

Measurement of Financial Soundness of Life Insurance Companies in Bangladesh: An Empirical Study

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ABSTRACT

Purpose: The study strives to measure insurance companies' financial soundness in Bangladesh with reference to private sector life insurance companies listed in the Dhaka Stock Exchange (DSE).

Methods: CAMELS ratio analysis and multiple discriminate analysis (MDA) have been employed to determine the results using secondary data sources collected from annual reports for ten-year DSE listed companies.

Findings: The study identified a satisfactory capital adequacy ratio (CAR) with a decreasing trend. Reinsurance and actuarial ratio indicate that companies hardly participate in reinsurance. In most cases, all selected companies' expense ratio during the study period is more than the standard (20 %) of the Insurance Development and Regulatory Authority (IDRA). All the selected insurance companies hold more liquid assets than the necessity. Z scores depicted that all the selected companies are potentially sick position in terms of financial health.

Originality/Value: This study measured the financial soundness of life insurance companies in Bangladesh. No in-depth study was conducted in Bangladesh, particularly on measuring the financial soundness of life insurance companies.

Key Words: Measurement, Financial Soundness; Life Insurance Companies; CAMELS Ratio; Multiple Discriminate Analysis (MDA); Reinsurance; Bangladesh

Introduction

From the very beginning, the human being has wanted safety for himself, his family, and the next generation. Although such expectation of safety is natural, man has never been able to assure it. Various types of risks and perils surrounded human life. The insurance business has originated to cover the losses from such types of risks and perils (Das & Sutradhar, 2016). Insurance companies are essential for both businesses and individuals as they indemnify losses and put them in the first positions as they were before the occurrence of the loss (Mazviona, Dube, & Sakahuhwa, 2017). Life insurance provides financial protection to a person against unforeseen circumstances. Contract of insurance is made between the insurer and the policy owner where compensation is paid to the nominated beneficiary if an insured event occurs, covered by the policy (Sobhan, 2014). In Bangladesh, insurance is not a new business. About a century back, some insurance companies started transacting business during British rule in India, both life and non-life in Bengal. There are significant challenges to survival for the insurance business due to the nature of the business. For the survival and expansion of the insurance business in the competitive business world, the insurance industry should take appropriate risk management strategies, policies, and plans. Measurement of financial soundness increases the quality of the activities and helps identify and solve insurance companies' problems. The resilient and well-regulated insurance industry can significantly contribute to economic growth and efficient resource allocation by transferring risk and mobilization of savings. So the people of Bangladesh can get excellent feedback from the insurance sector if it could be possible for this industry's successful operation.

Statement of the Problem

Insurance is an essential tool to lessen risks borne by individuals and businesses in modern economies. It is a mechanism of distributing the risk from one shoulder to many. It is a contract whereby the insurer agrees to indemnify the insured against losses arising out of certain specified unforeseen contingencies or perils on receipt of

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a consideration known as the premium (Khan & Uddin, 2013). Both financial and legal viewpoints can define insurance. The financial definition focuses on an arrangement that re-distributes the unexpected losses through a small amount of premium collected from many suspected and distribute it among those actual suffering losses. The legal definition focuses on the contractual arrangement whereby one party agrees on compensating somebody else's loss. Thus the financial definition provides for the funding of the losses. In contrast, the legal definition provides for the legally enforceable contract that spells out the legal rights, duties, and obligations of all the parties to contract (Kumari, 2013). Life insurance is a contract whereby the insurer promises to pay a specified amount of money to the insured or his/her nominee on the occurrence of the insured or after the maturity period of the policy, whichever happens, earlier. Insurance companies collect a premium to provide for this protection (Kayal, 2018). Life insurance counteracts inflation and plays a vital role in stabilizing and building the national economy. Life insurance covered 73.50 %, and non-life insurance covered 26.50 % insurance market in Bangladesh (BIA, 2017). Life insurance can play a more significant role in an economy like Bangladesh where capital is shy, rate of savings is insignificant, investment opportunities are lacking, inflationary situation is prevailing, and provisions of social security of the people are absent (Reza & Iqbal, 2007).

The insurance industry is part of the secure and repair system of an economy, and successful operation of the industry can set the liveliness for the industries and economic development of a country. Financially solvent and stable insurance industry only can do so through being profitable in operation (Ayele, 2012). Insurance companies can remedy socioeconomic crashes stemming from enterprises' failure due to economic disasters, securing funds, and reinvesting in the national economy (Tsfaye, 2018). Insurance carries out as a useful economic tool for capital formation by accumulating scarce funds from different corners and expanding employment opportunities (Neger, 2010). It played an essential role in developing the efficiency of other financial sector segments by enhancing collateral value through property insurance and reducing losses at the default level (Samina, 2012). Day by day, the importance of measuring financial soundness has been increasing due to the competition in the insurance sector. The number of insurance companies in Bangladesh too more compared to market size. Efficient operation is very much essential to survive in the competitive market. In 2017, insurance penetration was shallow in Bangladesh (0.55 %) compared to other south Asian countries like India (3.69 %), Sri Lanka (1.16 %), and Pakistan (0.86 %) (Swiss Re Institute, 2018). However, insurance is the second-largest financial intermediation in Bangladesh. The industry is not expanded and popular in Bangladesh because it cannot make people familiar with insurance's real benefits and stipulations. The insurance industry should be financially sound and capable enough in their business for increasing the faith level of people in the insurance industry. However, it is essential to know the insurance company's financial position for its efficient operation. Moreover, considering the lack of in-depth and empirical study on insurance companies' financial soundness in recent years in the context of Bangladesh, the present study is an attempt to fill up the gap.

Objectives

The study is an attempt to measure the financial soundness of life insurance companies in Bangladesh. The following specific objectives are to attain the main objective.

- i. To identify the present scenario of the insurance sector in Bangladesh.
- ii. To reveal the financial position of life insurance companies in Bangladesh, and
- iii. To recommend ways of improving the financial soundness of the life insurance sector in Bangladesh.

Literature Review

To identify the research gap and to formulate the research design, the following literature has been reviewed. Al Ali (2018) examined healthcare companies' financial soundness listed in the Kuwait stock exchange using secondary data sources collected from annual reports of 2013 to 2016. Using Altman's Z-Score, MDA, the research showed that both companies are positioned in the grey area, which means facing bankruptcy risk. Finally, the study suggested that the first company (Yiaco) should pay more attention to their earnings since their assets are growing faster than their profits. The second company (Advanced Technology) should pay more attention to control the growth of their liabilities since the increase in their liabilities is exceeding the growth in their equity. Ansari and Fola (2014) examined the financial soundness and performance of Life insurance companies (LIC) in India for

2008-09 to 2012-13 using CAMEL model. The study found that Indian life insurance companies have been satisfactorily financially sound by and significant. The study also revealed strange weaknesses that the excessive attention on marketing divisions to grow premiums without proportionate earmarking of resources towards their investment portfolios' risk management. Statistical test of the CAMEL model results revealed that, there was a significant difference between capital adequacy, asset quality, management efficiency, earnings and profitability, and liquidity positions in private and public life insurance companies. The study suggested to LIC for adequate reinsurance coverage, adequate capital, and low underwriting expenses. Bawa & Chattha (2016) measured intermediary channels' performance in India collected information from the individual agent, corporate agent, brokers, and direct selling. They find that each channel plays a valuable role in serving life insurance functions. They suggested that life insurance companies should select multi-channels to be innovative and customized. Das and Sutradhar (2016) evaluated Eastland Insurance Company Limited's policies and performance in Bangladesh using %ages and ratios analysis. They focus on the significant challenges that create obstructed the smooth development of the insurance industry in Bangladesh. They also provide a message that if the insurance companies operated very smoothly, the insurance sector would flourish very fast. Derbali and Jamel (2018) revealed that the size, age, and growth are the most critical determinants of Tunisian insurance companies' performance measured by the Return on Asset ratio. They found out that age and growth positively impact performance, while the size hurts insurance companies' performance levels.

Dey et al. (2015) identified a significant positive relationship between underwriting risk and size with financial performance (ROE) of life insurance companies in India using a linear multiple regression model. They recommended that Indian life insurance companies pay more attention to size, underwriting risk, capital volume, and leverage for better financial performance. Hasan & Khanam (2013) found that operational performance (profitability & activity) was satisfactory but financial performance (long term solvency, liquidity & productivity) was moderately satisfactory in the public sector non-life insurance company in Bangladesh. They recommended some strategic steps, such as adopting modern techniques for assets management, following-up modern marketing strategies, and launching more research. Development programs, increasing human resource development programs, relaxing pricing rules, and so on for continuous growth and development of Sadharan Bima Corporation (SBC). Iheanacho (2018) found that regulatory instruments are the significant component of insurance companies' performance in Nigeria using classical linear square technique and ordinary least square (OLS) analysis on the data covering 1981 to 2015. Based on study findings, the researcher recommended that regulatory policies should be used to create a favorable investment climate by facilitating the emergency sound insurance operation that will attract both domestic and foreign investment clients. Jansirani & Muthusamy (2019) analyzed the financial efficiency of public sector non-life insurance companies in India for five years from 2012-13 to 2016-17 using a secondary source of data collected from the IRDA annual reports. The study reveals that assets are increasing where underwriting losses are met by realizing loans and advances. The selected insurance companies are below the standard regarding financial soundness measured by CAMEL. Kumar and Ghimire (2013) tested Nepalese life insurance companies' financial performance by CAMELS parameters for 2007-08 to 2011-12. The study revealed a mixed performance for different components. Other than earning and profitability ratio, all the elements (expenses rate, investment income to investment assets ratio, liquidity position) are increasing trend at least at the last year of the study period. They recommended that life insurance companies should follow the latest trend of different components and convert the earning and profitability ratio to an upward trend from a downward trend.

Lee and Lee (2012) investigated the relationship between reinsurance and firm performance by sourcing panel data of the property-liability insurance industry in Taiwan using ordinary least squares (OLS)-fixed effects and random effects and two-equation simultaneous equation model. They found that insurers' purchases less reinsurance have a higher return on assets (ROA), and higher reinsurance insurers have a lower firm performance. They recommended that managers have to strike a balance between decreasing insolvency risk and reducing potential profitability. Malik (2011) examined the effects of firm-specific factors (age of the company, size of the company, the volume of capital, leverage ratio, and loss ratio) on profitability proxied by ROA using a sample of 35 listed life and non-life insurance companies in Pakistan. Study results indicate no significant relationship between profitability and the age of the company. However, there is a significant positive association between the company's size and profitability

and the volume of capital and profitability. Mamun (2011) evaluated the performance of general insurance companies in Bangladesh, emphasizing the trend of net premium, investment and investment income, net claims, profit, and the selected insurance companies' profitability. The study identified that insurance company is affected a lot by the natural and political environment like cyclone and floods, and political unrest in the country has resulted in a decrease in the company's profit due to drastic increases of claims. Saeed & Khurram (2015) find out the impact of a firm's specific factors on their return on assets using a panel data technique to measure the impact on non-life insurance companies' performance from the data gathered from 24 non-life insurance companies in Pakistan. The fixed-effect model outcomes showed that the age and loss ratio is significant in determining financial performance. In contrast, the growth of the firm's premium, size, debt, and expense ratio proved insignificant. The study suggested that insurance entities can swell their proceeds by overseeing their claims appropriately. The above-reviewed literature guided that there is a scope of evaluating the soundness of life insurance companies in Bangladesh through a methodical way.

Methodology

The research is an empirical study based on secondary data sources collected by analyzing annual reports of selected insurance companies for ten years from 2008 to 2017 and different published sources.

Hypothesis

Following hypotheses have been developed based on the review of the literature and objectives of the study.

H₀: There are no significant differences in respect of ratios among selected companies and years.

H₁: There are significant differences in respect of ratios among selected companies and

years.

Population

Thirty-two life insurance companies in Bangladesh are the population of the study. Based on ownership, there are two types of life insurance companies in Bangladesh.

- i. One public sector life insurance company and
- ii. Thirty-one private life insurance companies.

Sampling and sample of the study

In this study, through a simple random sampling technique, ten companies were selected. The companies are (i) Delta Life Insurance Company Limited (DLICL), (ii) Meghna Life Insurance Company Limited (MLICL), (iii) Popular Life Insurance Company Limited (PLICL), (iv) Pragati Life Insurance Company Limited (PGLICL), (v) Rupali Life Insurance Company Limited (RLICL), (vi) Fareast Islami Life Insurance Company Limited (FILIC), (vii) National Life Insurance Company Limited (NLICL), (viii) Prime Islami Life Insurance Company Limited (PILICL), (ix) Sandhani Life Insurance Company Limited (SLICL), and (x) Sunlife Insurance Company Limited (SICL).

Collection of data

Mainly data for the study have been collected from annual reports of selected companies from 2008 to 2017. Some data have also been collected from different publications such as published books, journals, Statistical Yearbook of Bangladesh, Bangladesh Economic Review, and various websites such as Bangladesh Securities and Exchange Commission (BSEC) and DSE.

Processing, analyzing, and interpreting of data

The study used CAMELS and MDA techniques through SPSS version 20. Different ratios and two-way ANOVA (done with M.S. Excel) were used to determine any significant differences between companies and years.

CAMELS techniques

CAMELS is a measurement of the insurance business's financial soundness guided by the International Monetary Fund (IMF). The study is based on most of the CAMELS model components. Table-1 shows the ratios of measuring CAMELS.

Table-1: Insurance Companies' Financial Soundness Indicators

Category	Indicator
Capital Adequacy	i. Net Premium to Capital ii. Capital to Total Assets
Asset Quality	i. Real Estate, Unquoted equities, and Debtors to Total Assets ii. Receivables to Gross Premium and Reinsurance Recoveries iii. Equities to Total Assets
Reinsurance and Actuarial Issues	i. Net Premium to Gross Premium
Earnings and Profitability	i. Loss Ratio = Net Claims to Net Premium ii. Expense Ratio = Expense to Net Premium iii. Combined Ratio = Loss Ratio + Expense Ratio iv. Investment Income to Net Premium v. Investment Income to Investment Assets
Liquidity	i. Current Assets to Current Liabilities

Source: Das, Davies, and Podpiera (2003): Insurance and Issues in Financial Soundness, IMF Working Paper No. 3/138, p. 28

Multiple discriminate analysis (MDA)

According to Mohapatra (2007), Multiple Discriminate Analysis (MDA) is a multivariate technique used by Altman to predict corporate failure. Under this technique, a single discriminate score, called Z, is calculated for each year by using five financial ratios' variables as follows:

$$Z = 0.012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5$$

Here,

X_1 = Working Capital to Total Assets

X_2 = Retain earnings to Total Assets

X_3 = EBIT to Total Assets

X_4 = Market Value of Equity to Book Value of Total Debt

X_5 = Sales to Total Assets

It is a statistical technique used by financial planners to evaluate potential investments where some variables must take into account. This technique reduces the differences between some variables to classify in a set number of broad groups, comparing it to another variable. In the case of MDA analysis in the absence of equity market value in the annual report for all companies, book values are used.

Results and Discussion

In this paper, CAMELS ratio analysis and MDA are used to understand the financial soundness of life insurance companies in Bangladesh.

CAMELS ratio analysis

The IMF guided CAMELS ratios have been used as a standard and compare the study results with the standard to understand the financial soundness of life insurance companies in Bangladesh.

Capital adequacy ratio

Capital adequacy ratio (CAR) is one of the measures that ensure insurances' financial soundness in absorbing a reasonable amount of loss. For the capital adequacy analysis, two capital adequacy ratios have been used in the present study according to the IMF guideline, i.e. (a) Net Premium to Capital and (b) Capital to Total Assets. The former reflects the risk arising from underwriting operations, and the latter reflects assets to risk.

Table-2: Capital Adequacy Ratio (In percentage)

Co.		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Aver
DLICL	a	28.28	26.93	23.79	21.33	19.07	18.24	15.07	14.97	14.96	14.73	19.74
	b	91.66	92.45	93.46	94.63	95.17	94.02	95.10	96.21	96.00	95.61	94.43
MLICL	a	54.28	47.51	44.33	42.48	36.84	34.46	32.38	30.86	28.20	26.76	37.81
	b	89.58	90.94	91.12	91.82	93.31	91.30	92.91	92.74	94.27	94.05	92.20
PLICL	a	63.64	49.62	42.21	36.69	31.45	25.48	23.21	23.19	23.10	20.64	33.92
	b	97.94	98.37	96.75	98.45	98.92	98.82	98.86	98.58	97.14	95.67	97.95
PGLICL	a	63.01	68.32	80.67	70.20	55.84	37.94	40.68	45.29	48.39	44.97	55.53
	b	91.87	91.18	84.24	94.20	102.07	104.45	105.05	105.74	94.97	94.05	96.78
RLICL	a	81.23	75.27	62.48	56.16	45.86	42.53	42.82	43.12	42.37	40.79	53.26
	b	92.34	98.09	96.50	98.17	96.93	96.21	96.46	96.64	96.87	96.54	96.48
FILICL	a	52.88	66.54	47.09	34.12	28.66	24.30	23.34	24.06	25.53	26.86	35.34
	b	93.64	93.72	94.56	92.24	87.29	90.37	84.80	86.64	88.12	88.36	89.97
NLICL	a	35.28	33.14	33.89	29.92	28.45	26.13	24.44	24.20	24.05	25.24	28.47
	b	87.57	87.16	70.13	76.14	88.11	87.13	85.63	85.03	84.22	83.14	83.43
PILICL	a	68.30	59.69	49.38	44.78	37.91	31.74	30.70	33.02	37.67	39.41	43.26
	b	94.41	94.88	94.59	92.34	91.43	91.77	92.48	92.36	92.19	93.37	92.98
SLICL	a	49.57	37.23	33.54	31.16	24.46	23.79	21.79	20.94	17.91	17.90	27.19
	b	93.01	95.27	94.00	93.39	90.35	89.73	91.61	94.48	93.11	91.07	92.60
SICL	a	114.08	101.91	76.73	59.34	50.48	41.79	38.74	43.24	32.14	31.78	59.02
	b	99.25	97.82	92.98	95.62	79.89	93.00	92.31	89.07	95.27	96.36	93.16

Source: Authors' calculations based on data of annual reports of selected companies during 2008-2017

a. Net Premium to Capital

b. Capital to Total Assets

The above table highlights the capital adequacy ratios of the selected insurance companies. The higher capital adequacy ratio is considered as good, although IRDA has prescribed no benchmark. However, to ensure safety against insolvency, a high capital adequacy ratio is desirable. The ratio of net premium to capital has witnessed a decreasing trend for all selected insurers during the study period but yet now healthy position. The highest average value is 59.02 (SICL), and the lowest average value is 19.74 (DLICL). The ratio of capital to total assets indicates the proportion of capital in the companies' total assets portfolio, growth in the business's assets, and how efficiently the capital has invested in creating assets. The ratios of capital to total assets have witnessed a mixed trend for all selected insurers. All the insurance companies' range of capital to total assets was 70 % to 105 %, which showed satisfactory capital adequacy. The highest average score is 97.95 (PLICL), and the lowest average score is 83.43 (NLICL). The capital adequacy ratio (CAR) found that PGLICL retained more indemnity risk and is carried by capital.

Similarly, DLICL, MLICL, PLICL, RLICL, FILICL, NLICL, PILICL, and SICL have shifted indemnity risk and fewer burdens capital due to said risk retention. Premium income was not following the growth of capital for any company during the study period. It is evident from annual reports that about 75 % of investments made to shares and debentures of listed companies, statutory deposit to Bangladesh Bank and Fixed Deposit Receipt (FDR), the investments may term as risk-free. So at the time of unexpected claims, the companies are capable enough to handle the problem. The statistics mentioned above give an idea that all the selected companies maintained satisfactory CAR. All the selected insurers depicted competent CAR, so emphasis should be given on consistent performance on the premium collection, managing adequate capital.

Table-3: Two-Factor ANOVA without replication for Capital Adequacy

Ratio	Sources of variation	F	P-value	F-crit.
Net Premium to Capital	Year	23.22	0.00	2.00
	Company	26.23	0.00	2.00
Capital to Total Assets	Year	0.58	0.81	2.00
	Company	11.70	0.00	2.00

Source: Calculation from Table No. 2

From the table-3, it is observed that the calculated value of F is higher than the table value of F at a 1 % level of significance for the net premium to capital. Thus significant differences among the years and companies were observed under the review period regarding net premium to capital. Significant differences among companies were found at the 1% level, but there are no significant differences among years under review regarding capital to total assets.

Assets quality analysis

Assets quality analysis is very crucial because it determines the overall financial health of an insurance company. Assets quality largely depends upon the investment portfolio. An attempt is made here to determine the structure of assets and focus on potentially impaired assets and the degree of credit control the insurance companies exercised. Investment in the real estate and housing sector increases the quality of the assets. The investment should be at least 10% of the total assets (Darzi, 2011). The companies' annual reports found no direct investment made by insurance companies to the real estate and housing sectors in Bangladesh. However, some investments in the form of shares (listed in the stock exchange) of real estate and housing companies.

Table-4: Assets Quality Ratio (In percentage)

Co.		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Aver.
DLICL	a	0.41	0.35	0.25	0.22	0.20	0.23	0.30	0.18	0.64	0.29	0.31
	b	1.59	1.38	1.14	1.10	1.08	1.32	2.09	1.24	4.39	2.05	1.74
	c	10.09	15.75	18.71	12.97	11.16	8.78	9.85	9.73	7.16	7.47	11.17
MLICL	a	0.56	0.54	0.41	0.35	0.30	0.29	0.52	2.15	2.21	2.11	0.94
	b	1.15	1.24	1.01	0.90	0.88	0.91	1.73	7.48	8.30	8.36	3.20
	c	27.60	23.73	25.14	17.83	14.61	13.67	10.72	4.42	7.76	7.54	15.30
PLICL	a	0.63	0.32	0.47	0.43	0.36	0.30	0.29	0.28	0.33	0.34	0.38
	b	1.01	0.65	1.16	1.19	1.15	1.21	1.27	1.24	1.46	1.74	1.21
	c	40.03	34.22	27.06	22.90	22.38	17.28	12.69	2.71	-9.54	-6.25	16.35
PGLICL	a	3.33	8.97	4.81	3.49	4.93	3.37	4.70	4.35	0.94	1.51	4.04
	b	5.67	14.12	6.97	5.18	8.39	8.28	10.76	9.03	2.01	3.53	7.39
	c	29.47	30.31	26.22	19.65	20.54	14.69	10.94	11.56	12.76	10.65	18.68
RLICL	a	0.12	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	b	0.16	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
	c	30.41	34.72	27.31	12.27	10.77	10.90	14.28	12.64	12.81	10.03	17.61
FILICL	a	0.02	0.51	0.34	0.09	0.05	0.14	0.08	0.12	0.42	0.24	0.20
	b	0.04	0.81	0.77	0.30	0.21	0.64	0.41	0.58	1.88	0.99	0.66
	c	31.98	35.36	30.99	15.28	17.04	15.53	10.80	7.50	3.65	4.78	17.29
NLICL	a	2.18	2.32	2.08	2.02	0.32	0.32	0.45	0.67	0.90	1.27	1.25
	b	7.05	8.02	8.73	8.85	1.29	1.42	2.12	3.27	4.45	6.02	5.12
	c	18.38	17.04	14.94	12.30	13.90	12.34	9.08	4.59	4.57	3.61	11.08
PILICL	a	2.15	0.06	0.02	0.87	0.02	0.51	0.53	0.84	0.42	0.33	0.58
	b	3.33	0.10	0.05	2.11	0.06	1.75	1.85	2.76	1.20	0.89	1.41

	c	40.18	39.41	34.19	24.28	18.48	15.65	14.61	8.84	7.57	8.69	21.19
SLICL	a	1.38	1.48	1.46	1.71	2.29	2.92	1.51	3.40	1.42	1.64	1.92
	b	2.99	4.17	4.63	5.86	10.36	13.65	7.53	17.13	8.52	10.06	8.49
	c	28.62	23.64	20.79	12.74	9.49	9.39	6.22	5.90	3.29	7.40	12.75
SICL	a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	b	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	c	38.05	33.03	23.97	24.92	33.88	16.93	15.38	9.23	1.72	6.56	20.37

Source: Authors' calculations based on data of annual reports of selected companies during 2008-2017

- a. Real Estate, Unquoted equities, and Debtors to Total Assets
- b. Receivables to Gross Premium and Reinsurance Recoveries
- c. Equities to Total Assets

Analysis of the first ratio of assets quality reveals almost trivial decreasing performance. During the study period and sometimes mixed performance, debtors and real estate investments could not keep velocity with the stout increase in selected insurance companies' total assets portfolio. All the companies were evidence of a low ratio ranging from 0.12 to 8.97. SICL and RLICL revealed 0% most of the years because of zero debtors and account receivables in the financial statements. The ratio of receivables to gross premium and reinsurance recoveries has witnessed a mixed trend for all selected insurers ranging between 0.04 and 14.12 %. SICL and RLICL revealed 0 percentages in most of the years because of zero account receivables in the financial statements. The analysis shows that selected insurance companies in Bangladesh made a sufficient volume of equity investments. The selected companies' annual reports witnessed that insurers made no direct real estate and housing investment in Bangladesh. However, some companies invested in the share of real estate and housing companies. The equities ratio to total assets has witnessed a mixed trend for all selected insurers ranging from 1.72 to 40.18%. This ratio indicates the proportion of capital in the companies' total assets' portfolio, growth in the business's assets, and how efficiently the capital has invested in creating assets. The investment portfolio should be revised by increasing assets, equity, and real estate investments prescribed by the IMF.

Table-5: Two-Factor ANOVA without Replication for Assets Quality

Ratio	Sources of variation	F	P-value	F-crit.
Real Estate, Unquoted Equities, and Debtors to Total Assets	Year	0.70	0.71	2.00
	Company	20.67	0.00	2.00
Receivables to Gross Premium and Reinsurance Recoveries	Year	0.62	0.77	2.00
	Company	16.31	0.00	2.00
Equities to Total Assets	Year	31.96	0.00	2.00
	Company	5.02	0.00	2.00

Source: Calculation from Table No. 4

From the table-5, significant differences among companies are observed at a 1% level of significance for real estate, unquoted equities and debtors to total assets; receivables to gross premium and reinsurance recoveries; and equities to total assets because the calculated value of F is higher than the critical value. However, there are no significant differences among years under review regarding real estate, unquoted equities and debtors to total assets, and receivables to gross premium and reinsurance recoveries. F's calculated value is higher than F's table value at a 1% level of significance for equities to total assets. Thus significant differences among the years are observed under the review period regarding equities to total assets.

Reinsurance and actuarial issues

If the insurers feel risk, then they may take reinsurance coverage from a large insurer. Reinsurance and Actuarial issues, also known as the risk retention ratio, reflect its overall underwriting strategy. Net premium to gross premium is the indicator of reinsurance and actuarial issues.

Table-6: Reinsurance and Actuarial Ratio (In percentage)

Co.		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Aver.
DLICL	a	99.35	99.31	99.34	99.28	98.87	98.33	99.28	99.38	99.20	98.78	99.11
MLICL	a	99.82	99.79	99.77	99.84	99.87	99.79	99.80	99.82	99.78	99.72	99.80
PLICL	a	99.87	99.93	99.91	99.86	99.84	99.80	99.83	99.81	99.85	99.82	99.85
PGLICL	a	98.53	98.05	98.60	98.02	96.94	97.38	97.95	99.32	98.76	98.77	98.23
RLICL	a	99.96	99.95	99.92	99.87	99.89	99.68	99.94	99.87	99.92	99.88	99.89
FILIC	a	99.90	99.95	99.89	99.87	99.79	99.76	99.86	99.83	99.81	99.83	99.85
NLICL	a	99.77	99.69	99.77	99.68	99.56	99.85	99.65	99.75	99.76	99.78	99.73
PILICL	a	99.89	99.95	99.89	99.89	99.79	99.75	99.72	99.72	99.72	99.59	99.79
SLICL	a	99.94	99.93	99.83	99.90	99.89	99.82	99.75	99.70	99.71	99.71	99.82
SICL	a	99.95	99.98	99.90	99.90	90.93	99.97	99.95	99.89	99.52	99.69	98.97

Source: Authors' calculations based on data of annual reports of selected companies during 2008-2017

a. Net premium to gross premium

This table highlights the position of reinsurance and actuarial issues of selected insurance companies. The risk retention ratio analysis indicates that all selected insurance companies' risk retention capacity is a risk position. During the study period, consistent performances were observed from all the insurers. All the selected companies' value placed significantly closer to 100%, which indicates that companies do not participate with reinsurance or participation is very emaciated. The technical reserve is an essential item for analyzing this section but not found in any companies' financial statements during the study period.

Table-7: Two-Factor ANOVA without Replication for Assets Quality

Ratio	Sources of variation	F	P-value	F-crit.
Net Premium to Gross Premium	Year	1.49	0.17	2.00
	Company	3.72	0.00	2.00

Source: Calculation from Table No. 6

Table 7 observed no significant difference among the years under review period regarding net premium to gross premium. It also found that the calculated value of F (3.72) is higher than the table value of F (2.00) with (9, 81) degree of freedom at a 1% level of significance. So, the null hypothesis is rejected. Thus, it can be concluded that there are significant differences among the companies under the study period regarding net premium to gross premium.

Earnings and profitability analysis

Earnings and profitability analysis judge the firm's ability to generate profits that would adequately support its operations and ensure a fair return on its investment (Mohapatra, 2007). Insurance Act 2010 guided expenses that it should not exceed 20% of the net premium. The combined ratio should be below 100%. If it is over 100% for a long time, it means premium income is not sufficient to pay the claim and operating expense. Return on equity indicates the overall level of profitability.

Table-8: Earning and Profitability Ratio (In percentage)

Co.		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Aver.
DLICL	a	63.88	46.86	46.02	46.16	57.32	65.64	73.02	76.54	83.69	86.43	64.56
	b	99.15	82.63	82.99	83.16	88.34	123.13	114.08	114.19	123.39	125.62	103.67
	c	163.03	129.49	129.02	129.33	145.66	188.76	187.09	190.72	207.08	212.05	168.22
	d	33.50	41.74	62.66	42.47	46.28	50.59	55.67	55.90	49.45	55.34	49.36
	e	23.24	24.10	28.54	18.58	16.12	16.68	13.54	12.85	11.17	12.14	17.70
MLICL	a	18.45	21.75	23.97	26.32	31.36	37.85	48.00	70.37	61.55	63.57	40.32
	b	62.93	70.63	70.54	77.14	82.74	85.02	92.40	114.10	100.77	100.23	85.65
	c	81.38	92.38	94.50	103.46	114.10	122.87	140.40	184.48	162.32	163.80	125.97
	d	11.72	13.75	12.77	15.23	19.21	22.02	21.79	21.67	21.17	20.06	17.94
	e	20.69	18.54	15.73	18.74	18.22	18.98	17.78	17.60	15.87	13.59	17.57
PLICL	a	3.16	3.58	4.30	8.62	12.11	21.42	37.96	90.38	134.30	124.30	44.01
	b	13.20	15.31	28.14	23.42	23.86	22.99	30.34	27.48	33.07	33.90	25.17
	c	16.36	18.89	32.44	32.04	35.97	44.40	68.31	117.86	167.37	158.20	69.18
	d	8.90	12.44	11.09	14.76	22.79	30.06	32.57	36.23	32.26	36.40	23.75
	e	19.23	19.72	9.71	12.42	16.59	14.86	13.17	14.86	11.61	11.22	14.34
PGLICL	a	18.31	17.24	15.78	25.70	32.50	46.84	58.21	59.22	56.40	57.70	38.79
	b	233.01	215.62	206.91	220.25	255.46	345.86	341.44	314.48	312.87	324.94	277.08
	c	251.33	232.86	222.69	245.95	287.96	392.70	399.65	373.70	369.28	382.64	315.88
	d	23.01	14.82	21.35	7.51	12.39	19.28	20.73	17.41	17.03	16.73	17.03
	e	31.10	21.15	31.25	12.24	18.27	15.72	16.06	14.06	14.25	13.89	18.80
RLICL	a	15.66	13.72	17.64	27.04	40.16	53.27	48.63	46.58	46.98	52.25	36.19
	b	70.23	66.47	72.29	91.99	96.06	96.12	92.94	96.60	94.35	100.04	87.71
	c	85.90	80.19	89.93	119.04	136.22	149.39	141.57	143.18	141.33	152.29	123.90
	d	6.95	7.08	6.96	8.19	12.46	14.06	12.66	15.15	15.44	14.61	11.36
	e	25.08	22.72	15.39	15.44	19.07	19.38	16.25	20.33	21.68	21.41	19.68
FILICL	a	13.31	10.29	10.18	20.26	24.54	28.24	34.46	42.08	58.74	57.49	29.96
	b	53.31	56.91	42.98	69.33	63.43	67.93	77.50	90.51	107.63	102.35	73.19
	c	66.62	67.20	53.16	89.59	87.96	96.17	111.96	132.59	166.37	159.84	103.15
	d	13.47	10.49	17.39	11.74	24.39	30.33	24.67	19.12	16.61	15.08	18.33
	e	33.55	55.20	62.42	59.24	94.34	85.42	75.07	55.49	46.66	20.09	58.75
NLICL	a	34.12	34.74	32.16	40.60	47.08	50.59	61.05	83.61	84.24	86.77	55.50
	b	68.91	71.86	69.46	78.67	85.19	90.67	103.88	124.89	123.79	128.33	94.57
	c	103.03	106.60	101.62	119.27	132.26	141.26	164.93	208.50	208.04	215.11	150.06
	d	24.06	24.85	21.09	26.12	34.63	36.67	37.11	36.62	35.13	32.34	30.86
	e	31.00	30.88	23.01	26.93	33.73	28.40	26.75	23.44	21.04	19.41	26.46
PILICL	a	10.88	9.18	10.43	15.53	24.03	37.16	44.10	57.33	59.03	53.20	32.09
	b	62.47	56.54	56.25	63.70	74.68	81.57	83.95	99.07	98.68	93.31	77.02
	c	73.35	65.72	66.68	79.23	98.71	118.73	128.05	156.40	157.70	146.51	109.11
	d	15.93	17.66	20.41	14.65	18.49	24.07	23.75	16.88	10.65	8.09	17.06
	e	36.13	35.29	112.38	53.20	69.35	45.23	39.99	28.78	20.41	17.27	45.80
SLICL	a	16.46	14.53	22.85	29.36	36.49	53.80	75.76	81.42	108.20	93.10	53.20
	b	57.33	60.91	71.38	88.30	103.86	107.53	136.41	144.33	187.15	163.62	112.08
	c	73.79	75.43	94.23	117.66	140.35	161.33	212.17	225.74	295.35	256.72	165.28
	d	15.62	22.95	31.95	22.71	33.84	36.17	43.08	40.21	48.09	51.53	34.62
	e	24.93	28.09	31.05	16.64	19.66	19.52	19.44	17.88	20.44	25.17	22.28
SICL	a	4.98	6.49	9.68	12.70	22.38	29.72	36.69	36.94	65.43	69.06	29.41

	b	73.12	73.86	75.81	79.13	89.60	93.67	95.71	112.07	135.28	128.03	95.63
	c	78.11	80.36	85.49	91.83	111.98	123.39	132.39	149.01	200.71	197.09	125.04
	d	3.96	4.84	6.24	10.87	16.15	15.95	15.67	12.78	10.56	16.24	11.33
	e	23.53	20.03	15.29	20.43	20.30	16.39	14.37	12.93	8.50	16.04	16.78

Source: Authors' calculations based on data of annual reports of selected companies during 2008-2017

- a. Loss Ratio = Net Claims to Net Premium
- b. Expense Ratio = Expense to Net Premium
- c. Combined Ratio = Loss Ratio + Expense Ratio
- d. Investment Income to Net Premium
- e. Investment Income to Investment Assets

The loss ratio witnessed a mixed trend for all selected insurers ranging from 3.16 to 134.30. The highest average value of loss ratio is 64.556 for DLICL, and the lowest average value is 29.407 for SICL. Due to inefficient pricing and claim estimates, some companies have to pay more claims against the premium. So at the time of efficient pricing, risk must be carefully estimated. The expense ratio also witnessed a mixed trend for all selected insurers ranging from 13.20 to 187.15. The highest average value of the expense ratio is 277.084 for PGLICL, and the lowest average value is 25.171 for PLICL. The expense ratio was very high compared to the IDRA standard (20%) for these companies. Expenses should reduce and emphasize expanding the business, increasing the amount of premium to keep the prescribed boundary ratio. The combined ratio should be below 100 %, while the ratio above 100 % means utilizing more money in paying claims and expenses that it receives from premium (Hampton, 1993). The highest average value of the combined ratio is 315.876 (PGLICL), and the lowest average value is 69.184 (PLICL). The selected companies reported underwriting profit for very few years during the study period as the ratio is above 100 % in most cases. The investment income to net premium witnessed an increasing trend for all selected insurers ranging from 3.96 to 62.66. This ratio's highest average value is 49.36 for DLICL, and the lowest average value is 11.32 for SICL. The investment income to investment assets witnessed a mixed trend for all selected insurers ranging from 8.50 to 112.38. This ratio's highest average value is 58.748 for FLICL, and the lowest average value is 14.339 for PLICL. High-quality portfolio investment may be the way of superior performance.

Table-9: Two-Factor ANOVA without replication for Earning and Profitability

Ratio	Sources of variation	F	P-value	F-crit.
Net Claim to Net Premium	Year	29.87	0.00	2.00
	Company	7.97	0.00	2.00
The expense to Net Premium	Year	15.51	0.00	2.00
	Company	136.16	0.00	2.00
Loss Ratio + Expense Ratio	Year	36.62	0.00	2.00
	Company	81.05	0.00	2.00
Investment Income to Net Premium	Year	8.19	0.00	2.00
	Company	47.97	0.00	2.00
Investment income to Investment Assets	Year	2.30	0.02	2.00
	Company	16.61	0.00	2.00

Source: Calculation from Table No. 8

Table-9 shows that in all the cases, F's calculated value is higher than the table value. So the null hypothesis is rejected. Thus, there are significant differences among the companies and years under the study period regarding the net claim's net premium. The expense to the net premium, loss ratio + expense ratio, investment income to the net premium, and investment income to investment assets ratio during the study period.

Liquidity analysis

The liquidity ratio is the indicator of the firm's ability to meet its day-to-day obligations (Mohapatra, 2007). Liquidity is usually a less persistent problem for insurance companies, at least as compared to banks. A standard of 2:1, i.e., 200 %, has been prescribed as the ideal current ratio (Mohapatra, 2007).

Table-10: Liquidity Ratio (In percentage)

Co.		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Aver.
DLICL	a.	542.81	537.73	559.08	728.69	675.91	545.21	579.15	622.60	581.55	544.14	591.69
MLICL	a.	597.92	666.39	675.01	675.08	757.36	573.92	660.61	617.21	750.29	676.75	665.05
PLICL	a.	2564.01	3237.00	1320.16	2984.57	4466.61	3469.62	2964.79	2282.76	809.45	511.56	2461.05
PGLICL	a.	374.19	447.62	238.68	795.38	-	-862.11	-743.24	-594.05	672.52	616.43	-123.49
						2180.30						
RLICL	a.	682.43	2833.11	1136.20	1185.24	1118.94	931.46	1071.48	1154.63	1184.68	1069.75	1236.79
FILICL	a.	1039.55	1183.09	1377.86	847.58	509.13	661.88	393.71	367.66	386.32	325.92	709.27
NLICL	a.	537.00	531.57	524.74	553.11	502.15	437.05	357.05	316.78	283.12	254.55	429.71
PILICL	a.	1017.15	1185.38	763.42	486.85	536.27	628.88	707.67	699.73	693.42	621.67	734.04
SLICL	a.	825.28	978.51	723.63	538.51	359.15	342.66	377.83	627.31	475.86	411.19	565.99
SICL	a.	2359.94	1926.16	581.50	1045.58	308.25	505.44	474.33	214.57	507.33	676.14	859.92

Source: Authors' calculations based on data of annual reports of selected companies during 2008-2017

a. *Liquidity = Current Assets to Current Liabilities*

This table shows the liquidity ratio of selected life insurance companies. The liquidity analysis observed that all the selected insurance companies maintain more than 100 % of the liquid assets against liabilities and showed that companies are well-thought-out to meet unforeseen claims. The liquidity ratio is maintained more than 500 % by DLICL, MLICL, FILICL, PILICL, SLICL, and SICL; even this is too high for PLICL (average value 2461 %) and RLICL (average value 1237 %). PGLICL showed a negative percentage in 2012, 2013, 2014, and 2015 due to appearing fair value change account in the balance sheet's liabilities side. Fair value change is the difference between book value and the market value of the investment. All the selected companies hold a more liquid asset, which indicates lower investment, i.e., idle capital owned by the companies. So, through proper liquidity analysis, companies should maintain an appropriate liquidity ratio and invest the unused money to the different portfolios as more as possible to increase income.

Table-11: Two-Factor ANOVA without Replication for Liquidity Ratio in Respect of Current Assets to Current Liabilities

Ratio	Sources of variation	F	P-value	F-crit.
Current Assets to Current Liabilities	Year	1.81	0.08	2.00
	Company	13.67	0.00	2.00

Source: Calculation from Table No. 10

The table-11 observed that the hypothesis is rejected for companies at a 1% level of significance because the F calculated is greater than the F critical value. Thus, there are significant differences among the companies under the study period regarding current assets to current liabilities. Again, F calculated value is lower than the F critical value for years. There are no significant differences among the years under the study period regarding current assets to current liabilities.

Multiple discriminate analysis (MDA)

Companies having a Z score of 2.99 or above are healthy. Z score 1.81 or less are considered the potential sick and firms operating within Z score of 1.81 to 2.99 taken as operating in the risk zone (Mohapatra, 2007).

Table-12: Summary of Z Scores of Selected Life Insurance Companies

Co.	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average
DLICL	0.27	0.26	0.23	0.21	0.19	0.18	0.15	0.15	0.15	0.15	0.19
MLICL	0.50	0.45	0.42	0.40	0.35	0.33	0.31	0.29	0.27	0.26	0.36
PLICL	0.65	0.51	0.42	0.38	0.33	0.26	0.24	0.23	0.22	0.2	0.34
PGLICL	0.60	0.65	0.70	0.69	0.60	0.42	0.44	0.49	0.47	0.44	0.55
RLICL	0.77	0.76	0.62	0.56	0.45	0.42	0.42	0.42	0.42	0.40	0.52
FILIC	0.52	0.65	0.47	0.33	0.26	0.23	0.21	0.22	0.23	0.24	0.34
NLICL	0.32	0.30	0.25	0.24	0.26	0.24	0.22	0.21	0.21	0.24	0.25
PILICL	0.67	0.59	0.49	0.43	0.36	0.30	0.29	0.31	0.36	0.38	0.42
SLICL	0.48	0.37	0.33	0.30	0.23	0.22	0.20	0.20	0.17	0.17	0.27
SICL	1.15	1.01	0.73	0.58	0.41	0.40	0.36	0.43	0.31	0.31	0.57

Source: Authors' calculations based on data of annual reports of selected companies during 2008-2017

The above table shows the Z score for individual insurance companies and the average Z score of all the selected life insurance companies for 2008 to 2017. The average Z score articulates that SICL is in the top position (Z score 0.57) and DLICL is low (Z score 0.19) among the selected companies. However, compared to standards, scores are abysmal for all the companies. So each of the companies should emphasize increasing Z score, and it should be 2.99 or above. Z scores were determined to predict the companies' financial soundness, so it can say that the insurance companies are in a financially unhealthy position during the study period. So to increase the Z score, companies should increase premium income.

Major Findings

The researchers used CAMELS and MDA analysis to determine the level of life insurance companies' financial soundness in Bangladesh. From those analyses, different findings are identified. Some of them summarize in brief.



Indemnity risk burden has shifted to capital during the study period as capital growth is faster than the premium income for most companies.



Most of the selected insurance companies do not follow the portfolio investment guidelines of the IMF. IMF prescribed investments in real estate and housing sectors are 10 % of the life insurance companies' total assets. However, insurance companies have no direct investment in real estate and housing companies in Bangladesh. About 50 % of the total assets invested to statutory deposit with Bangladesh Bank, shares and debentures, and FDR.



The risk-retention ratio indicates that all the selected insurers were in a risky position during the study period. Reinsurance and actuarial ratio indicate that companies hardly participate in reinsurance.



A minimum claim or loss ratio is desirable to be a company financially sound. Under the study period, it is found that due to inefficient pricing and claim estimate DLICL, MLICL, PGLICL, RLICL, NLICL, and SLICL had to pay more amount of claim against the premium.



During the study period, it is found that DLICL, PGLICL, NLICL, and SICLS' volume of expense ratio was so high that the other selected companies. In most cases, the expense ratio was found more than the IDRA standard (20 %) for all selected companies during the study period.



The underwriting profit of some selected companies was very poor during the study period. Other income (the investment income) was sometimes used to meet up claim settlement and operating expense.



The selected insurance companies hold more liquid assets than the necessity.



From the results of MDA, it was observed that all the selected companies are in sick position.

Conclusion

Insurance is a technique of reducing and distributing risk through an appropriate risk management system. The insurance industry is generally seen as the spine of any country's risk management system since it ensures financial security. The study results evident that expense ratio, claims ratio, and liquidity ratio is the factors that significantly and negatively influence the financial soundness of insurance companies in Bangladesh. The financial soundness of life insurance companies over the study period was not satisfactory. The insurance companies did not wholly follow the International Monetary Fund (IMF) and the Insurance Development and Regulatory Authority (IDRA) in Bangladesh. For better management, the organizations' executive body should take some strategic steps like introducing a mechanism that reduces costs, develops HRD programs, and assesses risky policies with due care. Eliminate fake agents, transparent in all aspects, relaxing pricing rules, introduce new assets management techniques, and the like. To increase financial soundness, insurance companies should increase risk retention power through reinsurance, underwriting profit by increasing premium income, investment income by quality portfolio investment of idle money. Customers' confidence through the payment of claims at due time grasps all sorts of customers. However, to increase product lines and improve Bangladesh's insurance sector, the government, insurance companies, insurance regulatory authorities, Bangladesh Securities and Exchange Commission (BSEC) should take the collective initiative. These will undoubtedly create an atmosphere for improving the financial soundness of life insurance companies in Bangladesh. Future researchers may research to measure life insurance companies' performance, the impact of premium income on profitability, customer satisfaction regarding claim settlement, reinsurance and risk management mechanism, and the like.

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Acknowledgement: The article is a part of the research project financed by Jatiya Kabi Kazi Nazrul Islam University, Trishal, Mymensingh-2224, Bangladesh.