

Financial performance analysis of GIC Re

Analysis of
GIC Re

Tutun Mukherjee

Xavier Law School, St. Xavier's University, Kolkata, Kolkata, India, and

Pinki Gorai and Som Sankar Sen

Department of Commerce, The University of Burdwan, Burdwan, India

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Received 11 August 2020
Revised 27 September 2020
Accepted 13 October 2020

Abstract

Purpose – This study aims to analyse the following: first, the financial performance of General Insurance Re (GIC Re) using performance ratios (PRs); second, the uniformity of different financial performance indicators of GIC Re; third, the internal growth capacity of GIC Re; and finally, the likelihood of GIC Re going into financial distress.

Design/methodology/approach – As a sample, GIC Re, the lion shareholder in Indian Reinsurance Industry has been considered in the present study. All the necessary data have been extracted from the secondary sources over a time period of 16 years. The financial performance of GIC Re is assessed using five standard ratios, and the uniformity of different financial performance indicators of GIC Re has been examined using Kendall's Coefficient of Concordance (W). To assess the internal growth capacity of GIC Re internal growth rate has been used, and the likelihood of GIC Re going into financial distress is analysed using multivariate discriminant approach, namely, modified Altman's Z-score model and logit analysis technique, namely, Ohlson's O-score model.

Findings – The results exhibit that financial performance of GIC Re is somewhat satisfactory over a few considerable areas. However, no notable degree of uniformity has been observed amongst the varied financial performance indicators, namely, performance ratio, expense ratio, return on assets, risk retention ratio and combined ratio of GIC Re. The results also reveal GIC Re is lacking ability of growing internally. Moreover, there remains a significant possibility of GIC Re going into financial distress in the near future and so.

Originality/value – This study is one of the first empirical research studies in India that examines the financial performance of GIC Re from different perspectives.

Keywords Financial performance, Reinsurance, Forecasting financial distress, GIC Re, Performance uniformity, Internal growth capacity

Paper type Research paper

1. Introduction

Reinsurance has been practised as a commercial endeavour for centuries, across the globe (Kramer, 2020). Gradually, it has evolved from a risk management tool to a value-added component of the insurance process. Natural catastrophes such as earthquake, flood, tsunami, hurricane and so on, bring in sudden and significant financial losses and affects the insurance industry severely. In fact, such financial losses are so substantial that it might cripple an insurance company and compel into bankruptcy. Reinsurance, as such, spread the



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Vilakshan - XIMB Journal of
Management
Vol. 17 No. 1/2, 2020
pp. 181-195
Emerald Publishing Limited
e-ISSN: 2633-9439
p-ISSN: 0973-1954
DOI 10.1108/XJM-08-2020-0071

risk of catastrophic loss, which might bankrupt the ceding insurer. Additionally, it enables an original insurer to accept risks that would otherwise be beyond its capacity by allowing it to transfer a portion of that risk to reinsurer (Thomas, 2020).

As such, reinsurance companies are imperative to insurance businesses. In fact, they are the bedrock of the insurance business and thereby contribute to the general economic prosperity of the country.

In India, General Insurance Re (GIC Re), the sole domestic reinsurer, was doing the business of reinsurance, till-recent times. It is not only the premier financial institution of India but also an imperative reinsurance company in the international platform. According to Sidhu and Verma (2017), "GIC Re has the power to influence the underwriting capacity and culture of the primary Indian insurers and thus holds an extremely important place in the Indian insurance market". But with the advent of foreign reinsurers in the Indian insurance market at present, will it be possible for GIC Re to hold its monopoly power for long? Will it be able to face the fiery competition? Probably, these are the set of questions that seek answers.

Thus, in the present context, this study primarily aims to gain an insight into the GIC Re's overall financial performance. To be more specific, this study aims to analyse: First, the financial performance of GIC Re using performance ratios (PRs). Second, the uniformity of different financial performance indicators of GIC Re. Third, the internal growth capacity of GIC Re. Lastly, the likelihood of GIC Re going into financial distress. In doing so, this study adds a couple of novelties to the existing literature. First, this study is one of the first empirical researches in India that examines the financial performance of GIC Re from different perspectives. Second, the present study utilizes a set of varied standard tools and techniques, namely, internal growth rate (IGR), modified Altman's Z-score model and Ohlson's O-score model, among others to analyse and forecast GIC Re's financial performance.

The rest of the paper is organized as follows. Section 2 deals with literature review. Section 3 delineates the research methodology. Then, results and discussions are presented in Section 4, and Section 5 concludes the paper.

2. Literature review

There is a dearth of study regarding reinsurance, particularly in India. This section covers most of the studies in this context.

Few studies attempted to discuss the need and importance of reinsurance. For example, Howard (1956) presented the factors that lead life insurance companies to code and assume reinsurance through a reinsurance pool. They summarized the essential factors of the life insurance companies of insurance pools. They found the main purpose of reinsurance pools was to provide opportunities for executives of participating companies to confer on the matter of mutual trust. Blazenko (1986) evaluated the features of the insurance market that affect the use of reinsurance market. He found that capital market equilibrium negates the need for reinsurance. When direct markets were imperfectly competitive, active reinsurance market emerged. They also found two important factors which determine the utilization of transaction cost and degree of the market provided by the reinsurance company. Evans (1999) discussed the need for the omnipresence of reinsurance transactions within the insurance marketplace. He found that the reinsurance business dominated worldwide by reinsurers in other countries and had achieved a significant domestic presence and among all reinsurance companies US reinsurance had more combine net worth than annual premium and the financial condition was strong and linked to worldwide retrocession improve that strength. Nissim (2012) described the insurance business, including activities and organisation of insurance

companies, products and services, distributor channels, competition, regulation, taxation, risk, risk management, the financial performance of insurance activities and the primary difference between international financial reporting standards and the US, GAAP. [Contador and Krebs \(2016\)](#) discussed on post opening relationship and casualty between insurance and reinsurance. They used Granger Casualty Test between insurance and reinsurance. The empirical analysis used monthly data from the post-2009 period and annual data since 1970 and showed the strongest evidence indicates that the strongest casualties were from the reinsurance market to the insurance one and that local reinsurance positive effect on insurance than eventually and admitted at the end. The opening of reinsurance was a radical change in the insurance market in Brazil, with positive impacts that were just beginning.

Different researchers tried different mathematical models to search for an optimum level of retention. [Hald and Schmidli \(2004\)](#) considered the maximisation of the adjustment coefficient in the case of proportional reinsurance. For this purpose, they used three models, such as Cramer – Lundberg risk model, the Spare – ANDERSON model and the Markov modulated risk model. By using these models, they maximised the adjustment coefficient $R(b)$ which satisfied the equation of the models. [Zhi Li \(2008\)](#) tried to analyse the optimal retentions of quota share and stop loss/excess of loss reinsurances. He attempted to make a balance of interest between the ceding company and reinsurance company which would fulfil the interest of both the parties. The relationship among the retention level, quota share, maximum of joint survival probability, the optimal split of the total premium income and maximisation of joint survival were derived, and comparison between exponential distribution claim and parent claim took place. He also used the properties of associated random variables to derive a lower bound for the joint survival probability, bivariate gamma distribution to approximate the joint survival probability of both the companies and calculate quota share reinsurance treaties the drives optimal quota share levels by varying the dividend ceiling, insurance loading, claim frequency, claim size, initial surplus etc. [Veprauskaite and Sherris \(2012\)](#) analysed the optimal reinsurance structures for a heterogeneous life insurance portfolio based on actual policy, claim and reinsurance data of an Australian life insurance company. They compared among quota share, surplus, a combination of quota and surplus. They used “mean-variance” framework for assessing the optimised desirable reinsurance structure. They found that the optimum reinsurance structure is based on a combination of different characteristics such as homogeneity of the portfolio, a combination of quota share and surplus, claim variance, etc. Finally, they suggested that if the pre-determined criteria were fulfilled an optimum reinsurance structure can be constructed. [Boyer and Nyce \(2013\)](#) evaluated the optimum reinsurance coverage cost and the role of government in such cases. They used a classic economic approach and showed the structure of reinsurance program for given catastrophic risk exposure to minimise the cost of such natural hazards to policyholders. They suggested that if government intervention in the insurance market is to increase society’s welfare, then it would be at the highest possible level of risk. [Park and Xie \(2020\)](#) in their paper discussed the impact of reinsurer downgrading on property casualty insurers for the period 2002 to 2009. This paper especially emphasised on the interconvert between insurers and US property-casualty insurers and the impact of major global reinsurer insolvency on the US property-casualty insurance industry for the potential systematic risk caused by the interconnectedness of the insurance sector through reinsurance. They concluded that the likelihood of primary insurer’s downgrade increases with its reinsurance default risk exposure from downgraded insurers and the negative effects also spill over to insurers that are not directly exposed to the credit risk of downgrade reinsurers. [Boyer and Courtade \(2013\)](#) examined the structure of the reinsurance market. They observed that reinsurance

treaties during the period 2005–2010 had generally become more complex over the year and a unique liner pattern was found by a line of insurance for distribution of the quotes. Cogo (2017) measured the optimal reinsurance agreement under the perspectives of both the reinsurance and insurer company. She used VaR-based optimal reinsurance model and proved that limited stop loss reinsurance is nearly a certainty. She also reported that the treaty does not allow minimizing the VaR of the reinsurer's total risk exposure.

Some studies tried to evaluate the financial performance of different reinsurers. Lee and Lee (2012) analysed the performance of reinsurance business property validity insurance industry in Taiwan from 1999 to 2009. They found that insurers with a higher return on assets (ROA) purchased less reinsurance. Insurance manager had to strike a balance between decreasing insolvency risk and reducing potential profitability. They provided new information and some insight that firm preference and reinsurance are independent, the impact of reinsurance and firm performance on each other and offered managers an integrated thought process for reinsurance, decision and performance management. They concluded that firm performance and reinsurance are interdependent. Insurers with a higher likelihood of insolvency purchase more insurance and this manager made a balance between decreasing insolvency risk and reducing potential profitability. Nema and Jain (2012) discussed the growth of reinsurance business in India and GIC Re in particular. They analysed the growth of the company dividing the period into three stages. That is Reinsurance before nationalization, reinsurance after nationalization and reinsurance after liberalization. They compared earned premium and incurred claimed for the period of five years commencing from 2005 and ending in 2010. The study found that the growth of reinsurance had increased during the study period. Gatumel and Forges (2013) analysed the understanding and monitoring of reinsurance counter party risk. They mainly focused on the impact of reinsurance credit on an insurers balance sheet market complexity and lack of coordinated responses regarding the rule of control and regulation and also highlighted the impact of market and discipline on this risk and point out the importance of entire within the reinsurance industry the key role of regulation in providing better risk measurement tools to assist in assessing the importance of reinsurance interparty risk on insurance levels and the systematic development of risk management tools. Bawa and Verma (2017) evaluated the financial performance of GIC Re from 2006–2007 to 2015–2016. They used several ratios such as loss ratio, expense ratio (ER), combined ratio (CR), investment income/net premium, investment income/investment assets, return on equity, solvency ratio, liquidity ratio, risk retention ratio (RRR), etc. They concluded that though GIC Re earned a handsome profit still its CR showed the unsatisfactory result.

From the above discussion, it can be observed that there is lack of research in this field, particularly in India. Thus, there is an ample opportunity to conduct a study on the financial performance of General Insurance Re, the lion shareholder in Indian Reinsurance Industry.

3. Research methodology

3.1 Data and sample

The present study is descriptive, as well as an empirical in nature. As a sample, General Insurance Re, the lion shareholder in Indian Reinsurance Industry has been considered in the present study, and the selection is being made on the basis of purposive sampling. All the necessary data have been extracted from the secondary sources over a time period of 16 years i.e. from 2002–2003 to 2017–2018. To be more specific, required financial data have been gathered and compiled from the company's annual reports retrieved from www.gicofindia.com. In addition, other relevant facts and figures as required to develop

the conceptual framework of this study, gathered from the articles, magazines, academic books, newspapers and others.

3.2 Method

In the present study, several fundamental, as well as standard accounting and statistical tools and techniques have been employed in appropriate places to analyse the data legitimately. To be more specific, initially, financial performance of GIC Re is assessed using five standard ratios. Then, uniformity of different financial performance indicators of GIC Re has been examined using Kendall's Coefficient of Concordance (W). To assess the internal growth capacity of GIC Re IGR has been used, and the likelihood of GIC Re going into financial distress is analysed using multivariate discriminant approach, namely, modified Altman's Z-score model and logit analysis technique, namely, Ohlson's O-score model. There are plethora of models through which one can predict corporate financial distress, for example Probit model (Zmijewski, 1984), Hazard model (Shumway, 2001) and D-Score model (Blums, 2003), among others. However, Altman's Z-score model (modified) and Ohlson's O-score model are considered the most accurate and significant predictor of corporate financial distress (Chieng, 2013; Kordlar and Nikbakht, 2011; Pongsatit *et al.*, 2004).

The methods as used, namely, Kendall's Coefficient of Concordance, modified Altman's Z-score model and Ohlson's O-score model are discussed as under:

Kendall's Coefficient of Concordance

Kendall's Coefficient of Concordance (W) is used to measure the degree of association among three or more sets of rankings:

$$W = s / \left[\left(\frac{1}{12} \right) k^2 (n^3 - n) \right] \tag{1}$$

Where:

$$s = \sum (R_i - \bar{R})^2$$

\bar{R} = sum of ranks assigned to each individual;

\bar{R} = mean of R_i s;

K = number of sets of rankings; and

N = number of individuals ranked.

If there is any tie then formula 1 will be adjusted as follows:

$$W = s / \left[\left(\frac{1}{12} \right) k^2 (n^3 - n) - k \sum T \right] \tag{2}$$

Where $\sum T = \sum (t^3 - t) / 12$

t = number of objects or individuals involved in a tie.

$0 \leq W \leq 1$.

The computed value of W is tested using χ^2 test. The value of χ^2 is calculated by using the following formula:

$$\chi^2 = k(n - 1)W \quad (3)$$

Where:

- k = number of sets of rankings;
- n = number of individual ranked; and
- W = Kendall's Coefficient of Concordance.

If the computed value of χ^2 is either equal to or greater than the table value of χ^2 at $(n-1)$ degrees of freedom at a given level of significance, then the computed value of χ^2 is significant and vice versa.

Modified Altman's (1968) Z-Score

In response to requests for a measure to predict the likelihood of bankruptcy for non-manufacturing firms, Altman (1968) refined his earlier prediction model, namely, Z-Score model and presents an alternative multivariate model, named "modified Z-Score model". In this model, first four variables were kept intact as of the earlier Z-Score model, but the fifth variable, i.e. sales/total assets ratio was dropped to filter the function from the possible distortion related to the sector and country (Chieng, 2013). Moreover, different weighted coefficients were employed in the model. The variables and analysis technique is summarized below:

$$Z'' \text{ Score} = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

where:

$$X_1 = \frac{\text{Working Capital}}{\text{Total assets}}$$

$$X_2 = \frac{\text{Retained Earnings}}{\text{Total assets}}$$

$$X_3 = \frac{\text{EBIT}}{\text{Total assets}}$$

$$X_4 = \frac{\text{Book Value of Equity}}{\text{Total Liabilities}}$$

Source: Chieng (2013).

Notes:

- Z'' Score > 2.6 – Safe Zone.
- Z'' Score ranging from 1.1 to 2.6 – Grey Zone.
- Z'' Score < 1.1 – Distress Zone.

Ohlson's (1980) O-Score

The Ohlson's O-Score model has been widely used in the distress prediction literature. This model is based on conditional logit technique (Timmermans, 2014) and uses logistic regression with a set of nine accounting ratios to predict corporate financial distress (Asfrac *et al.*, 2019). The variables and analysis technique is summarized below:

$$\text{O-Score} = -1.32 - 0.407X_1 + 6.03X_2 - 1.43X_3 + 0.08X_4 - 2.37X_5 - 1.83X_6 + 0.29X_7 - 1.72X_8 - 0.52X_9$$

Where:

$$X_1 = \text{Log} \left(\frac{\text{Total assets}}{\text{GNP price - level index}} \right)$$

$$X_2 = \frac{\text{Total liabilities}}{\text{Total assets}}$$

$$X_3 = \frac{\text{Working capital}}{\text{Total assets}}$$

$$X_4 = \frac{\text{Current liabilities}}{\text{Total assets}}$$

$X_5 = \text{One if total liabilities exceed total assets, Zero otherwise}$

$$X_6 = \frac{\text{Net Income}}{\text{Total assets}}$$

$$X_7 = \frac{\text{Funds provided by operations}}{\text{Total liabilities}}$$

$X_8 = \text{One if net income was negative for the last two years, Zero otherwise}$

$$X_9 = (NI_t - NI_{t-1}) / (NI_t + NI_{t-1})$$

Source: [Asfrac et al. \(2019\)](#)

Notes:

- O-Score < 0.50 – Safe Zone
- O-Score > 0.50 - Distress Zone

3.3 Research variables

As stated earlier, the present study considered a comprehensive set of five standard ratios, where each of them measures a particular aspect of the financial performance of the reinsurance company. These ratios are briefly discussed as under:

- PR – PR is simply the ratio of a net claim for a particular reporting period to the net premium for the period. This ratio highlights the efficiency of a reinsurance company in managing its underwriting function. In general, the lower this ratio, the better the company's financial performance.

- ER – ER represents the ratio of operating expense plus underwriting commission for a particular reporting period to the net premium earned for the period. This ratio highlights the efficiency of a reinsurance company in managing its operations. In general, the lower this ratio, the better the company's financial performance. However, according to Insurance Regulation Act, 1993, a reinsurance company should not let their management expenses exceeding 30% of their net premium received.
- ROA – ROA is the ratio of net income for a particular reporting period to the total assets for the period. This ratio highlights the profitability of a reinsurance company. In general, the higher this ratio, the better the company's financial performance.
- RRR – RRR represents the ratio of net premium for a particular reporting period to the gross premium for the period. This ratio highlights the efficiency of a reinsurance company in managing its risks. In general, the higher this ratio, the better the company's financial performance.
- CR – CR is the ratio of incurred losses plus expense for a particular reporting period to the earned premium for the period. This ratio is believed to be the key indicator of a reinsurance company's overall financial performance. In general, the lower this ratio, the better the company's financial performance.

In addition, to assess the internal growth capacity of GIC Re, IGR has been used as a proxy in this study. IGR represents the utmost growth rate in sales that a firm can have with its internal funds only (i.e. retained earnings only). It is a specially designed tool that allows the manager to monitor the consistency of the firm's diverse growth plans. It is computed as follows:

$$IGR = \frac{ROA \times b}{1 - (ROA \times b)} \times 100 \text{ [Ross et al. (2012), pp. 103–106]}$$

Where,

$$ROA \text{ (Return on Assets)} = \frac{\text{Net Income}}{\text{Total Assets}}$$

$$b \text{ (Retention Rate)} = 1 - \text{Dividend Pay-out ratio (Table 1)}$$

4. Results and discussion

Table 2 and Figure 1 presents the summary statistic of the varied financial performance indicators namely, PR, ER, ROA, RRR and CR of GIC Re over the study period. The statistics of PR indicate that GIC Re's net claim is approximately 0.81 times of its net premium, which signifies the company is managing its underwriting function in an efficient manner. The mean value of ER is 24.02 with a minimum of 17.55 and a maximum of 32.01. The figures indicate that the management expense of GIC Re is approximately 24% of their net premium earned, which signifies the company is managing its operations fairly. However, it seems worth noting that GIC Re's profitability, as measured by ROA is approximately 2.92% only. This indicates the company is not producing enough income from the use of its existing assets. Literally speaking, companies used to have such an experience only when their strategic management is inadequate. To such a degree, the same reflects in GIC Re's case as well. As regards risk management, the statistics (refer RRR) indicate that on an average 84.37% of the GIC Re's risk is retained by the insurers. This signifies the company is managing its risks quite efficiently. The last but not the least, the "CR", indicate that GIC Re's outflow is approximately 1.10 times of its premium income,

Table 1.

Summary list of
research variables

| Variables of interest | Measurement | Indicate |
|-------------------------------|--------------------------------------------------------------------------------------|-------------------------------------|
| 1. Performance Ratio (PR) | $PR = \frac{Net\ Claim}{Net\ Premium} \times 100$ | Efficacy in underwriting management |
| 2. Expense Ratio (ER) | $ER = \frac{Operating\ exp. + Underwriting\ comm.}{Net\ Premium\ Earned} \times 100$ | Operational efficiency |
| 3. Return on Assets (ROA) | $ROA = \frac{Net\ Income}{Total\ Assets} \times 100$ | Profitability |
| 4. Risk Retention Ratio (RRR) | $RRR = \frac{Net\ Premium}{Gross\ Premium} \times 100$ | Efficacy in managing risk |
| 5. Combined Ratio (CR) | $CR = \frac{Incurred\ Losses + Expenses}{Earned\ Premium} \times 100$ | Overall financial performance |
| 6. Internal Growth Rate (IGR) | $IGR = \frac{ROA \times b}{1 - (ROA \times b)} \times 100$ | Internal Growth Capacity |

Source: Author's own compilation

| Year | PR (in %) | ER (in %) | ROA (in %) | RRR (in %) | CR (in %) |
|-------------|--------------|--------------|---------------|---------------|--------------|
| 2002–2003 | 71.60 | 29.22 | 2.23 | 70.56 | 115.60 |
| 2003–2004 | 69.55 | 27.90 | 6.31 | 86.02 | 100.20 |
| 2004–2005 | 80.25 | 28.42 | 1.02 | 85.40 | 113.20 |
| 2005–2006 | 107.99 | 25.70 | 2.27 | 91.35 | 128.30 |
| 2006–2007 | 56.42 | 32.01 | 5.37 | 71.10 | 101.40 |
| 2007–2008 | 72.33 | 29.67 | 2.76 | 77.60 | 112.80 |
| 2008–2009 | 83.99 | 23.09 | 4.69 | 96.84 | 102.80 |
| 2009–2010 | 78.12 | 24.77 | 4.05 | 82.94 | 109.70 |
| 2010–2011 | 82.05 | 21.19 | 2.08 | 81.71 | 111.40 |
| 2011–2012 | 111.37 | 19.08 | –4.59 | 83.10 | 142.70 |
| 2012–2013 | 79.46 | 21.70 | 3.91 | 88.31 | 106.50 |
| 2013–2014 | 91.63 | 17.55 | 3.36 | 92.70 | 110.30 |
| 2014–2015 | 85.82 | 22.14 | 3.45 | 89.30 | 109.00 |
| 2015–2016 | 78.78 | 23.16 | 3.57 | 82.30 | 107.40 |
| 2016–2017 | 71.74 | 21.24 | 3.29 | 79.54 | 99.70 |
| 2017–2018 | 87.56 | 17.43 | 2.93 | 91.14 | 103.80 |
| No. of obs. | 16 | 16 | 16 | 16 | 16 |
| Minimum | 56.42 | 17.55 | –4.59 | 70.56 | 99.70 |
| Maximum | 111.37 | 32.01 | 6.31 | 96.84 | 142.70 |
| Mean | 81.79 | 24.02 | 2.92 | 84.37 | 110.93 |
| SD | 13.74 | 4.45 | 2.39 | 7.37 | 11.04 |

Table 2.

Summary statistic of
the varied financial
performance
indicators of GIC Re

Notes: "PR" – Performance Ratio; "ER" – Expense Ratio; "ROA" – Return on Assets; "RRR" – Risk Retention Ratio; "CR" – Combined Ratio

Source: Authors own tabulation using MS-Excel

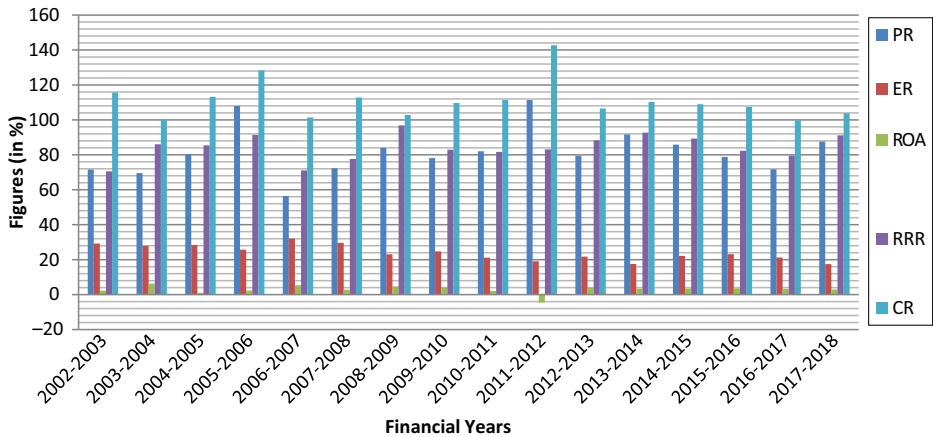


Figure 1.
Statistics of the varied financial performance indicators of GIC

Source: Authors own presentation using data from Table 2

which suggests the company is not in an upright control, so far as the overall financial performance has been of concern.

In sum, it may be asserted that even though the financial performance of GIC Re seems somewhat satisfactory over a few considerable areas, but as a whole, the financial performance is not in an upright control (indicates by its high CR).

Table 3 reports the result of Kendall's Coefficient of Concordance (W) amongst the varied financial performance indicators of GIC Re. This test enables a researcher to study whether there is any uniformity amongst the varied financial performance indicators (three or more) or not. The test statistic reveals that the value of W (0.27) is neither significant at 1% level nor, at 5% level. This suggests that there is no notable degree of uniformity amongst the varied financial performance indicators of GIC Re over the period of study.

Table 4 presents the internal growth capacity of GIC Re over the period of study, i.e. from 2002–2003 to 2017–2018. The internal growth capacity explains a firm's maximum growth potentiality without external financing of any kind. In other words, it portrays the utmost annual growth that a firm can undergo with its internal funds only (i.e. through retained earnings only). The mean value of IGR is -0.17 with a maximum of 4.62 and a minimum of -4.75 . The negative mean value of IGR suggests GIC Re is incompetent of growing internally, i.e. with its internal funds. The logical reasoning behind this observed phenomenon could be their inefficient management of existing resources, which could have added ample funds to their till for growth and future benefits.

Table 5 presents the Altman's Z" Scores and Ohlson's O-Scores for GIC Re over the study period. With the Altman model, the lower the Z" Score, the more likely that the firm will go into financial distress. The Z" Score for GIC RE ranges from a minimum of -3.43 to a maximum of -0.22 , with a mean of -0.79 . The negative Z" Score indicates there remains a significant possibility of GIC Re going into financial distress.

To check the robustness of the prior result, Ohlson's O-Score model has been used. With the Ohlson model, the higher the O-Score, the more likely that the firm will go into financial distress. The O-Scores are, on average, quite higher the 0.5 threshold. This confirms there is a significant risk of GIC Re going into financial distress in the near future and so.

| Year | PR (In %) | | ROA (In %) | | RRR (In %) | | CR (In %) | | Financial Performance Rank | | | | Sum of ranks Ri = AR + BR + ... + ER | $(\bar{R} - R)^2$ | |
|-----------|--------------|-------|---------------|-------|---------------|----|--------------|----|----------------------------|----|----|----|-----------------------------------------|-------------------|--------|
| | A | B | C | D | E | F | G | H | AR | BR | CR | DR | | | ER |
| 2002-2003 | 71.60 | 29.22 | 2.23 | 70.56 | 115.60 | 3 | 14 | 13 | 16 | 14 | 14 | 16 | 14 | 60 | 306.25 |
| 2003-2004 | 69.55 | 27.90 | 6.31 | 86.02 | 100.20 | 2 | 12 | 1 | 7 | 2 | 12 | 1 | 7 | 24 | 342.25 |
| 2004-2005 | 80.25 | 28.42 | 1.02 | 85.40 | 113.20 | 9 | 13 | 15 | 8 | 13 | 13 | 15 | 8 | 58 | 240.25 |
| 2005-2006 | 107.99 | 25.70 | 2.27 | 91.35 | 128.30 | 15 | 11 | 12 | 3 | 15 | 11 | 12 | 3 | 56 | 182.25 |
| 2006-2007 | 56.42 | 32.01 | 5.37 | 71.10 | 101.40 | 1 | 16 | 2 | 15 | 3 | 16 | 2 | 15 | 37 | 30.25 |
| 2007-2008 | 72.33 | 29.67 | 2.76 | 77.60 | 112.80 | 5 | 15 | 11 | 14 | 12 | 15 | 11 | 14 | 57 | 210.25 |
| 2008-2009 | 83.99 | 23.09 | 4.69 | 96.84 | 102.80 | 11 | 8 | 3 | 1 | 4 | 8 | 3 | 1 | 27 | 240.25 |
| 2009-2010 | 78.12 | 24.77 | 4.05 | 82.94 | 109.70 | 6 | 10 | 4 | 10 | 4 | 10 | 4 | 10 | 39 | 12.25 |
| 2010-2011 | 82.05 | 21.19 | 2.08 | 81.71 | 111.40 | 10 | 4 | 14 | 12 | 11 | 4 | 14 | 12 | 51 | 72.25 |
| 2011-2012 | 111.37 | 19.08 | -4.59 | 83.10 | 142.70 | 16 | 3 | 16 | 9 | 16 | 16 | 3 | 9 | 60 | 306.25 |
| 2012-2013 | 79.46 | 21.70 | 3.91 | 88.31 | 106.50 | 8 | 6 | 5 | 6 | 6 | 6 | 5 | 6 | 31 | 132.25 |
| 2013-2014 | 91.63 | 17.55 | 3.36 | 92.70 | 110.30 | 14 | 2 | 8 | 2 | 10 | 2 | 8 | 2 | 36 | 42.25 |
| 2014-2015 | 85.82 | 22.14 | 3.45 | 89.30 | 109.00 | 12 | 7 | 7 | 5 | 8 | 7 | 7 | 5 | 39 | 12.25 |
| 2015-2016 | 78.78 | 23.16 | 3.57 | 82.30 | 107.40 | 7 | 9 | 6 | 11 | 7 | 9 | 6 | 11 | 40 | 6.25 |
| 2016-2017 | 71.74 | 21.24 | 3.29 | 79.54 | 99.70 | 4 | 5 | 9 | 13 | 1 | 5 | 9 | 13 | 32 | 110.25 |
| 2017-2018 | 87.56 | 17.43 | 2.93 | 91.14 | 103.80 | 13 | 1 | 10 | 4 | 5 | 1 | 10 | 4 | 33 | 90.25 |

$\sum Ri = 680,$ $\sum (Ri - R)^2 = 2336$
 $\bar{R} = 42.5$

W stat. = 0.27, Cal. Chi-Sq value = 20.61

Notes: $p < 0.05^{**}, p < 0.01^*$
Source: Authors own tabulation using MS-Excel

Table 3.
Kendall's coefficient
of concordance
amongst the varied
financial
performance
indicators of GIC Re

| Year | ROA | b | ROA x b | 1-(ROA x b) | IGR (ln %) |
|-------------|-------|-------|---------|-------------|-------------------------------------------------------------------------|
| | | | | | $= \left\{ \frac{ROA \times b}{1 - (ROA \times b)} \times 100 \right\}$ |
| 2002–2003 | 0.02 | 0.78 | 0.02 | 0.98 | 1.77 |
| 2003–2004 | 0.06 | 0.70 | 0.04 | 0.96 | 4.62 |
| 2004–2005 | 0.01 | 0.70 | 0.01 | 0.99 | 0.72 |
| 2005–2006 | 0.02 | 0.80 | 0.02 | 0.98 | 1.85 |
| 2006–2007 | 0.05 | 0.28 | 0.02 | 0.98 | 1.53 |
| 2007–2008 | 0.03 | 0.54 | 0.01 | 0.99 | 1.51 |
| 2008–2009 | 0.05 | 0.35 | 0.02 | 0.98 | 1.67 |
| 2009–2010 | 0.04 | 0.18 | 0.01 | 0.99 | 0.73 |
| 2010–2011 | 0.02 | 0.52 | 0.01 | 0.99 | 1.09 |
| 2011–2012 | -0.05 | 1.00 | -0.05 | 1.05 | -4.39 |
| 2012–2013 | 0.04 | -0.09 | 0.00 | 1.00 | -0.35 |
| 2013–2014 | 0.03 | -0.05 | 0.00 | 1.00 | -0.15 |
| 2014–2015 | 0.03 | -0.26 | -0.01 | 1.01 | -0.88 |
| 2015–2016 | 0.04 | -1.00 | -0.04 | 1.04 | -3.45 |
| 2016–2017 | 0.03 | -1.33 | -0.04 | 1.04 | -4.20 |
| 2017–2018 | 0.03 | -1.70 | -0.05 | 1.05 | -4.75 |
| No. of obs. | 16 | | | | |
| Minimum | -4.75 | | | | |
| Maximum | 4.62 | | | | |
| Mean | -0.17 | | | | |
| SD | 2.70 | | | | |

Table 4.Internal growth
capacity of GIC Re**Notes:** ROA – Return on assets; b –Retention rate; IGR – Internal growth rate
Source: Authors own tabulation using MS-Excel

5. Summary and conclusion

In emerging economies, reinsurance companies are the bedrock of the insurance business. In the Indian context, despite an increased number of foreign competitors in the insurance market, GIC Re manages to hold the lion market share to-date. The present study aimed to analyse; First, the financial performance of GIC Re using PRs. Second, the uniformity of different financial performance indicators of GIC Re. Third, the internal growth capacity of GIC Re. Finally, the likelihood of GIC Re going into financial distress.

The findings of this study bring to light that financial performance of GIC Re is somewhat satisfactory over a few considerable areas. However, no notable degree of uniformity has been observed amongst the varied financial performance indicators, namely, PR, ER, ROA, RRR and CR of GIC Re. The results also reveal GIC Re is lacking ability of growing internally. Moreover, there remains a significant possibility of GIC Re going into financial distress in the near future and so.

Putting the findings together, even though the GIC RE's financial performance appears to be marginally satisfactory over a few areas, but as a whole it is not in an upright control. There is a significant possibility of GIC Re going into financial distress and even might go bankrupt. With the advent of foreign reinsurers in the Indian insurance market at present, whether GIC Re be able to hold its market share for long- seems questionable.

This study contributes to the extant literature by revealing the financial performance of GIC Re from different perspectives. The findings of this study would serve the GIC Re's management in devising plans, policies and strategies for future decision making. Using

| Year | Z' Score | O-Score | Status |
|-------------|----------|---------|---------------|
| 2002–2003 | -1.08 | 4.56 | Distress Zone |
| 2003–2004 | -3.43 | 6.18 | Distress Zone |
| 2004–2005 | -0.97 | 5.11 | Distress Zone |
| 2005–2006 | -0.99 | 4.84 | Distress Zone |
| 2006–2007 | -0.90 | 4.56 | Distress Zone |
| 2007–2008 | -0.75 | 4.70 | Distress Zone |
| 2008–2009 | -0.54 | 3.85 | Distress Zone |
| 2009–2010 | -0.27 | 3.99 | Distress Zone |
| 2010–2011 | -0.22 | 4.13 | Distress Zone |
| 2011–2012 | -1.23 | 3.47 | Distress Zone |
| 2012–2013 | -0.69 | 24.44 | Distress Zone |
| 2013–2014 | -0.55 | 4.11 | Distress Zone |
| 2014–2015 | -0.29 | 3.97 | Distress Zone |
| 2015–2016 | -0.32 | 3.90 | Distress Zone |
| 2016–2017 | -0.23 | 3.82 | Distress Zone |
| 2017–2018 | -0.25 | 3.76 | Distress Zone |
| No. of obs. | 16 | 16 | |
| Minimum | -3.43 | 3.47 | |
| Maximum | -0.22 | 24.44 | |
| Mean | -0.79 | 5.59 | |
| SD | 0.78 | 5.07 | |

Notes: This table presents the Altman's Z' Scores and Ohlson's O-Scores for GIC Re over the study period. A firm with a Z' score > 2.6 is predicted to have minimal risk of financial failure, and a firm with a Z' score < 1.1 is expected to go into financial distress. A Z' score between 1.1 and 2.6 indicate that the firm is in grey zone. With the Ohlson model, the higher the O-Score, the more likely that the firm will go into financial distress. More specifically, the firms with O-Scores < 0.50 are predicted to have minimal risk of financial failure and firms with O-Scores > 0.50 are expected to go into financial distress

Source: Author's own tabulation using MS-Excel

Table 5.
Forecasting financial
distress

these findings, financial advisors would be able to assist and advise their clients judiciously, in the investment-related matters to GIC Re. In addition, the investors and existing clients would be able to capture a snapshot of the riskiness of their investments in GIC Re.

This study presents a foundation and source of reference to the academicians and the scholars for future research. The present study can be further extended by taking into consideration other performance metrics or by expanding the period of study. Moreover, further studies can be carried out on other contemporary issues, such as the role of reinsurance industry towards economic development, benefits and future challenges of reinsurance sector in emerging economies, reinsurance and financial stability and so forth.

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Further reading

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Corresponding author

Tutun Mukherjee can be contacted at: tutun.mukherjee@sxuk.edu.in

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