



Performance of Stand Alone Health Insurance Companies in India using Solvency Ratios

by

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Abstract

Solvency ratio of insurance companies is the important component for the financial analyst and who buy insurance policies to financially secure the future of self and family members for unexpected and untimely events. It is important for any policyholder to know about the company is doing financially good or not and capability to pay the claims. The solvency ratio is one of the key determinants that suggest whether an insurer can stay solvent in the long run or not. It is assumed that the insurance companies which have good solvency ratios are considered good financially. Health insurance dominates with 38% market share of the total general insurance premium income in the country.

Design/methodology/approach – The analysis in this paper will provide an understanding about the comparative performance between the standalone health insurance companies presently fully working in India during study and specified period. This study attempts to find out how much to earn expected amount of premium to fulfil claims and other related expenses possible to occur. The concept of statistical methodology used in this study one to establish relationship between dependent variable Underwriting Profit/Loss with independent variable net Insurance Premium earned performed regression analysis and another one way analysis of variance to understand the performance of insurance companies using solvency ratios..

Findings – Findings of this study indicates that there may be significant relationship between net insurance premium earned and underwriting profit/ loss. On the basis of this result it may be possible there has been increase in insurance premium could increase in profit for the sector may reduce underwriting loss accumulated over the years. The compounded annual growth rate of the earnings of this sector is growing to 34% but not able to earn underwriting profits. There is a need to improve other financial management services by every standalone health insurance companies individually.

Originality/value – This study is self-driven and based on secondary data taken from insurance regulatory and development authority of India site (IRDAI).

Key words: Health care insurance, Health Insurance Solvency ratio(s)

1. Introduction

Insurance becomes the important for everyone in the life because this commodity is attached with risk factor. This product is either attached with assets or life accordingly with requirement. The main reason for insurance in our life to reduce risks especially life and non-life respectively. Insurance is nothing but a legal contract between insurance company (one party) which agrees to undertake risks of the insured entity (other party) in exchange of agreed premium and duration to indemnify for happening of uncertain events. Health insurance is one of the important insurance for every one today in India also which contributes 38% market share among all other sectors of General Insurance. The insurance sector in India has grown very fast and one of the major drivers of the Indian economy also.

There are three categories of insurance sectors i.e. Public Sector (4), Private Sector (25) and specialised insurers and reinsurer (3); total 32 insurance companies in India. The Indian insurance industry will be \$280 billion by the year 2025 with compound annual growth rate (CAGR) of 12-15%; while as per IRDAI (The Insurance Regulatory and Development Authority of India) the insurance industry will be sixth largest insurance market globally and reach \$222 billion by 2026. Even today among emerging markets of insurance India is the world's tenth insurance market by total premium volumes globally with a health penetration rate is very low i.e. 60 crore people were covered by health insurance i.e. 37% of the people in the country.

1.1. Importance of the study

Every health insurance company in India since their inception provides benefits to their customers either through mediclaim or cash less payment treatments and hence growth rate of the health insurance sector in every different insurance company is different from one another depends on their satisfied customers. Due to raise in medical claims and uncertainty in financial resource management in the private health insurance companies always either delays in their claims settlement or increasing the premiums on policies accordingly.

The health insurance plans in India includes hospitalization, family health insurance, existing disease cover plans, senior citizen health insurance, critical illness plans, special disease plans and maternity health insurance etc. which required funds by health insurance companies to keep balancing between income and expenditure. The insurance companies always try to remain in market and competition hence the control the administrative costs for which they change (increase) the premiums time to time and reinvesting these premiums into other interest generating assets. According to the IRDAI's mandate every insurance company needs to maintain minimum *solvency ratio* by required value 150% to minimise bankruptcy risk.

The *solvency ratio* is a performance metric which helps insurance companies to maintain their financial health and able to sustain for long term. The important formula for calculating *solvency ratio* is as follows:

$$\text{Solvency Ratio} = \frac{(\text{Net Income} + \text{Depreciation})}{\text{All Liabilities (Short Term} + \text{Long Term)}}$$

The above ratio if exceeds 20% then insurance company is considered financially strong; other financial ratios also provides meaningful comparisons.

The performance of any insurance company depends on their profit or loss which is totally depends on their net premium earnings and other fund investments.

1.2. Statement of the problem

Insurance policy is a contract in which a policy holder (individual) or dependents (family) receives financial benefits or reimbursement from insurance company for losses due to uncertain events e.g. loss of asset or property due to fire or natural calamity, death, accidents etc.. Because of health insurance business becomes more competitive and to survive in the business the performance is only the bench mark in terms of claims settlement and funds management. The growth of premium is every year with respect to claims incurred, commission and other expenses paid by health insurance companies. The study is based on standalone health insurance companies starting year 2016-17 till 2022-23; during this period some of the companies are either non-operative or merged with other collaborator but ultimately there are now only five stand-alone health insurance companies. The *solvency ratios* of following standalone health insurance companies taken for study:

- Aditya Birla Health Insurance Co. Ltd. **(AB)**
- Care Health Insurance Ltd (earlier Religare Health Insurance Co. Ltd.) **(CH)**
- Manipal Cigna Health Insurance Co. Ltd. **(MC)**
- Niva Bupa Health Insurance Co Ltd. **(NB)**
- Star Health & Allied Insurance Co. Ltd. **(SH)**

1.3.Objectives of the study

The objective of this study has been to:

- Study the performance of stand-alone health insurance companies in India using regression analysis application using Underwriting profit or loss and net premium earned.
- To compare solvency ratio of stand-alone health insurance companies using analysis of variance.

1.4. Research Methodology

This study is based on secondary data collected from the Annual Reports of IRDAI (Insurance Regulatory Authority of India) in two parts. First for all standalone health insurance companies active during that respective period (refer **Table - 4**) from 2016-2017 to 2022-2023 while Second for *solvency ratios* of all active standalone health insurance companies for the period from 2017-2018 to 2022-2023.

The data of **Table - 1** were analysed with one way analysis of variance (One way ANOVA) during the period. The data of **Table 2** were analysed using regression analysis method for the following equation:

$$Y = mX + c$$

In this equation **Y** is a dependent variable (as Underwriting Experience) which is required to calculate, **X** is an independent variable (as Net Premium earned) while **m** is a slope of regression line and **c** is a constant known as intercept of the line.

1.5. Hypothesis

A. Solvency Ratio

H_{AO}: There is no significant difference between the *Solvency ratios* of standalone health insurance companies.

H_{Aa}: There is significant difference between the *Solvency ratios* of standalone health insurance companies

B. Regression Analysis

H_{BO}: There is no influence of Net Premium Earned of standalone health insurance companies on Underwriting Experience.

H_{Ba}: There is influence of Net Premium Earned of standalone health insurance companies on Underwriting Experience.

1. Literature Review

In the year 1948 first Health Insurance Company started named as Employee's State Insurance Scheme (ESIS) which was providing health care services through ESIS hospitals and dispensaries for industry and government employees. The General Insurance Corporation of India in 1986 introduced a voluntary mediclaim policy for limited reimbursement of expenses of hospitalization, specific injuries and illnesses to patients. In the year 2000, the government introduced private sector participation in health insurance sector and in the year 2015 government allowed 49% holding to foreign players also.

Ellis et al. (2000) had reviewed various different of health insurance systems in India and revealed that there is a need for a competitive environment which can only happen with the opening up investments from other countries in the insurance sector.

Harrington and Nelson (1986) used regression analysis to find out the relationship between premium-to-surplus ratios and insurer characteristics including asset and product mix variables.

Chen and Wong (2004) analyzed solvency of general property-liability and life insurance companies in Asia (Japan, Singapore, Malaysia and Taiwan) and found the factors that significantly affect general insurers' financial health in Asian economies.

Chauhan (2019) examined medical underwriting experience and rating modalities in health insurance sector. It was revealed that while underwriting a health policy; the health insurance company has to consider the different parameters of insured entity such as lifestyle, health condition, occupation, and habits. Author pointed that about different studies on health insurance which conducted in India and abroad; but none of the study done on the performance of health insurance sector based on underwriting profit or loss.

Kumar (2009) examined the role of insurance in financing health care in India its own health. He observed that insurance may be one of the important sector or industry in health insurance mobilizing resources, providing risk protection and extending facilities that may helpful in economic growth of the country also.

3. Analysis and Interpretation

3.1. Solvency ratios

The data are collected from the IRDAI internet sites published Annual Reports for the period of 2017-2018 thru 2022-2023 of the standalone health insurance companies and tabulated below in **Table – 1** on *solvency ratios* quarterly for respective standalone health insurance companies:

Table – 1 : Quarterly Solvency Ratios for Standalone Health Insurance Companies												
FY	QTR	AB	MC	NB	CH	SH	FY	AB	MC	NB	CH	SH
2017-18	June	2.22	2.13	1.99	1.58	1.53	2020-21	1.73	1.97	1.74	2.59	2.00
	September	3.46	3.83	1.96	1.54	1.52		2.17	3.06	1.80	2.52	1.69
	December	2.34	3.82	1.92	1.32	1.51		2.09	2.59	1.65	2.52	2.49
	March	1.67	2.06	2.11	1.56	1.77		1.82	2.12	2.09	2.45	2.22
2018-19	June	2.21	1.11	1.95	1.53	1.51	2021-22	1.61	1.65	1.65	1.81	1.65
	September	2.98	2.43	1.76	1.54	1.28		1.73	1.77	1.66	1.90	0.03
	December	1.77	1.91	1.76	1.53	1.65		1.84	1.59	1.78	1.68	1.80
	March	1.62	2.23	1.77	1.56	2.01		1.77	1.68	1.72	1.85	1.67
2019-20	June	1.59	1.86	1.52	1.52	1.81	2022-23	2.16	1.59	1.89	1.64	1.87
	September	2.19	1.67	1.63	1.52	1.54		1.67	1.56	1.77	1.97	1.95
	December	2.40	1.86	1.66	1.54	1.56		3.03	1.55	1.81	1.90	2.17
	March	1.81	1.90	1.77	1.55	1.88		2.63	1.56	1.67	1.82	2.14
Average of Values								2.10	2.06	1.79	1.80	1.81
Source : IRDAI Annual Reports from 2017-18 to 2022-2023												

3.1.1. Findings and Interpretation

The F values in **Table – 2** above shows that $F_c = 2.051$ (calculated F) while $F_t = 2.459$ (table value of F) with p-value 0.020 is less than 5% level of significance. Hence here the null hypothesis (H_{AO}) of the ANOVA is rejected and it can be concluded that there is a statistically significant difference between the means of the *solvency ratios* of standalone health insurance companies. This also provides sufficient evidence to say that at least one of the standalone health insurance company's means of *solvency ratios* is different from the others.

Table – 2 : Analysis of Variance (one-way) F-test for Solvency Ratio						
Source of variation	Sum of Square	Degree of Freedom (df)	Mean Sum of Square	Calculated value of F_c	P-value	Table Value of F_t
Between Companies	2.296	4	0.574	2.051	0.020	2.450 @0.05 level of significance
Within Companies	21.631	115	0.188			
Total	23.926	119				

In order to find out exactly which companies are different from each other a *pos hoc test* (i.e. multiple comparison test), which will allow to explore the difference between multiple company's means. A Tukey's Test used to make every possible pair wise (one to another standalone health insurance company) comparison. The **Table- 3** gives multiple comparison (using Tukey HSD#).

Table -3 : Multiple comparison (using Tukey HSD#)										
Mean Difference						Significance at 0.05				
	AB	MC	NB	CR	SH	AB	MC	NB	CR	SH
AB		-0.54	0.43	0.92	0.84		0.670	0.819	0.196	0.270
MC	0.54		0.97	1.46*	1.38*	0.670		0.165	0.017*	0.025*
NB	-0.43	-0.97		0.50	0.41	0.819	0.165		0.731	0.837
CR	-0.92	-1.46*	-0.50		-0.08	0.196	0.017*	0.731		1.000
SH	-0.84	-1.38*	-0.41	0.08		0.270	0.025*	0.837	1.000	
* The mean difference is significant at the 0.05 level										
# HSD means Honestly Significant Difference										

The results are tabulated in **Table-3** gives such comparison is plotted below **Figure – 1**.

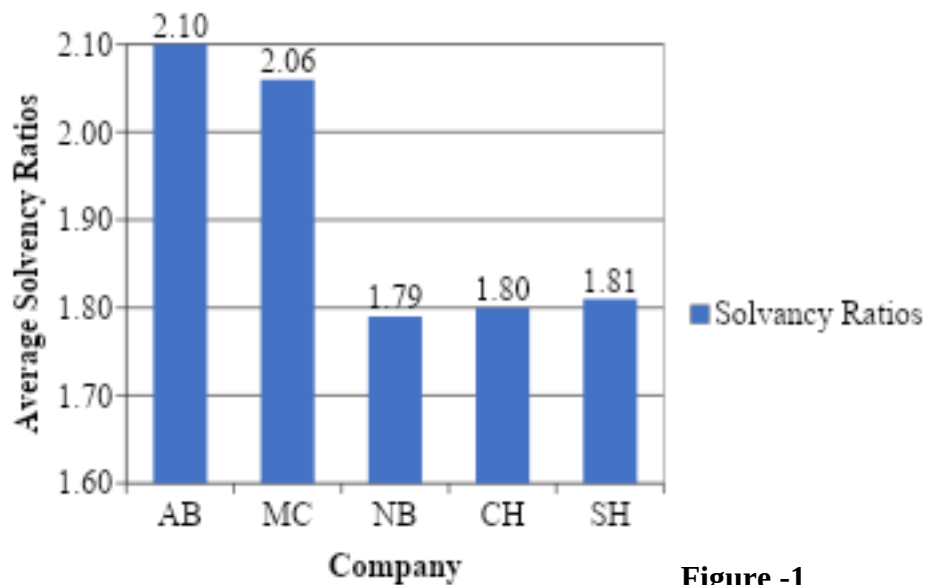


Figure -1

3.2. Regression Analysis

The data are from IRDAI annual reports for the period from 2016-2017 to 2022-2023 of including every standalone health insurance company during that period; assumed that the impact will be remain same on the performance of the company with premium earned and profit is made during that period, with; the assumption a straight relationship between possible between the data. This will be analysed by regression analysis. The increase in claims, commissions and management costs has outpaced the increase of premiums received (Dutta, 2020).

Table – 4 : Performance of Standalone health insurance companies in India							
Particulars	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
Number of Standalone Health Insurers	6	6	7	7	7	5	5
Insurance Penetration# (%)	0.77	0.93	0.97	0.94	1.00	1.00	1.00
Insurance Density# (US\$)	13.20	18.00	19.00	19.00	19.00	22.00	22.00
Net Premium Earned (Rs. Cr.)	4059.83	6327.37	7821.02	8671.02	2292.10	3918.92	12364.63
Claims Incurred (Rs. Cr.)	1638.11	2235.03	2854.48	3709.19	1053.55	1072.87	3969.60
Commission Expenses (Rs. Cr.)	664.08	987.82	1411.45	1821.59	2134.87	2758.69	3486.64
Underwriting Experience (Rs. Cr.)	-261.43	-435.73	-568.22	-651.20	-2373.65	-3263.34	-528.80
Profit After Tax (Rs. Cr.)	26.99	-102.19	-298.00	-331.07	-1359.73	-1359.73	-1808.01
Data Source: Handbook of Statistics, IRDAI #Source Swiss Re- Sigma Reports							

3.2.1. Findings and Interpretation

According to IRDAI Annual Reports, standalone health insurance has grown 248% from the year 2016 to the year 2023. This shows that there is an increase in premium earned but also increase in claims incurred and commission expenses respectively.

Table – 5 : Coefficients		
Model	Un-standardized Coefficients	
	B	Std. Error
1(Constant)	-2413.715	904.019
Net Premium Earned	.194	.125

The result of **Table - 5** in equation form is as follows

$$Y = 0.194X - 2413.715$$

In India healthcare industry has seen a compound annual growth rate (CAGR) of about 22% since 2016; on average growth in the net premium earned for health insurance sector was 135% but unable to achieve underwriting profit better.

Table – 6 : Analysis of Variance					
Model	Sum of Squares	df	Mean Square	F	Sig.
1Regression	2677056.054	1	2677056.054	2.408	.181 ^b
Residual	5559216.662	5	1111843.332		
Total	8236272.716	6			
Here Dependent Variable: Underwrite Exp Predictors: Constant : Net Premium Earned : F table value : 6.61					

The **Table – 6** shows at 95% confidence level the calculated p-value is 0.161 which is greater than table values 0.05 (also it shows $F_c < F_t$); hence the null hypothesis H_{BO} is not rejected. This means the above regression equation it may conclude; there is no influence of net premium earned with underwriting experience by standalone health insurance companies. There may be possibly some other sources influencing the profit / loss of the companies.

In the **Table – 7** the R^2 value is **0.325** that explains 32.50% relationship between net premium earned and underwriting experience possibly made by standalone health insurance companies and 67.50% of total variation of the relationship is unexplained. This might be possible due to high growth of claims, payment of commission and other management expenses even though premium on policy has increased (either renewal or new).

Table – 7 : The Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.570 ^a	0.325	0.190	1054.43982
Here Dependent Variable: Underwrite Exp				

4. Limitations and Suggestions

In India health insurance industry is still growing and having huge potential. The standalone health insurance companies are still managing the business services but the quality in services and different types of products required for various economic classes. The data required from the sources needs more depth classification and required proper understanding. The health insurance companies required more innovation their product, services and proper distribution channel (sometimes TPA are not able to provide proper services). This study can be further continuing in subsequent financial years.

5. Conclusions

The services of IRDAI will be definitely improving the insurance sector. Now it is required that stand alone health insurance companies provide better services and proper financial management and earned the profit. This study may help the stand alone health insurance companies about their performance and corrective measures.

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