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EFFECTS OF GROWTH ON SHORT-TERM CHANGES IN LOSS RATIOS: A CASE STUDY ON AUTOMOBILE INSURANCE OF SRI LANKA INSURANCE CORPORATION LTD.

by

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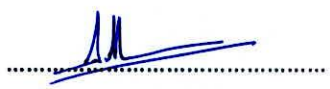
Declaration

"The work described in this thesis was carried out by me under the supervision of Prof. Y.K.Weerakoon Banda and a report on this have not been submitted in whole or in part to any university or any other Institution for another Degree."



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Ms. M.A.S.S.Perera
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ABSTRACT

The impact of growth on underwriting profitability in terms of premium and cost of claims are two important factors in the field of Property & Casualty insurance. This research examines the short-term effects of growth in Gross Written Premium and cost of claims on growth in loss ratio of automobile insurance market in Sri Lanka. It is proven by the past studies that, in the long-run, the losses in automobile insurance will be compensated by accumulation of the premiums. Therefore, this study is focused on short-term effects only. The results show a positive relationship between growth in Gross Written Premium and Loss Ratio. However, the values of the betas were not significant except Private Car/Three-Wheels and Institutional Bus category. The relationship between growth in Claims cost and growth in Loss Ratio is positive with all the betas turning significant. Suggesting that, increase in Gross Written Premium by business expansions and increase in Claims Cost have resulted an increase in Loss Ratios. The growth in claims payments have the highest effect on the rise in Loss Ratio.

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Abbreviations

P&C- Property and Casualty

SLIC-Sri Lanka Insurance Corporation Ltd.

IBSL-Insurance Board of Sri Lanka

RBC-Risk Based capital

NAIC-National Association of Insurance Commissioners

USA -United State of America

GWP-Gross Written Premium

NWP- Net Written Premium

OOR-Overall Operating Ratio

FAST-Financial Analysis and Surveillance Tracking

IBNR-Incurred But Not Reported

YoY -Year on Year

Ln- Natural Log

CP-Claims Paid

Chapter 1

Introduction

1.1 Background of the study

Automobile insurance segment is considered to be the area of high risk which requires prudent underwriting along with strategic management of cost of claims in order to maintain a healthy solvency level and sustainable bottom line in any insurer. Deriving the core idea mentioned above, this study intends to explore on the issue of effects on premium and claims cost growth on growth of automobile insurance Loss Ratio. Automobile insurance segment represent a larger portion more than 50% in total non-life insurance segment in any insurer in most of the developing countries including Sri Lanka, hence the risk embedded in automobile insurance segment account for most of the risk embedded in non-life insurance category. Automobile insurance category in these countries struggle with two severe issues namely increasing motor insurance Claims Ratio and enlarging underwriting losses. On average Claims Ratio hover around 50-60% in developing economies where as in developed countries it goes down to 30-40%. Michael and Eckles (2009) presents the idea that lack of prudent underwriting of automobile insurance business (new and renewal) coupled with maladministration of claims payment have led most of the insurers struggle with increasing Loss Ratio. Loss ratio being a very crucial indicator of solvency position of non-life insurance segment, premium collection too plays a vital role in determining future Loss Ratio levels. This situation is clearly visible when analyzing the case of automobile insurance segment than any of the other insurance segments in Sri Lanka since it involves aggressive business collection with large pool of premium coming in to insurance companies daily.

Risk measurement techniques are being practiced by the insurance industry globally to keep track of solvency levels of insurers ex- Risk Based Capital Model introduced by the USA, has been practicing it as a solvency tracking measurement. In Sri Lanka, RBC model has just been introduced with the intention of implementing it fully by 2016. This research is carried out based on a case study of the automobile insurance segment of the industry leader in Sri Lanka. The core of this study lies on the phenomena of business growth and short-term changes in Loss Ratio which is a function of two key factors namely Gross Written Premium and Claims cost. These are widely discussed concepts in Actuarial research arena. As mentioned above, risk of insolvency and deteriorating profitability arising from increasing Loss Ratio as a result of increased business and claims cost are the highly discussed issues in the automobile insurance segment especially in developing countries.

Theories of Excessive growth discuss this matter as policy underwriters are keen on fattening their books of business rapidly in short term resulting increasing the rate of premium growth. Unless these businesses are written prudently the final effect on the profitability will be reduced due to surge in the cost of claims as well as due to the lag between receipt of premiums and final payment of all claims. Michael and Eckles (2009) argue business growth may occur due to pricing insurance products less than the market rate, lack of reserves and the market leadership. D'Arcy and Gorvett (2004) mention new business is initially unprofitable; renewal books of business eventually become profitable over time. Practically, per year new business generation is around 30-40% in Sri Lanka whilst renewal business more than 70-60%.

Michael and Eckles (2009) have developed two equations to measure the effects of short term growth on Loss Ratio combining Premium growth and Claims count growth as independent variables showing that there is a negative relationship between premium

growth and changes in loss ratios, suggesting premium growth alone does not necessarily result in higher underwriting risk whilst there is a positive relationship between claim count growth and changes in loss ratios. According to them, Claim count growth is considered as a preferred measure of underwriting risk. However, some classes of Actuarial studies believes that, growth in premium collection, claims cost and claims count can be used in modeling risk functions of non-life insurersb (Heckman & Meyers,1983: Berg 1980). These studies have gradually paved the path to model risk and solvency testing methodologies of non-life insurers such as Risk Based Capital Model(RBC). Insurance industry is one of the most critical business segments in every aspect such as risk management, profitability measures, competitiveness, high volumes and customer interaction. It requires capturing the right markets, increasing business volumes (prudent underwriting) and effective claims management systems.

However, it is also reported that, motor insurance segment in developing countries is exposed to high underwriting pressure and high levels of claims payment cost due to pricing deficiencies such as reducing premium rates, cancellation/reducing premium loadings and other economic effects such as inflationary effects. Insurance segment is highly exposed to sever competitiveness among market players in developing countries.

This study attempts to examine the short term effects of Premium growth and Claims cost growth on growth of Loss Ratio. It is discussed only the short run since most of the risky areas will be captured in the short run. In this study growth in Claims cost is used as an independent variable representing both claims count and per claims cost. However, some of the Actuarial research studies suggest Claims count is not always considered as a better proxy for measuring risk whilst some studies have chosen claims cost as a desirable factor to measure risk in non-life insurance segment - Heckman and Meyers (1983).

1.2 Research problem

The problem of short-term effects of Premium growth and growth in Claims cost on the loss ratios of respective Motor Insurance business lines in the insurance sector of Sri Lanka.

1.3 Research Question

To what extent Premium growth and growth in claims (in terms of cost of claims) affect short-term profitability of the respective Motor insurance categories?

1.4 Research Objectives

1. To examine the impact of Premium growth on short-term Loss Ratios of Automobile insurance classes.
2. To examine the impact of Claims cost growth on short-term Loss Ratios of Automobile insurance classes.
3. To examine which vehicle segment should be expanded/contracted in value addition in Automobile insurance classes.

1.5 Research Hypothesis

Hypothesis test is carried out to test whether the coefficients on the independent variables are significantly different from zero. The hypothesis of this study has been formed using the theoretical aspects of Barth and Eckles (2009). According to them, it is tested whether or not the coefficients on the independent variables in equations formulated in their methodology are significantly different from zero. If premium growth is related to increased risk, the relevant coefficient in their first equation was to

be significant and positive. If exposure growth is related to increased risk the coefficient in the second equation was to be significant and positive.

They have argued that, premium growth or exposure growth could increase insolvency risk, in which case the coefficients in equations should turn positive whilst the opposite could also happen. The formulation of two hypothesis is discussed in the methodology chapter.

1.6 Research Methodology

This empirical study is based on the sample data of each comprehensive policy holding automobile insurance classes of the leading state owned insurer, Sri Lanka Insurance Corporation Ltd (SLIC). At present SLIC is the market leader in non-Life insurance business in Sri Lanka, capturing 25.68% of the total market in terms of non-Life GWP. The sample consists of quantitative monthly aggregated data between 2007-2011. Data processing is carried out using SPSS data analysis statistical tool.

1.7 Significance of the study

This empirical study emphasizes the need of prudent underwriting and strategic management of cost of claims in automobile insurance sector, since it pays attention on each individual vehicle category. The outcome of the results analysis will be helpful in deciding the extent of Premium growth and Claims cost affects short-term Loss Ratios of Automobile insurance classes as well as to identify automobile insurance classes risk levels.

In the context of Actuarial Studies carried out based on Sri Lanka, there has not been much of contribution done with regard to these subject areas so far. Therefore, this study can be considered as an eye opening to Actuarial research arena in Sri Lanka.

Literature on Excessive growth and Loss Ratio have mostly focused on studying the property and liability insurance sector rather than the automobile insurance individually. As an attempt to fulfill this gap, conducting an empirical research study with regard to automobile insurance short-term growth and Loss Ratio in Sri Lanka will be a timely need. This study is useful to study the behavior of automobile insurance Loss Ratio levels, the effects generated by premium and claims towards short-term Loss Ratio, identifying viable business areas and future policy making in terms of automobile insurance industry in a developing country like Sri Lanka.

1.8 Limitations

There have not been able to find much empirical research on automobile insurance segment in Sri Lanka, therefore this research study is referred with most of the global examples and past studies. The data have been collected to represent Comprehensive policyholder's details only. The fleet insurance policy details with regard to vehicle classes have not incorporated in this analysis. Also, the sample size is limited to 60.

The flow of this research report will be as follows. Chapter 2 describes the literature related to research problem. Chapter 3 describes the Insurance markets, including local and international trends. Chapter 4 describes the methodology of the study, including data collection, sampling, model specification and variables specification. Chapter 5 represents the results of the regression analysis and its interpretations. Chapter 6 provides a discussion on the overall outcome of the thesis. Finally, Chapter 07 will be the summery, conclusions and recommendation for future research.