



The Influence of Loss Ratio on Profitability of Non-Life Insurance Companies in Thailand: The Moderating Roles of Company Type

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Abstract

Research on the influence of loss ratio on the profitability of insurance companies has grown in importance. This study aims to investigate the influence of loss ratio on the profitability of non-life insurance companies and the moderating role of the type of companies. Fifty-two non-life insurance companies in Thailand were selected to collect the financial database for this study. Results from Ordinal Least Square (OLS) regression found significant negative relationships between loss ratio and the profitability of non-life insurance companies related to profitability, return on assets, return on equity, profit margin, and net profit margin. In addition, the type of company influenced its loss ratio and profitability. In terms of organizational implications, our findings would suggest that enhancing underwriting functions and risk management policies to reduce the chances of, and impacts from, future losses or claim payouts will improve a company's profitability. In addition, balancing lines of insurance business will enhance and improve a company's profitability as well.

Keywords: Loss Ratio, Profitability, Non-Life Insurance Company

Introduction

The insurance industry is widely held to be the service-base of economy of the country (Malik, 2011). It plays an important role in developing financial institutions and reducing uncertainties by improving financial resources. In Thailand, insurance businesses are separated into two main business sectors, including life insurance and non-life insurance. One of the vital challenges for the insurance industry in Thailand is future market concerns, such as political uncertainty, trade wars, market consolidation, and declining interest rates (Anansiriprapha, 2019). The statistical information about key economic and insurance indicators of non-life insurance in Thailand, as shown in Figure 1, presents the decreasing financial and operational incomes in the non-life insurance industry for the 2015–2018 period, such as net profit, net underwriting profit, and profit margin, even though the direct premiums to the industry have increased. This occurrence is consistent with loss ratio information, which has increased at the same rate as inflation, are the key causes of the negative effects on the financial and operational performance of non-life insurance companies. Non-life insurance policies cover several types of risks that can be classified as lines of business, including motor vehicle, fire, property damage, marine and transport, and miscellaneous (Office of Insurance Commission, n.d.). These different insurance lines can experience different affects from financial indicators in terms of their impact on the profitability of companies in the non-life insurance sector. In many countries, the overall trends observed in the non-life insurance sector are driven by motor vehicle insurance because it comprises the largest proportion of the non-life insurance categories (Crawford, Russignan, & Kumar, 2018). For example, in the respect to non-life insurance premiums, the overall increases in Latvia and Lithuania may be partly due to an increase in premiums in the motor vehicle insurance sector (The Organisation for Economic Co-operation and Development, 2020).

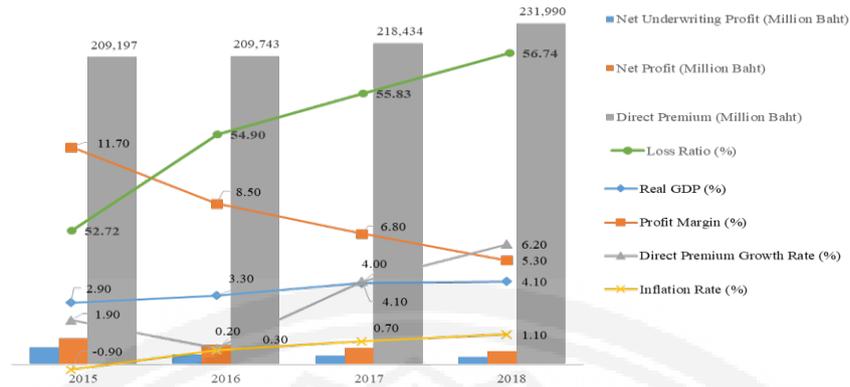


Figure 1 Key Economic and Insurance Business Indicators of Thai Non-Life Insurance

Source: Thai General Insurance Association (n.d.)

As an increase in premiums in the non-life insurance sector may be due to the impact of losses related to claims the company has incurred, and it is, therefore, a crucial relevant factor affecting profit generation and, eventually, influencing the firm's conditional stability. Therefore, we should note how the losses from operating an insurance business will influence the financial ratio indicators of profitability of non-life insurance companies in Thailand. As the statistical loss ratio in 2018 of non-life insurance sector shows, the losses and incurred claims are clearly different when comparing the motor and non-motor insurance sectors, with a 60.9% loss ratio in the motor insurance sector and 43.2%, 32.8%, and 14.4% for miscellaneous, marine, and fire insurance sectors, respectively (Thai General Insurance Association, n.d.). Additionally, non-life insurance companies need to be concerned with the impacts of multiple rising claim trends and global changes that influence the profitability of non-life insurance companies which indicated by various components, such as return on assets (ROA), return on equity (ROE), and profit margin. Among the challenges in addressing the evolving trends and world situation and their impacts on the insurance industry, the highest priority is probably achieving operational excellence and cost efficiency because they are the crucial factors in mitigating their impact, meaning insurance companies must focus on understanding their loss ratios and expenses (EYGM Limited, 2019).

In this study, the relationship between loss ratio and profitability was investigated as the first research objective related to the research question about what the effect of loss ratio on profitability is. The second research objective was to examine how the type of company moderated the relationship between loss ratio and profitability. Three different types of non-life insurance companies (based on their line of business, financial condition in terms of return on assets, and financial condition in terms of return on equity) were the focus of this study. The specific types of companies included 1) motor and non-motor insurance businesses, 2) below and above median target companies in terms of return on assets (ROA), and 3) below and above median target companies in terms of return on equity (ROE).

Literature Review

Loss Ratio

A long-standing indicator of profitability in insurance business is loss ratio, which demonstrates the percentage of incurred claim payouts settled with insured (Dar & Thaku, 2015). Loss ratio, which also expresses relevant underwriting results, shows the effectiveness of insurance firms in terms of their underwriting accomplishments



(Berhe & Kaur, 2017). Insurance firms may be in bad financial condition if they regularly experience high loss ratios, or incur excessive claim payouts, which means their payouts for claims and expenses are too high when compared with their earned premiums to make a reasonable profit. Additionally, higher risk lines of insurance, such as motor vehicle insurance, fire insurance, and miscellaneous insurance, will have more unpredictable losses. In this study, loss ratio is measured as the ratio of incurred claims to earned premiums and is calculated by dividing the net incurred claims with the net earned premiums (Mehari & Aemiro, 2013).

Profitability

One of the most important goals of firms, in terms of financial performance, is profitability, which is expected to maximize the wealth of firm (Agiobenebo & Ezirim, 2002; Berhe & Kaur, 2017). Profitability refers to the ability of a firm to generate profits, which is crucial for ensuring the business achieves its financial goals (Dicu, Bondoc, & Popescu, 2019). There are several approaches that can be used to indicate earnings and profitability, which are return on assets (ROA), return on equity (ROE), return on investment (ROI), net profit margin, and gross profit margin (Kajananthan & Velnampy, 2014; Thirunavukkarasu & Rajendran, 2013; Velnampy & Nimalathasan, 2010). Non-life insurance companies have always used a unique accounting system, which has made determining the profitability of the insurance industry difficult to measure in comparison to other financial institutions (Malik, 2011). In this study, the profitability of non-life insurance firms focused on five financial ratios that referred to five of the approaches for measuring their profitability, including return on assets (ROA), return on equity (ROE), retention rate (RR), profit margin (PM), and net profit margin (NPM).

Non-Life Insurance Companies

Non-life insurance is a broad category, including both property and casualty. The Office of Insurance Commission (n.d.) defined the meaning of non-life insurance as in other types of insurance, other than Life insurance, the insurer agrees to indemnify the insured for the ascertained amount of a loss or damage from any peril. In Thailand, the types of non-life insurance can be classified into four categories; fire insurance, motor vehicle insurance, marine and transport insurance, and miscellaneous insurance. There are fifty-eight non-life insurance companies operating in Thailand that face the challenges of unpredictable losses from insurance contracts with their insured because they can't predict when the insured claims will occur or what the severity of those claims will be. The insurers in the non-life insurance sector cover the loss or damage related to property, liability, personal injury, and health. Moreover, the uniqueness of insurance firms' accounting approaches and financial information is the elements of accounting information in the statements of financial position, comprehensive income, and cash flow that differ from other industries such as earned premiums, gross written premiums, and cash paid for reinsurance. These unique financial systems that affect the profitability of non-life insurance companies in Thailand are the focus of this study.

Types of Companies

In the non-life insurance industry, companies can be separated into two main groups: 1) motor insurance and 2) non-motor insurance classifications based on the insurance products offered by the (Pfukwa, 2015). In this study, the types of companies were classified using the lines of insurance as indicated in their average proportion of gross written premiums for insurance business lines because non-life insurance companies in Thailand offer both motor and non-motor insurance products used for 2016–2018. If more than 50% of a company's line of business was in the motor vehicle insurance sector, they were defined as a 'motor insurance company.' On the other hand, companies whose proportion of non-motor vehicle insurance (including fire, marine and transport,



and miscellaneous) was more than 50% were defined as ‘non-motor insurance companies’. Thus, non-life insurance companies were defined as either motor or non-motor insurance groups in this study.

In terms of company conditions based on financial performance, ROA and ROE were used to separate the companies into two groups based on the median ROA and ROE of non-life insurance companies. Thus, one group is comprised of companies have been operating above the ROA and ROE median target, and another one of firms operating below the ROA and ROE median target. The differences between these two groups and three types of insurers (relative to their line of business, financial condition in terms of return on assets, and financial condition in terms of return on equity) of non-life insurance was the study’s main focus to examine the moderating effects of the type of company.

Research Framework

The conceptual model in this study was developed based on the following associations and relationships. Firstly, the effect of loss ratio on profitability, including ROA, ROE, retention rate, profit margin, and net profit margin, and, secondly, the moderating effects of the non-life insurance company’s type on the main relationship between loss ratio and profitability, as shown in figure 2, were evaluated. This study answers the fundamental question of whether the losses of the non-life insurers would affect their profitability. The study will expand awareness in the motor and non-motor insurance sectors with regard to the need for balancing the proportions of a company’s lines of business.

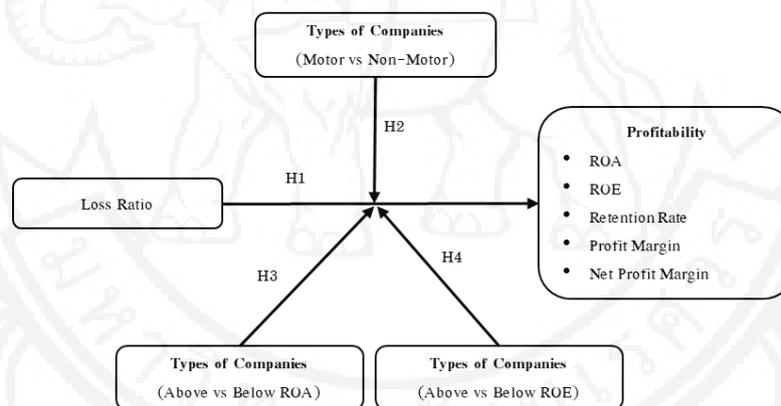


Figure 2 Research Framework

Hypotheses Development

Loss Ratio and Profitability

Several previous research studies have found that loss ratio influences the profitability of a company. For example, in the study by Malik (2011), the profitability of insurance companies was affected by several factors, including the age of the company, size, leverage, loss, and volume of capital. Increasing the amount of incurred claims could lead to an increase the costs and expenses of the company, which would definitely affect the profitability of insurance company, eventually (Berhe & Kaur, 2017; Mehari & Aemiro, 2013). For that reason, it is expected that a high loss ratio will have a negative influence on the profitability of non-life insurance companies, including ROA, ROE, retention rate, profit margin, and net profit margin. Thus, the following hypotheses are presented:



Hypothesis 1: A high loss ratio will be negatively associated with Profitability

Hypothesis 1_a: A high loss ratio will be negatively associated with Return on Assets (ROA)

Hypothesis 1_b: A high loss ratio will be negatively associated with Return on Equity (ROE)

Hypothesis 1_c: A high loss ratio will be negatively associated with Retention Rate (RR)

Hypothesis 1_d: A high loss ratio will be negatively associated with Profit Margin (PM)

Hypothesis 1_e: A high loss ratio will be negatively associated with Net Profit Margin (NPM)

Moderating Roles of Types of Companies

Some previous research studies found the differences in firm type to be a moderator that affected the main relationship. For example, in studies on proactive behavior and firm performance, relationships were moderated by the type of firm in regard performing below or above average median target of ROA (Wongsuwatt & Suntrayuth, 2019). In this study, moderating effects emphasized the differences of the two groups in terms of the company's type based on whether the company performed above median target of ROA or below median target. It was expected that loss ratio in above ROA target companies would have less of a negative influence on profitability than in below companies. Moreover, in the context of ROE, above ROE target companies would also have less negative impact from the effects of loss ratio on their profitability than below target companies. In addition, the researchers endeavored to explore the differences between motor and non-motor insurance companies. Non-motor insurance companies may have a lower probability of loss ratio having a negative influence on profitability because of the frequency and severity of losses and expenses of incurred claims. Thus, the following hypotheses were presented:

Hypothesis 2_{a-f}: The negative relationship between loss ratio and profitability will be weaker for non-life insurance companies mainly focused non-motor insurance than those who are mainly focused on motor insurance.

Hypothesis 3_{a-f}: The negative relationship between loss ratio and profitability will be weaker for non-life insurance companies which perform above average target on ROA than for those who perform below.

Hypothesis 4_{a-f}: The negative relationship between loss ratio and profitability will be weaker for non-life insurance companies which perform above average target on ROE than those who perform below.

Methodology

Research Designs and Unit of Analysis

According to the research objective, this research aimed to investigate the influence of loss ratio on profitability. Fifty-eight non-life insurance companies in Thailand were selected as the unit of analysis to collect secondary data about financial performance from their annual reports in 2016–2018.

Samples and Procedures

In order to collect the secondary data, the financial information for 52 non-life insurance companies' financial information, which was complete and accessible to assess their financial information, was gathered by accessing their annual reports for 2016–2018. These reports included information on their profitability, return on assets (ROA), return on equity (ROE), retention rate (RR), profit margin (PM), and net profit margin (NPM). Additionally, their total assets data was obtained to use as the control variable to standardize and represent the size of non-life insurance companies.



Measures

Loss ratio was measured using the financial information to indicate the losses and incurred claims of non-life insurance companies (Berhe & Kaur, 2017). It was calculated by dividing the value of incurred claims by their earned premiums.

Profitability is indicated by five financial ratios including 1) Return on Assets (ROA), 2) Return on Equity (ROE), 3) Retention Rate (RR), 4) Profit Margin (PM), and 5) Net Profit Margin (NPM). These were calculated using the average of five financial ratios. Firstly, ROA was measured as the effectiveness of profit generation based on the total assets of the company (Heikal, Khaddafi, & Ummah, 2014). This ratio was calculated by dividing the net income by total assets. Secondly, ROE was measured relative to the effectiveness of the company's management of firm capital to generate profits (Heikal et al., 2014). This ratio was calculated by dividing the net income by the shareholder's equity. Thirdly, RR was measured based on the proportion of retained earnings in operating the insurance business. This ratio was calculated by dividing the net written premium by the gross written premium. Fourthly, PM was measured based on the earnings from operating activities. This ratio was calculated by dividing the net profit by the gross written premium. Finally, NPM measured the percentage of profit that an insurance company could produce from its total revenue. This ratio was calculated by dividing the net profit by the total revenues. These variables were utilized for all hypotheses testing as a ratio scale derived from secondary data.

The Control variable was company size and was based on a previous study by Malik (2011) which determined that the size of a company influences the profitability and financial performance of the company. It was computed as decimal logarithm related to the total assets of the insurance company.

Estimation Method

Ordinal Least Squares (OLS) was used to analyze the data in this study (de Souza & Junqueira, 2005). OLS regression, used to estimate the slope and intercept of a model, allows researchers to estimate the relationship between the loss ratio and profitability of non-life insurance companies in Thailand. In addition, OLS regression allows researchers to estimate the moderating roles of the three types of companies on the main relationship between loss ratio and profitability.

Results

Demographic Information

Demographic characteristics of the 52 non-life insurance companies are described using nine variables: 1) type of company, 2) firm size, 3) loss ratio, 4) return on assets, 5) return on equity, 6) retention rate, 7) profit margin, 8) net profit margin, and 9) profitability. Of the 52 companies, 27 (51.9%) were motor insurance firms and 25 (48.1%) were non-motor insurance companies. The average size of all non-life insurance companies was 6.54 (logarithm of companies' total assets). The averages of loss ratio, return on assets, return on equity, retention rate, profit margin, net profit margin, and profitability for all non-life insurance companies were 52.38%, 1.24%, -12.22%, 61.87%, 1.45%, -2.09%, and 8.13% respectively.

Scale Validation

Before assessing the Ordinal Least Squares (OLS) model, the researchers executed variance inflation factor (VIF) analysis as recommended by Petter, Straub, & Rai (2007) to check for multicollinearity, which should be



lower than 10. The VIF results showed that the values for all indicators in the model ranged from 1.122 to 3.372, which were lower than the maximum threshold (Mela & Kopalle, 2002).

Hypotheses Testing

The results from the OLS analysis are shown in Table 1. Hypothesis 1 predicted a negative relationship between loss ratio and profitability of non-life insurance company. The results confirmed a negatively and strongly associated relationship between them ($\beta = -.284, p = .000$). Thus, Hypothesis 1 is strongly supported at a .05 significance level. Hypotheses 1_a – 1_e predicted negative relationships between loss ratio and return on assets, return on equity, retention rate, profit margin, and net profit margin. The results show that loss ratio is negative and statistically significant with regard to return on assets ($\beta = -.134; p = .001$), return on equity ($\beta = -.642; p = .008$), profit margin ($\beta = -.314; p = .007$), and net profit margin ($\beta = -.503; p = .014$). Thus, hypotheses 1_a, 1_b, 1_d, and 1_e were supported at a .05 significance level. Whereas the negative relationship between loss ratio and retention rate was not statistically significant ($\beta = -.087; p = .433$). Thus, hypothesis 1_c was not supported. With regard to the control variable, company size was positively and statistically associated with all of the dependent variables, including profitability, return on assets, return on equity, retention rate, profit margin, and net profit margin. In these models, the R-square scores were 0.521, 0.634, 0.225, 0.109, 0.312, and 0.508, which means that 52.1%, 63.4%, 22.5%, 10.9%, 31.2%, and 50.8%, respectively, of the data fit these regression models.

Table 1 Regression Results of Loss Ratio and Profitability

| Independent Variables | Dependent Variables | | | | | |
|-----------------------|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | Profitability | ROA | ROE | RR | PM | NPM |
| | H ₁ | H _{1a} | H _{1b} | H _{1c} | H _{1d} | H _{1e} |
| Company Size | 14.41*** | 5.85*** | 29.61* | 8.79* | 13.55** | 15.66*** |
| Loss Ratio | -.284*** | -.134*** | -.642** | -.087 | -.314** | -.503* |
| R-Square | .521 | .634 | .225 | .109 | .312 | .508 |

Number of Non-Life Insurance Companies: 52

*5% Significant Level; **1% Significant Level; ***0.1% Significant Level

ROA = Return on Assets; ROE = Return on Equity; RR = Retention Rate; PM = Profit Margin; NPM = Net Profit Margin

Hypotheses 2_a–2_f predicted that the type of company, either motor or non-motor insurance, would moderate the negative relationship between loss ratio and profitability as shown in Table 2. The results show that the moderating role of the type of company is positive and statistically significant for profitability ($\beta = 7.26, p = .034$), return on equity ($\beta = 20.03, p = .018$), and retention rate ($\beta = 9.68, p = .041$). These results suggest that non-motor insurance companies mitigate the negative relationships where the loss ratio affects the profitability, ROE, and retention rate of non-life insurance companies. Thus, hypotheses 2_a, 2_c, and 2_d were supported at a .05 significance level. With regard to the control variable, the size of the insurance company was positively and statistically significantly related to the influence on profitability, ROA, ROE, profit margin, and net profit margin.

**Table 2** Regression Results on the Interaction Effect of Motor and Non-Motor on Loss Ratio and Profitability

| Independent Variables | Dependent Variables | | | | | |
|---|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | Profitability | ROA | ROE | RR | PM | NPM |
| | H _{2a} | H _{2b} | H _{2c} | H _{2d} | H _{2e} | H _{2f} |
| Main Effect | | | | | | |
| TC1 (Non-Motor = 1) | -1.06 | -.622 | 3.54 | -1.38 | -2.20 | -3.84 |
| Company Size | 14.32*** | 5.48*** | 25.10* | 6.68* | 14.09*** | 11.12*** |
| Loss Ratio | -.342*** | -.113*** | -.631** | -.055 | -.277*** | -.428*** |
| R-Square | .510 | .586 | .208 | .099 | .345 | .507 |
| Interaction Effect | | | | | | |
| TC1 (Non-Motor = 1) | -1.17 | -.704 | 1.45 | -1.47 | -1.81 | -3.78 |
| Company Size | 13.60*** | 5.78*** | 21.12* | 4.08 | 10.95*** | 15.81*** |
| Loss Ratio | -.416** | -.148** | -1.23** | -.204 | -.301 | -.269* |
| Non-Motor X LR | 7.26* | .661 | 20.03* | 9.68* | -1.35 | -5.41 |
| R-Square | .474 | .611 | .283 | .201 | .368 | .546 |
| Number of Non-Life Insurance Companies: 52 | | | | | | |

*5% Significant Level; **1% Significant Level; ***0.1% Significant Level

TC1 = Types of Company (Motor = 0, Non-Motor = 1); ROA = Return on Assets; ROE = Return on Equity;

RR = Retention Rate; PM = Profit Margin; NPM = Net Profit Margin; LR = Loss Ratio

Hypotheses β_a – β_f predicted that the type of company, whether below or above target as indicated using the median of return on assets (ROA), would moderate the negative relationship between loss ratio and profitability, as shown in Table 3. The results show that the moderating role of the type of company is positive and statistically significant for profitability ($\beta = 7.66$, $p = .022$), ROA ($\beta = 3.02$, $p = .049$), and net profit margin ($\beta = 4.99$, $p = .041$). These results suggest that above ROA target companies mitigate the negative relationships that loss ratio has on the profitability, ROA, and net profit margin of non-life insurance companies. Thus, hypotheses β_a , β_b , and β_f were supported at a .05 significant level. Although the control variable, the size of the insurance companies, positively influences all of the elements related to profitability, its effect was not statistically significant.

Table 3 Regression Results for the Interaction Effect of Below and Above Average ROA Target on Loss Ratio and Profitability

| Independent Variables | Dependent Variables | | | | | |
|-----------------------|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | Profitability | ROA | ROE | RR | PM | NPM |
| | H _{3a} | H _{3b} | H _{3c} | H _{3d} | H _{3e} | H _{3f} |
| Main Effect | | | | | | |
| TC2 (Above ROA = 1) | 11.64** | 4.65** | 31.17* | 2.07 | 9.91** | 12.03** |
| Company Size | 6.85 | 2.36** | 11.77 | 6.33 | 6.39 | 8.42* |
| Loss Ratio | -.313** | -.123*** | -.754* | -.046 | -.279** | -.362*** |
| R-Square | .498 | .600 | .334 | .116 | .443 | .527 |



Table 3 (Cont.)

| Independent Variables | Dependent Variables | | | | | |
|---|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | Profitability | ROA | ROE | RR | PM | NPM |
| | H _{3a} | H _{3b} | H _{3c} | H _{3d} | H _{3e} | H _{3f} |
| Interaction Effect | | | | | | |
| TC2 (Above ROA = 1) | 14.23** | 5.12*** | 32.64* | 3.01 | 8.41** | 13.71*** |
| Company Size | 5.24 | 1.98 | 5.87 | 5.11 | 6.69 | 9.32 |
| Loss Ratio | -.445*** | -.148*** | -1.21** | -.107 | -.256* | -.472*** |
| Above ROA X LR | 7.66* | 3.02* | 21.30 | 7.17 | 3.97 | 4.99* |
| R-Square | .558 | .687 | .359 | .195 | .487 | .606 |
| Number of Non-Life Insurance Companies: 52 | | | | | | |

*5% Significant Level; **1% Significant Level; ***0.1% Significant Level

TC2 = Types of Company (Below ROA = 0, Above ROA = 1); ROA = Return on Assets;

ROE = Return on Equity; RR = Retention Rate; PM = Profit Margin; NPM = Net Profit Margin; LR = Loss Ratio

Hypotheses 4_a-4_f predicted that the type of company, either below or above target as indicated by using the median of return on equity (ROE), would moderate the negative relationship between loss ratio and profitability, as shown in Table 4. The results show that the moderating role of the type of company was positive and statistically significant for profitability ($\beta = 12.87, p = .010$), ROA ($\beta = 2.96, p = .002$), and ROE ($\beta = 21.25, p = .034$). These results suggest that above ROE target companies mitigate the negative relationships between the loss ratio and effects on the profitability, ROA, and ROE of non-life insurance companies. Thus, hypotheses 4_a, 4_b, and 4_c were supported at a .05 significance level. In the context of control variable, the size of the insurance company was positively and had a statistically significant influence on retention rate ($\beta = 12.56, p = .047$).

Table 4 Regression Results of Interaction Effect of Below and Above Average ROE Target on Loss Ratio and Profitability

| Independent Variables | Dependent Variables | | | | | |
|---|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | Profitability | ROA | ROE | RR | PM | NPM |
| | H _{4a} | H _{4b} | H _{4c} | H _{4d} | H _{4e} | H _{4f} |
| Main Effect | | | | | | |
| TC3 (Above ROE = 1) | 12.34* | 5.44*** | 40.21** | -10.77 | 8.36 | 11.54* |
| Company Size | 5.86 | 2.33 | -.675 | 10.65* | 7.11 | 6.10 |
| Loss Ratio | -.366*** | -.119*** | -.824** | -.099 | -.216*** | -.373*** |
| R-Square | .446 | .632 | .354 | .181 | .387 | .556 |
| Interaction Effect | | | | | | |
| TC3 (Above ROE = 1) | 11.87* | 5.30*** | 41.62** | -9.18 | 8.26 | 10.36* |
| Company Size | 5.44 | 3.98 | .986 | 12.56* | 4.89 | 6.42 |
| Loss Ratio | -.489*** | -.176*** | -1.21*** | -.145 | -.335*** | -.408*** |
| Above ROE X LR | 12.87** | 2.96** | 21.25* | 6.32 | 4.11 | 6.05 |
| R-Square | .496 | .688 | .375 | .217 | .404 | .589 |
| Number of Non-Life Insurance Companies: 52 | | | | | | |

*5% Significant Level; **1% Significant Level; ***0.1% Significant Level

TC3 = Types of Company (Below ROE = 0, Above ROE = 1); ROA = Return on Assets;

ROE = Return on Equity; RR = Retention Rate; PM = Profit Margin; NPM = Net Profit Margin; LR = Loss Ratio

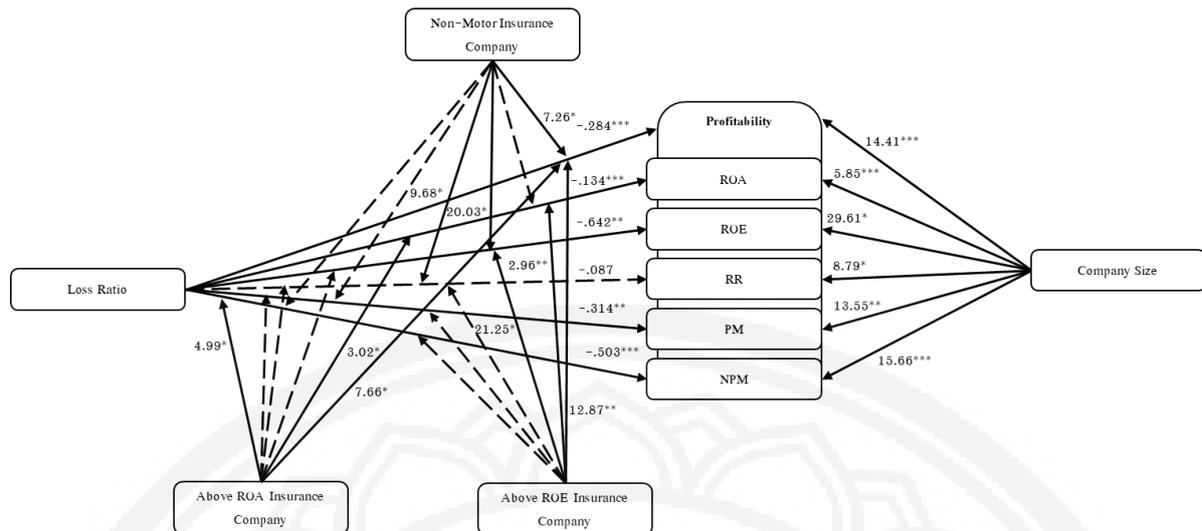


Figure 3 Ordinary Least Squares Results the Paths that were Significant are shown in Solid Lines

*5% Significant Level; **1% Significant Level; ***0.1% Significant Level

ROA = Return on Assets; ROE = Return on Equity; RR = Retention Rate; PM = Profit Margin; NPM = Net Profit Margin

Discussion

This research sought to investigate the effects of loss ratio on the profitability of non-life insurance companies, with an emphasis on the moderating roles of three types of insurance companies. Regarding the main effects of the loss ratio on profitability and its elements, including ROA, ROE, RR, PM, and NPM, the evidence strongly suggests that higher loss ratios for non-life insurance companies cause them to have a poorer financial performance with regard to profitability, ROA, ROE, RR, PM, and NPM. When non-life insurance companies have a high loss ratio, it will be the main cause of dwindling profitability because the loss ratio in insurance business reflects their operations costs and obligations with regard to insurance contracts. Thus, these results provide support for previous literature regarding the negative impacts of loss ratio on profitability, return on assets, return on equity, profit margin, and net profit margin (Berhe & Kaur, 2017; Dar & Thaku, 2015; Malik, 2011). Moreover, company size is an element which enhances, supports and boosts up the company's profitability, which may be related to the company's larger size leading to enhanced management efficiency, having more resources, and being better able to operate complex information and cost management systems. Thus, these results provide support for previous literature regarding the positive influences of company size on profitability (Ahmed, Ahmed, & Usman, 2011; Burca & Batrîna, 2014; Mehari & Aemiro, 2013; Petria, Capraru, & Ihnatov, 2015).

In addition, the analysis of these moderating effects found dramatic evidence that the role of loss ratio in profitability is significantly contingent on which of the three role types of the non-life insurance companies are. Firstly, the findings suggest that non-life insurance companies whose business is primarily non-motor insurance, such as fire, marine, and miscellaneous insurance, are less affected by the negative influences of loss ratio on profitability in comparison to firms whose business is primarily motor insurance, as shown in Figure 4. Thus, these results provide support for previous literature regarding the interaction between role types and profitability (Wongsuwatt & Suntrayuth, 2019).

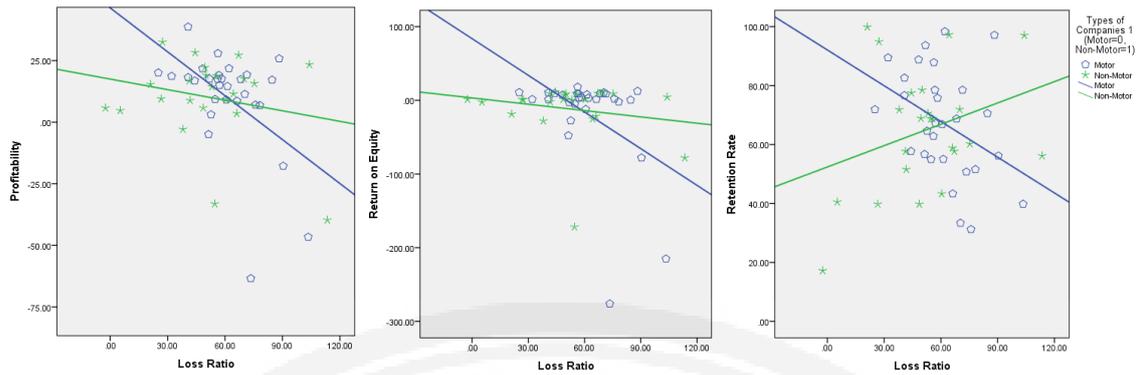


Figure 4 Data Plots Comparing Loss Ratio and Profitability, ROE, and RR Classified as Motor and Non-Motor Insurance Companies

Secondly, the findings suggest that non-life insurance companies who are positioned above the median target for ROA performance will be less affected by the negative influences of loss ratio on profitability than those who are positioned below the median target, as shown in Figure 5. Although the level of loss ratio also increases for above ROA companies, they still have better profitability, ROA, and net profit margins.

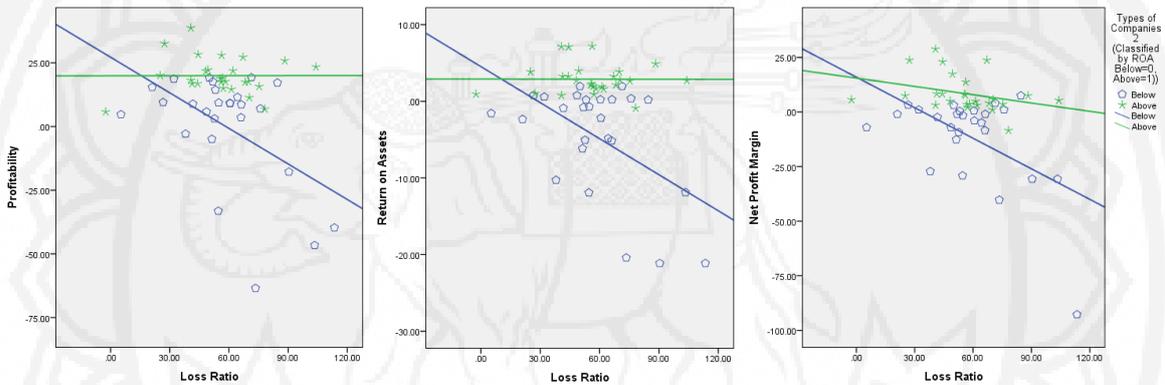


Figure 5 Data Plots Comparing Loss Ratio and Profitability, ROA, and NPM Classified as Below and Above Median Target of ROA

Finally, the findings suggest that non-life insurance companies who are positioned above the median target of ROE performance will be less affected by the negative influences of loss ratio on profitability than those who are positioned below the median target, as shown in Figure 6. Although the level of loss ratio also increases for above ROE companies, they still have better profitability, ROA, ROE, and net profit margins. Thus, maintaining good performance in terms of the returns generated from assets and equity is a good approach for mitigating the impact from an increase in loss ratio.

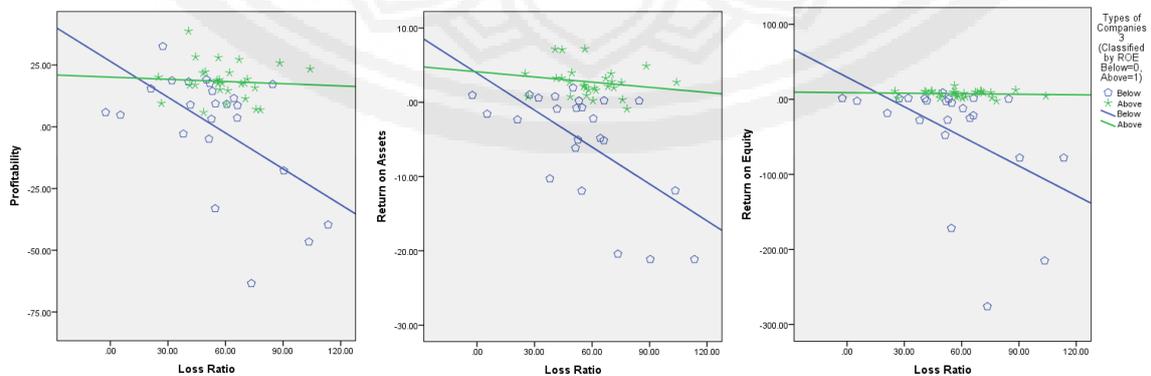


Figure 6 Data Plots Comparing Loss Ratio and Profitability, ROA, and ROE Classified as Below and Above Median Target of ROE



Conclusions and Recommendations

In conclusion, our findings reveal that loss ratio has significant influence on decreasing the abilities of non-life insurance companies to generate revenue, including profitability, return on assets (ROA), return on equity (ROE), profit margin, and net profit margin. Companies in the non-life insurance business should understand what the key factors and causes of loss ratio are so they can assess their current policies and future plans for improving loss management. One of the key causes of loss for non-life insurance businesses is related to their underwriting approach, which is the first operation controlling whether a company accepts or rejects potential risks or losses related to applications for insurance coverage. The measurement of loss ratio is reflected in the effectiveness of the non-life insurance company's underwriting activity which emphasizes controlling underwriting risks which negatively influence its financial performance, because taking an excessive underwriting risk can affect the stability of profitability through increasing the company's expenses. Another reason that a high loss ratio is the unpredictable nature incurred claims, which is dependent on several factors. Non-life insurance companies should pay serious attention to managing losses and incurred claims to indicate their appetite and tolerance for risk. Moreover, the diversification of risk in operating non-life insurance business is a key approach for controlling and limiting the loss ratio of a company. In addition, the nature of the motor insurance business means that companies are more likely to experience higher losses and incurred claims because of number of motor insurance policies and number of cars on the road. Even though the loss incurred related to a single motor vehicle claim is not a very large, this is in stark contrast to the total of the aggregated losses when the level of frequency is taken into consideration. Thus, non-motor insurance companies may be affected less by loss ratio's influence on profitability than motor insurance companies because of the frequency and severity of incurred claims. Therefore, motor insurance companies should balance their product lines and consider their abilities to cover the losses from the lines of insurance business, for example, increasing the proportion of non-motor insurance business, or limiting some parts of their motor insurance that over insurance reserves of firm. In the context of ROA and ROE performance, above median target companies are less affected by loss ratio than below median target companies with regard to generating profits and returns. The higher the loss ratio level is for above median target companies, the lower the influence it has on the company's profitability. Non-life insurance companies should enhance their business models and implement changes to improve and significantly increase their ROA and ROE performance. Ultimately, non-life insurance companies will be able to survive if they recognize the need, and understand how, to moderate or limit their loss ratio and how to maintain or improve positive performance on their ROA and ROE. Determining and analyzing the risk indicators of financial performance, especially quantitative risk analysis, will be useful for the implementation of strategies for managing losses and expenses to maximize profit generation for both motor and non-motor insurance companies in Thailand. Thus, non-life insurers in Thailand should pragmatically emphasize understanding and improving their loss ratios through diversification and balancing of their lines of insurance, including improving risk analysis and selection, expanding their portfolio mix divergence, further developing underwriting functions, and strengthening their enterprise risk management and controls.

Despite the interesting findings in this study, there are some weaknesses that need to be discussed. First, the data used in this study only covers a period of three years of financial data (2016–2018). Therefore, it is difficult to justify the direction of causality between the constructs. Also, collecting data over a longer period of time and using the average values of the variables for analysis, would have enabled the author to determine and track the reliability of the results of interest more accurately. The data used in this study only covers the public disclosure



of financial information. Therefore, it limits this study and makes it difficult to cover all characteristics of the insurance elements. In terms of future research, studies should be conducted to explore the mediating effects of other potential variables, such as company size or growth rate, on the relationships between loss ratio and profitability of non-life insurance companies.

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