FINANCIAL PERFORMANCE EVALUATION
OF PUBLIC SECTOR HEALTH INSURANCE COMPANIES IN INDIA

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ABSTRACT

The nature is tentative and impulsive. It is the true with regard to life of an individual. The life of a human being is surrounded by risks and uncertainties in a volatile world. No one should know when the misfortune leads from minor to serious injuries or health illness and there are many instances even loss of life. To cope up during hard times in one's personal life and his/her near and dear, health insurance is the perfect way to get rid of it. Keeping this in view, the researcher has made an attempt to know the performance of four public sector health insurance companies in India for the period from 2010-11 to 2020-21 using CARAMEL parameter. The study is limited to three categories of CARAMEL parameter, they are: (i) Capital adequacy, (ii) Asset quality, (iii) Reinsurance & Actuarial Issues. For this purpose, the researcher collected the secondary data from annual reports of IRDA and the data was tabulated. Using the statistical techniques like mean, standard deviation and ANOVA the data was analysed. Based on the results it was found that there is a significant difference in the ratios of (i) Net Premium to Capital Ratio, (ii) Capital to Total Assets Ratio, (iii) Equities to Total Assets Ratio, (iv) Real Estates + Debtors to Total Assets Ratio and (v) Net Premiums to Gross Premiums Ratio, whereas there is no difference was found in the ratio of Net Technical Reserves to Average claims paid for last three years Ratio. It is concluded that the entire research unit for defining performance indicators shows average outcomes in comparison to standard norms of financial tools of general industries.

1. Introduction

Elizabeth Edwards "Successful health reform must not just make health insurance affordable, affordable health insurance has to make health care affordable".

India's encounter with health care coverage program returns to the last part of the 1940s and mid 1950s when the government workers (Central Government Health Scheme) and formal area labourers (Employees' State Insurance Scheme) were selected into a contributory however vigorously financed health care coverage programs. As a result of progression of the economy since the mid-1990s, the public authority opened up private area (counting health coverage) in 1999. This advancement opened up the opportunities for higher pay gatherings to get to quality consideration from private tertiary consideration offices. Notwithstanding, India in the beyond a long time (beginning around 2007) has seen a plenty of new drives, both by the focal government and a large group of state legislatures additionally entering the trend of health coverage. One reason for starting such projects might be followed to the responsibility of the state run administrations in India to increase public spending in health care.

2. Health Insurance - Meaning

Health insurance is a type of insurance that covers medical expenses that arise due to an illness. These expenses could be related to hospitalisation costs, cost of medicines or doctor consultation fees.

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3. Review of Literature

Madan Mohan Dutta (2020)[1] indicated that there is a significant relationship between earned premium and underwriting loss. There has been increase of premium earnings which instead of increasing profit for the sector in fact has increased underwriting loss over the years. The earnings of the sector are growing at compounded annual growth rate of 27% still it is unable to earn underwriting profit.

Nair (2019)[2] has made a comparative study of the satisfaction level of health insurance claimants of public and private sector general insurance companies. It was revealed that majority of the respondents had claim of reimbursement nature through third party administrator. Satisfaction with respect to settlement of claim was found relatively higher for public sector than private sector.

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[1] Madan Mohan Dutta (2020), "Health insurance sector in India: an analysis of its performance", Vilakshan - XIMB Journal of Management, Vol. 17, No. 1/2, pp.97-109.

[2] Nair, S. (2019), "A comparative study of the satisfaction level of health insurance claimants of public and private sector general insurance companies", The Journal of Insurance Institute of India, Vol. VI, pp. 33-42.

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Page | 14

Chatterjee et al. (2018)[3] have studied health insurance sector in India. The premise of this paper was to study the current situation of the health-care insurance industry in India. It was observed that India is focusing more on short-term care of its citizens and must move from short-term to long term care.

Binny and Gupta (2017)[4] examined opportunities and challenges of health insurance in India. These opportunities are facilitating market players to expand their business and competitiveness in the market. But there are some structural problems faced by the companies such as high claim ratio and changing need of the customers which entails companies to innovate products for the satisfaction of the customers.

Nagaraju Y. (2014)[5] assessed the health indicators through parameters like infant mortality, maternal mortality rate, life expectancy, birth and death rate. India recorded notable achievement in all the parameters since independence.

Nikolina Smajla (2014)[6] explained one of the recent models used for analyzing financial soundness of insurance companies, CARAMELS model, and to understand the level of soundness of Croatian insurance companies. Methodology used to control and regulate insurance sector in Croatia is different from presented model, so this work gives a different view of the sector's soundness.

From the studies mentioned in the above para, there have been substantial studies were conducted on health insurance in India and abroad. But there has not been any work on performance of health insurance sector using CARAMEL model.

4. Objective

The objective of the study is to know the performance of public health insurance sector in India using CARAMEL model based on three parameters such as: (i) Capital adequacy, (ii) Asset Quality and (iii) Reinsurance and Actuarial Issues.

5. Hypotheses

The hypotheses comprises of

H_{01} : There is no significant difference in the Capital Adequacy of Public Sector Health Insurance Companies in India

H_{02} : There is no significant difference in the Asset Quality of Public Sector Health Insurance Companies in India

H_{03} : There is no significant difference in the Reinsurance and Actuarial Issues of Public Sector Health Insurance Companies in India

6. Research Methodology

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3 Chatterjee, S., Giri, A. and Bandyopadhyay, S.N. (2018), "Health insurance sector in India: A study", Tech Vistas, Vol. 1, pp. 105-115.
4 Gupta, D. and Gupta, M.B. (2017), "Health insurance in India-Opportunities and challenges", International Journal of Latest Technology in Engineering, Management and Applied Science, Vol. 6, pp. 36-43.
5 Nagaraju Y. (2014), "A Study on Performance of Health Insurance Schemes in India", International Journal of Innovative Research and Practices, Vol.2, Iss:4, pp.9-19.
6 Nikolina Smajla (2014), "Measuring Financial Soundness Of Insurance Companies By Using Caramels Model – Case Of Croatia," Interdisciplinary Management Research, Josip Juraj Strossmayer University of Osijek, Faculty of Economics, Croatia, vol. 10, pages 600-609.

The secondary data is collected from the various sources such as, annual reports, IRDA website, researcher journals and books. For this study the researcher collected data from public sector health insurance companies for 11 years period starting from 2010-2021. The four health insurance companies that are considered for the study were: The United India Insurance Company Limited, National Insurance Company Limited, Oriental Insurance Company Limited and New India Assurance Company Limited. The sample size consists of public sector health insurance companies. The study used CARAMEL parameters to know the financial performance of four public health insurance. The CARAMEL parameters have been tested statistically with the help of Mean, Standard Deviation and Analysis of Variance.

CARAMEL Parameters are presented as follows:

Category	Indicators
Capital Adequacy	Net premium/ Capital Capital/ Total Assets
Asset Quality	Equities / Total Assets Real Estate + Unquoted Equities + Debtors/Total Assets
Reinsurance & Actuarial Issues	Risk Retention Ratio (Net Premium/ Gross Premium) Net Technical Reserves/Average of Net Claims paid in last three years
Management Soundness	Operating Expenses/ Gross Premiums
Earnings and Profitability	Loss Ratio (Net Claims/ Net Premiums) Expense Ratio (Expenses / Net Premiums) Combined Ratio (Loss Ratio + Expense Ratio) Investment Income/ Net Premiums Return on Equity (ROE)=PAT/Equity
Liquidity	Current Assets/ Current Liabilities

7. Performance Evaluation of Public Sector Health Insurance Companies in India

In this study, the researcher considered three CARMEL parameters, such as (i) capital adequacy analysis, (ii) asset quality and (iii) reinsurance and actuarial issues. The capital adequacy analysis has two categories, they are namely: (a) Net Premium to Capital Ratio and (b) Capital to Total Assets Ratio. The purpose of asset quality analysis describes two ratios that are used in the present study namely: (a) Equities to Total Assets and (b) Real Estates + Debtors to Total Assets. For the purpose of Reinsurance and Actuarial issues, two ratios are used namely: (a) Net Premium to Gross Premiums ratio and (b) Net Technical Reserves to Average of claims paid in three years ratio.

Table 1 highlights the position of all the ratios of NIACL, UIICL, OICL and NICL.

Table 1: Performance Evaluation of PSHICs in India

Sl. No.	CARMEL Parameter	Ratio	Insurer	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	Mean	SD	Rank
1.	**Capital Adequacy**	Net Premiums to Capital Ratio	NIACL	69.00	71.69	76.86	91.03	101.85	110.89	79.00	81.69	75.86	81.03	71.85	82.80	13.25	2
			UIICL	83.38	88.53	92.43	109.41	113.86	126.41	73.38	68.53	72.43	89.41	113.86	93.78	19.45	1
			OICL	59.00	61.69	70.86	61.03	81.85	91.89	59.00	61.69	70.86	61.03	81.85	69.16	11.38	3
			NICL	73.38	78.53	42.43	19.41	33.86	46.41	73.38	78.53	42.43	19.41	33.86	49.24	22.88	4
			Mean	71.19	75.11	70.65	70.22	82.86	93.90	71.19	72.61	65.40	62.72	75.36	73.74		
			SD	10.11	11.31	20.89	39.31	35.23	34.66	8.55	9.19	15.45	31.23	32.96	22.63		
		Capital to Total Assets Ratio	NIACL	21.76	27.05	20.14	17.92	18.33	18.78	71.69	76.86	91.03	79.00	81.69	47.66	31.44	4
			UIICL	21.10	27.60	23.98	22.64	21.78	21.13	88.53	92.43	109.41	73.38	68.53	51.86	34.73	3
			OICL	69.00	71.69	76.86	91.03	101.85	110.89	61.69	70.86	61.03	59.00	61.69	75.96	17.69	2
			NICL	83.38	88.53	92.43	109.41	113.86	126.41	78.53	42.43	19.41	73.38	78.53	82.39	30.78	1
			Mean	48.81	53.72	53.35	60.25	63.96	69.30	75.11	70.65	70.22	71.19	72.61	64.47		
			SD	32.16	31.24	36.72	46.80	50.95	57.34	11.31	20.89	39.31	8.55	9.19	31.31		
2.	**Asset Quality**	Equities to Total Assets Ratio Analysis	NIACL	62.21	74.36	54.12	50.76	47.21	44.63	52.21	79.36	74.12	58.76	67.21	60.45	11.90	4
			UIICL	98.01	115.12	87.27	80.18	72.27	64.86	88.01	125.12	81.27	70.18	82.27	87.69	18.58	2
			OICL	71.69	76.86	91.03	79.00	81.69	40.82	27.11	34.66	60.23	68.44	60.76	62.94	20.70	3
			NICL	88.53	92.43	109.41	73.38	68.53	111.48	144.32	104.16	91.53	81.07	84.18	95.37	21.29	1
			Mean	80.11	89.69	85.46	70.83	67.43	65.45	77.91	85.83	76.79	69.61	73.61	76.61		
			SD	16.15	18.74	23.02	13.70	14.57	32.45	50.84	38.90	13.15	9.14	11.44	22.01		
		Real Estates + Debtors to Total Assets Ratio	NIACL	99.28	98.83	99.12	99.21	99.27	99.33	71.69	76.86	91.03	79	99.12	92.06	10.822	2
			UIICL	98.93	98.11	98.75	99.08	99.01	99.05	88.53	92.43	109.4	73.38	98.75	95.94	9.0334	1
			OICL	40.36	26.08	26.05	38	40.75	76.86	26.05	38	40.75	76.86	91.03	47.34	23.066	4
			NICL	73.84	67.55	54.5	50.56	46.17	92.43	54.5	50.56	46.17	92.43	109.41	67.10	22.045	3
			Mean	78.1	72.643	69.605	71.71	71.3	91.92	60.19	64.463	71.84	80.42	99.578	75.61		
			SD	27.84	34.295	35.804	32.09	32.22	10.53	26.67	24.694	33.69	8.336	7.5417	24.88		
3.	**Reinsurance & Actuarial Issues**	Net Premium to Gross Premiums Ratio	NIACL	78.21	81.31	80.44	78.70	78.17	79.59	16.78	15.21	125.16	131.10	78.17	76.62	35.68	2
			UIICL	72.26	74.78	73.26	72.89	74.42	78.25	17.30	18.51	281.24	237.51	74.42	97.71	83.56	1
			OICL	6.84	5.88	5.00	3.72	3.57	54.12	50.76	47.21	44.63	60.23	68.44	31.85	26.47	4
			NICL	3.36	2.86	2.42	1.99	1.63	87.27	80.18	72.27	64.86	91.53	81.07	44.49	40.84	3
			Mean	40.17	41.21	40.28	39.33	39.45	74.81	41.26	38.30	128.97	130.09	75.53	62.67		
			SD	40.59	42.64	42.34	42.18	42.58	14.35	30.43	26.82	107.12	77.26	5.45	42.89		
		Net Technical Reserves to Average claims Ratio	NIACL	177.41	171.03	155.13	126.98	120.53	114.77	84.33	87.62	84.18	82.39	18.93	111.21	46.47	1
			UIICL	138.57	145.05	143.79	120.17	100.69	90.57	89.2	95.68	97.24	95.42	18.34	103.16	35.57	2
			OICL	99.28	98.83	99.12	99.21	99.27	99.33	71.69	76.86	91.03	79	99.12	92.07	10.82	4
			NICL	98.93	98.11	98.75	99.08	99.01	99.05	88.53	92.43	109.41	73.38	98.75	95.95	9.03	3
			Mean	128.55	128.26	124.20	111.36	104.88	100.93	83.44	88.15	95.47	82.55	58.79	100.60		
			SD	37.51	35.99	29.54	14.38	10.46	10.08	8.12	8.22	10.72	9.35	46.36	20.07		

Source: Compiled from Annual Reports of Public Sector Health Insurance Companies and IRDA.

On the basis of the means of net premium to capital ratio, it can be understood that the UIICL is ranked first with 93.78 per cent, the NIACL is placed in second with 82.80 per cent, the OICL ranked three with 69.16 per cent and the NICL placed in the last rank with 49.24 per cent. On the basis of the means of total asset quality ratio, it is stated that the NICL is ranked first with 82.39 per cent, the OICL is placed in second with 75.96 per cent, the UIICL ranked three with 51.86 per cent and the NIACL placed in the last rank with 47.66 per cent, respectively.

Considering the means of equities to total assets, it can be understood that the NICL is ranked with first (95.37 per cent), the UIICL is placed in second with 87.69 per cent, the OICL ranked three with 62.94 per cent and the NIACL placed in the last rank with 60.45 per cent. The mean scores Real Estates + Debtors Ratio, UIICL secured rank 1 with 95.95 per cent, followed by NIACL, NICL and OICL with means of 92.07 per cent, 67.10 per cent and 47.35 per cent, respectively.

Table 2: Performance Evaluation of PSHICs in India – ANOVA Results

Sl. No.	CARAMEL Parameter	Ratio	Source of Variation	df	Sum of squares	Mean square	F	P-value	F-Critical
1.	Capital Adequacy	Net Premium to Capital Ratio	Between groups	3	12155.71	4051.90	13.43*	0.01	2.838
			Within groups	40	12066.87	301.67			
			Total	43					
		Capital to Total Assets Ratio	Between groups	3	9842.205	3280.735	3.79*	0.017	2.838
			Within groups	40	34542.31	863.5578			
			Total	43	44384.52				
2.	Asset Quality	Equities to Total Assets Ratio	Between groups	3	10148.73	3382.91	9.88*	0.00	2.838
			Within groups	40	13687.7	342.1924			
			Total	43	23836.43				
		Real Estates + Debtors Ratio	Between groups	3	17113.89	5704.631	18.75*	0.00	2.838
			Within groups	40	12167.25	304.1811			
			Total	43	29281.14				
3.	Reinsurance & Actuarial Issues	Net Premiums to Gross Premiums Ratio	Between groups	3	29728.44	9909.48	3.73*	0.01	2.838
			Within groups	40	106238.1	2655.953			
			Total	43	135966.5				
		Net Technical Reserves to Average claims Ratio	Between groups	3	2348.88	782.9601	0.86	0.46	2.83
			Within groups	40	36234.73	905.8684			
			Total	43	38583.62				

Source: Compiled from table 1.

Based on the mean scores of Net Premiums to Gross Premiums Ratio, UIICL secured rank 1 with 97.71 per cent, followed by NIACL, NICL and OICL with means of 76.62 per cent, 44.49 per cent and 31.85 per cent, respectively. According to the mean scores shown in the table regarding Net Technical Reserves to Average claims Ratio, NIACL ranked with 1 and the percentage is 111.21, followed by UIICL, NICL and OICL, with means of 103.16 per cent, 95.95 per cent and 92.07 per cent, respectively.

7.1 Capital Adequacy

Net Premium to Capital Ratio: It is observed from the table that the ANOVA results show the P value (0.01) is less than the critical value (0.05). Hence, the null hypothesis is rejected. It is inferred that there is a significant difference in the net premium to capital ratios of four Public Sector Health Insurance Companies over a period of study.

Capital to Total Assets Ratio: It is observed from the table that the ANOVA results show the P value (0.017) is less than the critical value (0.05). Hence, the null hypothesis is rejected. It is inferred that there is a significant difference in the Capital to Total Assets ratios of four Public Sector Health Insurance Companies over a period of study.

7.2 Asset Quality

Equities to Total Assets Ratio: It is observed from the table that the ANOVA results show the P value (0.00) is less than the critical value (0.05). Hence, the null hypothesis is rejected. It is inferred that there is a significant difference in the Equities to Total Assets ratios of four Public Sector Health Insurance Companies over a period of study.

Capital to Total Assets Ratio: It is observed from the table that the ANOVA results the P value (0.00) is less than the critical value (0.05). Hence, the null hypothesis is rejected. It is inferred that there is a significant difference in the Real Estates + Debtors to Total Assets ratios of four Public Sector Health Insurance Companies over a period of study.

7.3 Reinsurance & Actuarial Issues

Net Premiums to Gross Premiums Ratio: It is observed from the table that the ANOVA results show the P value (0.01) is less than the critical value (0.05). Hence, the null hypothesis is rejected. It is inferred that there is a significant difference in the Net Premiums to Gross Premiums ratios of four Public Sector Health Insurance Companies over a period of study.

Net Technical Reserves to Average Claims Paid Ratio: It is observed from the table that the ANOVA results show the P value (0.46) is more than the critical value (0.05). Hence, the null hypothesis is accepted. It is inferred that there is no significant difference in the Net Technical Reserves to Average claims paid in last three years Ratio of four Public Sector Health Insurance Companies over a period of study.

8. Conclusion

Based on the results obtained from the analysis using means, the investigators ranked the companies which are stood first ranks are:

(i) UIICL for the ratios: (i) Net premium to capital, (ii) Real Estates + debtors to total assets, (iii) net premium to gross premium.

(ii)   The NICL for ratio (i) capital to total assets, (ii) equity total assets

(iii)   The NIACL for ratios: (i) net tech results to average claims paid in 3 years and (ii) expense ratio;

(iv)   The OICL not stood first rank to any of the ratios.

The hypotheses results shows that there is a difference was found in the ratios of (i) Net Premium to Capital Ratio, (ii) Capital to Total Assets Ratio, (iii) Equities to Total Assets Ratio, (iv) Real Estates + Debtors to Total Assets Ratio and (v) Net Premiums to Gross Premiums Ratio, whereas there is no difference was found in the ratio of Net Technical Reserves to Average claims paid for last three years Ratio.

It is concluded that the entire research unit for defining performance indicators shows average outcomes in comparison to standard norms of financial tools of general industries.

9. References

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