



FACTORS DETERMINING FINANCIAL PERFORMANCE OF LIFE INSURANCE COMPANIES OF INDIA-AN EMPIRICAL STUDY



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ABSTRACT

Life insurance in India is a growth-oriented industry. In the year 2000, life insurance industry has been liberalized and thereafter more than forty years of monopoly with Life Insurance Corporation of India has been over. During post regulatory period, private life insurers have launched many innovations in the industry and at this juncture it has become imperative to study the firm specific factors affecting the overall financial performance of life insurance companies in India. Thirteen life insurance companies, which are fully in operation for the period of ten (10) years from 2003-04 to 2012-13, have been selected for the purpose of study. The linear multiple regression model has been applied for the purpose of study, where ROE has been taken as dependent variable and underwriting risk, liquidity, leverage, volume of capital, tangibility and size have been taken as independent variables. Analysis shows that there is significant positive relationship of underwriting risk and size with financial performance (ROE) of life insurance companies in India under the study. The study also finds there is significant negative relationship between volume of capital and leverage with financial performance (ROE). Finally, the study reveals insignificant positive relationship of tangibility and liquidity with financial performance (ROE).

KEYWORDS: *Financial Performance, Multivariate Model, Liquidity, Tangibility, Underwriting Risk, Leverage, Volume Of Capital, Size.*

INTRODUCTION

In the wake of the liberalization and the globalization of the Indian Economy the financial services sector has come to assume significant importance, and life insurance, being an essential constituent of the financial service sector, will assume special prominence. All financial businesses deal with management of risk, but life insurance companies with their special job of basic risk management, their assets size and relative stability of

cash flow are likely to play a key role in the future development of financial services industry. Indian Insurance industry has been under a nationalized set up with a monopoly for selling and servicing of insurance. The reforms in the life insurance sector leading finally to the opening of life insurance sector for private participation have brought in its wake major changes not only in the design of the products available in the market



but also the manner in which they are marketed. As a result Insurance Regulatory development Authority has been constituted for supervision of the performance of insurance sector. In view of these developments there is bound to be tremendous changes in the factors affecting overall financial performance of life insurance industry in India and a study in this direction is required to be conducted to find out the main determinants of Indian life insurance industry.

REVIEW OF LITERATURE

Although MDA has been utilized in a variety of disciplines as well as practical business world in recent years to study overall financial performance of a business organization, it is not as popular as multiple regression analysis (Altman, 2000). Several previous studies recognize the usefulness of financial statement variables and explore insurance specific ratios as explanatory variables in empirical models to find out difference between low and high risk insurers. For life insurers, the variables included are the age of the company, investment performance, net operating margin etc. Return on equity may be chosen as a ratio of overall financial performance of life insurers. Probably due to better data availability, most of these studies focus on U.S. insurers, so little can be said in general (Das et.al, 2003). After the setting up of IRDA in India, this type of studies can be undertaken on Indian life insurers and results can be compared with the results of studies conducted in insurance industry or other financial sectors across the world. The researcher has, therefore, tried to build up a multiple regression model exploring the firm specific factors determining the financial performance of life insurance companies in India. To estimate the overall financial performance indicator, Doumpos et al, 2012 have relied on seven core financial (criteria) ratios including Return on Assets (Equity/Total Assets, Equity/Net Premium, Technical Reserve/Net Premium, Liquid Assets/Total Liabilities, Underwriting Expenses including Commission/Net Premium Written, Incurred Losses and Loss adjustment expenses/Net Premium Earned) since there is no theoretical guidance for the selection of specific criteria. Actually, the set that has been used is selected on the basis of (a) data availability, (b) previous studies on insurance firms and (c) an attempt to cover various dimensions of the financial profile of insurers and a multi-criteria method has been used in the form of multiple regression analysis to estimate a combined indicator of financial performance of insurance firms.

However, though widely used, ROA is an odd measure because its numerator measures the return to

shareholders whereas its denominator measures the contribution of all investors (Shareholders as well as lenders). The return on equity measures the profitability of equity funds invested in the firm. Because maximizing shareholders' wealth is the dominant financial objective, ROE is the most important measure of performance in an accounting sense. Because ROA and ROE are commonly used measure and it must be remembered that they are accounting rates of return. Hence these measures may be properly referred to as return on book assets and return on book equity. In judging overall financial measures it should be borne in mind that the historical valuation of assets imparts an upward bias to profitability measures during an inflationary period. This happens because the numerator of these measures represents current values, whereas denominator represents historical values (Chandra, 2008). Thus, ROE is less biased from inflationary point of view than total assets of any insurance companies.

There are relevant earlier studies relating to the determinants of overall financial performance of insurance firms in developed countries, while there are few that focus in developing countries. Adam and Buckle (2000) provide evidence that insurance companies with high leverage have better operational performance than insurance companies with low leverage. Charumati (2012) finds that there is a significant negative relationship of financial performance with leverage and equity capital. Significant positive relationship with financial performance has been found in case of size and liquidity and no significant relationship with underwriting risks. Malik (2011) finds that overall profitability of Pakistan insurance companies is significantly and positively influenced by volume of capital, size and tangibility of assets and significantly and negatively influenced by leverage. The study of Ahmed et al (2011) shows that size is significantly and positively related to the financial performance of insurance companies while tangibility of assets and liquidity have also a positive relation to performance of insurance companies but they are statistically insignificant.

Referring to the previous studies, the use of ratio in measuring leverage, liquidity, tangibility and overall Financial/profitability performance is common in the literature finance and accounts. Charumati (2012), Malik (2011), Chen and Wong (2004), Ahmed (2011) and Adam and Buckle (2000) are researchers who have used ratios in measuring insurance companies' financial/profitability performance. Ratio is a relative measure and it permits the comparison of groups of unequal size (Krishna swami and Ranganathan, 2008).

In line with earlier studies, the following are the details of variables selected by the researcher for study:-

OVERALL FINANCIAL PERFORMANCE

There are different ways to measure overall financial performance as mentioned by researchers in previous studies. However, the ratio of profit before tax to shareholders' funds is selected as an indicator of overall financial performance while its numerator measures the return to shareholders and its denominator measures the amounts due to Shareholders.

SIZE OF THE COMPANY

Researchers use different parameters for defining the company size such as, total assets, net premium, etc. Size has a significant impact on financial performance of insurance companies However, most of the researchers use natural log of book value of total assets as size. So for size book value of total assets is considered in this study. Large firms have more resources, more staffs and sophisticated information system that result in high performance (Almajali et al, 2012).

VOLUME OF CAPITAL

After the opening up of insurance sector, there has been influx of more capital and this has enabled the players to expand and open new branches, which, in turn, has increased operating expenses. As a result insurers with more capital will not have any comparative advantage to improve their financial performance ((Charumati , 2012)..Most of the previous studies use book value of equity as volume of capital. In this study, natural log of book value of equity is considered as volume of capital being one of the independent variables.

LEVERAGE

Insurance companies could prosper by taking reasonable leverage risks or could become insolvent if the risk is out of control. Nevertheless more empirical evidence supports the view that leverage risks reduce the performance of the companies. It is a financial ratio that indicates the percentage of firms' assets that is financed with debt. Leverage is measured as total liabilities to total assets (Mehari and Aemiro, 2013).In this study the ratio of total liabilities to total assets is taken as an independent variable.

LIQUIDITY

Liquidity measures the ability of managers in insurance and reinsurance companies to fulfill their immediate commitments to policyholders and other creditors. In other words this ratio measures the firms' ability to use its near cash or quick assets to retire its liabilities. Liquidity ratio in this study is taken as current

assets to current liabilities (Adam and Buckle,2000).However, there are other liquidity ratios that have been taken by other researchers as independent variable for study. In this study, current assets to current liabilities have been taken as an independent variable.

UNDERWRITING RISK

The firm which increases the amount of risks assumed by writing life insurance with a potentially high exposure to loss (e.g., insurance written on lives of elderly) will need to maximize investment earnings , or alternatively introduce other risk management measures such as reinsurance (Adams,1996). This study has taken the ratio of Benefits paid to Net Premium as a measure of underwriting risk. However, the underwriting risks depend on risk appetite of life insurers.

TANGIBILITY

Tangible assets are considered to have an impact on the financial performance because a firm with large portion of fixed assets can easily raise funds at nominal rate of interest and utilizing these funds to raise more new business. According to Ahmed et al (2011), OLS regression analysis has revealed that tangibility of assets has a positive relation to financial performance of insurance companies with statistically insignificant results.

THEORY OF MULTIPLE LINEAR REGRESSIONS (Ordinary least square regression)

A multiple linear regression model is a probabilistic model that includes more than one independent variable. The general multiple linear regression model can be expressed as-

$$Y_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \dots + \beta_k X_{ik} + \epsilon_i$$

Where, $\beta_0, \beta_1, \beta_2, \dots, \beta_k$ are regression co-efficients of predictors $X_{i1}, X_{i2}, \dots, X_{ik}, i = 1, 2, 3, \dots, n$ and ϵ_i is the error term (the difference between scores predicted and scores actually obtained).However, the equation is often conceptualized without this error term (Field,2000).

BASIC ASSUMPTIONS OF MULTIPLE REGRESSION ANALYSIS

Residuals should be normally distributed about the predicted scores on the dependent variable. Error term has a constant variance. Two or more explanatory variables in a multiple regression model should not be highly correlated. There should not be outliers. Outliers with respect to the response variable indicate model misfit (Coaks, 2005).

OBJECTIVE OF THE STUDY

The objective of the study is to determine firm specific factors that will have impact on financial performance of life insurance companies of India.

RESEARCH METHODOLOGY

The study makes an attempt to analyze the firm specific factors affecting financial performance of life insurance companies in India from 2003-04 to 2012-13. Thirteen (13) life insurance companies namely, LIC (only public sector company), BAJAJ ALLIANZ, BIRLA SUN LIFE, ICICI PRUDENTIAL, ING VYSYA, KOTAK MAHINDRA, MET LIFE, SBI LIFE, TATA AIA, MAX N Y and RELIANCE have been selected purposively for the study out of twenty four (24) life insurance companies since these thirteen companies have been in existence during the entire period of study and having age ten years or more. The study is based on secondary data obtained from annual reports of IRDA.

MODEL SPECIFICATION

The linear multiple regression model developed for the study is specified as:-

$$ROE = \beta_0 + \beta_1 UWR + \beta_2 LIQ + \beta_3 TAN + \beta_4 LEV + \beta_5 LnEC + \beta_6 LnTA + \epsilon_i$$

Where,

ROE=Profit before Tax/Shareholders' Fund(Overall Financial Performance) UWR=Benefits Paid/Net Premium, LIQ=Current Assets/Current Liabilities(Liquidity),

TAN=Fixed Assets/Total Assets(Tangibility), LEV=Total Liabilities/Total Assets(Leverage), EC=Book Value of Equity Capital(volume of capital), TA=Book Value of Total Assets(size) and ROE is taken as dependent variable and UWR,LIQ,TAN,LEV,EC and TA are taken as independent variables and ϵ_i is the error term.

HYPOTHESES

To attain the objective of the study, the following null hypotheses (H_0) have been tested:-

- 1) There is no significant impact of underwriting risk on financial performance of life insurance companies.
- 2) There is no significant impact of liquidity on financial performance of life insurance companies.
- 3) There is no significant impact of tangibility on financial performance of life insurance companies.
- 4) There is no significant impact of leverage on financial performance of life insurance companies.
- 5) There is no significant impact of volume of capital on financial performance of life insurance companies.
- 6) There is no significant impact of size on financial performance of life insurance companies.

ANALYSIS OF DATA

The table-1 indicates that mean values of all variables ranges from 0.0206 for tangibility to 13.4577 for size

Table-1 Descriptive Statistics

Parameters	Mean	Std. Deviation
PBT/SF	-.1174	1.22336
BP/NP	.2343	.26701
CA/CL	.9963	.67186
FATOTA	.0206	.02806
TLTOTA	.8730	.15350
BVOFEQ	10.5084	.93687
TA	13.4577	2.05493

The average financial performance as measured by ROE of selected life insurance companies in India during the study period is -0.1174 and the Standard deviation is 1.22336 which implies that there are significant differences among the values of ROE. The table-1 also

indicates that there are no differences among the values of underwriting risks and tangibility and there are differences among the values of liquidity, leverage, volume of capital and size.

Table-2 Analysis of Variance (ANOVA)

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	120.976	6	20.163	34.403	.000 ^a
	Residual	72.087	123	.586		
	Total	193.062	129			

In multiple linear regressions, ANOVA table can indicate whether the mathematical model (multiple regression equation) can accurately explain variation in the dependent variable. The significant value of 0.000 (less than 0.05) provides evidence that there is low probability

that the variation explained by the model is due to chance. It can be concluded by looking at the table-2 that changes in dependent variable result from changes in independent variables and therefore the model is a good fit.

Table-3 Collinearity Statistics

		Tolerance	VIF
1	(Constant)		
	BP/NP	.513	1.949
	CA/CL	.614	1.627
	FATOTA	.413	2.422
	TLTOTA	.518	1.930
	BVOFEQ	.427	2.342
	TA	.282	3.540

SPSS-17 produces various co-linearity diagnostics, one of which is the variance inflation factor (VIF). VIF indicates whether a predictor has strong linear relationship with other predictor(s) and may be defined as $1/(1-R \text{ square})$. Gujarati, 1995 suggests that a value of 10 is a good value at which to worry. Related to the VIF is the tolerance statistics, which is its reciprocal ($1/VIF$). As such value below 0.1 indicate serious problems (Pallant, 2001). To check the assumption of no multi co-linearity,

VIF values from the table-3 shows that these values are less than 10 and it indicates that there probably is not a cause for concern (Field, 2005)

The plot of the residuals of transformed data indicates that the residuals are normally distributed with a mean of zero if the histogram is bell-shaped (Cunningham and Aldrich, 2012). The bell-shape of the histogram reveals that the residuals are normally distributed around their mean of zero.

Table-4 Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Std. Residual	-4.240	3.489	.000	.976	130
Stud. Residual	-4.279	3.754	-.009	1.029	130

By looking at the table-4, it is concluded that residuals are identically distributed with mean almost zero and equal variance and therefore, it appears that the model does not face a problem of heteroscedasticity (Charumati, 2012)

The researcher has chosen Forced entry (or Enter as it is known in SPSS) method of regression in which all predictors are forced into the model simultaneously.

Table-5 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.792 ^a	.627	.608	.76555

The value 0.792 as shown in the "R" column of the table-5 shows a strong multiple correlation coefficient. It represents the correlation coefficient when six independent variables are taken together and compared with the dependent variable. Summary also indicates that the amount of change in the dependent variable is determined by six independent variables. From an

interpretation standpoint the value in the next column, "R Square" is extremely important. The R Square of .627 indicates that 62.7% (0.627×100) of the variance in ROE (Dependent variable) can be explained by six independent variables. It is safe to say that the model has a "good" predictor of ROE if underwriting risk, liquidity, tangibility, leverage, volume of capital and size are known.

Table-6 Multiple Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	b	Std. Error	Beta			
1	(Constant)	-.703	1.180		-.596	.552
	BP/NP	1.059	.352	.231	3.004	.003
	CA/CL	.109	.128	.060	.850	.397
	FATOTA	1.312	3.739	.030	.351	.726
	TLTOTA	-2.110	.610	-.265	-3.459	.001
	BVOFEQ	-.498	.110	-.381	-4.521	.000
	TA	.541	.062	.908	8.760	.000

In multiple regressions, the model takes the form of equation and in that equation there are several unknown quantities (the b-values). The b-values (unstandardised coefficients) and their significance are important statistics to look at .The first part of the table gives estimates for these b-values and these values indicate the individual contribution of each predictor to the model. If b-values are replaced in the equation, the model can be defined as:-

$$ROE = (-) 0.703 + 1.059UWR + 0.109LIQ + 1.312 TAN + (-) 2.110LEV + (-) 0.498VOC + 0.541SIZE$$

From the above equation it can be inferred that, if underwriting risk is increased by 1, ROE is estimated to increase by 1.059 assuming that all other variables to be constant.

Similarly the influence on ROE for every unit increase or decrease in the given other factors can be explained by their coefficients .The negative values for leverage and volume of capital show that as the leverage and volume of capital increase , the ROE will decrease.

FINDINGS ON THE BASIS OF REGRESSION SUMMARY

Independent Variables	Impact on Financial Performance/ ROE(Dependent Variable)	Null Hypotheses	Findings of prior studies
Underwriting risks	Significant and Positive	Rejected	Insignificant and Positive(Charumati,2012),Significant and Negative(Adams and Buckle,2000)
Liquidity	Insignificant and Positive	Accepted	Insignificant and Positive(Charumati,2012,Significant and Negative(Adams and Buckle,2000)
Tangibility	Insignificant and positive	Accepted	Insignificant and Positive(Ayle,2000), Significant and Positive(Malik,2011)
Leverage	Significant and Negative	Rejected	Significant and Negative(Charumati,2012),Significant and Positive(Adams and Buckle,2000)
Volume of capital	Significant and Negative	Rejected	Insignificant and Negative(Charumati,2012),Significant and Positive(Malik,2011)
Size	Significant and positive	Rejected	Significant and Positive(Charumati,2012,Insignificant and Positive(Adams and Buckle,2000),Significant and Positive(Malik,2011)

*Significant at 5% level

CONCLUSION

The study finds that there is significant positive relationship of underwriting risk and size with financial performance (ROE) of life insurance companies in India under the study. There is significant negative relationship between volume of capital and leverage with financial performance. However, there is insignificant positive relationship of tangibility and liquidity with financial performance. As a result, Indian life insurance companies should pay more attention towards size, underwriting risk, volume of capital and leverage for better financial performance. Finally, more empirical studies may be made to identify regulatory, supervisory and macro economic variables affecting the financial performance of life insurance companies in India.

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