Factors Influencing Reinsurance Costs of Nepalese General Insurers

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Abstract

Although reinsurance is a ubiquitous practice in the insurance industry, it is not devoid of associated costs. In order to obtain the pledge of reinsurers, who are essential in sharing any risks/Losses, insurers are required to pay specific costs. The primary objective of this article is to examine firm-level variables that might have an influence on an insurance company's reinsurance costs. A study of the relationship between reinsurance costs and several financial and technical ratios, which are regarded as effective monitoring tools for insurers, has been accomplished in order achieve the aforementioned objective. Using panel data analysis, the relationship between reinsurance costs and both financial and technical indicators has been carefully examined. The information, which includes variables from 14 General insurance firms between the years 2010 and 2022, was obtained from the authorized portal of the Nepal Insurance Authority (NIA). One model focused on financial ratios, while the other went in-depth with technical ratios. Additionally, the analyses were revised to consider the 2015 Major earthquake and recent COVID-19 timeframe, revealing possible effects at these particular times.

The findings of the study revealed an interesting observation regarding the impact of various financial and technical ratios on reinsurance costs. Financial ratios, such as return on assets and debt ratio, as well as the technical ratio, retention ratio, had a significant negative impact on reinsurance expenses. In other words, as profits, debt levels, and retention ratios rise, insurance companies become less willing to bear insurance costs and prefer to bear a greater portion of the risks. Even after accounting for the disruptive periods of the2015 Major earthquake andrecent COVID-19 pandemic, these variables maintained their negative influence on reinsurance costs. In addition, the Net Combined Ratio emerged as an additional significant determinant of reinsurance costs when the data from the COVID-19 were excluded. This suggests that the Net Combined Ratio continues to have a significant impact on reinsurance costs even in the absence of this crisis period. Reinsurance is required as long as there is an insurance industry, which makes its existence essential. To prevent potential severe damages brought on by occurrences like fire, flood, or earthquake, these two sectors must work closely together. However, as with any transaction in this economic system, there are expenses involved in the process of reinsuring an insurance contract. According to research, several variables, particularly the return on assets, debt ratio, and retention ratio, are important in determining how much reinsurance will cost.

Keywords: *insurance, reinsurance, ratio analysis*

Introduction

Risks and uncertainty are a part of everyone's lives. Risks and uncertainties can sporadically result in losses. Individual investments are thus vulnerable to losses, and future living standards could be at risk. Throughout history, some charitable foundations or businesspeople have started to cover the damages of the others by creating similar institutions, like insurance companies, with their current meaning in order to prevent or compensate for such

future material losses. However, the lack of these unorganized activities and the rising demand from people and businesses for risk protection have resulted in the development of the insurance sector. Since the advent of the insurance industry, damages have been covered by funds generated by insurance companies. Initially focused on marine transportation, the insurance industry has expanded to include a variety of other industries (Morris, 2018). This industry now plays an important role in society, providing safe havens for investment and trade while also contributing to financial markets through funding functions and associated benefits and externalities. Insurance companies need additional insurance to ensure their ability to pay potential claims, even though they were established to cover the losses that insured parties might incur in the future. As a result, insurance companies cover their potential risks as well, which enhances reinsurance.

Naturally, both the original insurance and the reinsurance have a cost. While the insured must pay the insurance company premiums, the insurance company also incurs some expenses to ensure that the reinsurer shares the risks of potential losses. The cost of reinsurance may depend on several other factors, such as the type of risks to be shared and the financial and technical position of the insurance company, in addition to the amount of premiums paid by the insured and the level of exposure.

The purpose of this article is to investigate firm-level variables that could impact the cost of reinsurance to the insurance provider. In this study, the relationship between reinsurance costs and the financial and technical standing of insurance companies over the 13-year period 2010–2022 (14 General Insurer) has been investigated. The results of the panel data analyses showed that the Return on Asset and Debt Ratio on the financial side and the Retention Ratio on the technical side are the factors affecting the cost of reinsurance.

Literature Review

The amount of capital invested, and the reinsurance acquired must be balanced for the insurance companies because the capital requirements are impacted by this balance (Altuntas et al., 2018). In this way, a capital structure issue is the demand for reinsurance (Cummins et al., 2021). The demand for reinsurance has an impact on both the cost of reinsurance that is endured by the insurance company and the capital structure preferences.The general economic environment as well as firm-level factors were studied in the existing literature as potential influences on insurance demand. The position of the insurance industry or technical and financial ratios are the primary metrics used to examine firm-level factors.

Lee and Lee (2012), Mayers and Smith (1990), Cole and McCullough (2006), and Adams et al. (2008) demonstrate that insurers with higher ROA have fewer reinsurance contracts, resulting in reduced reinsurance costs. Furthermore, Berger et al. (1992) present evidence that the proportion of liquid assets is positively related to insurance company performance, implying that liquid insurance businesses with adequate liquidity reinsure less (Chen & Wong, 2004). As a result, Lee and Urritia (1996) and Lee and Lee (2012) discover a negative, highly significant relationship between liquidity and reinsurance. Furthermore, from the perspective of the reinsurer, Cole and McCullough (2006) suggest that liquidity in the reinsurer segment could be evidence of excess cash circulation, which leads to more reinsurance supply. The majority of studies find a similar relationship between insurer performance and reinsurance, but there is conflicting evidence regarding the connection between financial leverage and reinsurance demand. Reinsurance financing is essentially a replacement for insurers' equity, according to Garven and Tennant (2003) and Hoyt and Khang (2000), and there is a significant positive relationship between leverage and reinsurance.

Significant evidence of a beneficial relationship between financial leverage and reinsurance demand was also found by Carneiro and Sherris in 2005. While Zou et al. (2003) find a strong negative link, Lee and Lee (2012) and Aunon-Nerin and Ehling (2008) find no significant influence on reinsurance costs.

Massive losses, from the perspective of insurance companies, will reduce total reinsurance availability and raise reinsurance rates. Reinsurance improves cash flow predictability and lowers profit volatility (Weiss & Chung, 2004). Cole and McCullough (2006) discovered a negative relationship between reinsurance cost and reinsurance demand, as did Cummins et al. (2021). Hoerger et al. (1990), on the other hand, demonstrate the existence of a positive relationship, stating that an increase in reinsurance price, and thus cost, will result in a decrease in reinsurance demand. Lee and Lee (2012), on the other hand, discovered no significant relationship.

Reinsurance cost and underwriting risk have a significant positive relationship, as found by Lee and Lee (2012), suggesting that insurers with higher underwriting risk are more likely to purchase more reinsurance. In a similar vein, Winter (1991), Doherty and Garven (1993), and Browne and Hoyt (1995) discovered a highly significant relationship between the combined ratio and the insolvency rate, which increases the need for reinsurance and consequently reinsurance cost. The combined ratio is negatively correlated with price, according to Cole and McCullough's (2006) research, which raises demand for reinsurance contracts. It is anticipated that insurers will switch to the less expensive reinsurance market.

The recent 2015 Major earthquake and COVID-19 pandemic is one of many factors, other than firm-level factors, that are influencing the demand for reinsurance, as stated by Altuntas et al. (2022). The COVID-19 pandemic has some effects on both economic and real-world activities, including supply chain disruptions, company closures, a decline in job creation, and an increase in the unemployment rate. While the economic effects of the pandemic are obvious for all nations and sectors, they may not be disruptive for all. While some sectors use pandemics as an opportunity, others reach the point of insolvency.

Babuna et al. (2020), who looked at the pandemic's effects on the insurance industry from two different angles, note that although the pandemic caused many people to start looking to the insurance industry and governments as sources of hope, some insurance companies suffered financial setbacks as a result of the rapid rise in cases that outpaced recoveries.For the Republic of North Macedonia, Stojkoski et al. (2021) find that COVID-19 has a worsening effect on the insurance sector; for India, Parvathi and Lalitha (2021) and Kaur and Singh (2022); for Ukraine, Vojinovi et al. (2022); for Serbia; for the EU countries, Puawska (2021) and Cristea et al. (2021); for Indonesia, Ikhwan and Rus However, Yldz (2021) discovered that COVID-19 had a favourable effect on Turkey's insurance industry in terms of total written premium. Additionally, Atukalp (2021) discovered that the number of coverages increased following COVID-19, which led to an increase in the cost of health insurance.

Methods

A balanced sample of the annual panel data from Nepalese General Insurance companies is used in this study. A balanced panel data set from 14General insurance companies covering the years 2010 through 2023 (13 years) makes up the sample. Due to their continued existence in the insurance industry, these 14 companies are used as a sample. Additionally, based on the gross premium written over the course of 13 years, these 14 companies account for 90.37% of the industry as a whole. All information was taken from the freely accessible database provided on the Nepal Insurance Authority (NIA) and respective companies website and Department of Statistics, Government of Nepal.

The descriptions of the dependent, independent, and control variables are shown in Table 1.

Not only the reinsurance premium paid to the reinsurance company included in the reinsurance cost (RC). The total cost of a company's reinsurance is calculated by adding up all reinsurance-related costs, such as premiums and commissions. Costs of reinsurance could be positive or negative. In the insurance industry, the portion of risk that the primary insurer cedes to another insurer (reinsurer) is known as "reinsurance ceded." Ceding claims—whether they are paid, unpaid, or CF unpaid—are counted as revenue when a ceding premium would be a cost to an insurance provider. The accounts that are used to calculate the cost of reinsurance, which is a dependent variable in empirical analysis, are listed in Table 1.

In the literature section above, a potential connection between firm-level financial factors and reinsurance has been looked into. According to the literature, Return on Assets (ROA), Liquid Asset Ratio (LAR), and Debt Ratio (DER) are taken as independent variables among the alternative firm-level financial factors. Due to their profitability and capacity to pay claims whenever they arise, insurance companies with higher ROA typically prefer not to enter into additional reinsurance agreements. As a result, as ROA rises, fewer reinsurance contracts are entered into, which lowers reinsurance costs. A crucial indicator of a company's solvency or soundness is the liquidity ratio. The insurance company that has more liquid assets is less likely to be exposed to the risks of potential claims in the near future. As a result, if the business is sufficiently liquid, it would require fewer reinsurance contracts than less liquid businesses. The cost of reinsurance will go down for an insurance company with lots of liquid asset's thanks to no-demand reinsurance contracts. Being liquid and reinsurance costs are predicted to be negatively correlated.

When other factors are held constant while a company's total debt grows, the company's debt ratio also grows. A high leverage ratio, also known as debt ratio, can even result in bankruptcy because the likelihood of default is higher for a company with more debt than it is for a company without debt. In order to protect against the unfavorable effects of high debt, the company must purchase an additional cushion. This cushion could be a reinsurer or another risk-bearer under a reinsurance agreement. Reinsurance contracts impose a fixed capital requirement on reinsurers and require them to share the cost of insured parties' claims. As a result, it is anticipated that reinsurance costs will rise when a company has a high level of financial leverage. There is, however, another side to every coin. A company would not want to incur any additional costs if it is already under financial pressure and has high financial leverage. In order to avoid an additional expense, a company with high leverage would not enter into a reinsurance contract. As a result, there may be a negative correlation between leverage and reinsurance costs.

Table 1. List of Variable

Dependent Variable	Independent Variable		Control Variables
RIC (Reinsurance Cost)	Financial Ratio	Technical Ratio	
	ROA (Return on Assets)	RER (Retention Ratio)	EQC (equity Capital)
	LAR (Liquid Asset Ratio)	RIP (Reinsurance Price)	PFC (Portfolio Concentration)
	DER (Debt Ratio)	NCR (Net Combined Ratio)	

RIC (Reinsurance Cost). The cost of reinsurance for insurance companies is shown as the total of all reinsurance-related costs, including premiums, claims, expenses, and reserves.

Ceded Premium (RCP), Ceded Unearned Premium (CUP), Ceded Unexpired Risk Reserve (CUR), Ceded Losses Paid (CLP), Ceded Outstanding Losses (COL), Ceded Deductions (CDD), Reinsurance Commission (RCM), Ceded Technical

Income or Expense (CTI/E)Ceded Recoveries (CRS), Ceded Mathematical Reserves (CMR), Ceded Equalization Reserve (CER), Ceded Financial Risk Reserves (CFR), Ceded Technical Reserves (CTR), are used to determine RIC:

Independent Variable

Financial Ratio

ROA (Return on Assets). It shows how effectively and efficiently a business uses its resources to produce revenue.

LAR (Liquid Asset Ratio). It displays the percentage of liquid assets in relation to all assets.

DER (Debt Ratio). It calculates the swiftly a company can settle its debts with its profits.

Technical Ratio

RER (Retention Ratio). It gauges how much risk an insurer bears on their own rather than remitting premiums to reinsurers.

RIP (Reinsurance Price). It is calculated by multiplying the reinsurance share of claims by the ceded premium less received commissions (from reinsurers).

NCR (Net Combined Ratio). It provides a clear, comprehensive analysis of profitability. More than 100% is not worthwhile.

Control Variables

EQC (equity Capital). It is a company's equity expressed in natural logarithms.

PFC (Portfolio Concentration). It is calculated by locating the Herfindahl-Hirschman index component for each company.

In the literature section above, a potential connection between firm-level technical factors and reinsurance has also been looked at. Retention Ratio (RET), Reinsurance Price (REP), and Net Combined Ratio (COR) are used as independent variables to represent technical factors in accordance with the literature. Reinsurance costs rise in direct proportion to the amount of premiums that the insurance company cedes. If this RET is low, the primary source of income for the insurance company—its premiums—goes primarily to the reinsurer. Poorly constructed reinsurance contracts or risk-averse businesses will result in low income due to a low retention rate. Instead, citing a 100% retention rate as an extreme example, the insurance company would decide not to enter into a reinsurance contract. In this instance, the insurance provider assumes all of their risks and pays for all reinsurance. As a result, a high retention rate would result in lower reinsurance costs. The demand for reinsurance is anticipated to decline as the cost of reinsurance rises. In other words, the reinsurance cost will rise along with the reinsurance price. The demand for reinsurance contracts, on the other hand, increases in tandem with the COR, which is an indicator of profitability for insurance companies. It has two parts that can be examined and studied separately. If the Net Loss Ratio is about to rise over time, the insurance company will either need reinsurance contracts to cover potential future claims or cash on hand to cover current claims. The company's cash assets are diverted to operational costs rather than claim payments, however, if the Net Expense Ratio is rising. Because its money was used for operating costs, the company must find an additional source of funding or sign a reinsurance contract to cover potential losses. In conclusion, as Net Combined Ratio rose, so did reinsurance demand and cost.

Insurance companies are more committed to their line of business the less reinsurance they desire (Chidambaran et al., 1997; Mayers & Smith, 1990). According to Lee and Lee (2012), Cole and McCullough (2006), Garven and Tennant (2003), and Mayers and Smith (1990), line-of-business concentration has a highly detrimental effect on a company's reinsurance costs. Because an insurance company can accurately and healthily predict the risks in new businesses when it is heavily focused on one line of business, it need not seek reinsurance to protect itself.

Lending would be more likely to finance businesses without a strong equity structure. Increased default risks resulted from increased loan borrowing. The

need for more reinsurance is inevitably sparked by this circumstance (Lewis & Murdock, 1996). Smaller insurance providers also run the risk of defaulting more frequently and possibly going bankrupt. Thus, they need reinsurance contracts more than large corporations do and should avoid making broad claims. This increases their own risk of engaging effectively. Due to this, they have a high need for reinsurance. It is predicted to be inversely related to both size and reinsurance expense. The demand for reinsurance decreased for every unit increase in a company's equity. The price of reinsurance would go down as a result. Reinsurance is supposedly inversely related to the size of the company, or in this case, the natural logarithmic of the equity, according to studies (Garven & Tennant, 2003; Powell & Sommer, 2007; Adams, 1996). The findings of the Lee and Lee (2012) study indicated that there is no correlation between reinsurance cost and size.

Based on the aforementioned justifications, the study's hypothesis is presented as follows.

Technical Ratio Model

H0: Technical ratios have no influence on the cost of reinsurance.

H1: Technical ratios have an influence on the cost of reinsurance.

Financial Ratio Model

H0: Financial ratios have no influence on the cost of reinsurance.

H1: Financial ratios have an influence on the cost of reinsurance.

The fundamental statistics of the dependent variables and explanatory variables are shown in Table 3. The mean reinsurance cost is 0.1568, with a standard deviation of 0.2473. Some variables have been normalized from -1 to 1 (from 0 to 1 when there is no negative value in the variable) with the aim of adjusting the range to the other independent variables, and some variables have been minorized at 1% and 99% for removing outliers.

Table 2. Descriptive Statistics

Variables	Mean	Median	Standard Error
RIC	0.1568	0.1265	0.2473
ROA	0.4979	0.8117	0.5288
LAR	0.5101	0.5182	0.1747
DER	0.5730	0.5991	0.2352
RER	0.5508	0.5760	0.2215
RIP	0.1955	0.1576	0.1457
NCR	0.2377	0.2319	0.1848
EQC	0.2234	0.0958	0.2680
PFC	0.1143	0.0502	0.2303

The correlation between dependent, independent, and control variables is displayed using the Karl Pearson correlation statistics in Tables 4 and 5 below. RIC is positively correlated with ROA, RER, RIP, PFC, and EQC, but only negatively correlated with NCR, per the two tables below. With a maximum correlation level of 67%, there are no significantly high correlations among the independent variables.

Table 3. Correlation Matrix for Financial Ratio and Control Variables

	RIC	ROA	LAR	DER	EQC	PFC
RIC	1.0000					
ROA	0.1278**	1.0000				
LAR	0.0419	-0.2965***	1.0000			
DER	0.0711	0.9999*	-0.0297	1.0000		
EQC	0.3991***	0.2964***	-0.0482	0.031	1.0000	
PFC	0.2999***	0.5138***	-0.3111***	0.2189***	0.5983***	1.0000

Significant at 0.10 level; **significant at 0.05 level; * significant at 0.01 level.*

Table 4. Correlation Matrix for Technical Ratio and Control Variables

	RIC	RER	RIP	NCR	EQC	PFC
RIC	1.0000					
RER	0.1001*	1.000				
RIP	-0.2910*	-0.2531***	1.0000			
NCR	0.1234***	0.0139	-0.1933***	1.0000		
EQC	0.5161***	0.3001***	-0.2786***	0.0811	1.0000	
PFC	0.3456***	0.0981**	-0.1999***	0.0201	0.5979***	1.0000

Significant at 0.10 level; **significant at 0.05 level; * significant at 0.01 level.*

Methods

Panel data are analysed in this study.

By combining time series analysis with the cross-section analysis method, panel data analysis lessens the drawbacks of time series analysis, and one of its main benefits is that the results show estimates that are more accurate and informative. A further benefit of panel data analysis is the combination of cross-section and time-series observations, which results in a larger number of observations and more accurate predictions. Two distinct models, the Financial Ratio Model and the Technical Ratio Model, emerged for the upcoming panel data analysis. It was advantageous to examine the relationship with reinsurance cost separately because these ratios represent two distinct concepts, allowing for a more accurate assessment of the effects. Both models passed the Hausman (1978) test and were found to be appropriate for a random effect model. Equations 1 and 2 show how the financial and technical ratio model is built.

Financial Ratio Model

To properly test the model, several diagnostic tests have been carried out. First off, the unit effect is considered in the models based on the findings of the Likelihood-ratio (LR) Test. The results come from a large number of cross-sectional insurance companies, so heteroscedasticity is possible. The results of the tests by Levene (1961) and Brown and Forsythe (1974) show that both models have heteroskedasticity. According to Friedman (1937), there is no inter-unit correlation for the financial model, but there is autocorrelation and inter-unit correlation for the technical model, according to Breusch and Pagan's (1980) test, which was used to determine whether there is autocorrelation. As a result, the model is estimated as a one-sided unit effect with random effect model. For more reliable results, Driscoll and Kraay (1998) should be used because both models exhibit heteroskedasticity, autocorrelation, and inter-unit correlation. After testing for heteroskedasticity and autocorrelation, D'Agostino et al. (1990) performed a normality test. According to the test results, none of the variables used in the analysis were normally distributed. As a result, as mentioned above, outliers have been eliminated from the data.

Empirical Findings

Firm-level financial factors can affect a company's cost of reinsurance, as was mentioned in the previous section. The financial ratio model's results are presented in Table 6.

Table 5. Results of the Financial Ratio Model Panel Data Analysis

Dependent Variable: RIC					
Variables	Expected	Coefficient	Standard	t	
ROA	-	-0.0234*	0.0091	-2.08	
DER	+/-	-0.1754**	0.0701	-2.63	
LAR	-	-0.0900	0.0622	-1.49	
PFC	-	-0.2619***	0.0766	-3.44	
EQC	-	-0.2112**	0.0799	-2.36	
Cons		0.0764	0.0567	1.72	
R-Squared		0.1875	Wald chi2 (5)	18.92	
Rho		0.2001	Prob > Chi2	0.0015	

significant at 0.10 level; **significant at 0.05 level; * significant at 0.01 level.*

At a 10% significance level, the ROA has a marginally negative impact on the cost of reinsurance. This result is consistent with empirical studies by Lee and Lee (2012), Mayers and Smith (1990), Cole and McCullough (2006), and Adams et al. (2008), which all contend that a rise in ROA would lead to fewer reinsurance agreements and, consequently, lower reinsurance costs.On the other hand, the debt ratio has a stronger, 5% significant negative impact on insurance rates. Thus, the findings indicate that a rise in debt is anticipated to result in lower reinsurance costs. Reinsurance costs are declining as leverage rises because it appears that businesses, which already bear a high cost of debt, are reluctant to cover additional costs. The results of Zou et al. (2003) are consistent with the negative effect shown in the table above.

Though Several studies have found a significant negative relationship between liquidity and reinsurance (Chen & Wong, 2004; Lee & Urritia, 1996; Lee & Lee, 2012); however, this study did not find such a significant relationship. The findings revealed that liquidity has a negative effect on reinsurance costs, but the effect is minor.

The results for firm-level technical factors are shown in Table 7. The results show that only the retention ratio (RER) has a significant impact on reinsurance costs, whereas both of the control variables also have an impact. However, neither the reinsurance price (RIP) nor the net combined ratio (NCR) showed any discernible effects.

Table 6. Results of the Technical Ratio Model Panel Data Analysis

Dependent Variable: RIC				
Variables	Expected	Coefficient	Standard	t
RER	-	-0.0298*	0.0149	-2.17
NCR	+	-0.0992	0.1103	-1.19
RIP	+	0.0534	0.0298	1.49
PFC	-	-02561**	0.0817	-2.47
EQC	-	-0.1831*	0.0897	-1.90
Cons		0.1131	0.0459	2.55
R-Squared	0.1830	Wald chi2 (5)		19.82
Rho	0.1966	Prob > Chi2		0.0013

Significant at 0.10 level; **significant at 0.05 level; * significant at 0.01 level.*

At a 10% level of significance, the retention ratio has a negative impact on reinsurance costs. This finding implies that the less an insurance company retains its premium, the less reinsurance is required, and the less it holds the premium itself. In other words, increasing the amount of premium given to reinsurance would raise the cost of reinsurance. Both of the control variables have a significant impact on the cost of reinsurance in the analyses shown in Tables 6 and 7. Concentration within a single industry is extremely detrimental to reinsurance costs. When a company is overly focused on and an authority in a particular industry, it is well aware of the future risk and would not need reinsurance contracts as a result. This outcome is consistent with the empirical results of Mayers and Smith (1990), Cole and McCullough (2006), Garven and Tennant (2003), Lee and Lee (2012), and Cole and McCullough (2006). In line with earlier studies (Adams, 1996; Powell & Sommer, 2007; Garven & Tennant, 2003), equity capital has a significant negative impact on reinsurance costs.

The recent COVID-19 pandemics might be thought to have an impact on the findings that were previously presented. The same analyses were done from 2010 to 2017 to gauge the reliability of the findings, which were presented above.

The combined ratio (NCR) in the technical model becomes significant at 1%, which is the most notable difference between analyses for the 2010–2022 time period. The significance levels are also subject to an increase to 1% or 5%, despite the fact that the ROA, DER, and RER factors have a similar impact on the cost of reinsurance. For control variables, similar

differences are also discovered. While both control variables are significant for analyses under financial and technical factors for the 2010–2023 period, they lose their significance for these analyses for the 2010–2017 period.

Due to imbalances in the number of claims and premium income, these differences can be attributed to the COVID-19 effect (for more information, see Haque et al., 2021; Puawska, 2021; Wang et al., 2020; Stojkoski et al., 2021; Worku & Mersha, 2020; Parvathi & Lalitha, 2021). Additionally, by 2022 the insurance industry had undergone a number of mergers and acquisitions. As an example, Himalayan General Insurance Limited and Everest Insurance Limited merged to form Himalayan Everest Insurance Limited in June 2022.

Conclusion

There must be a reinsurance sector if there is an insurance sector. Companies from both sectors must work together to eliminate the consequences of potential future large damages caused by fire, flood, or earthquake. Reinsuring an insurance contract, on the other hand, would incur costs, as would any other transaction in this economic system.The insurers might prefer not to give the reinsurers written policies. At first glance, it appears to be a cost-free option, but the company must accept all the risks associated with the policies it holds. Contrarily, the business might not want to take on risk and reinsure all of the policies it has created. When a claim arises, the business won't experience financial hardship. The potential for an insurance company to make money will be constrained if it reinsures all policies and cedes the premiums. As a result, it is assumed that this method is the most expensive. To create the most appropriate, profitable, and applicable situation, the management and reinsurance department of the insurance companies must identify the ideal reinsurance contract agreement.

The purpose of this article is to demonstrate the connection between financial and technical ratios and reinsurance costs. As a result, the objective of this research is to uncover the effects of insurance companies' financial position (in terms of profitability, liquidity, and leverage) and technical performance (in terms of retention, combined costs, and reinsurance price) on reinsurance costs. According to the study's findings, financial ratios such as return on assets and debt ratio, as well as technical ratios such as retention ratio, all have a negative significant effect on reinsurance costs. Even after considering the2015 Major earthquake and recent COVID-19 pandemics, such effects are significant.

References

Adams, M. (1996). The reinsurance decision in life insurance firms: An empirical test of the risk-bearing hypothesis. *Accounting and Finance, 36,* 15-30.

Adams, M., Hardwick, P., & Zou, H. (2008). Reinsurance and corporate taxation in the United Kingdom life insurance industry. *Journal of Banking & Finance, 32*(1), 101-115.

Altuntas, M., Garven, J. and Rauch, J. (2018) On the corporate demand for insurance: evidence from the global reinsurance market. *Risk Management and Insurance Review, 21*(2), 221-242.

Atukalp, M. E. (2021). Küresel Kovid-19 ğlıksigortasısektörüneetkisi. *The Journal of International Scientific Researches, 6*(3), 316-322.

Aunon-Nerin, D., & Ehling, P. (2008). Why firms purchase property insurance. *Journal of Financial Economics, 90*(3), 298-312.

Babuna, P., Yang, X., Gyilbag, A., Awudi, D. A., Ngmenbelle, D., & Bian, D. (2020). The impact of Covid-19 on the insurance industry. *International Journal of Environmental Research and Public Health, 17*(16), 5766.

Breusch, T. S., & Pagan, A. R. (1980). The Lagrange multiplier test and its applications to model specification in econometrics. *The Review of Economic Studies, 47*(1), 239-253.

Brown, M. B., & Forsythe, A. B. (1974). The small sample behavior of some statistics which test the equality of several means. *Technometrics, 16*(1), 129-132.

Browne, M. J., & Hoyt, R. E. (1995). Economic and market predictors of insolvencies in the property-liability insurance industry. *Journal of Risk and Insurance*, 309-327.

Carneiro, L. A., & Sherris, M. (2005). *Demand for reinsurance: Evidence from Australian insurers.* Faculty of Commerce and Economics, Sydney.

Chen, R., & Wong, K. A. (2004). The determinants of financial health of Asian insurance companies. *Journal of Risk and Insurance, 71*(3), 469-499.

Chidambaran, N. K., Pugel, T. A., & Saunders, A. (1997). An investigation of the performance of the US property-liability insurance industry. *Journal of Risk and Insurance,* 371-382.

Cole, C. R., & McCullough, K. A. (2006). A reexamination of the corporate demand for reinsurance. *The Journal of Risk and Insurance, 73*(1), 169-192.

Cristea, M., Noja, G. G., Drăgoi, D., & Andriţoiu, L. C. (2021). Insurance development and life quality in the European Union countries. An empirical assessment. *Economics and Organization, 1*, 313-324.

Cummins, J. D., Dionne, G., Gagné, R., & Nouira, A. (2021). The costs and benefits of reinsurance. *The Geneva Papers on Risk and Insurance-Issues and Practice, 46(2*), 177-199.

D'Agostino, R. B., Belanger, A., & D'Agostino Jr, R. B. (1990). A suggestion for using powerful and informative tests of normality. *The American Statistician, 44*(4), 316-321.

Doherty, N. A., & Garven, J. R. (1993). *Interest rates, financial structure and insurance cycles.* University of Pennsylvania: Working Paper.

Driscoll, J. C., & Kraay, A. C. (1998). Consistent covariance matrix estimation with spatially dependent panel data. *Review of Economics and Statistics, 80*(4), 549-560.

Friedman, M. (1937). The use of ranks to avoid the assumption of normality implicit in the analysis of variance. *Journal of the American Statistical Association, 32*(2), 675-701.

Garven, J. R., & Lamm-Tennant, J. (2003). The demand for reinsurance: Theory and empirical tests. *Insurance and Risk Management, 7*(3), 217-237.

Haque, A., Mohona, N. T., Sultana, S., & Kulsum, U. (2021). The impact of Covid-19 on the insurance industry of Bangladesh. *Indian Journal of Finance and Banking, 6*(1), 73-85.

Hausman, J. A. (1978). Specification tests in econometrics. Econometrica: *Journal of the Econometric Society,* 1251-1271.

Hoerger, T. J., Sloan, F. A., & Hassan, M. (1990). Loss volatility, bankruptcy, and the demand for reinsurance. *Journal of Risk and Uncertainty, 3*(3), 221-245.

Hoyt, R. E., & Khang, H. (2000). On the demand for corporate property insurance. *Journal of Risk and Insurance,* 91-107.

Ikhwan, I., & Rusydiana, A. S. (2022). Stability of insurance efficiency during the Covid-19 pandemic: A comparative study between Islamic and conventional insurance in Indonesia. *Jurnal Ekonomi dan Keuangan Islam,* 8(1), 60-76.

Kaur, S., & Singh, B. (2022). An overview of the impact of COVID-19 on the Indian health insurance sector and post-COVID-19 Management. *International Management Review, 18,* 63-93.

Lee, H. H., & Lee, C. Y. (2012). An analysis of reinsurance and firm performance: Evidence from the Taiwan property-liability insurance industry. *The Geneva Papers on Risk and Insurance-Issues and Practice, 37*(3), 467-484.

Lee, S. H., & Urrutia, J. L. (1996). Analysis and prediction of insolvency in the property-liability insurance industry: A comparison of logit and hazard models. *Journal of Risk and Insurance,* 121-130.

Levene, H. (1961). Robust tests for equality of variances. Contributions to probability and statistics. *Essays in honor of Harold Hotelling* (pp. 279-292).

Lewis, C. M., & Murdock, K. C. (1996). The role of government contracts in discretionary reinsurance markets for natural disasters. *Journal of Risk and Insurance*, 567-597.