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, banc assurance, 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 endeavored 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 2004–2017. 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 nationalization 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 11th 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 2016.

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% (2015-16) for non-life insurance. (IRDA annual report, 2016-17) 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 nonlife 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 gives complete picture on efficiency with which fund entrusted to management has

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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
policyreime 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.

Review of Literature

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, theglobalization of risk diversification through
reinsurance, and the emergence of megafinancial
intermediaries. On the side, the important local differences
are political, legal and cultural component as well as
differences in financial markets, taxation, regulatory system,
isurance 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 strongattributes 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
recentimplementation 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 Jawaharal (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 & Srim (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

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practices in other countries to identify 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.

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.

Hypotheses
H01.1: There is no significant impact of premium on investment of LIC
H01.2: There is no significant impact of claim on investment of LIC

2. 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 2004-05 to 2016-17. 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 X1& X2. 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 = β0 + β1X1 + β2X2 + β3 + ε

Investment = β0 + β1 (Premium) + β2 (Claim) + ε

Y is the value of dependent variable “Investment”, X1 is the value of independent variable “Premium”, X2 is the value of independent variable “Claim”. β0 is the regression constant. β1 is the partial regression coefficient for independent variable “Premium” β2 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.

Table 1: Investment, premium and claim of LIC

<table>
<thead>
<tr>
<th>Years</th>
<th>Investment (Cr)</th>
<th>Premium (Cr)</th>
<th>Claim (Cr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-11</td>
<td>193282.99</td>
<td>34892.02</td>
<td>14036.84</td>
</tr>
<tr>
<td>2011-12</td>
<td>245387.72</td>
<td>49821.91</td>
<td>17476.64</td>
</tr>
<tr>
<td>2012-13</td>
<td>258732.32</td>
<td>54628.49</td>
<td>20530.39</td>
</tr>
<tr>
<td>2013-14</td>
<td>347959.14</td>
<td>63167.60</td>
<td>23923.75</td>
</tr>
<tr>
<td>2014-15</td>
<td>418288.99</td>
<td>70901.90</td>
<td>28440.45</td>
</tr>
<tr>
<td>2015-16</td>
<td>463771.14</td>
<td>90792.22</td>
<td>33927.11</td>
</tr>
<tr>
<td>2016-17</td>
<td>559200.56</td>
<td>127822.84</td>
<td>53286.46</td>
</tr>
</tbody>
</table>

Source: IRDA Annual reports from 2004-05 to 2016-17

Table 2(a): Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.997a</td>
<td>.994</td>
<td>.992</td>
<td>39971.87</td>
</tr>
</tbody>
</table>

Source: Computed through SPSS

Table 2(b): ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>2703E12</td>
<td>2</td>
<td>1.352E12</td>
<td>854.44</td>
<td>.000a</td>
</tr>
<tr>
<td>Residual</td>
<td>1.740E10</td>
<td>11</td>
<td>1.582E9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2.721E12</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Computed through SPSS

Table 2(c): Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>39657.300</td>
<td>.92759.33</td>
<td>-.1430</td>
<td>.180</td>
</tr>
<tr>
<td>PREMIUM</td>
<td>3.185</td>
<td>.492</td>
<td>.646</td>
<td>.000</td>
</tr>
<tr>
<td>CLAIM</td>
<td>5.011</td>
<td>.717</td>
<td>.698</td>
<td>.000</td>
</tr>
</tbody>
</table>

Source: Computed through SPSS

Table 3: Collinearity Statistics

<table>
<thead>
<tr>
<th>Collinearity Statistics</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>.103</td>
<td>9.69</td>
<td></td>
</tr>
<tr>
<td>.103</td>
<td>9.69</td>
<td></td>
</tr>
</tbody>
</table>

Source: Computed through SPSS

Table 4: Autocorrelation

<table>
<thead>
<tr>
<th>Durbin-Watson</th>
<th>1.940</th>
</tr>
</thead>
</table>

Source: Computed through SPSS

It is apparent from the table 1 that investment has shown a rising trend since 2010-11 to 2016-17 and investment increased from 193282.99 in 2010-11 to 1574296.00 in 2016-17. It is also observed from the table that premium has been showing an increasing trend since 2010-11 to 2016-17 and premium increased from 34892.02 in 2010-11 to 236942.30 in 2016-2017. Similarly, claim has been showing an increasing trend since 2010-11 to 2016-17 except for year 2017-18 and claim increased from 14036.84 in 2010-11 to 216329.00 in 2016-17. It is clear 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 2013-14, while premium have highest growth rate 42.7 in year 2011-12 and claim have highest growth rate 57 in year 2016. 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 and claim have negative growth rate -7.2 in year 2017-18.

The value of R2 represents the portion of variation of the dependent variable Y accounted for by the predictors.
Here in the table 2(a) R²= 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.

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.

H0: β1=β2=0 Ha: At least one of the regression coefficients is ≠0.

Table 2(b) shows the analysis of variance (ANOVA) of the variables with f values of 854.44(Sig. 0.00) 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).

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 β0 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 (Investment) =-39657.300+ (3.185 x premium) + (5.011 x claim) + ε

The result shows the coefficient of X1(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 X2 (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.

3. 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 an 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 multicollinearity (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 multicollinearity.

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.

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.

4. 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. Under writing and investment are two essential and related business activities of insurance...
companies. Investment decision is influence by underwriting activities of insurance companies.

In this paper an attempt has been made to assess the impact 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.

References