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Micro-Insurance Industry in India: A New Paradigm of Insurance after Post Reform Period

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Abstract - In India the micro insurance is a tool to provide protection to the people living on the bottom of economic pyramid of the society. The regulations framed by Government of India in 2005 provide the mechanism for design, cost, coverage and distribution of micro insurance products in the country. This leads to emergence of new concept of micro insurance in insurance industry of India. The present paper is based on secondary data collected from various sources namely annual reports of IRDAI and Annual Reports of public and private life insurance companies operating in India. Two samples t-test has been applied to test the significance of mean difference between public and private sector on various issues. The model of multiple linear regressions has also been used to examine the impact of micro-life insurance policies and number of total micro-life insurance agents of public and private life insurers on their total micro-life insurance premium. In this paper the researcher tries to find out the growth pattern of micro-life insurance industry. The paper finds that the growth of micro life insurance industry is slow. Moreover, it is found that micro insurance policies remain a major source of premium income for micro life insurance industry. Therefore, it is suggested that IRDA should start a mass campaign to educate rural people about the need of insurance. Moreover, the life insurance companies should enhance their network in rural and semi-urban areas because the majority of customers for micro life insurance belong to these areas.

Keywords: IRDA, Micro insurance, premium, polices, life insurance.

I. INTRODUCTION

The Micro-life insurance is an insurance agreement between Life Insurance Company and those people or group of people whose income is between $ 1 and $ 4 per day to provide them financial protection. Generally in life micro-insurance agreement premium is lower than conventional life insurance agreement. The target group for life micro-insurance is people doing traditional jobs and businesses and having low income. The claim settlement of life micro-insurance is quick, easy and requires less documentation as compared to conventional life insurance. The following list provides of the life micro-insurance products available globally.

1. **Credit-Life Micro-insurance product**: It is most popular micro-insurance product in the World. In this type of micro-insurance product the policyholder gets a life time protection. It aims to protect the policyholder. If the policyholder dies the dependents of policyholder does not get anything but in certain jurisdictions the dependents of the policyholders gets the fixed amount.
2. **Life Savings Micro-insurance product**: It is a type of unit linked endowment plan with low premium. For Example: In India ICICI Prudential Life has designed such products that aim at tea producers by encouraging them for savings and an improved quality of life.
3. **Life protection Micro-insurance product**: In this type of micro-insurance product the dependents of policyholders get a lump sum amount or maintenance payments for infinite period of time after the death of policyholder.

In India, a micro insurance policy is simply a low premium insurance policy. In 2003, a consultative group was set up by Government of India to examine the structure of insurance schemes designed for rural and urban poor. The group examined type of products, pricing, servicing, promotion, capital requirements and existing regulations for insurance business and found that micro insurance should be an integral part of insurance sector of the country. The report suggested that the Government should give power to Non-Government organizations, and self-help groups to act as agents of micro-insurance business. It will increase penetration of insurance in the country. Further, the group suggested the Government to prepare regulations so that insurers can design, distribute and service micro insurance products in the country. As a result of these suggestions in November 2005, the Insurance Regulatory and Development Authority (IRDA) came up with regulations for micro-insurance.

II. REVIEW OF LITERATURE

Singh and Gangal (2011) in their study examined the initiatives taken by private and public insurance companies in the growth of rural India The paper found that rural sector held great potential for both life and non-life insurers

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and there was an urgent need to improve the awareness among the low income people about the micro insurance. The researcher suggested that IRDA along with the existing insurers should take the responsibility to educate the people through print advertisement, TV advertisement, hoardings, campaigning and through the oral communication of the life insurance agents. The study also recommended the induction of more micro insurance agents and development of the distribution channels in the rural areas for the growth of micro insurance.[1]

Singh and Lall (2011) studied the awareness level of people about insurance policies and their purpose of investment in insurance companies and suggested that suggested that micro insurance products should be developed for under privileged people and for rural area population.[2]

Ramalakshmi and Ramalingam (2014) studied the awareness level of micro insurance among people of Madurai District. The study revealed that there was awareness about micro-insurance among the urban and rural population. Further, agents played a major in creating awareness as well as the major influencer for taking micro-insurance policy. Moreover, monthly mode premium for micro-insurance is mostly preferred by the people of Madurai District.[3]

Singh and Gangal (2015) found that from 2008 to 2011 there was an enough growth of new business under micro insurance. The study found that micro insurance provided the coverage of many risks for some segments of the low income market. Further, micro insurance acted as a social tool to build comprehensive social security system. It was suggested that awareness and literacy should be increased among the people for effective development of micro insurance. audio & visual media sources should be more utilized in future for development of micro insurance because they had more impact on the audience.[4]

Manivannan and Karunanithi (2015) in their paper found that the performance of micro insurance products in Tamil Nadu was showing a fluctuating trend during 2006-07 to 2012-13. Further, in Vellore Division the progress of micro insurance policies was very poor. The study suggested that The LIC of India should take steps to increase the business of Micro Insurance as well as to collect the renewal premium from the policyholders.[5]

PritiBakhshi (2016) in her paper reviewed the progress and potential of micro insurance in India. The study highlighted the importance of insurance in supporting the sustainable development of the poor and reducing the inequality in India. Further, the paper found that there was huge potential in in the micro insurance sector. The study revealed that the development of micro insurance was important for achieving the inclusive financial systems.[6]

Sharma in his paper (2016) studied the growth of micro insurance in India. The study found that the micro insurance industry had a good set up in India. The insurers had appointment 20855 micro insurance agents from 2006 to 2014-15. Further, the premium collected by the insurers at the end of the financial year 2014-15 was `2889.45 lakhs and issued 816368 policies at individual level. Moreover, the collection of premium was decreasing from last some years. In the group business the collection of micro insurance insurers was `31,560 lakh at the end of financial year 2014-15. The maximum part of premium was collected by LIC.[7]

Objectives of the study

1. To study the recent regulatory framework of micro insurance industry in India
2. To analyze the sector-wise growth of micro-life insurance industry in India
3. To examine the sector-wise performance of life micro-insurance agents in India.
4. To examine the level of development of micro life insurance in India.
5. To analyze the impact of total number of micro-life insurance policies and the agencies responsible for distribution of micro life insurance products on micro-life insurance premium.

Scope of the Study

The study is limited to only public and private sector life insurance companies operating in India.

Period of the Study

The period of study for the analysis of life insurance industry is of ten years from 2007-08 to 2016-17.

III. Research Methodology

The study is divided into two groups. The first five years (2007-08 to 2011-12) of life micro-insurance industry is termed as G_1 group and the other five years (2012-13 to 2016-17) of the study is termed as G_2 group. The present study is based on secondary data. These data have been collected from various sources namely annual reports of IRDAI and Annual Reports of public and private life insurance companies operating in India. The study has also used some relevant information from the website of Insurance Regulatory and Development Authority of India (IRDAI). The sector-specific data on total micro-life insurance premium, number of micro-life insurance policies and number of total micro-life insurance agents have been used to analyze the growth of public and private sector micro-life insurance players.

Data Analysis and Statistical Techniques

The data have been analyzed with the help of growth rate over previous year and Compound Annual growth rate (CAGR). The coefficient of variation has also been used to

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assess the inter-year variation of the data. The normality of the data has been confirmed through Jarque-Bera normality test. Two samples Welch t-test has been applied to test the significance of mean difference between public and private sector on various issues because the assumption of homogeneity of variances is not met. The Levene's test has been applied to check the equality of variances. To test the significance of mean difference between the two groups of public and private sector paired t-test has been used. The model of multiple linear regressions has also been used to examine the impact of micro-life insurance policies and number of total micro-life insurance agents of public and private life insurers on their total micro-life insurance premium. The assumptions of multiple linear regression model have been tested through various statistical tests. The assumption of normality of standardized residuals is checked through Jarque-Bera test. The assumption of no autocorrelation is tested through Durbin Watson statistic. The assumption of no multicollinearity is tested through value of tolerance and Variation Inflation factor. The assumption of homoscedasticity is tested through white test. The assumption of no highly influential data points is tested with the help of Cook's Distance. The main hypotheses of the study have been formulated at appropriate places of the study and accepted or rejected at 5 per cent level of significance.

Regulatory Framework of Micro Insurance in India

India is one of the first countries which provide regulations for micro insurance business in 2005. A revised version of these regulations came in 2015. According to these regulations, every insurer seeking to carry out the business of micro insurance in India is required to get a clearance for micro insurance product from the IRDA prior to commencement of sale of a product. The every micro insurance product which is cleared by IRDA will be called Micro-insurance product. According to new regulations on micro insurance the insurance contract should be in languages recognized by constitution of India. The wording of the contract should be simple and easy to understand because the micro-insurance policyholders are less literate. The group micro-insurance contract should contain the details of all individuals covered under the group and insurer will issue certificate to each such individual containing details of validity, period of cover, name of nominee etc. Further, the insurers have to handle complaints in speedy manner. Moreover, the insurers have to send quarterly report about disposal of complaints to IRDA. The sum assured under an insurance contract covering life or pension or health benefits should not exceed an amount of 200000[8]. The annual premium should not exceed 6,000 per annum in a Micro Variable insurance product under non-linked non-par platform. The micro life insurance product may allow flexible premium options. The insurers cannot offer micro insurance products under Unit Linked platform. In addition to insurance agents, corporate agents or brokers the micro- insurance products may be distributed through micro insurance agents. Micro-insurance business can also be done through other intermediaries such as NGO, Self-Help Groups and Micro-Finance Institutions, District Co-operative Banks, Regional Rural Banks including Business Correspondents of Scheduled Commercial Banks. Every insurer is required to give training of twenty-five hours to its micro insurance agents at its own expense. A micro insurance agent can work for one general or one life insurance company. He or she can also work for any health insurance company and Agriculture Insurance Company of India. For micro life insurance, the micro insurance agent will be paid remuneration of 10 per cent of single premium and 20 per cent of the premium for all the years of premium paying term. All transactions made by insurer in connection with micro-insurance business should be in accordance with the provisions of the Act, the Insurance Regulatory and Development Act, (41 of 1999)[9].

Sector-wise Growth of micro-life Insurance Premium in India

Premium is an amount paid periodically or once by policyholder to the insurer for covering his or her risk. The growth of micro life insurance premium in India is presented in Table 1.

Table 1 reveals that during G_1 period the total micro life insurance premium of the industry rose from `1823.10 lakh in 2007-08 to `11567.71 lakh in 2011-12. The amount received in 2011-12 is more than six times the amount of premium collected during first year of the study. The premium of micro life insurance industry registered a growth of 44.71 per cent during first five years of commencement of micro life insurance business in India. During the first two years of the G_1 period, the micro life insurance industry registered a positive growth while in another two years the growth rate over previous year was negative. Sector-wise, the total micro-life insurance premium of public sector player increased from `1613.36 lakh in 2007-08 to `10603.49 lakh in 2011-12. The public sector registered a growth of 45.73 per cent during G_1 period of the study. The table shows that LIC recorded a positive growth in first two years while in next two years the public sector company registered a negative growth. On the other hand the private sector registered a positive growth in all the years of the study except 2010-11. The Coefficient of variation for LIC and private life insurers stood at 0.68 and 0.44 respectively, which showed that growth was more consistent in case of private to private life insurers as compared to public sector. During G_2 period of the study the micro life insurance

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Table 1: Sector-wise Growth of Micro Life Insurance Premium Income in India

(in ` Lakh)

Group	Year	Public Sector	Growth over Previous Year	Private Sector	Growth over Previous Year	Industry	Growth over Previous Year
G_1	2007-08	1613.36	-------	209.74	----------	1823.1	----------
	2008-09	3118.74	0.93	537.81	1.56	3656.55	1.005677
	2009-10	14982.51	3.80	839.78	0.56	15822.29	3.327109
	2010-11	12305.76	-0.17	735.09	-0.12	13040.85	-0.17579
	2011-12	10603.49	-0.13	964.22	0.31	11567.71	-0.11296
	CAGR	**45.73**		**35.76**		***44.71***	
	C.V.	**0.68**		**0.44**		***0.66***	
G_2	2012-13	9949.05	-0.06	1018.54	0.05	10967.59	-0.05188
	2013-14	8635.77	-0.13	929.29	-0.08	9565.06	-0.12788
	2014-15	1640.23	-0.81	1249.22	0.34	2889.45	-0.69792
	2015-16	1953.78	0.19	1217.95	-0.02	3171.73	0.097693
	2016-17	1587.13	-0.18	2234.37	0.83	3821.5	0.204863
	CAGR	**-30.73**		**17.02**		**-19.01**	
	C.V.	**0.88**		**0.39**		**0.66**	

Note: Total Premium Exclude specialized insurers and Standalone Health Insurers

Source: IRDA Annual Reports of various Year

premium of the industry declined from `10967.59 lakh to `3821.50 lakh in 2016-17. The industry registered a negative growth of 19.01 per cent during the G_2 period of the study. The table exhibits that the industry registered a negative growth in all the years of G_2 period except 2015-16 and 2016-17. In 2015-16 the micro life insurance premium of the industry recorded an increase of 0.09 per cent over 2014-15. In 2016-17, the industry registered a growth of 0.20 per cent over 2015-16. Sector-wise the public sector player showed a negative growth of 30.73 per cent while private sector registered a positive growth of 17.02 per cent. The micro insurance premium of public sector decreased to `1587.13 lakh in 2016-17 from `9949.05 lakh in 2007-08. The micro insurance premium of private sector increased to 2234.37 lakh in 2016-17 from 1018.54 lakh in 2016-17. The public sector showed a negative growth in all the years of G_2 period except 2015-16. The private sector showed a positive growth in three years while in another two years the private sector recorded negative growth over previous year. The Coefficient of variation for LIC and private life insurers stood at 0.88 and 0.39 respectively, which showed that growth was more consistent in case of private to private life insurers as compared to public sector. The Jarque Bera statistic for public (1.07, p=0.58) and private sector (2.38, p=0.30) shows that the data is normally distributed for both the sectors. The Levene's statistic (61.75, p=0.00) has been calculated which concludes that the assumption of equality of variances is not met. The value of Welch t **(**3.421, p=0.07**)** depicts that there is no significant difference in the mean micro-insurance premium of public and private life insurers a 5 per cent level of significance. The Jarque Bera statistic for G_1 of public (0.60, p=0.73) and private (0.48, p=0.78) sector shows that the data are normally distributed for both the groups of public and private sector. The inequality of variance for G_1 group of public and private sector is verified by Levene's statistic (27.56, p=0.00). The value of Welch t **(**2.99, p=0.04**)** depicts that there

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Table 1 (a) Mean and Level of Normality of Data for Public and Private Micro- life Insurance Premium through Jarque-Bera Normality Test

Sector/Variables	***Mean***	**Normality of Data**				
		Skewness	***Kurtosis***	***Jarque-bera test statistic***	***p- Value***	**Result**
Public sector	66.38.98	0.28	1.49	1.07	0.58	data is normal at 5% level of significance
Private sector	993.60	1.02	4.23	2.38	0.30	data is normal at 5% level of significance
G_1 group of public sector	8524.77	-0.21	1.35	0.60	0.73	data is normal at 5% level of significance
G_1 group of private sector	657.32	-0.60	2.07	0.48	0.78	data is normal at 5% level of significance
G_2 group of public sector	4753.19	0.44	1.25	0.80	0.66	data is normal at 5% level of significance
G_2 group of Private sector	1329.87	1.25	2.94	1.31	0.51	data is normal at 5% level of significance

Table 1 (b) Computation of Independent t-test to test significance of means

Sector/Variables	***Test of Variances***		***Independent Welch t-test***			
	Levene's statistic	***p-value***	***Value of t***	***Degrees of freedom***	***p- value***	***Result***
Between Public and Private sector of Industry	61.75	0.00	3.421	9.19	0.07	Not significant at 5% level of significance
Between G_1 Group of Public and Private Sector	27.56	0.01	2.99	4.02	0.04	Significant at 5% level of significance
Between G_2 Group of Public and Private Sector	51.79	0.00	1.82	4.12	0.14	Not significant at 5% level of significance

Source: Author's own calculations

Table 1 (c) Computation of Paired t-test to test significance of means

Sector/Variables	***Normality of differences between pairs***				***Paired t- test***					
	Skewness	***Kurtosis***	***Jarque-bera test statistic***	***p- Value***	***Correlation***	***p-Value***	***Value of t***	***Degrees of freedom***	***p-value***	***Result***
Between G1 and G2 Group of Public Sector	-0.36	1.27	0.72	0.69 data is normal at 5% level of significance	-0.963	0.00	0.848	4	0.44	Not significant at 5% of significance
Between G1 and G2 Group of Private Sector	-0.90	2.23	0.79	0.67 data is normal at 5% level of significance	0.715	0.17	-4.02	4	0.01	significant at 5% level of significance

Source: Author's own calculation

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is significant difference in the mean micro-insurance premium of public and private life insurers at 5 per cent level of significance. The Jarque Bera statistic for G_2 of public (0.60, p=0.73) and private (0.48, p=0.78) sector shows that the data are normally distributed for both the groups of public and private sector. The Levene's statistic (51.79, p=0.00) concludes that the assumption of equality of variances is not met. The value of Welch t **(**1.82, p=0.14**)** depicts that there is no significant difference in the mean micro-insurance premium of public and private life insurers during the G_2 period of the study at 5 per cent level of significance. The Jarque Bera test statistic (0.72, p=0.69) reveals that the differences between two groups of public sector is normally distributed at 5 per cent level of significance. The value of paired t (0.848, p=0.44) reveals that there is no significant difference in the mean micro-insurance premium of two groups of public sector during the G_2 period of the study at 5 per cent level of significance. The Jarque Bera test statistic (0.79, p=0.67) reveals that the differences between two groups of private sector is normally distributed at 5 per cent level of significance. The value of paired t (-4.02, p=0.44) reveals that there is significant difference in the mean micro-insurance premium of two groups of private sector during the G_2 period of the study stands at 5 per cent level of significance.

Sector-wise Growth of Micro-life insurance Policies in India

Another important parameter of growth of industry is number of policies issued by the industry. The growth of micro life insurance policies in India is presented in Table 2.

Table 2: Sector-wise Growth of Life Insurance Micro-insurance Policies in India

Group	Year	Public Sector	Growth over Previous Year	Private Sector	Growth over Previous Year	Industry	Growth over Previous Year
G_1	2007-08	854615	----------	83153	--------	937768	----------
	2008-09	1541218	0.803406	610851	6.346109	2152069	1.294884
	2009-10	1985145	0.288036	998809	0.635111	2983954	0.386551
	2010-11	2951235	0.48666	699733	-0.29943	3650968	0.223534
	2011-12	3826783	0.296672	793660	0.134233	4620443	0.265539
	CAGR	***34.96***		***57.02***		***37.57***	
	C.V.	***0.52***		**0.53**		***0.49***	
G_2	2012-13	2951235	-0.22879	695904	-0.12317	5036139	0.089969
	2013-14	4340235	0.47065	561339	-0.19337	2767159	-0.45054
	2014-15	2205820	-0.49177	416027	-0.25887	816368	-0.70498
	2015-16	452291	-0.79496	458655	0.102465	910946	0.115852
	2016-17	480892	0.063236	475269	0.036223	956161	0.049635
	CAGR	**-30.43**		***-7.34***		***-28.27***	
	C.V.	**0.79**		***0.21***		***0.87***	

Note: Total Premium Exclude specialized insurers and Standalone Health Insurers

Source: IRDA Annual Reports of various Years

Table 2 reveals that the total micro insurance life policies increased from 937768 in 2007-08 to 4620443 in 2016-17 registering a growth of 37.57 per cent during G_1 period of the study. During 2008-09, the industry registered a growth of 1.29 per cent over 2007-08. In 2009-10, 2010-11 and 2011-12, the industry registered a growth of 0.38 per cent 0.22 per cent and 0.26 per cent respectively over previous year. Sector-wise during G_1 period the total micro insurance policies of public sector life insurer increased from 854615 in 2007-08 to 3826783 in 2016-17. LIC registered a growth of 34.96 per cent during the G_1 period of the study. The public sector showed a positive growth in all the years of G_1 period. The total policies of private sector increased from 83153 in 2007-08 to 793660 in 2016-17. The private sector registered a growth of 57.02 per cent during the period of the study. In 2008-09, 2009-10 and 2011-12 the private sector registered a positive growth of 6.34 per cent, 0.63 and 0.13 per cent respectively over previous year but in 2010-11 the private sector recorded a negative growth of 0.29 per cent. The Coefficient of variation for LIC and private life insurers stood at 0.52 and 0.53 respectively, which showed that growth was more consistent in case of public life insurer as compared to private sector. During G_2 period of the study the total micro life insurance policies decreased from 5036139 in 2007-08 to 956161 in 2016-17. The industry registered a negative growth of 28.27 per cent during the period of the study. Sector-wise the total micro insurance policies of LIC decreased from 2951235 in 2007-08 to 480892 in 2016-17 registering a negative growth of 30.43 per cent during the period of the study. During 2012-13, LIC recorded a negative growth of 0.22 per cent over 2011-12. During 2013-14, LIC registered a positive growth

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of 0.47 per cent. In 2014-15 and 2015-16, LIC registered a negative growth over previous year. However LIC was able to revive in the last year of the study by registering a positive growth of 0.06 per cent. On the other hand the private sector registered negative growth of only 7.34 per cent during G_2 period of the study. During 2012-13 and 2013-14 and 2014-15, the private sector recorded a negative growth of 0.12 per cent and 0.19 per cent and 0.25 per cent respectively. However, the private sector was able to revive during last two years of G2 period of the study by registering a positive growth of 0.10 and 0.03 per cent in 2015-16 and 2016-17 respectively. The Coefficient of variation for LIC and private life insurers stood at 0.79 and 0.21 respectively, which showed that growth was more consistent in case of private to private life insurers as compared to public sector. The Jarque Bera statistic for public (0.62, p=0.73) and private sector (0.18, p=0.90) shows that the data are normally distributed for both the sectors. The Levene's statistic (15.56, p=0.00) also concludes that the assumption of equality of variances is not met. The value of Welch t **(**3.61, p=0.00**)** depicts that there is significant difference in the mean micro-insurance policies of public and private life insurers at 5 per cent level of significance. The Jarque Bera statistic for G_1 of public (0.38, p=0.82) and private (0.61, p=0.73) sector shows that the data are normally distributed for both the groups of public and private sector. The inequality of variances is also verified by Levene's statistic (6.83, p=0.03). The value of Welch t (2.92, p=0.03) depicts that there is significant difference in the mean micro-insurance policies of public and private life insurers during G_1 period at 5 per cent level of significance. The Jarque Bera statistic for G_2 of public (0.42, p=0.80) and private (0.64, p=0.72) sector shows that the data are normally distributed for both the groups of public and private sector. The Levene's statistic (10.80, p=0.00) concludes that the assumption of equality of variances is not met. The value of Welch t **(**2.09, p=0.10**)** depicts that there is no significant difference in the mean micro-insurance policies of public and private life insurers for the G_2 period of the study at 5 per cent level of significance. The Jarque Bera test statistic (0.58, p=0.74) reveals that the differences between two groups of public sector is normally distributed at 5 per cent level of significance. The value of t (0.12, p=0.91) reveals that there is no significant difference in the mean micro-insurance premium of two groups of public sector. during the G_2 period of the study at 5 per cent level of significance. The Jarque Bera test statistic

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Table 2 (a) Mean and Level of Normality of Data for Public and Private Micro- life Insurance Policies through Jarque-Bera Normality Test

Sector/Variables	*Mean*	Normality of Data				
		Skewness	*Kurtosis*	*Jarque-bera test statistic*	*p- Value*	Result
Public sector	2158947	0.17	1.82	0.62	0.73	data is normal at 5% level of significance
Private sector	579340	-0.32	3.14	0.18	0.90	data is normal at 5% level of significance
G_1 group of public sector	2231799	-0.25	1.74	0.38	0.82	data is normal at 5% level of significance
G_1 group of private sector	637241	-0.83	2.56	0.61	0.73	data is normal at 5% level of significance
G_2 group of public sector	2086095	0.21	1.63	0.42	0.80	data is normal at 5% level of significance
G_2 group of Private sector	521438.80	0.78	2.21	0.64	0.72	data is normal at 5% level of significance

Table 2 (b) Computation of Independent t-test to test significance of means

Sector/Variables	*Test of Variances*		*Independent Welch t-test*			
	Levene's statistic	*p-value*	*Value of t*	*Degrees of freedom*	*p- value*	*Result*
Between Public and Private sector of Industry	15.56	0.00	3.61	9.59	0.00	significant at 5% level of significance
Between G_1 Group of Public and Private Sector	6.83	0.03	2.92	4.67	0.03	Significant at 5% level of significance
Between G_2 Group of Public and Private Sector	10.80	0.00	2.09	4.03	0.10	Not significant at 5% level of significance

Source: Author's own calculation

Table 2 (c) Computation of Paired t-test to test significance of means

Sector/Variables	*Normality of differences between pairs*				*Paired t- test*					
	Skewness	*Kurtosis*	*Jarque-bera test statistic*	*p- Value*	*Correlation*	*p-Value*	*Value of t*	*Degrees of freedom*	*p-value*	*Result*
Between G1 and G2 Group of Public Sector	0.12	1.34	0.58	0.74 data is normal at 5% level of significance	-0.83	0.00	0.12	4	0.91	Not significant at 5% level of significance
Between G1 and G2 Group of	-0.84	2.52	0.63	0.72 data is normal	-0.97	0.00	0.57	4	0.59	Not significant

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Private Sector				at 5% level of significance						at 5% level of significance

Source: Author's own calculations

(0.63, p=0.72) reveals thatthe differences between two groups of private sectors is normally distributed at 5 per cent level of significance. The value of t (0.57, p=0.59) reveals that there is no significant difference in the mean micro-insurance policies of two groups of private sector during the G_2 period of the study at 5 per cent level of significance.

Sector-wise Performance of Micro-life Insurance Agents

According to new regulations released in 2015, the micro-life insurance agents include NGOs, SHGs, MFIs, Business Correspondents and other micro-insurance agents. The performance of micro-life insurance agents is assessed by the average life insurance business procured by them for their company. To see the performance of micro life insurance agents for different years, average business per micro insurance agent has been calculated and given in Table 3.

Table 3: Performance of Micro-Life Insurance Agents in India on the Basis of Total Premium and Total Policies

Period	**Year**	***PUBLIC SECTOR***		***PRIVATE SECTOR***		***MICRO-INSURANCE INDUSTRY***	
		Performance on the basis of Micro-life insurance Premium	***Performance on the basis of Micro-life insurance Policies***	***Performance on the basis of Micro-life insurance Premium***	***Performance on the basis of Micro-life insurance Policies***	***Performance on the basis of Micro-life insurance Premium***	***Performance on the basis of Micro-life insurance Policies***
G1	2007-08	38726.83	205.14	50,000	198.93	39770	204.57
	2008-09	46919.50	231.86	89,000	1013.02	50435.17	296.83
	2009-10	189508.00	251.09	109000	1297.15	182368.48	343.93
	2010-11	126550.39	303.50	96,900	923.13	124411.84	348.30
	2011-12	91836.91	331.43	77,000	634.42	90393.92	361.05
G2	2012-13	65333.92	193.80	55,800	381.52	64318.49	295.34
	2013-14	46930.98	235.86	56,110	338.97	47689.38	137.96
	2014-15	8463.95	113.82	84,600	281.86	13854.95	39.14
	2015-16	10518.89	24.35	14,300	54.16	11729.33	33.68
	2016-17	8223.04	24.91	14,000	29.89	10856.53	27.16

Source: IRDA Annual Reports of various Years

Table 3 reveals that during the initial year of the study (2007-08), the average premium per micro-insurance agent was `39770. After 2007-08, the average premium per micro-insurance agent increased up to 2009-10 and reached to `182368.48 in 2009-10. After 2009-10, the average premium declined to `90393.92 in 2011-12. In the initial year of $G_2$ period (2012-13), the premium per micro-insurance agent was `64318.49. After 2012-13, the premium per micro insurance agent started declining and reached to `10856.53 in 2016-17. Sector-wise premium per micro insurance agent in LIC increased up to 2010-11 and reached to `126550.39in 2010-11 from `38726.83 in 2007-08. However during 2011-12, premium per micro-insurance agent declined to `91836.91. During 2012-13 the premium per micro-insurance agent was 65333.92 which declined to `46930.98 in 2013-14. After 2013-14 the premium per agent again declined and reached to `8223.04 in 2016-17. In case of private sector the premium per agent increased to `109000 in 2009-10 from `50000 in 2007-08. After 2009-10 the private sector showed a decline in premium per agent up to last year of study. In 2016-17 the premium per agent reached to `14000.If we look at the micro-insurance policies per agent we find that during G_1 period, the policy per agent increased from 204.57 in 2007-08 to 361.05 in 2011-12. During G_2 period, the policies declined to 27.16 in 2016-17 from 295.34 in 2012-13. Sector-wise, LIC showed a rising trend by increasing its policies per agent during G_1 period. The policy per agent of LIC increased from 205.14 in 2007-08 to 303.50 in 2011-12. However, during G2 period the policy per agent increased to 235.86 in 2013-14 from 193.80 in 2012-13. After 2013-14 the policy per agent for LIC started declining and reached to 24.91 in 2016-17.

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On the other hand the policy per agent in case of private sector increased to 1297.15 in 2009-10 from 198.93 policies in 2007-08.After 2009-10 the private sector showed a declining trend and policy per agent reached to 634.42 in 2011-12. During entire G_2 period the policy per agent showed a declining trend and policy per agent reached to 29.89 in 2016-17 from 381.52 in 2012-13.

Development of Micro-life Insurance Industry in India

The development of micro-life insurance industry can be accessed through two parameters namely micro-life insurance density and penetration. There are several factors which affects the demand for micro-life insurance in the country. The major factors are income of people, level of education in rural areas and rate of inflation. Therefore, an effort has been made in Table 4 to study development of micro-life insurance through density and penetration in the country.

Table 4 reveals that the micro life insurance density in India declined from ` 0.31 in 2008 to `0.30 in 2016. The micro life insurance density showed a declining trend in all the years of the study except 2009, 2015 and 2016. During 2009, the micro life insurance density showed a very high positive growth of 335.48 per cent over 2008. After 2009, the micro life insurance density continued to decline up to 2014. After 2014, the micro-life insurance density showed a positive growth of 8.70 per cent and 20.00 per cent during 2015 and 2016 respectively. It means that per capita premium for micro life insurance industry started increasing after 2014.

Table 4: Life-micro Insurance Density and Penetration in India

Year	Micro- life insurance Premium (` crores)	Population (in Crores)	Micro-life insurance density (`)	Growth (%)	Nominal Gross Domestic Product (`crores)	Micro-life insurance Penetration (%)
2008	36.56	115.02	0.31	_____	530356.70	0.01
2009	158.22	116.62	1.35	335.48	610890.30	0.03
2010	130.40	118.6	1.09	-19.26	724886.00	0.02
2011	115.67	121.05	0.95	-13.09	873603.90	0.01
2012	109.67	121.33	0.90	-5.26	994663.60	0.01
2013	95.65	122.30	0.78	-13.33	1123664.00	0.01
2014	28.89	123.88	0.23	-70.51	1243375.00	0.00
2015	31.71	125.40	0.25	8.70	1367533.00	0.00
2016	38.21	126.89	0.30	20.00	1525103.00	0.00

Source: IRDA Annual Reports of various Years

The second important parameter of development of micro life insurance is penetration. The same table reveals that India's micro life insurance penetration is very low. During 2008, it was 0.01 per cent which rose to 0.03 per cent in 2009 but again declined continuously and reached to nil (0.00%) during 2016. It means that the receipts of micro-insurance premium by the life insurance industry declined with the increase of the GDP of India.

Impact of Number of Micro-Life Insurance Policies and Micro-Life Insurance Agents on Total Micro-Life Insurance Premium of Life Insurance Industry

To analyze the impact of total micro-insurance policies issued and total micro-insurance agents (both taken as independent variables) on total premium (taken as dependent variable) of life insurance industry, the multiple regression analysis has been used. Before conducting the analysis, the main assumptions of multiple regressions have been tested through various statistical tests. The assumption of normality of standardized residuals has been verified through Jarque-Bera Test (Table 5). The calculated value of Jarque-bera statistic (2.06, p=0.35) reveals that the standardized residuals are normally distributed at 5 per cent level of significance. The calculated value of F (6.57 p=0.02) is statistically significant at 5 per cent level of significance which shows that the linear relationship exists among dependent and independent variable. Hence, the model used in this problem is valid. In our problem the calculated value of Durbin-Watson statistic is 2.01 which confirm that no auto correlation exists in the data. The next assumption of multiple regression analysis is that there should not be any multicollinearity in data. This assumption is tested through value of Tolerance and Variation Inflation Factor. In our problem Tolerance value is 0.88. On the other hand the calculated value of Variation Inflation Factor is 1.13. It reveals that there is no Multicollinearity in the data. To test homoscedasticity, the White test has been used. The calculated value of White statistic (obs*R^2=3.73, p=0.57) shows that the variance of error term in regression model is constant.. All the values of Cook's Distance (Table 6) are less than 1 which reveals that there is no significant outlier present in the data. The multivariate regression analysis is presented in Tables 8 and 9.

The analysis reveals that the calculated value of R is 0.808 which shows that there is very high degree of correlation exists between studied variables. The value of adjusted R

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square is 0.652 which means that 65.20 per cent variation in the total premium is explained by two independent variables namely total micro-life insurance policies issued and total number of micro-insurance agents. The developed regression equation is as follows:

The Regression Equation= $Y = a + \beta_1 (X_1) + \beta_2(X_2) \ldots\ldots + \beta (Xn)$

Where

Y= Dependent Variable a= Constant β_1= Unstandardized coefficient β_2= Unstandardized coefficient X_1= number of Policies X_2= number of Agents

Table 5: Level of Normality of Standardized Residuals for Micro-Life Insurance Industry through Jarque-bera Normality Test

Residual value	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
	-.61727	-.97056	1.99201	.68619	-.45814	-.92205	.37565	-.12596	-.08042	.12056
Jarque Bera Statistic	**2.06 p=0.35 normal at 5 per cent level of significance**									

Table 6: White Test for Heteroskedasticity.

Test	obs*R^2 (White Statistic)	p-value	Result
White test	3.73	0.58	homoscedasticity at □ = 0.05

Table 7: Calculated values of Cook's Distance

Cook's Distance	.27306	.12758	.33167	.04080	.04303	.38219	.00793	.00195	.00118	.01202

Table 8: Regression Statistics Model Summary and Calculated Value of Durbin-Watson

Regression Statistics Model Summary				**Calculated Value of Durbin-Watson**
R	**R Square**	**Adjusted R square**	**Standard error of the estimate**	
0.808	0.652	0.553	3402.10	2.01

Based on Table 7 we can derive the following equation:

Total Micro-life insurance premium= 1625.033+0.003(Number of Agents) -0.018((Number of Policies)

Table 9: Multiple Regression Analysis Representing Impact of number of Agents and Policies on Total Micro-life insurance Premium of Industry

Model	**COEFFICIENTS**			t	p-value	F-Value	p-value	Collinearity statistics	
	Unstandardized Coefficients		Standardized Coefficients			6.57	0.02	Tolerance	Variation Inflation Factor
	B	Standard Error	Beta						
Constant	1625.033	3406.62		0.477	0.64				
Polices	0.003	0.001	0.79	3.352	0.01			0.88	1.13
Agents	-0.018	0.126	-0.03	-0.145	0.88			0.88	1.13

Dependent Variable: Life Micro-Insurance Premium

The value of t for policies (3.352, p=0.01) reveals that the number of policies issued has statistically significant impact on total premium at 5 per cent level of significance. It means that with every additional one unit of policies the premium may be increased by `300. Thus, we can conclude that the total premium is independent of number of new policies issued. The t-value for number of agents (-0.145, p=0.88) depicts that the number of agents has no significant direct impact on total premium at 5 per cent level of significance. Hence, we can conclude that the the total premium is independent of number of offices

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IV. CONCLUSIONS AND SUGGESTIONS

From the above discussion, it is concluded that there is much scope for the development of micro life insurance industry in the country as the micro life insurance penetration and density in the country is very low. In terms of premium LIC and private sector register positive growth in G_1 period of the study. During G_2 period LIC registers a negative growth as similar to industry but private sector registers a positive growth. In terms of policies the industry registers a positive growth during G_1 period and negative growth during G_2 period. A similar trend is seen in case of total micro insurance policies irrespective of sector. The regression analysis reveals that the micro insurance policies remain a major source of premium income for micro life insurance industry. Further, the performance of public sector agents in terms of micro insurance premium per agent is found to be better than private sector. Moreover, total micro insurance policies per agent are more in case of private sector than that of public sector. It is therefore suggested that IRDA should start a mass campaign to educate rural and low-income people in urban areas about the need of insurance. Women self Help Groups in the country should be encouraged to take micro insurance. Further, the micro insurance agents should be trained properly to understand the needs of people living at the bottom of economic pyramid of the society so as to motivate them to take life insurance policies. The life insurance companies should also enhance their network in rural and semi-urban areas in the country to facilitate micro insurance.

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