	0.0001	0.0021
Aegon R	--	--	--	--	--	--	--	0.0005	0.0005
Star U	--	--	--	--	--	--	--	0.0008	0.0067
India F	--	--	--	--	--	--	--	--	0.0025
Sum	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Pvt HHI	0.2392	0.1961	0.1649	0.1523	0.1565	0.1475	0.1413	0.1239	0.1096

Table 4.3: Entropy for all life insurance firms (total premium)

$$-\text{LogE} = \sum S_i \log\left(\frac{1}{S_i}\right)$$

Insurers	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
LIC	0.0024	0.0086	0.0198	0.0386	0.0572	0.0691	0.0956	0.1058	0.1082
ICICI	0.0061	0.0159	0.0271	0.0441	0.0562	0.0660	0.0789	0.0803	0.0751
Max	0.0024	0.0048	0.0080	0.0115	0.0158	0.0195	0.0252	0.0306	0.0318
HDFC	0.0021	0.0069	0.0105	0.0173	0.0271	0.0320	0.0390	0.0402	0.0417
Birla	0.0018	0.0067	0.0169	0.0216	0.0229	0.0222	0.0291	0.0348	0.0349
Tata	0.0014	0.0041	0.0092	0.0133	0.0173	0.0181	0.0203	0.0236	0.0248
SBI	0.0010	0.0037	0.0084	0.0155	0.0202	0.0326	0.0434	0.0484	0.0540
Kotak	0.0006	0.0023	0.0060	0.0127	0.0131	0.0138	0.0174	0.0209	0.0212
Bajaj	0.0006	0.0036	0.0082	0.0232	0.0452	0.0432	0.0636	0.0632	0.0588
ING V.	0.0003	0.0013	0.0038	0.0098	0.0096	0.0107	0.0129	0.0142	0.0137
Met	0.0000	0.0005	0.0015	0.0030	0.0053	0.0079	0.0129	0.0184	0.0193
Reliance	0.0000	0.0005	0.0016	0.0037	0.0057	0.0142	0.0288	0.0368	0.0399
Aviva	--	0.0009	0.0036	0.0077	0.0127	0.0158	0.0190	0.0184	0.0183
Sahara	--	--	--	0.0001	0.0009	0.0012	0.0022	0.0028	0.0029
Shriram	--	--	--	--	0.0004	0.0034	0.0049	0.0053	0.0061
Bharti	--	--	--	--	--	0.0002	0.0019	0.0045	0.0066
Future	--	--	--	--	--	--	0.0001	0.0022	0.0055
IDBI	--	--	--	--	--	--	0.0002	0.0041	0.0057
Canara H	--	--	--	--	--	--	--	0.0038	0.0079
DLF Par.	--	--	--	--	--	--	--	0.0001	0.0020
Aegon R	--	--	--	--	--	--	--	0.0005	0.0006
Star U	--	--	--	--	--	--	--	0.0008	0.0054
India F	--	--	--	--	--	--	--	--	0.0024
-Log E	0.0189	0.0598	0.1246	0.2219	0.3098	0.3698	0.4954	0.5598	0.5866
NE	1.0440	1.1480	1.3320	1.6670	2.0410	2.3430	3.1290	3.6290	3.8600
E=1/NE	0.9579	0.8711	0.7508	0.5999	0.4900	0.4268	0.3196	0.2756	0.2591

Table 4.4: Entropy of all private Life insurance firms (total premium)

$$-\text{Log}E = \sum S_i \log\left(\frac{1}{s_i}\right)$$

Insurers	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
ICICI	0.1578	0.1598	0.1582	0.1574	0.1551	0.1560	0.1526	0.1484	0.1419
Max	0.1208	0.0918	0.0801	0.0680	0.0670	0.0694	0.0673	0.0732	0.0743
HDFC	0.1118	0.1165	0.0974	0.0934	0.1023	0.1028	0.0967	0.0918	0.0930
Birla	0.1021	0.1146	0.1316	0.1097	0.0900	0.0774	0.0760	0.0815	0.0804
Tata	0.0861	0.0827	0.0886	0.0766	0.0720	0.0653	0.0556	0.0584	0.0597
SBI	0.0684	0.0769	0.0825	0.0863	0.0818	0.1042	0.1049	0.1064	0.1140
Kotak	0.0433	0.0520	0.0636	0.0736	0.0571	0.0517	0.0487	0.0523	0.0521
Bajaj	0.0414	0.0747	0.0814	0.1150	0.1418	0.1267	0.1366	0.1290	0.1211
ING V.	0.0279	0.0326	0.0439	0.0596	0.0437	0.0412	0.0370	0.0369	0.0349
Met	0.0049	0.0152	0.0187	0.0209	0.0255	0.0315	0.0371	0.0467	0.0478
Reliance	0.0031	0.0129	0.0199	0.0257	0.0272	0.0529	0.0753	0.0854	0.0899
Aviva	--	0.0231	0.0413	0.0487	0.0557	0.0580	0.0527	0.0467	0.0456
Sahara	--	--	--	0.0008	0.0050	0.0051	0.0071	0.0080	0.0079
Shriram	--	--	--	--	0.0022	0.0145	0.0150	0.0147	0.0163
Bharti	--	--	--	--	--	0.0010	0.0061	0.0126	0.0175
Future	--	--	--	--	--	--	0.0002	0.0062	0.0148
IDBI	--	--	--	--	--	--	0.0008	0.0114	0.0154
Canara H	--	--	--	--	--	--	--	0.0107	0.0210
DLF Par.	--	--	--	--	--	--	--	0.0002	0.0056
Aegon R	--	--	--	--	--	--	--	0.0016	0.0016
Star U	--	--	--	--	--	--	--	0.0024	0.0145
India F	--	--	--	--	--	--	--	--	0.0066
-log E	0.7674	0.8528	0.9072	0.9356	0.9263	0.9576	0.9697	1.0245	1.0758
NE	5.8480	7.1290	8.0724	8.6298	8.4333	9.0780	9.3240	10.5780	11.9070
E=1/NE	0.1710	0.1403	0.1239	0.1159	0.1186	0.1102	0.1073	0.0945	0.0840

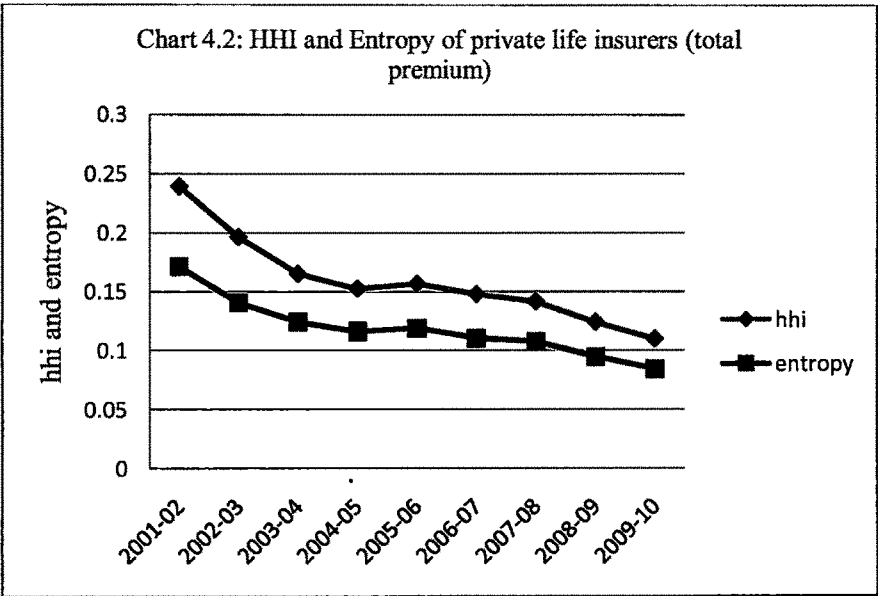
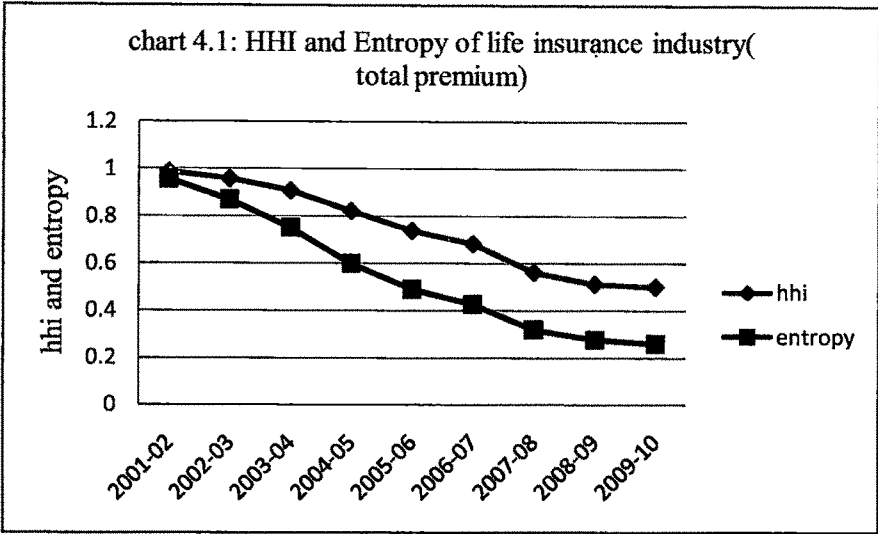


Table 4.5: Market share and HHI of all life insurance firms (equity share capital)

$$HHI = \sum_{i=1}^n S_i^2$$

Insurers	2002	2003	2004	2005	2006	2007	2008	2009	2010
LIC	0.0030	0.0022	0.0015	0.0011	0.0008	0.0006	0.0004	0.0003	0.0002
ICICI	0.1138	0.1902	0.2081	0.2125	0.2011	0.1615	0.1139	0.0782	0.0679
Max	0.1498	0.1141	0.1067	0.1071	0.0946	0.0902	0.0840	0.0977	0.0875
HDFC	0.1007	0.0976	0.0788	0.0735	0.1052	0.0986	0.1034	0.0984	0.0936
Birla	0.0899	0.0806	0.0894	0.0804	0.0781	0.0827	0.1036	0.1030	0.0937
Tata	0.1108	0.0828	0.0712	0.0737	0.0759	0.0673	0.0708	0.0832	0.0914
SBI	0.0749	0.0560	0.0540	0.0804	0.0721	0.0615	0.0813	0.0548	0.0476
Kotak	0.0605	0.0588	0.0466	0.0486	0.0415	0.0407	0.0391	0.0280	0.0243
Bajaj	0.0899	0.0672	0.0463	0.0345	0.0255	0.0185	0.0123	0.0083	0.0072
ING V.	0.0659	0.0761	0.0755	0.0747	0.0832	0.0849	0.0642	0.0558	0.0485
Met	0.0659	0.0492	0.0493	0.0540	0.0399	0.0652	0.0619	0.0866	0.0844
Reliance	0.0749	0.0560	0.0493	0.0499	0.0562	0.0817	0.0933	0.0636	0.0554
Aviva	--	0.0693	0.0749	0.0735	0.0779	0.0933	0.0817	0.0817	0.0899
Sahara	--	--	0.0484	0.0361	0.0266	0.0193	0.0189	0.0127	0.0110
Shriram	--	--	--	--	0.0212	0.0154	0.0102	0.0068	0.0059
Bharti	--	--	--	--	0.0002	0.0185	0.0298	0.0366	0.0538
Future	--	--	--	--	--	--	0.0150	0.0257	0.0334
IDBI	--	--	--	--	--	--	0.0163	0.0247	0.0214
Canara H	--	--	--	--	--	--	--	0.0219	0.0238
DLF Par.	--	--	--	--	--	--	--	0.0075	0.0105
Aegon R	--	--	--	--	--	--	--	0.0164	0.0271
Star U	--	--	--	--	--	--	--	0.0082	0.0119
India F	--	--	--	--	--	--	--	--	0.0095
total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
HHI	0.0975	0.0993	0.0997	0.1016	0.0988	0.0889	0.0799	0.0717	0.0680

Table 4.6: Market share and HHI of all private life insurance firms
(equity share capital)

$$HHI = \sum_{i=1}^n S_i^2$$

Insurers	2002	2003	2004	2005	2006	2007	2008	2009	2010
ICICI	0.1142	0.1907	0.2084	0.2128	0.2013	0.1616	0.1140	0.0782	0.0680
Max	0.1502	0.1144	0.1069	0.1072	0.0947	0.0902	0.0840	0.0977	0.0875
HDFC	0.1010	0.0978	0.0789	0.0736	0.1053	0.0987	0.1034	0.0984	0.0936
Birla	0.0901	0.0807	0.0895	0.0805	0.0781	0.0827	0.1037	0.1030	0.0937
Tata	0.1112	0.0830	0.0713	0.0738	0.0759	0.0674	0.0708	0.0833	0.0914
SBI	0.0751	0.0561	0.0540	0.0805	0.0722	0.0616	0.0814	0.0548	0.0476
Kotak	0.0607	0.0589	0.0467	0.0487	0.0415	0.0407	0.0391	0.0280	0.0243
Bajaj	0.0901	0.0673	0.0463	0.0345	0.0255	0.0185	0.0123	0.0083	0.0072
ING V.	0.0661	0.0763	0.0756	0.0748	0.0832	0.0850	0.0643	0.0558	0.0485
Met	0.0661	0.0493	0.0494	0.0541	0.0399	0.0653	0.0619	0.0866	0.0845
Reliance	0.0751	0.0561	0.0494	0.0499	0.0562	0.0818	0.0934	0.0636	0.0554
Aviva	--	0.0694	0.0750	0.0736	0.0779	0.0934	0.0817	0.0818	0.0899
Sahara	--	--	0.0485	0.0361	0.0267	0.0193	0.0189	0.0127	0.0110
Shriram	--	--	--	--	0.0212	0.0154	0.0102	0.0069	0.0059
Bharti	--	--	--	--	0.0002	0.0185	0.0298	0.0366	0.0538
Future	--	--	--	--	--	--	0.0151	0.0257	0.0334
IDBI	--	--	--	--	--	--	0.0163	0.0247	0.0214
Canara H	--	--	--	--	--	--	--	0.0219	0.0238
DLF Par.	--	--	--	--	--	--	--	0.0075	0.0105
Aegon R	--	--	--	--	--	--	--	0.0164	0.0271
Star U	--	--	--	--	--	--	--	0.0082	0.0119
India F	--	--	--	--	--	--	--	--	0.0095
total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Pvt.HHI	0.0981	0.0998	0.1000	0.1019	0.0990	0.0890	0.0800	0.0718	0.0680

The market share of life insurance industry in terms of equity share capital and HHI is shown in table 4.5 and that of private life insurers in terms of equity share capital and HHI is shown in table 4.6. The market share of LIC was decreasing over the years standing 0.02 % in 2010 from 0.03% in 2002. This is because LIC equity share was fixed at 5 crore only while the total equity share capital of the industry was increasing with the increase in private insurers. The HHI of the industry is at 0.09 in the first three years and increased to 0.10 in 2005. From 2006 onwards it was

decreasing to 0.068 in 2010. Among private insurers, the market share of Max was highest in 2002 but ICICI stood highest for 6 years from 2003 to 2008. In 2009 and 2010, Birla stood first among life insurers in market share of equity share. The HHI of the private insurers was at 0.09 in the first two years and increased to 0.10 in 2004 and 2005. From 2006 onwards it was decreasing to reach 0.068 in 2010.

Entropy in terms of equity share capital for life insurance industry and that of private insurers is shown in table 4.7 and 4.8 respectively. Like HHI, the entropy of the industry is decreasing in the first three years from 0.093 to 0.086 and then increased to 0.087 in 2005. From 2006 onwards it was decreasing from 0.084 to 0.059 in 2010. The entropy of the private insurers was also decreasing in the first three years and increased at 0.087 in 2005. From 2006 onwards it was decreasing and stood at 0.059 in 2010.

The combined chart of HHI and entropy for life insurance industry in terms of equity share capital and that of private insurers is shown in chart 4.3 and 4.4 respectively. For the industry as well as private insurers, the HHI was greater than that of entropy index.

Table 4.7: Entropy of all life insurance firms (equity share capital)

$$-\text{LogE} = \sum S_i \log\left(\frac{1}{S_i}\right)$$

insurers	2002	2003	2004	2005	2006	2007	2008	2009	2010
LIC	0.0076	0.0059	0.0043	0.0034	0.0026	0.0020	0.0014	0.0011	0.0007
ICICI	0.1074	0.1371	0.1419	0.1429	0.1401	0.1279	0.1075	0.0866	0.0793
Max	0.1235	0.1076	0.1037	0.1039	0.0969	0.0942	0.0903	0.0987	0.0926
HDFC	0.1004	0.0986	0.0869	0.0833	0.1029	0.0992	0.1019	0.0991	0.0963
Birla	0.0940	0.0881	0.0938	0.0880	0.0865	0.0895	0.1020	0.1017	0.0963
Tata	0.1059	0.0896	0.0817	0.0835	0.0850	0.0789	0.0814	0.0898	0.0950
SBI	0.0843	0.0701	0.0684	0.0880	0.0824	0.0745	0.0886	0.0691	0.0629
Kotak	0.0737	0.0723	0.0621	0.0639	0.0574	0.0566	0.0550	0.0435	0.0392
Bajaj	0.0940	0.0788	0.0618	0.0504	0.0406	0.0321	0.0234	0.0173	0.0154
ING V.	0.0778	0.0851	0.0847	0.0841	0.0898	0.0910	0.0766	0.0699	0.0637
Met	0.0778	0.0644	0.0645	0.0684	0.0558	0.0773	0.0748	0.0920	0.0906
Reliance	0.0843	0.0701	0.0645	0.0649	0.0702	0.0889	0.0961	0.0761	0.0696
Aviva	--	0.0803	0.0843	0.0833	0.0863	0.0961	0.0889	0.0889	0.0941
Sahara	--	--	0.0637	0.0520	0.0420	0.0331	0.0325	0.0241	0.0215
Shriram	--	--	--	--	0.0355	0.0279	0.0203	0.0147	0.0132
Bharti	--	--	--	--	0.0007	0.0320	0.0454	0.0526	0.0683
Future	--	--	--	--	--	--	0.0274	0.0409	0.0493
IDBI	--	--	--	--	--	--	0.0291	0.0397	0.0357
Canara H	--	--	--	--	--	--	--	0.0363	0.0386
DLF Par.	--	--	--	--	--	--	--	0.0159	0.0208
Aegon R	--	--	--	--	--	--	--	0.0293	0.0425
Star U	--	--	--	--	--	--	--	0.0171	0.0229
India F	--	--	--	--	--	--	--	--	0.0192
-Log E	1.0308	1.0480	1.0661	1.0603	1.0746	1.1011	1.1427	1.2043	1.2279
NE	10.735	11.168	11.64	11.486	11.874	12.62	13.887	16.007	16.901
E=1/NE	0.0932	0.0895	0.0859	0.0871	0.0842	0.0792	0.0720	0.0625	0.0592

Table 4.8: Entropy of all private life insurance firms (equity share capital)

$$-\text{LogE} = \sum S_i \log\left(\frac{1}{S_i}\right)$$

Insurers	2002	2003	2004	2005	2006	2007	2008	2009	2010
ICICI	0.1076	0.1372	0.1419	0.143	0.1401	0.1279	0.1075	0.0866	0.0794
Max	0.1237	0.1077	0.1038	0.104	0.0969	0.0942	0.0904	0.0987	0.0926
HDFC	0.1005	0.0987	0.087	0.0834	0.1029	0.0993	0.1019	0.0991	0.0963
Birla	0.0942	0.0882	0.0938	0.0881	0.0865	0.0895	0.1021	0.1017	0.0964
Tata	0.1061	0.0897	0.0818	0.0836	0.085	0.0789	0.0814	0.0899	0.095
SBI	0.0845	0.0702	0.0685	0.0881	0.0824	0.0745	0.0886	0.0691	0.0629
Kotak	0.0739	0.0724	0.0621	0.0639	0.0574	0.0566	0.055	0.0434	0.0392
Bajaj	0.0942	0.0789	0.0618	0.0505	0.0407	0.0321	0.0234	0.0172	0.0154
ING V.	0.078	0.0852	0.0848	0.0842	0.0899	0.091	0.0766	0.07	0.0637
Met	0.078	0.0645	0.0645	0.0685	0.0558	0.0774	0.0748	0.092	0.0907
Reliance	0.0845	0.0702	0.0645	0.065	0.0703	0.0889	0.0962	0.0761	0.0696
Aviva	--	0.0804	0.0843	0.0834	0.0864	0.0962	0.0889	0.0889	0.094
Sahara	--	--	0.0637	0.0521	0.042	0.0331	0.0325	0.0241	0.0216
Shriram	--	--	--	--	--	--	0.0203	0.0148	0.0132
Bharti	--	--	--	--	0.0007	0.032	0.0455	0.0526	0.0683
Future							0.0274	0.0408	0.0493
IDBI	--	--	--	--	--	--	0.0291	0.0397	0.0357
Canara H	--	--	--	--	--	--	--	0.0364	0.0386
DLFPar.	--	--	--	--	--	--	--	0.016	0.0208
Aegon R	--	--	--	--	--	--	--	0.0293	0.0425
Star U	--	--	--	--	--	--	--	0.0171	0.0229
India F	--	--	--	--	--	--	--	--	0.0192
-LogE	1.025	1.0434	1.0628	1.0576	1.0725	1.0996	1.1416	1.2035	1.2274
NE	10.593	11.05	11.55	11.415	11.816	12.57	13.85	15.9772	16.881
E=1/NE	0.0944	0.0905	0.0866	0.0876	0.0846	0.0796	0.0722	0.0626	0.0592

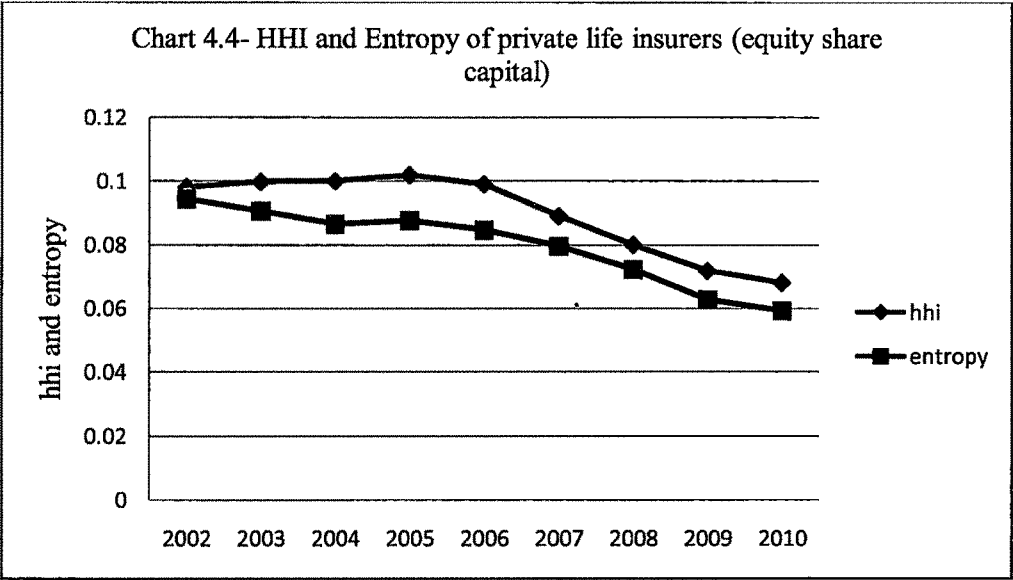
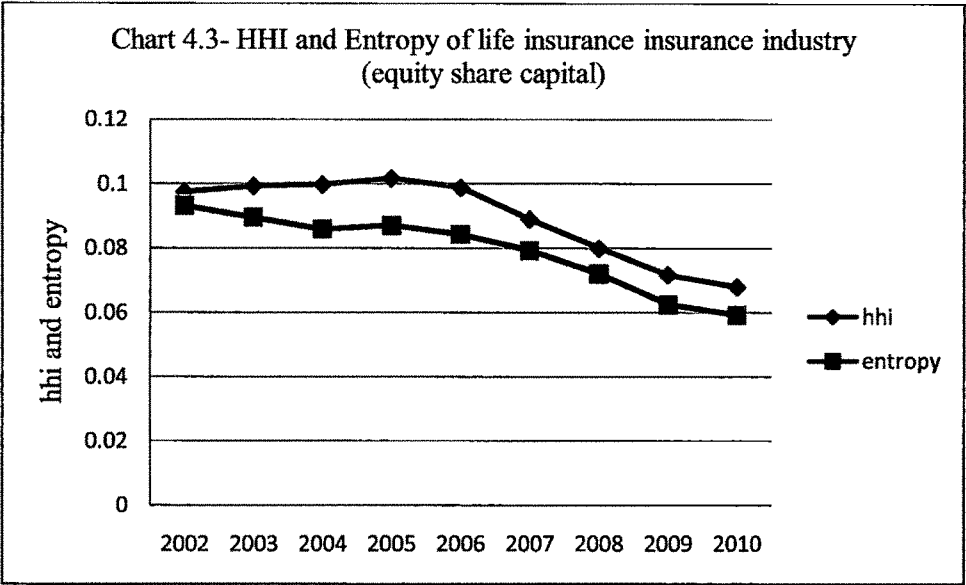


Table 4.9: Market share and HHI of all life insurance firms (total assets)

$$HHI = \sum_{i=1}^n S_i^2$$

Insurers	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
LIC	0.9972	0.9929	0.9905	0.9850	0.9721	0.9523	0.9258	0.8912	0.8724	0.8321
ICICI	0.0008	0.0010	0.0026	0.0049	0.0092	0.0159	0.0240	0.0336	0.0345	0.0426
Max	0.0005	0.0008	0.0007	0.0009	0.0013	0.0018	0.0030	0.0047	0.0064	0.0080
HDFC	0.0009	0.0008	0.0011	0.0015	0.0024	0.0051	0.0077	0.0108	0.0116	0.0156
Birla	0.0006	0.0006	0.0008	0.0020	0.0032	0.0047	0.0062	0.0083	0.0100	0.0124
Tata		0.0007	0.0007	0.0010	0.0016	0.0024	0.0035	0.0047	0.0056	0.0073
SBI		0.0006	0.0007	0.0012	0.0026	0.0039	0.0072	0.0117	0.0152	0.0216
Kotak		0.0006	0.0005	0.0007	0.0014	0.0021	0.0028	0.0037	0.0043	0.0051
Bajaj		0.0006	0.0007	0.0010	0.0024	0.0064	0.0105	0.0158	0.0181	0.0249
ING V.		0.0004	0.0005	0.0005	0.0015	0.0016	0.0022	0.0027	0.0031	0.0037
Met		0.0005	0.0004	0.0004	0.0005	0.0006	0.0013	0.0024	0.0033	0.0046
Reliance		0.0005	0.0004	0.0003	0.0005	0.0008	0.0021	0.0049	0.0070	0.0105
Aviva			0.0005	0.0006	0.0009	0.0017	0.0027	0.0036	0.0042	0.0050
Sahara					0.0004	0.0003	0.0003	0.0005	0.0005	0.0007
Shriram						0.0002	0.0004	0.0007	0.0008	0.0011
Bharti							0.0002	0.0004	0.0005	0.0008
Future								0.0002	0.0004	0.0005
IDBI								0.0002	0.0007	0.0010
Canara H.									0.0006	0.0011
DLF Par									0.0001	0.0001
Aegon R									0.0002	0.0003
Star U									0.0002	0.0008
India F										0.0004
Sum	1.0000	1.000	1.0000	1.0000	1.000	1.0000	1.0000	1.000	1.0000	1.0000
HHI	0.9944	0.9858	0.9810	0.9703	0.9452	0.9072	0.8580	0.7960	0.7632	0.6961

Table 4.10: Market share and HHI of all private life insurance firms (total assets)

$$HHI = \sum_{i=1}^n S_i^2$$

Insurers	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
ICICI	0.2703	0.1447	0.2759	0.3254	0.3291	0.3330	0.3235	0.3090	0.2705	0.2540
Max	0.1771	0.1187	0.0746	0.0619	0.0478	0.0385	0.0410	0.0428	0.0505	0.0474
HDFC	0.3265	0.1066	0.1130	0.0993	0.0867	0.1065	0.1040	0.0993	0.0907	0.0930
Birla	0.2261	0.0867	0.0840	0.1326	0.1148	0.0980	0.0835	0.0765	0.0786	0.0736
Tata		0.0977	0.0683	0.0653	0.0567	0.0509	0.0475	0.0432	0.0436	0.0433
SBI		0.0829	0.0766	0.0831	0.0931	0.0827	0.0964	0.1074	0.1192	0.1287
Kotak		0.0819	0.0565	0.0449	0.0518	0.0445	0.0379	0.0336	0.0335	0.0303
Bajaj		0.0876	0.0782	0.0635	0.0872	0.1347	0.1410	0.1454	0.1418	0.1486
ING V.		0.0564	0.0473	0.0360	0.0538	0.0332	0.0291	0.0248	0.0246	0.0219
Met		0.0632	0.0372	0.0259	0.0172	0.0129	0.0181	0.0218	0.0262	0.0274
Reliance		0.0735	0.0376	0.0226	0.0169	0.0176	0.0284	0.0454	0.0549	0.0624
Aviva			0.0508	0.0394	0.0323	0.0352	0.0361	0.0328	0.0330	0.0297
Sahara					0.0127	0.0066	0.0044	0.0045	0.0042	0.0040
Shriram						0.0052	0.0058	0.0063	0.0066	0.0066
Bharti						0.0005	0.0029	0.0033	0.0038	0.0047
Future							0.0002	0.0017	0.0033	0.0031
IDBI								0.0021	0.0058	0.0057
Canara H									0.0050	0.0064
DLF Par									0.0009	0.0006
Aegon R									0.0014	0.0016
Star U									0.0018	0.0045
India F										0.0024
sum	1.0000	1.000	1.0000	1.0000	1.000	1.0000	1.0000	1.000	1.0000	1.0000
HHI	0.2621	0.0973	0.1289	0.1584	0.1581	0.1658	0.1604	0.1530	0.1331	0.1285

Table 4.11: Entropy for all life insurance firms (total assets)

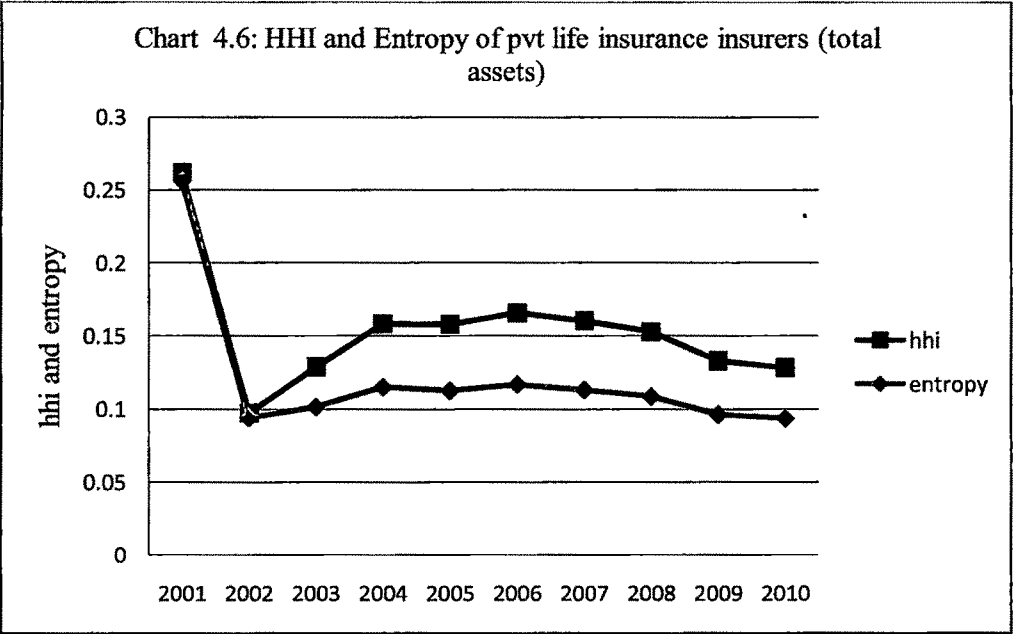
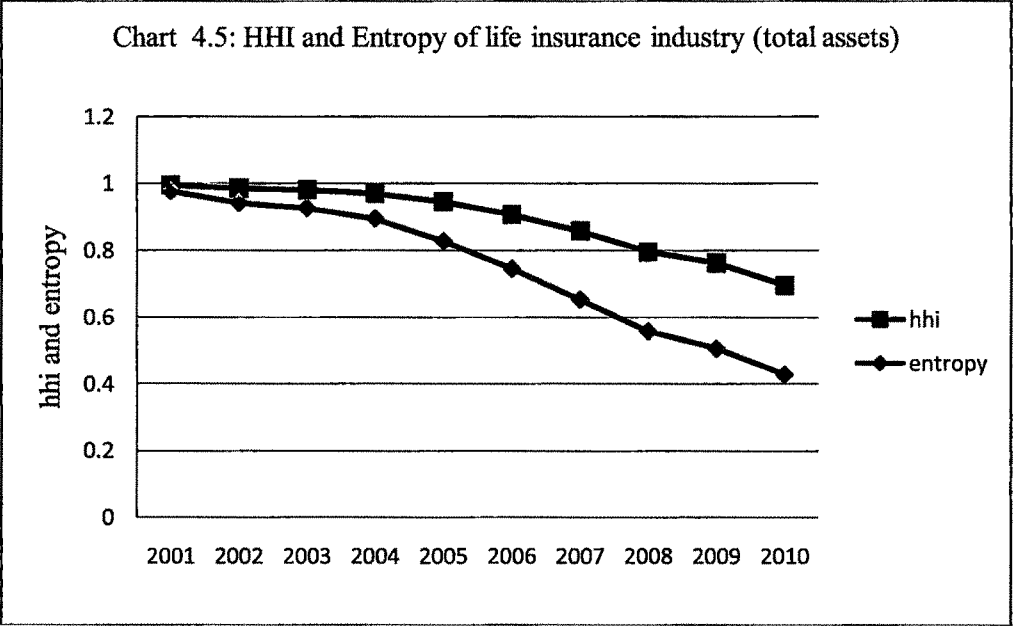
$$-\text{Log}E = \sum S_i \log\left(\frac{1}{S_i}\right)$$

Insurers	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
LIC	0.0012	0.0031	0.0041	0.0065	0.0119	0.0202	0.0310	0.0446	0.0517	0.0664
ICICI	0.0024	0.0031	0.0068	0.0113	0.0187	0.0286	0.0389	0.0495	0.0505	0.0584
Max	0.0016	0.0026	0.0022	0.0028	0.0038	0.0050	0.0077	0.0109	0.0141	0.0167
HDFC	0.0028	0.0024	0.0032	0.0042	0.0063	0.0117	0.0163	0.0212	0.0224	0.0282
Birla	0.0020	0.0020	0.0025	0.0054	0.0080	0.0109	0.0137	0.0173	0.0200	0.0236
Tata		0.0022	0.0021	0.0029	0.0044	0.0064	0.0086	0.0109	0.0126	0.0155
SBI		0.0019	0.0023	0.0036	0.0067	0.0095	0.0154	0.0226	0.0277	0.0360
Kotak		0.0019	0.0018	0.0021	0.0041	0.0057	0.0072	0.0089	0.0101	0.0117
Bajaj		0.0020	0.0023	0.0029	0.0064	0.0141	0.0207	0.0285	0.0315	0.0400
ING V.		0.0014	0.0015	0.0018	0.0042	0.0044	0.0058	0.0069	0.0079	0.0090
Met		0.0015	0.0012	0.0013	0.0016	0.0020	0.0038	0.0062	0.0083	0.0107
Reliance		0.0017	0.0012	0.0012	0.0016	0.0026	0.0056	0.0114	0.0151	0.0207
Aviva			0.0016	0.0019	0.0027	0.0047	0.0069	0.0087	0.0100	0.0115
Sahara					0.0012	0.0011	0.0011	0.0016	0.0018	0.0021
Shriram						0.0009	0.0015	0.0022	0.0026	0.0033
Bharti						0.0001	0.0008	0.0012	0.0016	0.0025
Future							0.0001	0.0007	0.0014	0.0017
IDBI								0.0008	0.0023	0.0029
Canara H									0.0020	0.0032
DLF Par									0.0004	0.0004
Aegon R									0.0007	0.0010
Star U									0.0008	0.0024
India F										0.0014
-Log E	0.0100	0.0258	0.0328	0.0479	0.0817	0.1278	0.1851	0.2544	0.2956	0.3692
NE	1.0233	1.0617	1.0789	1.1169	1.2078	1.3428	1.5311	1.7947	1.9770	2.3388
E=1/NE	0.9772	0.9419	0.9269	0.8953	0.8280	0.7447	0.6531	0.5572	0.5058	0.4276

Table 4.12: Entropy of all private life insurance firms (total assets)

$$-\text{Log}E = \sum S_i \log\left(\frac{1}{S_i}\right)$$

Insurers	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
ICICI	0.1536	0.1215	0.1543	0.1587	0.1588	0.1590	0.1586	0.1576	0.1536	0.1512
Max	0.1332	0.1099	0.0841	0.0748	0.0631	0.0544	0.0569	0.0586	0.0655	0.0628
HDFC	0.1587	0.1036	0.1070	0.0996	0.0921	0.1036	0.1023	0.0996	0.0945	0.0960
Birla	0.1460	0.0921	0.0904	0.1164	0.1079	0.0989	0.0901	0.0854	0.0868	0.0834
Tata		0.0987	0.0796	0.0774	0.0707	0.0658	0.0629	0.0590	0.0594	0.0590
SBI		0.0897	0.0855	0.0898	0.0960	0.0895	0.0980	0.1041	0.1101	0.1146
Kotak		0.0890	0.0705	0.0605	0.0666	0.0601	0.0538	0.0495	0.0495	0.0460
Bajaj		0.0927	0.0865	0.0760	0.0924	0.1173	0.1200	0.1218	0.1203	0.1230
ING V.		0.0704	0.0627	0.0520	0.0683	0.0491	0.0447	0.0398	0.0396	0.0364
Met		0.0758	0.0532	0.0411	0.0303	0.0244	0.0315	0.0363	0.0414	0.0428
Reliance		0.0833	0.0536	0.0372	0.0300	0.0309	0.0439	0.0610	0.0692	0.0752
Aviva			0.0657	0.0554	0.0481	0.0512	0.0521	0.0487	0.0488	0.0453
Sahara					0.0240	0.0143	0.0104	0.0105	0.0100	0.0096
Shriram						0.0119	0.0130	0.0139	0.0143	0.0144
Bharti						0.0018	0.0074	0.0082	0.0093	0.0110
Future							0.0007	0.0047	0.0081	0.0078
IDBI								0.0057	0.0129	0.0128
Canara H									0.0115	0.0140
DLF Par									0.0026	0.0020
Aegon R									0.0040	0.0045
Star U									0.0050	0.0107
India F										0.0063
-Log E	0.5914	1.0266	0.9931	0.9388	0.9483	0.9322	0.9461	0.9643	1.0165	1.0287
NE	3.9030	10.6316	9.8424	8.6856	8.8777	8.5546	8.8328	9.2109	10.3872	10.6832
E=1/NE	0.2562	0.0941	0.1016	0.1151	0.1126	0.1169	0.1132	0.1086	0.0963	0.0936



Market share of life insurance industry in terms of total assets and HHI is shown in table 4.9 and that of private insurance industry is shown in table 4.10. The market share of LIC was decreasing over the decade from 0.99 in 2001 to 0.83 in 2010. While on an average, the private insurers were grasping market share in an upward trend throughout the year taken. It may be noted that LIC's market share was consistently decreasing at slow pace as LIC still enjoyed 83% of market share in terms of total assets. Next to LIC, ICICI was having a market share of 4 % which was far behind. The HHI of the industry was decreasing over the years. It was 0.696 in 2010 declining from 0.994 in 2001.

In the private insurance industry, the market share (as shown in table 4.10) was highest for ICICI throughout the year except in 2001. The insurers in the second place keep fluctuating over the years. The HHI was not consistently decreasing over the years but its value remained below 0.2. The HHI of the private industry was much lower than that of the industry.

Table 4.11 and 4.12 show the entropy in terms of total assets for life insurance industry and that of private insurance industry. The industry entropy was decreasing over the years and in fact reduced to more than half, from 0.977 in 2001 to 0.428 in 2010. For the private industry, the entropy was decreased over the years but its value fluctuated over the years. From 2006 onwards it was consistently decreasing from 0.1169 to 0.093 in 2010. The entropy of private industry is lower than that of the industry.

Chart 4.5 and 4.6 show the HHI and entropy of life insurance industry in terms of total assets and that of private insurance industry. In both the charts, HHI was higher than that of entropy.

Table 4.13: HHI, E, CR1 and CR4 compared (total premium)

year		2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
No of insurers		12	13	13	14	15	16	18	22	23
Industry total	HHI	0.9890	0.9600	0.9090	0.8230	0.7390	0.6840	0.5630	0.5130	0.5010
	E	0.9579	0.8711	0.7508	0.5999	0.49	0.4268	0.3196	0.2756	0.2591
Pvt	HHI	0.2392	0.1961	0.1649	0.1523	0.1565	0.1475	0.1413	0.1239	0.1096
	E	0.1710	0.1403	0.1239	0.1159	0.1186	0.1102	0.1073	0.0945	0.084
CR1 (%)		99.46	97.99	95.32	90.67	85.75	82.45	74.39	70.92	70.10
CR4 (%)		99.84	99.27	98.06	95.83	94.21	92.22	88.75	85.88	84.44

Table-4.14: HHI, E, CR1 and CR4 compared (equity share capital)

year		2002	2003	2004	2005	2006	2007	2008	2009	2010
Number of firms		12	13	14	14	16	16	18	22	23
Industry total	HHI	0.0975	0.0993	0.0997	0.1016	0.0988	0.0889	0.0799	0.0717	0.0680
	E	0.0932	0.0895	0.0859	0.0871	0.0842	0.0792	0.0720	0.0625	0.0592
Pvt	HHI	0.0981	0.0998	0.1000	0.1019	0.0990	0.0890	0.0800	0.0718	0.0680
	E	0.0944	0.0905	0.0866	0.0876	0.0846	0.0796	0.0722	0.0626	0.0592
CR1 (%)		14.98	19.02	20.81	21.25	20.11	16.15	11.39	10.30	09.37
CR4 (%)		47.51	48.47	48.30	48.04	48.41	44.36	41.42	38.57	36.86

Table-4.15: HHI, E, CR1 and CR4 compared (total assets)

year		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Number of firms		05	12	13	13	14	15	16	18	22	23
Industry total	HHI	0.9944	0.9858	0.9810	0.9703	0.9452	0.9072	0.8580	0.7960	0.7632	0.6961
	E	0.9772	0.9419	0.9269	0.8953	0.8280	0.7447	0.6531	0.5572	0.5058	0.4276
Pvt	HHI	0.2621	0.0973	0.1289	0.1584	0.1581	0.1658	0.1604	0.1530	0.1331	0.1285
	E	0.2562	0.0941	0.1016	0.1151	0.1126	0.1169	0.1132	0.1086	0.0963	0.0936
CR1 (%)		99.72	99.29	99.05	98.5	97.21	95.23	92.58	89.12	87.24	83.21
CR4 (%)		99.95	99.55	99.5	99.34	98.71	97.97	96.8	95.23	94.02	92.12

In Table 4.13, HHI, E and Concentration Ratios (CR1 and CR4) are shown in terms of total premium. The HHI as well as E showed a similar trend wherein both were decreasing over the years from 2001-02 to 2009-10. The HHI index was always greater than the E in all the years. For the

industry total, HHI decreased from 0.99 in 2001-02 to 0.50 in 2009-10 and E decreased from 0.96 to 0.26. In case of private insurers, the HHI decreased from 0.23 in 2001-02 to 0.11 in 2009-10 and E decreased from 0.17 to 0.08. In terms of total premium, the concentration was almost reduced to half since monopoly regime of LIC and the competition among private insurers was also increasing over the period. This was also evident from the CR1 which is decreasing over the years. The CR4 was also decreasing over the years.

In Table 4.14, HHI, E and Concentration Ratios (CR1 and CR4) in terms of equity share capital are shown. The HHI of industry as well as private insurers showed a similar trends wherein both were decreasing since 2006. However the indices showed a slight increase till the year 2005. In case of entropy, it was decreasing over the years for industry as well as private insurers except in the year 2005. The equity share of LIC was constant at 5 Crores in all the years and so the fluctuations may be due to increase in private players. The HHI index was always greater than the E in all the years. For the industry total, HHI decreased from 0.09 in 2002 to 0.06 in 2010 and E decreases from 0.093 to 0.059. In case of private insurers, the HHI decreased from 0.098 in 2002 to 0.06 in 2010 and E decreased from 0.09 to 0.059. The CR1 was fluctuating over the years. The CR4 also changed from year to year. The average CR4 of the 09 years taken was at around 45%.

In Table 4.15, HHI, E and Concentration Ratios (CR1 and CR4) for market shares in terms of total assets are given. For the industry total, both HHI and E were decreasing from 0.99 and 0.97 in 2001 to 0.70 and 0.42 in 2009-10 respectively. This shows that the competition, of course, has increased in life insurance industry after liberalization but the LIC of

India still dominated the market. In the case of private players, the HHI sharply decreased to 0.097 in 2002 from 0.262 in 2001 but increased thereafter for two years standing 0.158 in 2004. The similar trend was also seen in Entropy also. This may be due to the fact that new entrant in the industry increased in the first two years of liberalization and the number of new entrant remained same for the two years 2003 and 2004. The slight decrease in concentration in 2005 may be due to the entry of a new player (Sahara) in 2005 with huge assets. Though there were two new entrants in 2006 also, their total assets size may not be large enough to reduce the concentration level. The HHI index was always greater than the E in all the years. In terms of total assets, the concentration ratio of LIC was reduced to 83 %. This shows that LIC still dominated the market though its share was decreasing consistently and gradually. The CR4 also was decreasing over the years.

4.4-Insurance Penetration and Density

Insurance plays a significant role in shaping the economy of a nation. The contribution of the insurance sector to growth can be gauged by the rate of penetration. The life insurance penetration and density are the standard measures of the development of life business. Penetration is defined as the ratio of premium volume to the Gross Domestic Product (GDP). The rate of penetration means the quantum of premium mobilized by the insurance sector vis-à-vis the growth of Gross Domestic Product. The insurance density may also be defined as per capita expenditure on insurance premium. It has direct correlation to per capita GDP income of the country. The insurance penetration and density are presented in table 4.16 which showed that the impact of Insurance sector reform on Indian economy. The penetration and density is also compared with that of Asia

and world in case of Life insurance. Insurance penetration as well as density was increasing over the years since liberalization as expected. The values of above indicators were 1.93 and 8.5 in 1999 which were grown to 5.2 and 54.3 respectively in 2009 for the total industry (life and non life together). The values of above indicators were 1.39 and 6.1 in 1999 which were grown to 4.60 and 47.7 respectively for life insurance in 2009. Insurance penetration was however lower comparing to Asia and world penetration in all years except in 2007. In case of insurance density it is very much behind the Asian and World density.

Table 4.16: Insurance penetration and density in India (1999-2009)

Year	Insurance penetration					Insurance density				
	life	non-life	Total	Life		Life	Non-life	Total	Life	
				Asia	World				Asia	World
1999	1.39	0.54	1.93	--	--	6.1	2.4	8.5	--	--
2000	1.77	0.55	2.32	--	--	7.6	2.3	9.9	--	--
2001	2.15	0.56	2.71	5.84	4.68	9.1	2.4	11.5	125.0	235.0
2002	2.59	0.67	3.26	5.81	4.76	11.7	3.0	14.7	128.1	247.3
2003	2.26	0.62	2.88	5.74	4.59	12.9	3.5	16.4	140.1	267.1
2004	2.53	0.65	3.17	5.58	4.55	15.7	4.0	19.7	147.2	291.5
2005	2.53	0.61	3.14	5.16	4.34	18.3	4.4	22.7	149.6	299.5
2006	4.10	0.60	4.70	5.00	4.50	33.2	5.2	38.4	154.6	330.6
2007	4.00	0.60	4.60	4.60	4.40	40.4	6.2	46.6	156.7	358.1
2008	4.00	0.60	4.60	--	4.10	41.2	6.2	47.4	--	369.7
2009	4.60	0.60	5.20	--	4.00	47.7	6.7	54.3	--	341.2

Source: Compiled from IRDA's Annual Reports

(Note- Insurance Penetration: Ratio (%) of Premium to GDP, Insurance Density: Ratio of Premium to Total Population)

4.5-Spread of Insurance Business in Rural Areas:

Apart from the overall increase in penetration of insurance in the country, there is also need for increasing the insurance penetration in the rural areas. Spread of life insurance business in rural areas was poor before liberalization. IRDA therefore made it mandatory to cover rural areas in their business [IRDA (Obligations of Insurers to Rural or Social Sectors) Regulations 2000, 2002, 2008].

Table 4.17: Growth of LIC of India's rural new business (1994-95 to 2009-10)

Year	No. of Policies (In Lakh)	Sum Assured (Rs. in Crore)	% Growth Rate		Share of the rural new business in total new business(%)	
			Policies	Sum Assured	Policies	Sum Assured
1994-95	49.02	21571.00	--	--	45.10	39.10
1995-96	52.57	21263.59	7.20	-1.40	47.70	41.00
1996-97	60.33	24278.73	14.80	14.20	49.20	42.80
1997-98	68.40	27550.69	13.40	13.50	51.40	43.30
1998-99	81.23	32372.94	18.80	17.50	54.70	47.00
1999-00	97.04	44168.19	19.50	36.43	57.50	48.70
2000-01	109.20	59676.42	12.53	35.11	55.53	47.76
2001-02	37.02	25461.94	-66.1	-57.33	16.94	13.65
2002-03	45.23	23574.69	22.18	-7.41	18.90	13.37
2003-04	62.19	35651.99	37.50	51.23	22.79	17.85
2004-05	55.03	46037.01	-11.51	29.13	22.97	25.18
2005-06	74.66	60971.85	35.67	32.44	23.65	21.21
2006-07	88.50	68497.21	18.54	12.34	23.16	22.60
2007-08	90.43	59694.44	2.18	-12.85	21.67	24.06
2008-09	87.15	73354.97	-3.63	22.88	24.28	18.81
2009-10	102.50	78895.11	17.61	07.55	26.39	18.84

Source: Annual Reports of LIC of India

Table 4.17 shows the growth of LIC of India's Rural New Business (1994-95 to 2009-10). At the time of liberalization, the rural new business of LIC in terms of policies stood at 57.50% while sum assured stood at 48.70% in 1999. The percentage of the rural new business in terms of policies and sum assured was increasing since 1994-95 to 1999-00 but it was declined to a low of 16.94 and 13.65 in 2001-02.

In 2009-10 it stood at 26.39 % and 18.84 % respectively. The growth rate of rural new policies and sum assured were seen fluctuating over the years following liberalization. The number of new policies issued in rural areas stood at 102.50 lakh only which was lower than 109.20 lakh policies issued at the beginning of the liberalization in 2000-01. However, LIC was always compliant with its obligations in the rural sector and underwrote a higher percent of policies in the rural sector, than the prescribed 25% in 2009-10. Like LIC, all the twenty two life insurers in the private sector fulfilled their rural sector obligations during 2009-10 (IRDA's Annual Report 2009-10). Similarly, all life insurers except HDFC Standard fulfilled their social sector obligations during 2009-10.

Postal life insurance organization has been given responsibility to promote insurance in the rural areas. The growth of postal life insurance is given in table 4.18. The growth of postal life policies procured and sum assured was positive in all years except 2006-07. The premium income however was seen having a positive growth over the previous year in all the years after liberalization. The postal life policies procured, and sum assured has increased from 172163 and Rs 1710.02 Crores in 2000-01 to 417832 and Rs 7345.56 Crores in 2008-09. Premium income from postal life insurance has also increased from Rs 501.85 Crores in 2001-02 to Rs 2301.24 Crores in 2009-10. In case of rural postal life insurance, the premium income has increased from Rs 94.71 Crores in 2000-01 to Rs 1262.11 Crores in 2009-10. The rural postal life policies procured was declined in 2006-07 and 2007-08.

Table 4.18: Growth of postal life insurance (PLI) and rural postal life Insurance (RPLI) in India (2001-02 to 2009-10)

Achievement of policy, sum assured and premium income in PLI						
Year	Policies procured during the year	% growth over Previous year	Sum Assured (Rs in Crores)	% growth over Previous year	Premium Income (Rs in Crores)	% growth over Previous year
2001-02	172163	8.92	1710.02	20.27	501.85	13.19
2002-03	212967	23.70	2110.21	23.40	590.84	17.73
2003-04	276880	30.01	2846.66	34.90	698.17	18.17
2004-05	344403	24.39	3830.64	34.57	904.58	29.56
2005-06	364564	5.85	4533.20	19.86	1078.66	19.24
2006-07	318058	-12.75	4146.67	-8.52	1211.78	12.34
2007-08	355700	11.83	5020.62	21.08	1480.34	22.16
2008-09	417832	17.47	7345.56	46.31	1860.52	25.68
2009-10	--	--	--	--	2301.24	23.69
Achievement of policy, sum assured and premium income in RPLI						
2001-02	368527	127.19	1696.85	156.07	94.71	39.75
2002-03	702542	90.64	3347.94	97.30	171.36	80.93
2003-04	1083152	54.18	5949.97	77.72	245.32	43.16
2004-05	1335847	23.33	7207.96	21.14	380.87	55.25
2005-06	1443818	8.08	8822.86	22.40	475.09	24.74
2006-07	1268826	-12.12	11116.59	26.00	601.02	26.51
2007-08	1200582	-5.38	9644.30	-13.24	664.70	10.60
2009-10	--	--	--	--	1262.11	43.54

Source: Directorate, postal Life Insurance, Department of post (www.mospi. govt.in)

4.6-Summary:

The change in structure of life insurance with the coming of private insurers and the intensity of changes is analyzed with Concentration Ratios, Herfindahl Hirschman index (HHI) as well as Entropy (E). Both HHI and Entropy are calculated in terms of a) total premium b) equity share capital and c) total assets respectively. The concentration was declining in all the three variables taken. For the industry total, HHI decreased from 0.99 in 2001-02 to 0.50 in 2009-10

and E decreased from 0.96 to 0.26 in terms of total premium. In case of equity share capital, the industry's HHI decreased from 0.09 in 2002 to 0.06 in 2010 and E decreased from 0.093 to 0.059. For the industry total, both HHI and E were decreasing from 0.99 and 0.97 in 2001 to 0.70 and 0.42 in 2009-10 respectively in terms of total assets. In terms of total premium CR1 has decreased from 14.98% in 2001-02 to 9.37% in 2009-10 while the CR4 has decreased from 47.51% to 36.86% during the period. In case of equity share capital, CR1 has decreased from 99.46% in 2001-02 to 84.44% in 2009-10 while the CR4 has decreased from 99.84% to 84.44% during the period. In terms of total assets, CR1 has decreased from 99.72 % in 2001-02 to 83.21 % in 2009-10 while the CR4 has decreased from 99.95 % to 92.12% during the period. The HHI index was always greater than the E in all the years for all the indices. LIC still dominated the market though its share was gradually decreasing consistently. For premium and total assets, the HHI and E of private insurers were always less than that of the whole industry. This shows rising competition among private players. Among the private insurers, ICICI has highest market share so far in almost all the years in terms of total premium, total assets and equity shares.

Insurance penetration as well as density has increased as expected, over the years since liberalization. The values of above indicators were 1.93 and 8.5 in 1999 which were grown to 5.2 and 54.3 respectively in 2009. The values of above indicators were 1.39 and 6.1 in 1999 which were grown to 4.60 and 47.7 respectively for life insurance in 2009. Though the insurance penetration and density has increased over the years, they were lower than that of Asia and world. In terms of rural penetration, the share of rural business in total volume of insurance business was still low in India. LIC of India, which is the dominant player

in life insurance sector has issued only 26.39% of its new policies in rural areas and assured 18.84% in 2009-10. This was far less than the 57.50 % of new policies out of total policies issued in 1999-00. The postal life policies procured, and sum assured has increased from 172163 and Rs 1710.02 Crores in 20001-02 to 417832 and Rs 7345.56 Crores in 2008-09. The rural postal life insurance premium income has increased from Rs 94.71 Crores in 2000-01 to Rs 1262.11 Crores in 2009-10. The rural postal life policies procured was declined in 2006-07 and 2007-08.