

## **Determinants of Insurance Investment: A case study of Life Insurance Corporation of India**

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### **ABSTRACT**

*Indian insurance markets have changed radically and deeply in the last countable years. Deregulation, globalization of insurance institutions, intensified competition, electronic commerce, bancassurance, and the emergence of new risks are among the challenges confronted by insurance markets. These trends pose both global and local challenges for insurance firms as key advancement in insurance and financial services markets influence insurance markets on a global scale. The paper endeavoured to link insurance investment decisions with underwriting activities of insurance companies. Although, underwriting and investment are two important and related business activities of insurance companies, impact of underwriting activities on investment for life insurers has not been rigorously examined in the literature. Using a sample of public life insurer, this article conducts an empirical investigation of how underwriting impact investment in the period of 2001–2014. The result of study suggests that premium and claim is significantly influenced the investment of insurance sector. In the aftermath of expanding liberalization in the insurance industry together with the worldwide financial crisis has posed a great deal of challenges for insurance regulatory authorities in monitoring investment of insurance companies. Researcher believes the current paper provides some helpful bits of knowledge in this vein.*

**Keywords:** Insurance, Investment, Underwriting.

### **1. Introduction**

The life of a human is loaded with risks which can be certain or uncertain in nature. Insurance is the compelling answer for lessen these risks. Insurance, becoming one of the exigent financial services just as banking, mutual funds and wealth

management, possesses an important position in financial sector of economy. The Historical perspective of insurance sector uncovers that nationalisation had given flair of risk to number of problems in area of operational efficiency, image, productivity,

and quality of portfolio, which raised the urgency for insurance sector reform for creating more efficient and competitive social security system suitable to requirement of economy (Pal, 2007) (Sinha, 2002). The year 1999 saw upheaval in the Indian insurance sector, as major sea changes took place with ending of government monopoly, and passage of Insurance Regulatory and Development Authority (IRDA) bill, lifting entry restriction for private players and sanction to foreign players to enter the market with some limit on foreign ownership (Haridas, 2011) (Gulati, 2007).

Insurance sector has undergone a phenomenal change after liberalisation. Earlier, Life Insurance Corporation of India (LIC) was the only means for insurance. But now days, flair of wind change, private sector has been shown tremendous growth in terms of better customer service and aggressive marketing strategies, and give better competition to LIC. In spite of these, LIC rules the roost with a market share of about 70 per cent and become unshakable mainly due to its brand & its sheer reach. LIC has powerful network of coverage, launching attractive advertisement at regular interval to create awareness among general public and introducing phenomenal business strategies by offering colourful scheme products.

At present, there are 24 life insurance companies operating in the country and 28 general insurance companies (including the Export Credit Guarantee Corporation and Agriculture Insurance Corporation of India). There are five standalone health insurance companies Star Health & Allied Insurance Co., Apollo Munich Health Insurance Co., Max Bupa Health Insurance Co., Religare Health Insurance Co., and Cigna TTK Health Insurance Co., falls under preview of general insurance companies. General Insurance Corporation of India (GIC) acts as a national reinsurer for Indian insurance companies. The insurance sector is a colossal one and growing at healthy rate. In life insurance business, India is ranked 11<sup>th</sup> among the 88 countries, for which data is published by Swiss Re while India ranks 21st in global non-life insurance markets. India's share in global life insurance market was 2.00 per cent during 2013. However, the share of Indian non-life insurance premium in global non-life insurance premium was small at 0.66 per cent. Since the passage in 1999 of the Insurance Regulatory and Development Authority Act, which permitted the entry of private and foreign firms into the insurance sector, the market share of the state-run firms has decreased to 71% (2012-13) for life insurance and to 56% (2012-13) for non-life insurance. (IRDA annual report, 2013-14)

A well-developed and evolved insurance sector is a boon for economic development as it provides long-term funds for infrastructure development while simultaneously strengthening the country's risk-taking ability (Mitra & Ghosh, 2010). Life insurance and non-life insurance have accumulated a significant amount of fund over time, which can be invested productively in the economy. The mutual dependence of insurance and capital market plays an instrumental role in channelling funds and investment capabilities to augment the development potential of the Indian economy. Investment analysis give complete picture on efficiency with which fund entrusted to management has been deployed. In addition to these, this attempt to furnish relevant information for its various users like creditors, bankers, financial institutions, equity shareholder, suppliers, customers and government etc., for their decision making.

Investment management is the critical area of operation in any financial institution, in any insurance company, which has to generate reserve for claim that might arise (and over a period, a large corpus of fund is build up) keeping in view the different risk level, regulations and a variety of investment objective implicit in mind of policyholders and shareholders. (Vaidyanathan, 2001) Insurance companies

invest their shareholder's funds, policyholder's fund and other temporally available financial resources, which have a valuable contribution to firm as well as to economy (Palande, Shah & Lunawat, 2003). Investment earnings made by insurance firms make a valuable contribution to their operating results, thereby improving their competitiveness (Lomott, 2011). Insurance investment activity will also be diversify the firm's capital base and hence enhance its ability to settle claims when they occur (Kakuba, 2007). It is therefore, necessary to study the investment management of Life Insurance Corporation of India (LIC) after the liberalization policy regime and as also the changes that might have occurred or any restructuring that might have been done by the LIC in the wake of entry of private players in the life insurance sector. Researcher believes that rigorous examination can shed light on the relationship between insurers' underwriting and investment activities. Thus the evidence on the linkage between insurers' underwriting and investment activities should be of significant interest to regulators, investors, policyholders and insurance managers, especially when insurance investment pattern has been going through regulatory consideration from last countable years.

## 2. Literature review

Bedi & Singh (2011) evaluated the overall performance of life insurance industry between pre and post economic reform era, covering the period 1980 to 2009. The study revealed that there is an enormous improvement in the performance of Indian life insurance industry due to the policy of LPG. In addition to this, there is also a huge change in the investment pattern of LIC, Which show an increasing trend toward the investment in stock market by LIC from 60% to 93% from 1980 to 2009 due to the effective regulation of SEBI and increasing transparency of stock market.

Cummins and Venard (2008) illustrated that the important global trends are the increasing sophistication of insurance products, the globalization of risk diversification through reinsurance, and the emergence of mega-financial intermediaries. On the side, the important local differences are political, legal and cultural component as well as differences in financial markets, taxation, regulatory system, insurance investment strategies and insurance distribution systems.

Chaudhary & Kiran (2011) studied the recent trend in life insurance industry in term of various indicators like growth in total number of offices of life insurers, growth in number of individual agents

working in life insurance industry, number of products and riders, growth of life insurance business and premium income, lapse / forfeiture ratio and settlement of death claims in Indian life insurance industry. The result of study indicated an improved sign of performance in terms of number of offices, number of agents, new business policies, and premium income etc.

Purusothaman (2013) examined the growth of Life Insurance Corporation in India and attributes responsible for growth of investment. For the purpose of research primary data was collected through questionnaire and variables are identified using factor analysis and cluster analysis. The empirical results of study show that cluster I with 44.84% of customers were weak in awareness, advertisement, and speed of decisions and adoption of technology. Cluster II with 43.95% of customers with strong attributes from LIC. The cluster III with a minimum of 11.21% with moderate attributes in assured returns, service behavior, and information about new schemes, transparency and corporate image. In their study they have also found that 50% customers are loyal to LIC.

Panda (2013) analyzed the investment pattern of LIC of India and its risk taking ability while investing in different segments. The paper has used autocorrelation through linear trend

analysis for keeping present and past years in the analysis of segment wise investment with Box Ljung statistics. The result of study indicated a significant increase in trends in case of G-securities segment, S-securities plus housing/infrastructure, corporate sector & project loan while investment in housing and infrastructure alone does not reveal any significant increase.

Parekh (2013) observed that investment function of insurance industry in India is not so vibrant when compared with global counterparts. Therefore, he has suggested government to recognize the importance of insurance sector in financial landscape and introduce more fiscal stimulus and tax incentive to strengthen its role in saving mobilization.

Basu (2013) asserted that investment function cannot be taken as incidental to but crucial to business of non-life insurance. Investment management in general insurance industry is at the cusp of a new inflection point with recent implementation of IRDA (Investment Regulation) 2013, coupled with the expectation of passing insurance bill in parliament. Author believed that favorable global and domestic macro-economic factors will demand for high level of efficiency in portfolio management to foster the profitability of operation, paving the way for higher insurance penetration in country

Jawaharlal (2013) emphasized that investment have to be managed with a high level of dexterity which lead to never failure of insurance companies to honor the claim when incurred. Author has suggested that deployment of funds should be strictly regulated which will avoided all chances of defaulting. In addition to this, national priorities also have to keep in mind while setting sectorial limits.

Vaidyanathan & Sriram (2000) expressed the views on the regulatory framework for investments of insurance and pension funds in India. In addition to this, they have also referred to investment practices in other countries to identified possible changes in investment criteria which will benefit all constituents of industry. They have also recommended investment pattern for regulated asset, which to a great extent based on suggested investment pattern of Malhotra committee(1994) in which a bifurcation was made between regulated asset and free assets, and free assets of life insurance should be invested in approved and unapproved investment based on insurers discretion.

### **3. Objectives:**

1. To study the investment management of insurance companies.

2. To analyze the impact of underwriting operations on investment of LIC.
3. To identify the problems and suggest suitable measures for improvement and development of investment of LIC

#### 4. Hypotheses:

H<sub>0</sub>1.1: There is no significant impact of premium on investment of LIC

H<sub>0</sub>1.2: There is no significant impact of claim on investment of LIC

#### 5. Methodology:

The study is based on the secondary data, collected from authentic and corporate websites, magazines, journals, annual reports and financial statements of LIC and IRDA for the year 2000-01 to 2013-14. To analyze the impact of underwriting activities on investment, multiple regression model has been developed. The investment is dependent variable denoted by “Y” and the predictors (premium and claim) are independent variables or explanatory variables that are designated as X<sub>1</sub>& X<sub>2</sub>. As the number of explanatory variables is two, relationship between the variables is explored by using multiple regression model. Further the analysis has been done through the SPSS.

**Regression Equation**  $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \epsilon$

**Investment** =  $\beta_0 + \beta_1(\text{Premium}) + \beta_2(\text{Claim}) + \epsilon$

Y is the value of dependent variable “Investment”.

X<sub>1</sub> is the value of independent variable “Premium”.

X<sub>2</sub> is the value of independent variable “Claim”.

$\beta_0$  is the regression constant.

$\beta_1$  is the partial regression coefficient for independent variable “Premium”

$\beta_2$  is the partial regression coefficient for independent variable “Claim”

**Sample:** For the purpose of study “Life Insurance Corporation of India” is selected as a sample which represents about 70 percent of life insurance sector in India.

#### 6. Data analysis and interpretation:

Table 1 represents Investment, premium and claim of LIC

Figure 1 represents Growth rate of investment, premium and claim of LIC

It is apparent from the table 1 that investment has shown a rising trend since 2000-01 to 2013-14 and investment increased from 193282.99 in 2000-01 to 1574296.00 in 2013-14. It is also observed from the table that premium has been showing an increasing trend since 2000-01

to 2013-14 and premium increased from 34892.02 in 2000-01 to 236942.30 in 2013-14. Similarly, claim has been showing an increasing trend since 2000-01 to 2013-14 except for year 2008-09 and claim increased from 14036.84 in 2000-01 to 216329.00 in 2013-14. It is clear from chart 1 that growth rate of investment, claim and premium are showing mix trend. The highest growth rate was 34.4 percent in case of investment in year 2003-04, while premium have highest growth rate 42.7 in year 2001-02 and claim have highest growth rate 57 in year 2006-07. Lowest growth rate was 10.4 in case of investment in year 2011-12, while premium have negative growth rate -0.2 in year 2011-12 and claim have negative growth rate -7.2 in year 2008-09.

Table 2(a) represents the Model Summary

The value of  $R^2$  represents the portion of variation of the dependent variable Y accounted for by the independent variables in regression model. The  $R^2$  of '0' indicates no relationship between the predictor's variables in the model and dependent variable whereas  $R^2$  of 1 indicates that 100% of the variability of dependent variable has been accounted for by the predictors. Here in the table 2(a)  $R^2=99.7\%$  indicating a very strong predictability of a regression model which implies that a relatively high proportion of the variation of the dependent variable

investment is accounted for by the independent variables (premium and claim) in this regression model.

Table 2(b) is the ANOVA table

The  $F$ -ratio in the ANOVA table tests whether the overall regression model is a good fit for the data. For multiple regression an analogous test makes use of  $F$  statistic. The overall significance of the multiple regression model is tested with the hypotheses.

$H_0: \beta_1=\beta_2=0$   $H_a: At least one of the regression coefficients is \neq 0$

Table 2(b) shows the analysis of variance (ANOVA) of the variables with  $f$  values of 854.44(Sig. 000) for investment which clearly shows that there is a strong relationship between the dependent variable (investment) and the independent variables (premium and claim) at 5 % levels (i.e., the regression model is a good fit of the data).

Table 2 (c ) represents the coefficients.

As the value of investment is dependent on more than one independent variable so the partial regression coefficient occurred. The partial coefficients are analogous to  $\beta_0$  which is the slope of regression model. The partial regression coefficients and the regression constant of a multiple regression

model are population values and are unknown.

$$Y \text{ (Investment)} = -39657.300 + (3.185 \times \text{premium}) + (5.011 \times \text{claim}) + \varepsilon$$

The result shows the coefficient of  $X_1$ (premium) as 3.185, which means that single unit change in the premium would result in a predicted increase of 3.185 units in the investment of LIC, all other variables being held constant. Premium have significant positive impact on investment of life insurance corporation of India as reflected by its p value (.000) which is less than 0.05, which leads to rejection of null hypothesis.

The coefficient of  $X_2$  (claim) is 5.011, which means that single unit change in the claim would result in a predicted increase of 5.011 units in the investment, all other variables being held constant. Claim have significant positive impact on investment of Life Insurance Corporation of India as reflected by its p value (.000) which is less than 0.05, which leads to rejection of null hypothesis.

#### **Assumption of Multiple Regression analysis:**

Multiple regression relies upon certain assumptions about the variables and error term used as a part of the analysis. At the point, when these assumptions are not met

the outcomes may not be reliable, bringing about a Type I or Type II error, or over- or under-estimation of significance or effect size(s) (Osborne and Waters, 2002). Accordingly, it can only be appropriate to use multiple regression if data "passes" three basic assumptions that are required for multiple regression to give a valid result i.e. Multicollinearity, Autocorrelation and Normality.

Multicollinearity- the presence of perfect or exact, linear relationship among some or all independent variables of regression model. Multicollinearity generally identified through VIF or Tolerance level. The VIF is an index of the amount that the variance of each regression coefficient is increased over that with uncorrelated explanatory variables (Keith, 2006). At a point when a explanatory variable has a strong linear relationship with other explanatory variables, the related VIF is large and is confirmation of multicollinearity (Shieh, 2010). The rule of thumb for a large VIF value is ten (Keith, 2006)(Shieh, 2010). Tolerance measures the influence of one independent variable on all other independent variables. Tolerance levels for correlations range from zero (no independence) to one (completely independent) (Keith, 2006). Small values for tolerance and large VIF values show the presence of multi-collinearity (Keith,

2006). From table 3, it was observed that all VIF values are lies between 1-10 as well as TOL inclines towards 1. Therefore there is non-existence of multi-collinearity.

Table 3 represents the Collinearity Statistics

Autocorrelation- is correlation between members of series of observation ordered in time or space. The classical linear regression assumes independence of observations or independence of residuals, that the disturbance term relating to any observation is not influenced by disturbance term relating to any other observation. The most commonly used test to detect serial correlation is that developed by statisticians Durbin and Watson, popularly known as the Durbin- Watson d statistic. As a rule of thumb the value of Durbin- Watson d statistic should be the value lie between 1-4(Gujarati, Porter & Gunasekar, 2009). From table 1, it is observed that the Durbin-Watson value is 1.940, which is lie between 1-4. Therefore, there is non-existence of autocorrelation.

Table 4 represents the Autocorrelation.

Normality-the errors should be normally distributed. Technically, normality is essential just for the t-tests to be valid; estimation of the coefficients just obliges that the errors be identically and independently distributed. Finally, you need to check that the residuals (errors) of the

regression line are approximately normally distributed. Histogram and Normal P-P Plot are more demanding methods to spot deviations from normality, and are moderately simple to interpret as departures from a straight line (Ballance, n.d).In this paper we use Normal P-P Plot which shows that errors are normally distributed.

Figure 2 represents the Investment

## 7. Conclusion

India is firmly on the path of reforms since 1991. Financial operators are being liberalised to take decisions in a developed and regulated environment and assume responsibility for their decisions. The time has come when we have to give similar freedom to insurance industry to invest their funds in assets they consider appropriate, keeping in view the interests of their clients and the opportunities available in the environment. However, the environment should be well developed and regulated so that investment manager enjoys investing. Otherwise, insurance sector would soon find their investment choices restricted and the accessible alternatives would not provide them an opportunity to fabricate a protected and adjusted portfolio. Notwithstanding, this freedom needs to be painstakingly aligned to dodge any untoward occurrences and make the reforms sustainable. Underwriting and

investment are two essential and related business activities of insurance companies. Investment decision is influenced by underwriting activities of insurance companies. In this paper an attempt has been made to assess the impact of premium and claim on investment of insurance companies. It is found in the study that on general premise, a relatively high proportion of the variation of the dependent variable investment is accounted for by the independent variables (premium and claim). The result of first hypotheses uncovered that there exists a statistically significant impact of premium on investment of Life Insurance Corporation of India. The result of second hypotheses stated that there exists a statistically significant impact of claim on investment of Life Insurance Corporation of India. The paper serves as the first methodical investigation of the impact of underwriting activities on investment. In particular, it is of interest to see whether insurers embrace an integrated approach to considering their underwriting profile so that risk of unavailability of fund can be mitigating. In the aftermath of expanding liberalization in the insurance industry together with the worldwide financial crisis has posed a great deal of challenges for insurance regulatory authorities in monitoring investment of insurance companies. Researcher believes the current paper provides some helpful bits

of knowledge in this vein.

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#### List of Table:

**Table-1: Investment, premium and claim of LIC**

| Years   | Investment (Cr) | Premium (Cr) | Claim (Cr) |
|---------|-----------------|--------------|------------|
| 2000-01 | 193282.99       | 34892.02     | 14036.84   |
| 2001-02 | 245387.72       | 49821.91     | 17476.64   |
| 2002-03 | 258732.22       | 54628.49     | 20530.39   |
| 2003-04 | 347959.14       | 63167.60     | 23923.75   |
| 2004-05 | 418288.99       | 70901.90     | 28440.45   |
| 2005-06 | 463771.14       | 90792.22     | 33927.11   |
| 2006-07 | 559200.56       | 127822.84    | 53286.46   |

Source: IRDA Annual reports from 2000-01 to 2013-14

**Table-2(a): Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .997 <sup>a</sup> | .994     | .992              | 39771.87                   |

Source: Computed through SPSS

**Table-2(b): ANOVA<sup>b</sup>**

| Model      | Sum of Squares | Df | Mean Square | F      | Sig.              |
|------------|----------------|----|-------------|--------|-------------------|
| Regression | 2.703E12       | 2  | 1.352E12    | 854.44 | .000 <sup>a</sup> |
| Residual   | 1.740E10       | 11 | 1.582E9     |        |                   |
| Total      | 2.721E12       | 13 |             |        |                   |

Source: Computed through SPSS

a. Predictors: (Constant), Claim, Premium

b. Dependent Variable: Investment

**Table-2(c): Coefficients**

| Model      | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
|            | B                           | Std. Error | Beta                      |        |      |
| (Constant) | -39657.300                  | 27725.933  |                           | -1.430 | .180 |
| PREMIUM    | 3.185                       | .492       | .486                      | 6.469  | .000 |
| CLAIM      | 5.011                       | .717       | .525                      | 6.986  | .000 |

Source: Computed through SPSS

**Table 3: Collinearity Statistics**

| Collinearity Statistics |      |
|-------------------------|------|
| Tolerance               | VIF  |
| .103                    | 9.69 |
| .103                    | 9.69 |

Source: Computed through SPSS

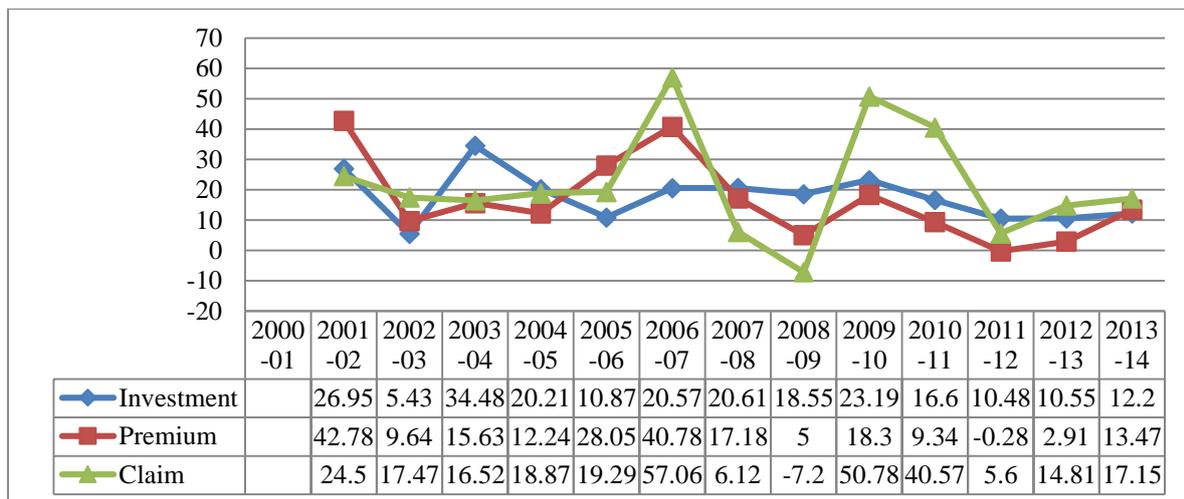
**Table 4: Autocorrelation**

| Autocorrelation |       |
|-----------------|-------|
| Durbin-Watson   | 1.940 |

Source: Computed through SPSS

List of Figures:

**Figure 1: Growth rate of investment, premium and claim of LIC**



Source: calculated and prepared by researcher on the basis of above data

Figure 2: Pictorial representation for INVESTMENT

