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The Impact of Policy Commencement Date and Claim Settlement Date on Terms of Investment in Motor Insurance Business in Sri Lanka

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Abstract

Insurance business involves undertaking of risks and currently shows a positive growth in respect to previous years. Motor insurance is a part of insurance business and contributes to significant part of Net Earned Premium (NEP). Apart from NEP, investment income can be identified as the second main income of the insurance business. The objectives of this research paper were to identify the most suitable time periods for investment decisions to maximize shareholder wealth in motor insurance, to develop a framework to guide to decide time period of investment using commencement date vs claim settlement date and to identify the claim reporting trend throughout the policy period. Data were gathered from 5,630 motor insurance policies commenced during the month of January 2010 and by analyzing respective claims up to January 2011. Both qualitative and quantitative data for both claims and underwritings were collected using the insurance portfolios of insurance agents covering entire country. A telephone survey was conducted with an Internal Audit Manager working at a reputed insurance company in order to collect qualitative data. The study results revealed that averagely 6% of gross written premium need to be repaid in each month as claim expense and based on that loss pattern, a model is developed for investment of funds raised from motor insurance business.

Keyword: Commenced Date, Investment, Motor Insurance, Settlement Date, No Claim Discount, Net Earned Premium

Introduction

According to Ohio Insurance Institute the term insurance can be defined as a system to make large financial losses more affordable by pooling the risks of many individuals and business entities and transferring them to an insurance company or other large group in return for a premium (www.ohioinsurance.org). Insurer collects the total premium at the commencement of the policy or normally allows a credit period less than 60 days due to higher competition in the industry. Most of the motor insurance policies are underwritten for a time period of one year. Once the insurance premium is collected at the beginning of the period, the insurer is liable to undertake potential risks associated with the assets till the end of the policy period.

Special Features of Insurance Business

Manufacturing and other types of businesses always expose to working capital management risks. Since they have to wait for a long period of time to re-collect money which they invest in working capital, they always concern about operating cycle and cash cycle of the company. One of important characteristics of insurance business is that the insurer collects the revenue at the beginning of the transaction and liable to incur expense throughout the policy period. On the other hand manufacturing and other types of businesses can clearly set the price of products after evaluating what they spend on the manufacturing process and by adding sufficient profit margin. Therefore the profit can be measured reliably in those types of

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businesses. But in the case of insurance business, revenue occurs before incurring the expenses and associated business risk is comparatively high.

One of the special features of insurance industry is that a larger amount of premium income is occurred at the time of commencement of insurance policies. Therefore they can invest those funds in short term and long term investments and can earn income to recover potential losses. Investment function is a very popular function in insurance industry in Sri Lanka and currently most of insurance companies maintain a separate department for the above purpose.

Significance of Investment in Insurance Industry

Investment income is one of main sources of income in insurance industry and it represents 23% of NEP and 72% of total assets of the selected insurance companies in Sri Lanka. Therefore high level of concentration should be given on the above area. The study will attempt to identity the impact of commencement date and loss date on terms of investment in motor insurance business in Sri Lanka. This study will address one of important areas of profitability and financial positions of insurance industry in Sri Lanka.

Table 1: Investment Income as a Percentage of Net Earned Premiums (NEP) from Selected Insurance Companies in Sri Lanka for the Year ending on 31st December 2011

Seq. No	*Insurance company*	*Net earned premium (NEP) Rs. Mn.*	*Investment income (IA) Rs. Mn.*	*IA as a % of NEP*
1	Ceylinco Insurance PLC	17,433	4,120	24%
2	HNB Assurance PLC	2,350	475	20%
3	Union Assurance PLC	7,351	1,550	21%
4	Aviva NDB Insurance PLC	9,851	2,601	26%
5	Janashakthi Insurance PLC	6,076	894	15%
6	Allianz Insurance Lanka Ltd	337	106	31%
7	Seemasahitha Sanasa Rakshana Samagama	274	53	19%
8	Asian Alliance Insurance	1,316	693	53%
Total		44,988	10,492	23%

**Source: Annual reports of insurance companies for the year 2011*

Table 2: Investment Value as a Percentage of Total Assets from Selected Insurance Companies in Sri Lanka as at 31st December 2011

Seq. No	*Insurance company*	*Total investment value Rs. Mn.*	*Total Assets Rs. Mn.*	*Investment as a % of total assets*
1	Ceylinco Insurance PLC	42,693	64,261	66%
2	HNB Assurance PLC	4,655	6,036	77%
3	Union Assurance PLC	15,559	21,796	71%
4	Aviva NDB Insurance PLC	31,229	36,420	86%
5	Janashakthi Insurance PLC	8,054	12,973	62%
6	Allianz Insurance Lanka Ltd	952	1,799	53%
7	Seemasahitha Sanasa Rakshana Samagama	628	794	79%
8	Asian Alliance Insurance	3,751	4,318	87%
Total		107,521	148,397	72%

**Source: Annual reports of insurance companies for the year 2011*

Operations vs Investment

Investment department cannot invest all the cash inflows in different investment sources to earn more investment income because they have to keep sufficient amount of cash to settle claims on timely basis. In addition to those they have to comply with regulations of Insurance Board of Sri Lanka (IBSL) as well. Therefore a conflict is created between investment function and with the claim settlement function. Keeping of sufficient liquidity will results in improving claim settlement process and thereby improve the customer satisfaction and future business base. Insurance companies need to settle claims on timely basis to assure the trust since trust is one of core principles of risk transferring process.

Therefore proper interplay between investment and holding of funds is very important to maximize the shareholder's wealth. Insurance companies have to decide the timing of investment (such as one month, three months, one year etc) without compromising claim settlements.

Research Problem

Against the background of the above discussion, the research problem is stated as follows.

"Referring to the commencement date and claim settlement date,

what is the timing of investment of received premium income without compromising the objectives of smoothing of claim settlement process and increasing of investment income?"

Objectives of the Study

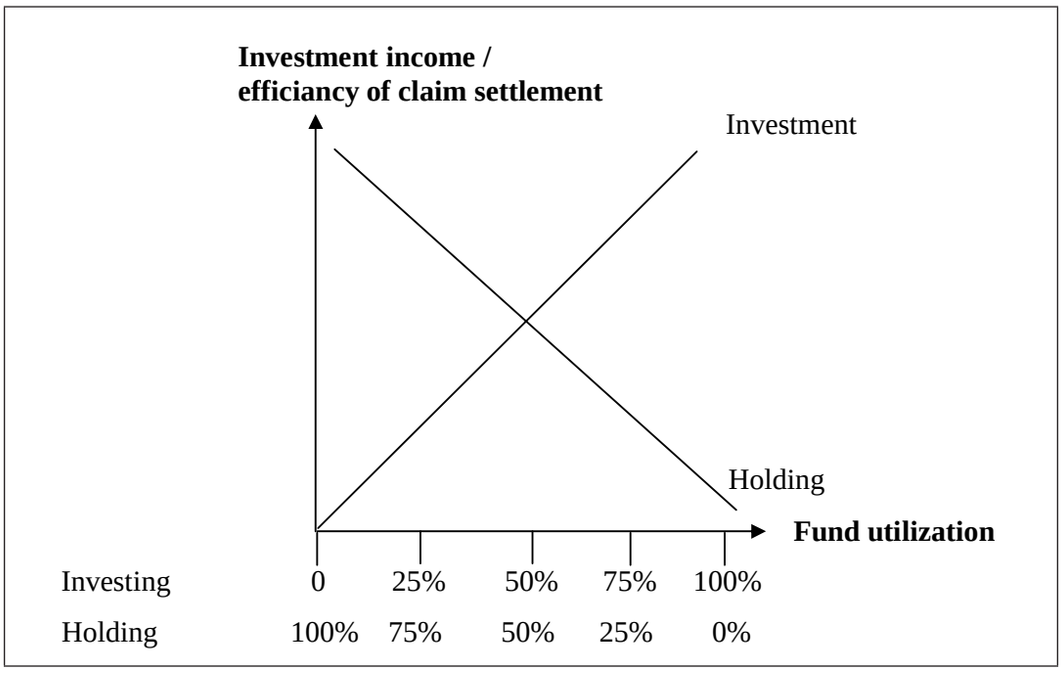
In relation to above discussed research problem, following objectives can be created.

1. To identify the most suitable timing periods for investment decisions to maximize shareholder's wealth.
2. To develop a framework to guide to decide time period of investment using commencement date vs claims settlement date.
3. To identify the claim reporting trend throughout the policy period.

A Brief Review of Literature

Haner (1968) has done a research on prediction of automobile claims by psychological methods. But under

Figure 1: Interplay between funding for investment and for claim settlement



*Source: Developed by the researcher

the current study the researcher attempts to predict claims by analyzing pass claim patterns and allocates excess money on investment by maximum utilization of time. Further Smith, Willis and Brooks (2000) have done a research on analysis of customer retention and insurance claim patterns using data mining and demonstrate the benefits of data mining to the daily operation. The business problem is the optimal pricing of policies to find a balance between profitability and growth and retention (Smith *et al*., 2000). In the current study the researchers examine optimal cash flows decisions which will increase the investment income and claim settlement operations.

Prastacos (1983) has done a study on optimal sequential investment decisions under conditions of uncertainty. He has presented a mathematical model of sequential investment behaviour under conditions of uncertainty. The model addressed the problem of an investor with access to a limited pool of capital, who makes sequential decisions on long-lasting investments, under uncertainty as to the timing or the quality of future opportunities (Prastacos, 1983). Under current study the researcher is interested to identify time periods to invest received premiums under the uncertainty of reporting a claim.

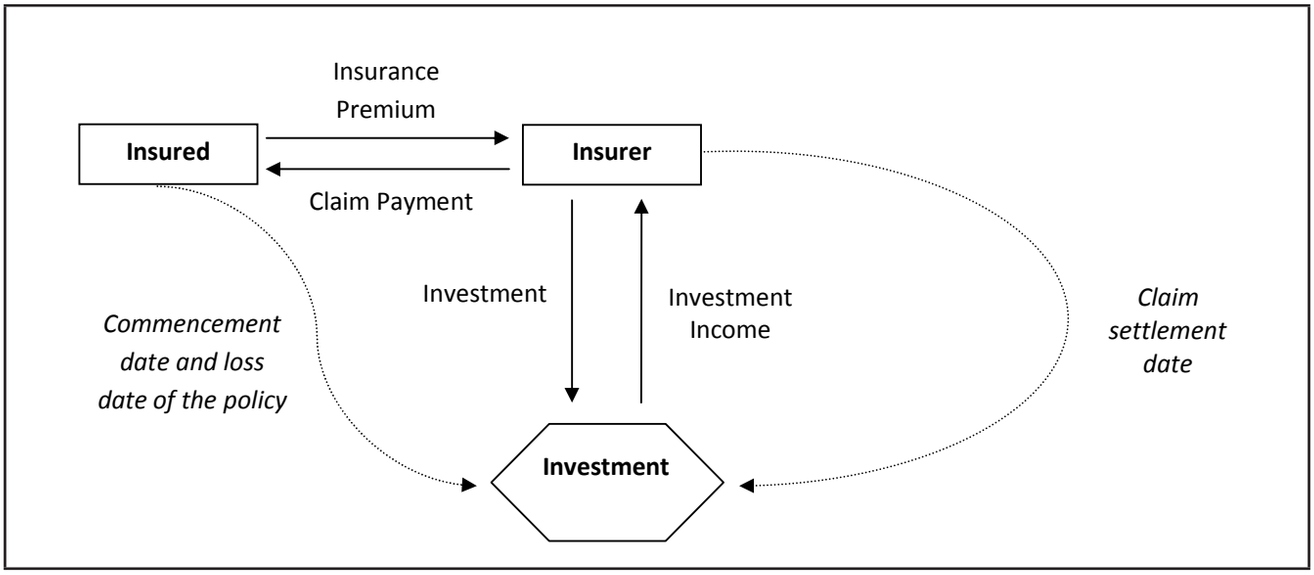
Further, Puelz (2002) has studied Stochastic Convergence Model for Portfolio Selection and he claims that portfolio selection techniques must provide decision makers with a dynamic model framework that incorporates realistic assumptions regarding financial markets, risk preferences, and required portfolio characteristics. Puelz (2002) has presented an alternative model framework for portfolio selection, stochastic convergence, which systematically incorporates uncertainty under a realistic assumption set. Under the current study the researchers attempt to select time period of investment portfolio without considering risk factors associated with investment.

Décamps e*t al.* (2005) have done a research on the topic of investment timing under incomplete information. They have studied the decision of when to invest in a project whose value is perfectly observable but driven by a parameter that is unknown to the decision maker ex ante. This generates path dependency in the optimal investment strategy (Décamps *et al.*, 2005). The current study is also somewhat similar to study done by Décamps *et al.* (2005) and this will predict information based on past practice.

Concept – Indicator Model

According to the concept-indicator model policy commencement date, loss date and claim settlement date influence the investment decisions in insurance industry.

Figure 2: Concept - Indicator Model



**Source: Researchers' original construct*

Methodology

An exploratory study was undertaken by using 5,630 motor insurance policies commenced during the month of January 2010 and by analyzing respective claims up to January 2011. In order to achieve above stated research objectives, both qualitative and quantitative were gathered. Data for both claims and underwritings were collected using the insurance portfolios of insurance agents covering entire country. A telephone survey was conducted with an Internal Audit Manager working for the selected insurance companies to collect qualitative data. The data for the study would be collected at a single point in time. Thus the study was cross sectional in time horizon. The study was conducted on motor insurance policies of selected insurance companies in Sri Lanka and researcher reviewed 5630 motor insurance policies from eight insurance companies in Sri Lanka. Time horizon of the study was longitudinal and the unit of analysis of the study was motor insurance policies and respective claims.

After the underwritten of policy, loss pattern in each month is planned to be identified and thereby researchers attempt to develop a framework for term of investment in motor insurance business.

Results and Findings

Motor insurance policies of 5,630 were analyzed during their policy period commencing from 1st January 2010 and ending in 31st January 2011.

Table 3: No of Accidents and Involved Vehicles for a Period of one year Commencing from January 2010 to 31st January 2011

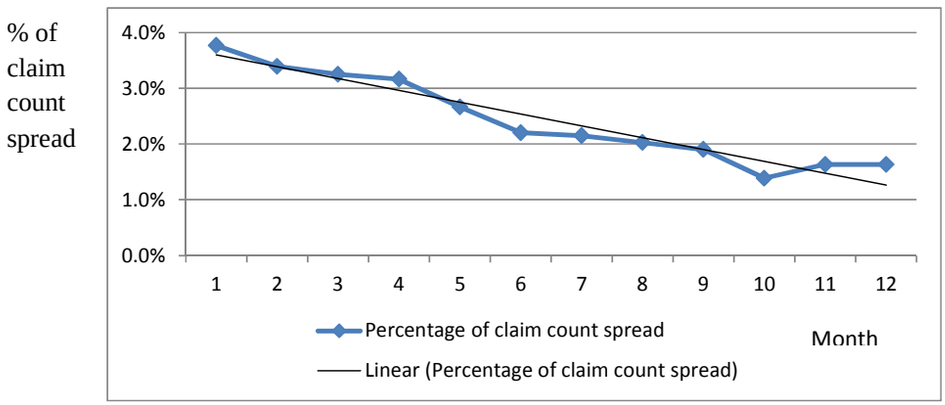
No of Accidents	*No of vehicles involved*	*Total No of accidents*	*%*
0	3,988	0	70.83%
1	1,084	1,084	19.25%
2	385	770	6.84%
3	121	363	2.15%
4	32	128	0.57%
5	13	65	0.23%
6	6	36	0.11%
7	1	7	0.02%
Total	**5,630**	**2,453**	**100.00%**

**Source: based on the survey*

As shown in Table 3, out of the analyzed sample of 5,630 motor insurance policies, 70.83% of policies had not reported any claim during the policy period. 19.25% of vehicles had claimed only one time and 9.92% of vehicles claimed more than one time. In order to identify the loss/ accident pattern of motor vehicles during the policy period, Figure 3 was drawn.

Figure 3 shows that claim count spread during the policy period. Based on the claim count spread trend, it can be identified a declining trend throughout the policy period. At the beginning of the policy period 3.8% of policies made claims and it will reduce up to 1.6% at the end of the policy period. In the discussion with Internal Audit Manager, he argues that intention to obtain No Claim Discounts (NCD) in the next year

Figure 3: Claim Count Spread during the Policy Period



**Source based on the survey*

and thereby to reduce the premium are the reasons for not making much claims at the end of the policy period and it will further be evidenced by having a higher claim reporting at the beginning of the period. This will provide evidence for researchers' third objective of "to identify the claim reporting trend throughout the policy period".

As per Table 4, at the beginning of the policy period a positive cash flow of rupees 143,604,790 is occurred and out of that, 5.57% have to be paid as claims in the same month. Thereafter on an average 6% is needed to be paid as claim in each month. There is 27% retention at the end of the policy period. Based on this analysed information, researchers developed the following model that maximizes both company's interest and shareholders' wealth.

As per the model developed in Figure 4, on an average 6% of premium income should be allocated each month for claims payment expectation. There should be a higher liquidity for short term investments especially for investments less than 1 month with a lesser interest income expectation to maintain the high level of liquidity. But for the investments greater than one year, it should have less liquidity since those cash will not be required to settle the claims and it should be invested with a higher interest rate expectation. Through these analysis researchers fulfill the attainment of first, second and third objectives of the research.

Table 4: Cash In and Cash Out Flows Associated with Motor Insurance Policies Commenced in January 2010

Month	*Cash flows*	*Net Cash Flow*	*%*
0	143,604,790	143,604,790	100
0	(7,999,446)	135,605,344	(5.57)
1	(5,639,697)	129,965,648	(3.93)
2	(10,055,716)	119,909,931	(7.00)
3	(4,363,334)	115,546,598	(3.04)
4	(6,623,113)	108,923,485	(4.61)
5	(9,030,513)	99,892,971	(6.29)
6	(9,751,920)	90,141,051	(6.79)
7	(9,451,120)	80,689,931	(6.58)
8	(7,032,874)	73,657,057	(4.90)
9	(6,809,881)	66,847,175	(4.74)
10	(8,096,597)	58,750,578	(5.64)
11	(10,955,678)	47,794,900	(7.63)
12	(9,361,513)	38,433,388	(6.52)

**Source: Based on survey*

Conclusion and Limitations

From the study, it is found that on an average 6% of premium income received needs to be re-paid as claim expenses in each subsequent month. When investment time period becomes shorter, there should have a higher liquidity and as a result a lower interest income is expected. When it is longer there should have a less liquidity and

Figure 4: Investment Term Model in Motor Insurance

Investment period	Percentage	Features
Less than 1 month	6%	Liquidity of Investment
1-2 months	6%	
2-3 Months	6%	
3-4 Months	6%	
4-5 Months	6%	
5-6 Months	6%	
6-7 Months	6%	
7-8 Months	6%	
8-9 Months	6%	
9-10 Months	6%	
10-11 Months	6%	
11-12 Months	6%	
More than 12 Months	28%	Interest Income Expectation

thereby a higher interest income is expected. Therefore, this model suggests a framework for investment of motor insurance premium receipts in a systematic manner.

As with all empirical research, this study has its limitations. The main limitation of this study was the sample which had been restricted to motor insurance policies from eight selected insurance companies. The model developed in this paper is based upon straight-forward principle and it does not address liabilities to policy holders' tax authorities and its shareholders. Therefore, the future studies should address these limitations.

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