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# THE DETERMINANTS OF FINANCIAL PERFORMANCE IN LIFE INSURANCE SECTOR IN INDIA

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## Abstract

This paper attempts to examine the relationship between financial performance and their determinants in the case of Indian life insurance sector. This study is carried out using Correlation and Multiple Regression Analysis for 23 out of 24 companies for 10 years from 2009-10 to 2014-15. The financial performance is indicated by Return on Assets (ROA) and the independent variables chosen are commission, expenses, liquidity, size, solvency ratio, surplus (deficit)/policy holder's liability, tangibility and underwriting risk. The quality of data was assessed using Autocorrelation, Heteroskedasticity, Multicollinearity. The results of the model indicated that commission, size and surplus (deficit)/policy holder' are significantly related to financial performance, commission is negatively related and size and surplus(deficit)/policy holder's liability are positively related to financial performance whereas other factors expenses, liquidity, solvency ratio, tangibility and underwriting risk are not significant related to financial performance.

## 1. INTRODUCTION

Insurance is a legal contract where insurer agrees to indemnify financial loss to the insured may suffer within the scope of the contract. Financially sound, well-regulated and well-developed Insurance sector is an important pillar of financial service industry and essential for economic development of any country. Life Insurance is a long term obligation contract and funds are tied up for longer time horizon. Insurer invests funds in the country's economic development and encourages savings and investment. Life insurance companies needs provide claims in two circumstances one is maturity claims and another is death claims. Due to long term nature of the contract insurance companies should have strong financial position to fulfill its obligation on time. Financial performances of companies are also affected by various determinants. These determinants can broadly be assigned into two groups i.e., internal determinants and external determinants.

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Internal determinants can be influenced by top management and it can be said that these are under control of management of the insurance companies; therefore, finding out impact of select internal determinants on financial performance of insurance companies is essential. The objective of this study is to explore and evaluate the internal determinants affecting the financial performance of life insurance companies in India

## 1.1. Current scenario of insurance industry in India
Post liberalization, significant growth is observed in Insurance Industry of India and it is also expected that it will to reach to US$ 280 billion by FY2020. These expectations can be met when people of the country will have higher personal disposable income along growth in economy. Growth rate of 22.5 % is achieved from last year in gross direct premium in Life insurance sector and in general insurance sector, growth rate of 12 % is recorded in gross direct premium from last year (http://www.ibef.org/industry/insurance-presentation).

Presently, 24 companies in life insurance sector and 29 companies in general insurance are operating in India. Also the limit of foreign direct investment is increase to 49 % from 26 %.

## 1.2. Internal factors
A study found following internal factors but not limiting only these factors are: Leverage, size, premium growth, liquidity, underwriting risk and equity capital were taken as independent variables (Charumathi, 2012). Another study identified Liquidity, Solvency Ratio, Size, Leverage, and Equity Capital Insurance Company's performance (Bawa and Chatta, 2013). Another study considered Leverage, Tangibility, Size, Liquidity, Risk and Growth as independent variables (Boadi *et al.,* 2013).

## 2. REVIEW OF LITERATURE

A study was conducted on 23 Life Insurance Companies of India to analyze the impact of determinants on profitability. The period of the study was 3 years (2008-2009, 2009-2010 and 2010-2011). Multiple regression analysis was used as statistical tool for investigation. Study was conducted to assess the impact on dependent variable i.e. Return on Assets. Independent variable considered in the study were Leverage, size, premium growth, liquidity, underwriting risk and equity capital. The research results depicted that size (natural log of net premium) and liquidity, both had positive and significant impact on profitability of life insurers. Premium growth, leverage and natural log of equity capital had significant and negative impact on profitability of Indian life insurers (Charumathi, 2012).

A study conducted to explore determinants of profitability and its impact on financial performance of Micro-Life insurers in Nigeria. 35 companies were considered as sample and period of study was 2004 to 2009. Net Profit was considered as profitability measure and dependent variable. Ownership structure, Leverage, and Reinsurance were taken as independent variables. Control variables considered were such as: Firm size, Product mix, Age, Interest rate, and Inflation. Generalized Methods of Moments (GMM) was considered as tool for data analysis purpose. Results showed that profitability measure was not affected by few variable such as: ownership structure, leverage and size of firms. Reinsurance was negatively related with profitability. Interest rate and Product mix factors were positively influenced the Net Profit (Olaosebikan, 2013).

Another study was conducted in Pakistan to analyze the effect of independent variables on profitability of insurance companies. Thirty one insurance companies were taken as sample and period of the study was 2006 to 2011. Fixed effects and random effects models were deployed for data analysis. Fixed effects model was appropriate model on relative basis. The results showed that leverage, size, earnings volatility and age of the firm were found to be affecting profitability significantly on the other hand growth opportunities and liquidity were found to be insignificant determinants of profitability. The results obtained from random effects model were different as

obtained from fixed effect model. As per results of random effect model, significant variables were size of firm, age of firm and earnings volatility on the other hand, leverage, growth opportunities and liquidity of firm were found to be in significant (Bilal *et al.,* 2013).

A study was conducted to evaluate the impact of independent determinants on financial performance of life insurance companies in Tunisia. Eight life insurance companies were taken as sample and period of study was 2005 to 2012. Multiple regression models were employed for data analysis. Results showed that three independent variables such as: size, age and growth were the most important determinants of the Return on assets i.e., financial performance. It is also found that Age and Growth variables were positively impact the financial performance, while the Size variable had negative impact on the level of performance. Leverage, Tangibility and Liquidity Risk variables were insignificant in relation to the performance of life insurance Tunisian firms (Derbali, 2014).

Life insurance sector in India had undergone dynamic changes during the last couple of years. Another study investigated the impact of independent factors on financial performance of life insurance companies in India. Thirteen life insurance companies were considered as sample and period of study was from 2003-04 to 2012-13. Linear multiple regression model was employed to analyze the data. Return on Equity (ROE) was considered as dependent variable. Underwriting risk, liquidity, leverage, volume of capital, tangibility and size variables were considered as independent variables. Result showed that there was significant-positive relationship between ROE and underwriting risk and size. It also found that there was significant-negative relationship between ROE and volume of capital, leverage. Tangibility and liquidity had insignificant-positive relationship with ROE (Dey *et al.,* 2015).

## 2.1. Rationale
The life insurance sector is one of the important sector of risk transfer mechanism and social security. Life Insurance Companies undertake long term obligation and therefore, its financial health is very critical to the wellbeing of the general economy at large. Various internal and external determinants affect the financial health of life insurance companies. Internal factors are those factors which can be control by the management their impact can be obtained in desired manner by strategically modifying them. Understanding and Knowledge of the internal determinants that significantly affects the financial performance of the life insurance companies is, therefore, essential not only for the management of the life insurance companies, but also for the other stakeholders.

# 3. RESEARCH METHODOLOGY

### 3.1. Data collection
Data was gathered from financial statements and annual report of the life insurance companies of the six years considered in study. Some data is also taken from internet.

### 3.2. Statistical tools
Correlation and multiple linear regressions were applied to explore the relationship and also to determine the significant effect of internal determinants on financial performance.

### 3.3. Model specification
Following 1 model of multiple regressions was used to evaluate the impact of commission, liquidity, size, solvency ratio, surplus/policy holder's liabilities, tangibility and underwriting risk on the ROA. The above mentioned variables are found out from the review of literature.

### Model 1
$ROA = \beta_0 + \beta_1 COMM + \beta_2 EXPENSE + \beta_3 LQD + \beta_4 SIZE + \beta_5 SR + \beta_6 SUR\_PHL + \beta_7 TANGIBILITY + \beta_8 UR + u_t$

**Hypothesis**

Following Null and Alternate hypotheses are formulated in the study-

$H_{01}$: Commission (COMM) has no significant impact on Return on Assets (ROA)
$H_{11}$: Commission (COMM) has significant impact on Return on Assets (ROA)
$H_{02}$: Expense (EXPENSE) has significant impact on Return on Assets (ROA)
$H_{12}$: Expense (EXPENSE) has no significant impact on Return on Assets (ROA)
$H_{03}$: Liquidity (LQD) has significant impact on Return on Assets (ROA)
$H_{13}$: Liquidity (LQD) has no significant impact on Return on Assets (ROA)
$H_{04}$: Size (SIZE) has significant impact on Return on Assets (ROA)
$H_{14}$: Size (SIZE) has no significant impact on Return on Assets (ROA)
$H_{05}$: Solvency Ratio (SR) has significant impact on Return on Assets (ROA)
$H_{15}$: Solvency Ratio (SR) has no significant impact on Return on Assets (ROA)
$H_{06}$: Surplus (Deficit)/Policyholder's liabilities (SUR_PHL) has no significant impact on Return on Assets (ROA)
$H_{16}$: Surplus (Deficit)/Policyholder's liabilities (SUR_PHL) has significant impact on Return on Assets (ROA)
$H_{07}$: Tangibility (TANGIBILITY) has no significant impact on Return on Assets (ROA)
$H_{17}$: Tangibility (TANGIBILITY) has significant impact on Return on Assets (ROA)
$H_{08}$: Underwriting Risk (UR) has no significant impact on Return on Assets (ROA)
$H_{18}$: Underwriting Risk (UR) has significant impact on Return on Assets (ROA)

### 3.4. Data quality assessment

The quality of data was assessed based on the following parameters:
   a. Autocorrelation (Durbin-Watson Test)
   b. Heteroskedasticity  (Breusch-Pagan / Cook-Weisberg test)
   c. Multicollinearity (Variance Inflation Factor)

The value of Durbin Watson Test was .460536 which was less than the Lower Limit Value (1.622 at 5% level of significance), it implied that the problem of autocorrelation exist.

The p-value of Breusch-Pagan / Cook-Weisberg test for heteroscedasticity was 0.0000 (less than .05), so null hypothesis of constant variance had been rejected.  It implied that there was problem of heteroscedasticity.

According to the values of Volatility Index Factor (VIF) were greater than .10 and less than 10, for all the independent variables. It implied that the problem of multicollinearity does not exist among the independent variables.

## 4. RESULTS AND INTERPRETATION

### 4.1. Correlation matrix

**Table 1: Correlation matrix of variables**

|  | ROA | COMM | EXPENSE | LQD | SIZE | SR | SUR_PHL | TANGIBILITY | UR |
|---|---|---|---|---|---|---|---|---|---|
| ROA | 1 | | | | | | | | |
| COMM | -0.4556 | 1 | | | | | | | |
| EXPENSE | -0.7091 | 0.3866 | 1 | | | | | | |
| LQD | 0.0839 | -0.0254 | -0.1510 | 1 | | | | | |
| SIZE | 0.4194 | -0.2704 | -0.5301 | 0.3723 | 1 | | | | |
| SR | 0.1962 | 0.02797 | -0.0674 | -0.0684 | -0.3632 | 1 | | | |
| SUR_PHL | 0.5175 | -0.0549 | -0.2386 | 0.0041 | 0.2372 | 0.1805 | 1 | | |
| TANGIBILITY | -0.2504 | 0.22687 | 0.3833 | -0.1237 | -0.3964 | 0.0945 | -0.0798 | 1 | |
| UR | 0.4264 | -0.2801 | -0.3108 | 0.0560 | 0.4148 | 0.0757 | 0.1953 | -0.3223 | 1 |

Referring to the above Table, Correlation Matrix Regarding ROA, it was found that there was a negative Correlation (−0.455679) between: Commission (COMM) and ROA. It showed that if Commission paid/Gross Premium ratio increases then ROA will decrease and, vice versa. There was a strong negative correlation (−0.709146) between: Expense (EXPENSE) and ROA. It revealed that if Expenses of Management/ Total Gross Direct Premium (EXPENSE) increase then ROA will decrease and, vice versa. There was a weak positive correlation (0.083985) between: Liquidity Ratio (LQD) and ROA. If Liquidity of insurance companies were improved then it will have positive impact on profitability in terms of ROA as a measure and, vice versa. There was a positive correlation (0.419462) between: Natural Logarithm of Total Assets (SIZE) and ROA. If size increases then ROA of life insurance companies will increases and, vice versa.

## 4.2. Regression model

As per the results of the data quality assessment, the data of the study have problem of heteroscedasticity and serial correlation. The problem of heteroscedasticity was corrected by using white cross-section method and serial correlation problem was corrected by taking first difference.

**Table 2: Summary of regression model**

| Variable | Coefficient | Std. Error | t-statistic | Prob. |
|---|---|---|---|---|
| COMM | -0.2652 | 0.0560 | -4.7282 | 0 |
| EXPENSE | -0.0176 | 0.0196 | -0.9006 | 0.3698 |
| LQD | -0.0848 | 0.0492 | -1.7221 | 0.088 |
| SIZE | 0.1074 | 0.0244 | 4.3900 | 0 |
| SR | 0.3450 | 0.2152 | 1.6030 | 0.1119 |
| SUR_PHL | 0.0694 | 0.0212 | 3.2654 | 0.0015 |
| TANGIBILITY | 0.4497 | 0.4521 | 0.9946 | 0.3222 |
| UR | 0.1728 | 0.4640 | 0.3725 | 0.7102 |
| AR(1) | 0.5862 | 0.0184 | 31.8045 | 0 |
| R-squared | 0.9357 | Mean dependent var | -0.4266 | |
| Adjusted R-squared | 0.9308 | S.D. dependent var | 4.6248 | |
| S.E. of regression | 1.2161 | Akaike info criterion | 3.3042 | |
| Sum squared resid | 156.772 | Schwarz criterion | 3.5190 | |
| Log likelihood | -180.9949 | Hannan-Quinn criter. | 3.3914 | |
| Durbin-Watson stat | 1.9419 | | | |
| Inverted AR Roots | 0.59 | | | |

As per the above Table, which represents summary of Regression Model of ROA, the adjusted R-square (.9308 or 93.081%), so 93.08% of the variation in the dependent variable (ROA) was explained by the independent variables (COMM, Expense, LQD, SIZE, SR, SUR_PHL, TANGIBILITY and UR). The results implied that the model applied was good fit.

The Regression Model (1) as follows:

ROA = 0.586 −0.265 COMM −0.017 EXPENSE −0.034 LQD + 0.107 SIZE+ 0.345 SR + 0.069 SUR_PHL+ 0.449 TANGIBILITY+ 0.172 UR+ $u_t$

## 5. DISCUSSION

As per the above Table, which represents summary of Coefficients of Regression Model of ROA, (Annexed herewith) analysis showed that Commission (COMM) (Coefficient Value −0.265), (P value 0.0000 <0.005), had significant negative impact on ROA. It seems very rationale also, if insurance companies pay higher commission on their products than ultimately it increases cost and decreases profitability. $H_{01}$: Commission (COMM) has no significant impact on Return on Assets

(ROA) was rejected and alternate hypothesis H11: Commission (COMM) has significant impact on Return on Assets (ROA) was accepted.

Expense (EXPENSE) (Coefficient Value -0.0176) (P value 0.3698 >0.005), had insignificant negative impact on ROA. If expenses of companies increases, it negatively impact profit of the companies. Here also relationship also states the same, but impact is insignificant. $H_{02}$: Expense (EXPENSE) has significant impact on Return on Assets (ROA) was rejected and alternate hypothesis $H_{12}$: Expense (EXPENSE) has no significant impact on Return on Assets (ROA) was accepted.

Liquidity (LQD) (Coefficient Value -0.0848) (P value 0.0880 > 0.005) had insignificant negative impact on ROA. It implied that if companies were investing higher amount in current assets to maintain strong liquidity position, than it had yield lower returns on assets and ultimately negatively impact ROA. Results are tune with same, but impact was insignificant. H03: Liquidity (LQD) has significant impact on Return on Assets (ROA) was rejected and alternate hypothesis H13: Liquidity (LQD) has no significant impact on Return on Assets (ROA) was accepted.

Size (SIZE) (Coefficient Value 0.107), (P value 0.0000 < 0.005), had significant positive impact on ROA. Economies of scale plays vital role in insurance industry and impact of size on ROA supports the same. Big size companies were able reduces their expenses and having capabilities to undertake higher risk, which finally have positive impact on profitability. H04: Size (SIZE) has significant impact on Return on Assets (ROA) was accepted and alternate hypothesis H14: Size (SIZE) has no significant impact on Return on Assets (ROA) was rejected.

Solvency Ratio (SR) (Coefficient Value 0.3450), (P value 0.1119 > 0.005), had insignificant positive impact on ROA. As per regulation all insurance companies operating in India needs to maintain minimum prescribed solvency margin as statutory requirement. Results showed that it had positive impact on ROA, it implied that higher solvency margin boosts the confidence of the stakeholders, which finally impact the financial performance, but here relationship was insignificant. $H_{05}$: Solvency Ratio (SR) has significant impact on Return on Assets (ROA) was rejected and alternate hypothesis H15: Solvency Ratio (SR) has no significant impact on Return on Assets (ROA) was accepted.

Surplus/Policyholder's Liabilities (SUR_PHL) (Coefficient Value 0.069), (P value 0.0015 < 0.005), had significant positive impact on ROA. Higher surplus/Policyholder's Liabilities Ratio gives confidence to the stakeholder of the company, enhances their trust and it also improves the goodwill of the company, which finally contributes to the profitability of the company. Here positive and significant relationship evidences the same. H06: Surplus (Deficit)/Policyholder's liabilities (SUR_PHL) has no significant impact on Return on Assets (ROA) was rejected and alternate hypothesis H16: Surplus (Deficit)/Policyholder's liabilities (SUR_PHL) has significant impact on Return on Assets (ROA) was accepted.

Tangibility (TANGIBILITY) (Coefficient Value 0.1728), (P value 0.3222 > 0.005), had positive and insignificant impact on ROA. Business of insurance fall into the category of financial service industry and it does not required much ample of fixed assets. Investment in fixed assets gives positive and confidence to the investors, due to which cost of capital reduced. Availability of lower cost of funds drives the profitability and positively impact ROA. Here results support the same, but relationship is insignificant. H07: Tangibility (TANGIBILITY) has no significant impact on Return on Assets (ROA) was accepted and alternate hypothesis.

$H_{17}$: Tangibility (TANGIBILITY) has significant impact on Return on Assets (ROA) was rejected.

Underwriting Risk (UR) (Coefficient Value 0.449), (P value 0.7102 > 0.005), had positive and insignificant impact on ROA. Net benefits paid to the policyholders send positive message among

the customers of insurance companies, which increases the business of insurance companies and impact profitability on positive note. Results found the same evidence, but here relationship is insignificant. H08: Underwriting Risk (UR) has no significant impact on Return on Assets (ROA) was accepted and alternate hypothesis H18: Underwriting Risk (UR) has significant impact on Return on Assets (ROA) was rejected.

Regression model was applied to study the effect on ROA. The results showed that up to 93.57% variation was explained by the factors which were undertaken by the study. As per adjusted R-square, variation up to 93.08% was explained by the factors which were considered for the study. It can be inferred that ROA model was good fit, based on the higher Explanatory Power (R Square and Adjusted R Square.

The model depicted that effect of various factors on the financial performance of Indian life insurance sector. Commission, Size and Surplus/Policy Holder's Liabilities has significant impact on financial performance of Indian Life Insurance Sector, while Commission had negative and size and Surplus/Policy Holder's Liabilities had positive impact. Other factors, Expense, Liquidity, Solvency, Tangibility and Underwriting Risk had insignificant impact on the financial performance of Indian Life Insurance Sector.

### 5.1. Suggestions

Commission is one of the important factors to enhance the market share. In insurance business, commission paid throughout the tenor of the policy with different rates, but it had negatively impacting the profitability of the companies. Companies should not compete on the cost front (Commission) instead of this; they should adopt the cheaper alternatives channels to sell their products directly to the customers through Amazon, Flipkart and PAYTM are few sites to achieve the objective. Claim settlement ratio is also important factor to enhance profitability of companies, so they should improve claim settlement ratio by speedy settlement to the genuine cases. Size in insurance business also plays vital role to enhance the profitability. Size can be enhanced by offering new innovative products and higher yielding products. Regression Model can be applied by banks to assess the impact on profitability with a change in a variable.

### 5.2. Implications

#### 5.2.1. Limitations of this study

Time horizon considered for the purpose of study was six years i.e. (2009-2010 to 2014-2015). All the internal factors were not considered in study. External factors were not considered as independent variable for the study.

#### 5.2.2. Future scope of the study

General insurance sector companies and larger time period may be undertaken for future study. External factors can be considered to analyze the effect on profitability. More internal factors can be added for the future study purpose. This model can be applied to study the performance of life insurance companies of different countries. Private and Public life insurance companies may also be considered for future study.

## 6. CONCLUSION

ROA had positive Correlation with Liquidity, Size, Solvency Ratio, Surplus/Policyholder's Liability and Underwriting Risk. At the same time ROA had negative Correlation with Commission, Expense and Tangibility.

From the results of regression model which was applied to predict ROA, it can be concluded that variables which were considered to be independent viz., Size (SIZE), and Surplus/Policyholder's Liability (SUR_PHL) had significant positive impact on ROA. Commission (COMM), had

significant negative impact on ROA. Solvency Ratio (SR) and Underwriting Risk (UR) had insignificant positive impact on ROA. Expense (EXPENSE), Liquidity (LQD) and Tangibility (TANGIBILITY) has insignificant negative impact on ROA. The applied model of Regression was good fit to evaluate the impact of internal factors on return on asset which was considered as a proxy measure of profitability of insurance companies.

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### Webliography
http://www.ibef.org/industry/insurance-presentation

## Appendix

The above mentioned terms are measured as follows**:**

ROE- Return on Equity
Net Profit/Stockholder's Equity

### Dependent variable

ROA- Return on Assets
Net Profit/Total Assets

### Independent variable

$B_0$- Intercept

COMM- Commission

Gross Commission Paid/Gross Premium

EXPENSE- Expenses
Expenses of Management/Total Gross Direct Premium

LQD- Liquidity
Current Assets/Current Liabilities

SIZE- Size
Natural Logarithm of Total Assets

SR- Solvency Ratio
Actual Solvency Margin/Required Solvency Margin

SUR_PHL- Surplus (Deficit)/Policyholder's Liability

Tangibility- Tangibility
Fixed Assets/Total Assets

Ur- Underwriting Risk
Benefits Paid/Net Premium

$u_t$ = Error Term.