An Analysis of Underwriting Performance of Nepalese Non-Life Insurers

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Abstract

The study depicts the performance of non-life insurers in terms of their net premium income with reinsurance commission received and the expense made through the net claims, agency & reinsurance commission paid and management expenses. By netting the income versus expenses aroused of core business function, underwriting profit or loss are derived which formed the basis of this study. The underwriting profit is still in the P/L accounts of insurer but with much diminishing pattern. If other variables are kept constant the higher expenses ratio having 6.3% CAGR will surpass the lower income ratio having 4.15% CAGR in coming 11.3 years. Methodology of ANOVA is used in this study to find out the relation between the underwriting profit and net premium income by using simple linear regression. Findings directs that the underwriting profit will be converted into near future if the rate of risk premium does not rise or the net claims are not reduced by this industry.

Keywords: Performance, net premium income, underwriting, non-life insurers, net claims.

1. Introduction

The insurance being an inevitable part of our risk transfer strategy, has gone too much advanced and technical in terms of risk analysis and risk financing. It consists of good anticipation of risk and pricing strategy. Pace of analysis had come to far from hit & trial method to the artificial intelligence technology. It can be said that the human intervention is needed only while training the software in Machine Learning process. Albeit the various approaches are introduced by the experts, the analysis and pricing of the risks in Nepalese market is still on the cradle of its own kind. Risk analysis and pricing in Nepalese insurance market has still as a backlogging than those of concurrent foreign market. It is assumed that the top-level management of non-life insurance companies are experts in risk anticipation and pricing. The insurance regulatory has made almost every business portfolio under a tariff regime. The company has choice of doing or not doing the tariff driven non-life businesses. On the flip side, File and Use system has created the policy wordings, ratings & modality into pre-approval from regulatory limiting the competitive edge. The competitive advantage between insurers is now limited to the procedural services to insured and claimants. Another competitive advantage could be limited to the return on the investment mix made by insured's finance team. Rest policy coverage, policy pricing, claims modality are somehow

same in this sector. Under the controlled environment of pricing and choice of risks are fixed, the underwriting profit/loss of each company operating in the same market, should follow the same pattern of rise/fall of each business segment. This article aims to find the underwriting profit/loss by non-life insurers under the tariff-controlled environment.

It is to study the impact of almost every business portfolio tariff. Since 1990s the tariff is being loaded and the last one named "minimum rating guidelines for non-tariff business" has come to force from 2079-80 onwards except Medical & Public Liability Products. So, the data is taken from 2079-80 quarterly basis. Altogether 12 quarters are reviewed for the study of this article.

For the purpose of this study, we have taken the aggregated income/loss calculation. The income side of the insurer consists of various topics such as Net Premium Income, Reinsurance Commission, Investment Income, Other realized income, Opening balance of unexpired risk reserve & outstanding claims. Whereas the expense side of the insurer consists of various topics such as Net Claim Paid, Agency & Reinsurance Commission paid, service tax, other direct expenses, management expenses, Closing balance of unexpired risk reserve & outstanding claims. This article focuses on the significant contributor of income as net premium income, reinsurance commission and on the expense side as net claims paid, reinsurance and agency commission paid and management expenses.

Underwriting Profit/Loss = Net Premium Income + Reinsurance commission received – Net Claim Paid – Agency/Reinsurance commission paid – Management expenses

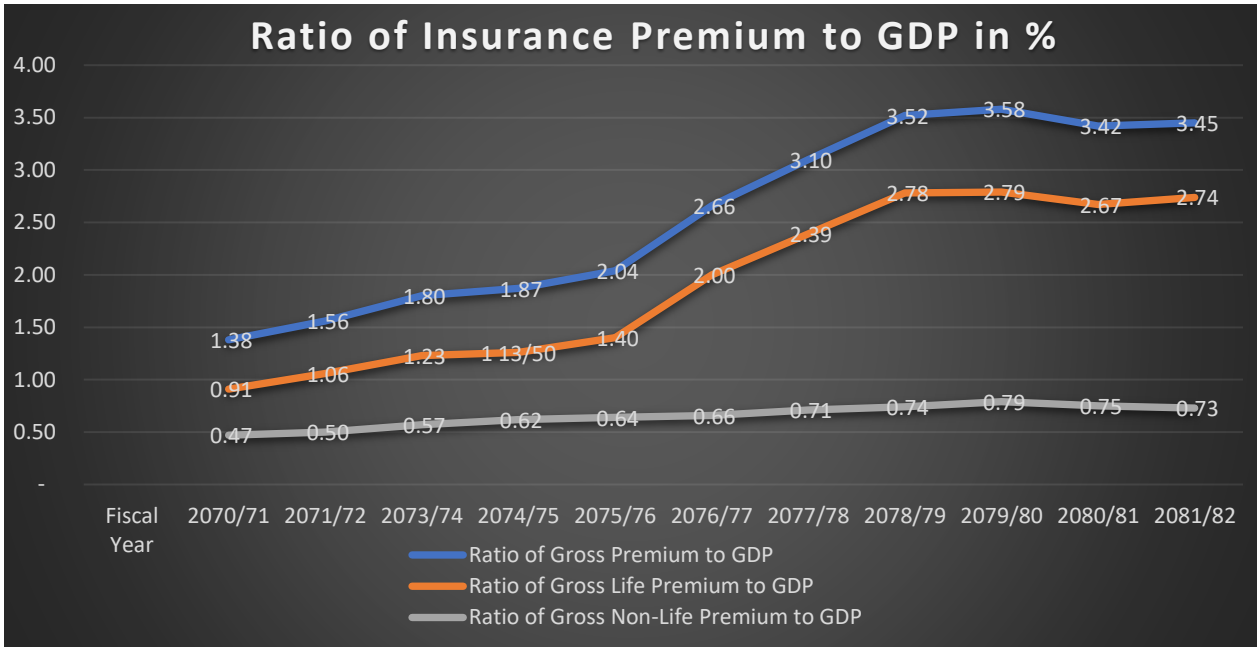
Milestones and Governmental Uplift

After being the WTO member in 2004, a new avenue in Nepal has risen in competitive trade and so did in insurance sector. The mandatory transit insurance in foreign trade has given insurance company a new level. Beside this, government of Nepal had started a new regulation for the mandatory third-party insurance to every road use vehicle while renewing vehicle registration book. With increasing disablement and death to those Nepali who went for foreign employment, has introduced another threat to the livelihood of those dependents and also a serious concern of workplace safety. Again, mandatory foreign employment insurance policy is introduced in conjunction of work permit documentation. These reforms made by government enhanced gross premium income of some portfolio of insurers. The performance shift by these changes is visible and shown in comparison with the GDP as Chart 1 below.

Apart from regular insurance ecosystem, government has introduced a separate health insurance scheme under health bill passed in 2019 AD, which mainly functions as pooling mechanism of risk and backed by government fund for adverse scenario. Provident fund institutions like Social Security Fund, Citizen Investment Trust, Employe Provident Fund

also provides their respective coverage on the health and accidental products at their own capacity. Deposit & Credit Guarantee Fund has separate arrangement of coverage of funds at financial institutions and a credit guarantee against non-collateral loans as well.

Chart 1



Source: NIA Annual Report 2080/81

By the establishment of autonomous insurance regulatory in 1992 AD as a result of free economic reform by the then government, many industrialists have taken license for the insurance companies. Before 1990s one government owned, two branches of Indian insurance company and few joint stocks company were in operation. The number raised to 20 non-life insurers with 2 reinsurers. Later the merger/acquisition took place and non-life insurer got reduced to 14. The government has given extra 4 licenses to the non-life micro insurers to capture the untapped area where the traditional non-life insurer had not reached thereto. After the various insurance literacy program and the initiatives taken by the government in collaboration with the insurers and stakeholder good uplift on insurance product is seen these current years. Records from the insurance regulatory shows the penetration level reached 50% of the population. There is a good increment in the number of policies and premium as penetration level raised.

Parameters of analysis

The risk assumed by the insurers are not to be accumulated in the insurers' liability section, they are spread to the reinsurers domestically and/or cross border. After the hedging of the risk by insurers to the reinsurers, the remaining premium are retained by the insurers as termed as Net Retention Premium. While ceding such reinsurance premium, reinsurance

commission are provided by the reinsurers to the insurers. Reinsurance commission could be fixed, provisional or sliding scale accounted for loss ratio. After the payment released to the claimant for the losses, insurers allocate the proportion of the shared loss to their reinsurance partners. Some of the losses or part of the losses are paid to claimant by insurer itself. Such retained losses are treated as Net Claims paid. While receiving the reinsurance business inward by non-life insurer, some of the premiums are rebated to the reinsured in the form of reinsurance commission paid, such amount is charged as reinsurance commission. Business allocation charges incurred by the agents are indicated as agency commission, which are also charged to the profit/loss account. The overall management expenses including staff renumerations, office expenses, operating costs are also allocated. These income resources and the expenses are net-off for the final computation to arrive at underwriting profit/loss. There are other sources of income and expenses, which are not considered for this particular study.

Underwriting Practices

Underwriting is the decision on the risk to be written in accounting books. Those risks which are being transferred from the client to the company's account, the company will measure the risk exposure and price the risk on the basis of their financial capacity. Moreover, risks are transferred to the reinsurers, but still the significant number of risks are to be retained by every insurer. Underwriting risk may arise from the inadequate pricing or inaccurate risk assessment. The insurance policy is contingent and the future liability is the main concern, so every insurer has to thoroughly analyze their future liability and cost of acquiring business as on date. Additionally, the non-life insurance policies are short term in nature and generally do not exceed 12 months. Underwriting strategy of each company has to ensure that the underwriting risks has to be well managed despite of their diverse nature as per geography, intensity, recurring ability. Every company has its unique feature of underwriting practices. It differs in its risk appetite, risk modeling, financial capacity, short term and long-term strategy, skills of underwriting staffs, etc. Historical data provide the nature of frequency and severeness of the risk enabling underwriters to make decisions. As per the Nepalese market, the policy wording and risk rating both are tariff driven, there is very little scope of the customization. Almost all portfolios are somehow tariff guided. Innovations on the new product are some areas where insurers can bring competitiveness. If new products have overlapping features with those tariff driven products, then the insurance regulatory usually does not allow such duplicated policy to float in the market. In this situation the competitiveness solely depends upon the service rendered to the insured and claimants. Underwriting income now dependent on the top line, who can procure maximum number of efficient sales staffs. Underwriting income also depends upon on the maximized negotiation done in the part of reinsurers and reinsurers brokers' commission payout. On the flip side, the underwriting expenses depends on net claims liability to pay out and the cost of business

acquisition. The business acquisition expenses usually incurred the expenses namely agency plus reinsurance commission payout, sales staff renumeration, and overhead costs.

2. Review of Literature

Many research articles have been published in the determinant of profitability in banking sectors, but very few research articles are found in the Nepalese insurance sector. Specially research is more focused in finding profitability of Nepalese insurance companies in terms of ROA & ROE and the correlation between liquidity, tangible assets, premium growth, firm size and operating ages (Shah, et.al, 2021). Similarly, determinant of profitability of insurance companies has been identified by authors as Expense Ratio, Financial Leverage, Claim Ratio, Firm size and operating ages. (Sejuwal & Koirala 2023) Separately, profitability of insurance companies has been researched on the determinants are explored as Liquidity, Leverage, Firm Size and Operating ages by author Sharma (2024). Ghimire (2014) has studied the impact of income structure to profitability on Nepalese life insurance companies. Contents in terms of underwriting profitability and its relation with underwriting income of Nepalese insurance market is not found in Internet of Things (IoT). But the similar type of research is found in India, Pakistan and other countries. In India, data from 2001 to 2024 is used to find the performance done by non-life insurers in last 24 years based on regression analysis and CAGR method by Dutta (2024). Based on Data Envelop Analysis method, by taking input variables as Operating Expenses and Commission to the output variables as Net Premium and Investment Income of Insurance Sector, performance was analyzed by Sinha and Bandopadhyay (2016). Similar type of DEA analysis was done by Ertagrul et al. (2016) for finding out the performance of insurance sector. There have been numerous studies on various aspects of non-life insurers in terms of performance, but there is less research work on underwriting performance in terms of underwriting proft/loss. By finding the gap in the similar type of performance analysis from ANOVA and CAGR method, this research paper tries to fulfill the gap.

3. Objectives and Methodology

Objectives

The objective of this paper is to confirm whether the trend of underwriting profit is directly proportional to the business underwritten and analyzing the underwriting performance of non-life insurance sector of Nepal. The paper has examined the trends and pattern of underwriting profitability despite of same underwriting ratings and business arena. Based on the net value of underwriting premiums and net claim losses, this paper examined the retention portion of insurers in correspondence with the market trends.

Data Source

The study is based on the secondary data. The data has been obtained from quarterly reports of respective 12 non-life insurers from 2079-80 to 2081-82 (12 Quarters). Data of those unmerged insurers before merger has been compiled with their respective merged entity. References and cross validation have been done from data obtained via annual reports of NIA, quarterly reports published under the statistics section of Nepal Insurance Authority website.

Out of 14 non-life insurers, only 12 companies are taken for study (See Table 1). The Oriental Insurance Company and National Insurance Company, has been excluded due to unavailability & insufficient data in their respective websites under study period. These companies were established in Nepal as the foreign branch of Indian insurers and has less accessibility to public disclosure of their financials. The data used in this study has been derived entire from the secondary data and in the lack of primary data, further screening is not possible. The effort has been made in the cross verification of such data with the NIA published data in their websites. Some of the quarterly reports were downloaded from Nepal Stock Exchange website.

Table 1: Non-Life Insurance Companies under study

S.No	Nepse Code	Name of Company	Type
1	NICL	Nepal Insurance Company Limited	Unmerged
2	SICL	Shikhar Insurance Company Limited	Unmerged
3	NECO	Neco Insurance Company Limited	Unmerged
4	RBCL	Rastriya Beema Company Limited	Unmerged
5	PRIN	Prabhu Insurance Limited	Unmerged
6	NLGI	NLG Insurance Company Limited	Unmerged
7	HEI	Himalayan Everest Insurance Limited	Merged
8	SALICO	Sagarmatha Lumbini Insurance Company Limited	Merged
9	SPIL	Siddhartha Premier Insurance Company Limited	Merged
10	SGIC	Sanima GIC Insurance Company Limited	Merged
11	IGI	IGI Prudential Insurance Company Limited	Merged
12	UAIL	United Ajod Insurance Company Limited	Merged

Research Methodology

This research paper used MS-Excel for graphical presentation and regression model running for the data analysis. The linear regression is done in the standard form as prescribed below.

$$Y = mX + C$$

Where, X = Independent Variable (Non-life insurance premium earned)
Y = Unknown Dependent Variable (Underwriting Profit/Loss)
m = Slope
C = Intercept

For analysis of last 12 quarters in terms of compounded annual growth rate (CAGR), the following formula is used.

$$CAGR = (FV/PV)^{\wedge(1/years)} - 1$$

Where, CAGR = Compounded Annual Growth Rate
FV = Final Value
PV = Beginning Value

The problem statements

The primary objective of establishing an insurance company is to function its core business and earn the profit out of its core business. The core business functions of any insurance company include underwriting, claims & reinsurance. The marketing and sales perform the front end of insurance company. Other auxiliary function consists of Accounts, Finance, Agency, Risk Management, Logistics, Legal, IT etc. Income generation consists of underwriting net premium, investment income, other income, commissions and release of earlier provisioning. Expenses consists of Net claim, reinsurance and agency commission paid, service charges, management expenses, allocation of current year provisioning. So, the profit allottable to underwriting is given by formula as below:

Underwriting Profit = (Net Premium Income + RI Commission Income) – (Net Claims paid + RI & Agency Commission Paid + Management Expenses)

It is considered that as the income in the form of premium increases, the underwriting profit also increases; provided that the other conditions remain constant. As per the Nepalese market, the tariff driven business in terms of coverage and ratings makes an equal footing between insurance company. Higher premium income ought to yield the higher profit with same profitability percentage. As the anticipated claims are statistically predicted as indicated by law of large number philosophy and reserving as prescribed by actuaries. Now, the yard stick of determining profitability percentage would only differ if insurer does the business with higher negotiation in commissions and optimized management expenses.

So, the analysis spiral down to the method of simple linear regression analysis. Regression analysis is conducted between the earned premium and the underwriting loss/profit made by non-life insurance sector.

Hypothesis

The following hypothesis has been formulated and tested.

H_o: $\beta = 0$ (Non-Life Insurance net earned premium does not explain the phenomenon of underwriting profit or loss)

H_1: $\beta \neq 0$ (Non-Life Insurance net earned premium explains the phenomenon of underwriting profit or loss)

Data Analysis

Hypothesis has been tested using independent t test and Analysis of Variance (ANOVA). CAGR, Descriptive Analysis, Inferential Statistics has been used via MS-Excel to analyze data and finding the conclusion.

Explanation of Variables

Full name of Variables, abbreviation of variables, measurement unit, descriptions of variables used in analysis are shown in Table 2.

Table 2: Abbreviation and Description of Income and Expenses related variables

Abbreviation	Variable	Description	Measurement Unit
NPREM	Net Premium	Net premium shown in P/L account (Serial No. 1.1)	Rs. in '000
RECOMI	Reinsurance Commission Income	Reinsurance Commission Income shown in P/L account (Serial No. 1.2)	Rs. in '000
NCLM	Net Claim	Net Claim shown in P/L account (Serial No. 2.1)	Rs. in '000
ACOME	Agency Commission Expenses	Agency Commission Expenses shown in P/L account (Serial No. 2.2)	Rs. in '000
RCOME	Reinsurance Commission Expenses	Reinsurance Commission Expenses shown in P/L account (Serial No. 2.3)	Rs. in '000
MGMTE	Management Expenses	Management Expenses shown in P/L account (Serial No. 2.6)	Rs. in '000
UWPL	Underwriting Profit/Loss	Underwriting Profit/Loss = NPREM+RECOMI-NCLM-ARCOME-MGMTE	Rs. in '000

While extracting variables from the quarterly report, the agency commission expenses and reinsurance expenses are in separate serials in P/L account in 2.2 and 2.3, which are added while taking the data for ease of calculation. After the introduction of NFRS 17 with effective from 1st quarter of 2080-81 by insurance regulatory, data are extracted from condensed

consolidated statement of profit and loss. Headings are same except for the bifurcations on Management Expenses into Other Operating Expenses and Employee Benefit Expenses. These two headings of Other Operating Expenses and Employee Benefit Expenses were added in the name of management expenses for ease of calculation.

4. Descriptive Analysis

Compounded Annual Growth Rate Pattern

Table 3: Non-Life Insurance Premium, Claims Paid, Commissions Paid & Operating Expenses

					Rs. In '000
Year	**Qtr**	**NPREM**	**NCLM**	**Commission Paid**	**Operating Expenses**
79-80	1	4,330,878	1,399,864	132,096	1,032,219
79-80	2	3,868,184	1,405,387	133,683	1,037,160
79-80	3	4,307,409	1,968,914	172,765	1,138,760
79-80	4	4,312,186	2,373,451	114,216	1,551,696
80-81	1	3,491,476	1,757,070	119,074	1,876,144
80-81	2	3,959,753	1,359,062	135,904	1,494,966
80-81	3	4,853,827	1,659,676	155,424	1,815,100
80-81	4	6,519,786	2,719,438	160,199	2,879,637
81-82	1	4,023,248	2,557,336	98,912	2,656,248
81-82	2	4,108,623	1,898,540	129,826	2,028,366
81-82	3	5,436,650	2,233,995	132,849	2,366,844
81-82	4	6,774,392	2,566,147	237,481	2,803,628
Source: Quarterly Report of insurers					

The table 3 shows the data of 12 non-life insurers' performance data from 2079-80 to 2081-82 total 12 quarters. It shows the net premium, claims, commissions paid and expenses. This table shows the premium and expenses are neck to neck but somehow some underwriting margins are seen. If we calculate the CAGR of the net premium income pattern, then it is found 4.15%, whereas in the net claims and commission & management expenses, it is found to be 6.30%. It revealed that the compounded annual growth rate of management &

commission expenses is more than net premium. The investment income has not been considered while calculating the underwriting loss. The net claims, commissions paid and management expenses has been increased in a higher rate than those of premium income rate. It requires the better management of claims and efficient management expenses, so the underwriting profit will be safeguarded in time.

Based on 4th quarter data, expenses to premium income ratio comes to 79.38% If this pattern continues, keeping other variables constant, then underwriting loss will start to occur. The below stated formula (Sam, 2025) is used to predict the time for the underwriting loss, keeping all other variables constant.

$$t = \ln\left(\frac{Po}{Eo}\right) / \ln\left(\frac{1+re}{1+rp}\right)$$

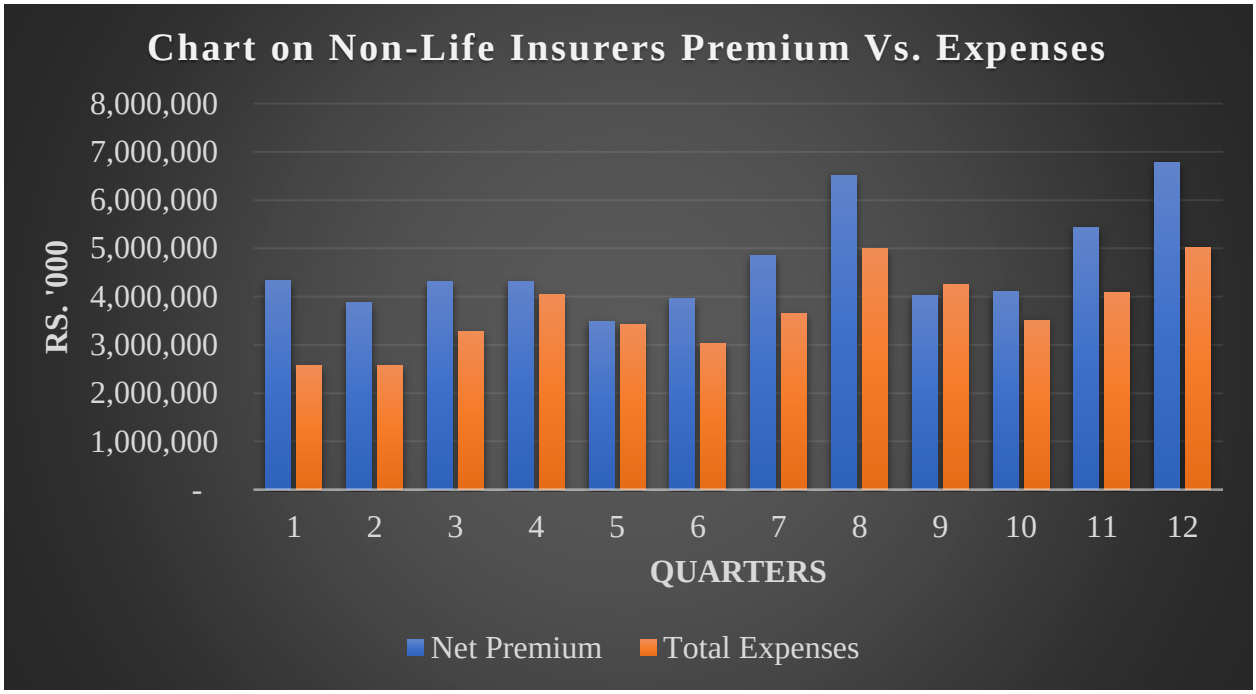
Where:

P_o is the initial premium income (NPREM+RECOMI)
E_o is the initial expenses (NCLM+ACOME+RCOME+MGMTE)
r_p is the premium CAGR (4.15%)
r_e is the expenses CAGR (6.30%)

By using the above formula, the underwriting loss will occur as per the time estimation comes to nearly 11.3 years.

Income and Expenses Trend

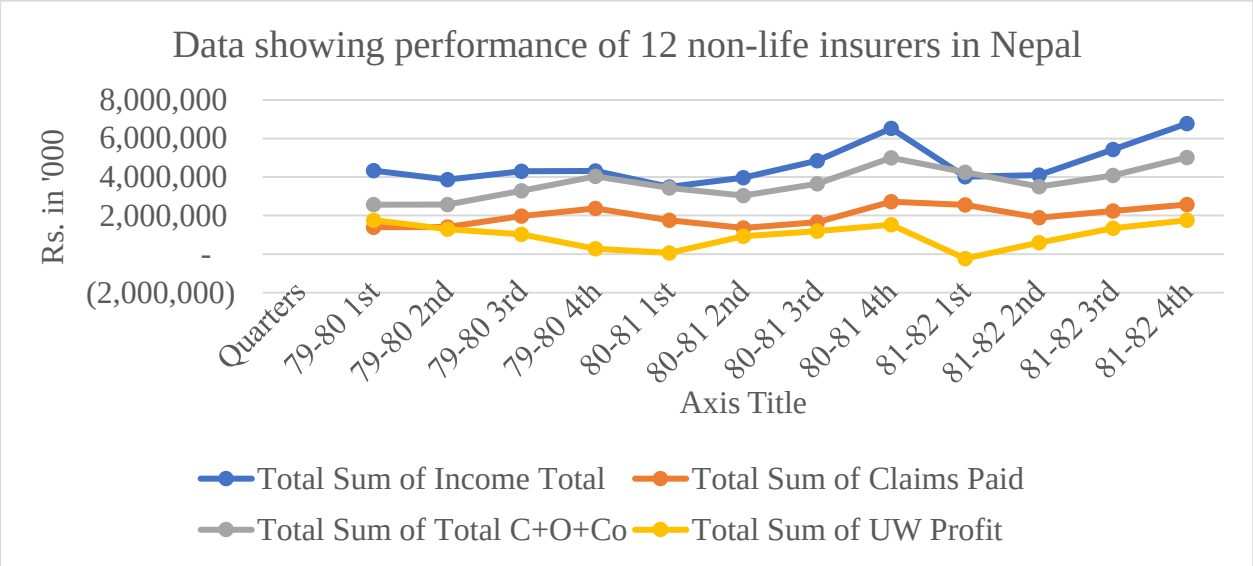
Chart 2



Source: Quarterly reports

From the chart 2, it revealed that the underwriting profit are seen in first three quarters of 79-80 and then its neck to neck till fourth quarter of 80-81. Then an underwriting loss is found in the first quarter of 81-82 and again it is found good underwriting profit.

Chart 3: Chart showing performance of non-life insurers



As on increase in the net premium income with higher slope, there is less rise in the underwriting profit.

Correlation between Income and Profitability

Model of Regression: Y = mX + C

Regression Fit:

Table 4: Coefficient of Regression

	β	*Standard Error*
C (Constant)	-884250	731,522.15
Premium Income	0.3957	0.153

a. Dependable Variable: Underwriting Profit/Loss

Predictors are to be based on the known independent variable X (Non-Life Net Premium Income Earned), Y is the unknown dependent variable which is to be predicted (Underwriting Profit/Loss) and m & C are slopes and constant/intercept whose value are to be determined.

Y = 0.3957X – 884250

Model Predictive Ability

Table 5: Summary of the model

Regression Statistics	
Multiple R	0.6324
R Square	0.39993
Adjusted R Square	0.33992
Standard Error	533525
Observations	12

a. Predictors: Non-Life Insurance Premium Income Earned

R square shows how well the data fit in the regression model (goodness of fit). The R square value comes to be 0.399 ≈ 0.40. It means the 40% of the relationship between non-life insurance income earned and the underwriting profit/loss can be explained. Remaining 60% are due to unexplained factors or the left-out variables such as investment income, other income, opening reserve balance.

Testing of Hypothesis

Coefficient of Regression:

Table 6: ANOVA Table

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.89708E+12	1.89708E+12	6.664642745	0.027341299
Residual	10	2.84649E+12	2.84649E+11		
Total	11	4.74357E+12			

a. Dependent Variable: Underwriting Profit/Loss

b. Predictors: Non-Life Premium Income Earned

Alternative Hypothesis

$H_1: \beta \neq 0$ (Non-Life Insurance net earned premium explains the phenomenon of underwriting profit or loss)

Null Hypothesis

$H_0: \beta = 0$ (Non-Life Insurance net earned premium does not explain the phenomenon of underwriting profit or loss)

At 95% confidence level (CL) the p-value computed is 0.027 which is less than 0.05. Thus, the null hypothesis is accepted and the alternative hypothesis is rejected. So, it proves that the non-Life net premium income earned and underwriting profit/loss has significant relationship.

5. Results & Conclusion

The major findings of this research paper are as follows:

a. The CAGR of the Net Premium Income Earned is 4.15%.
b. The CAGR of the Expenses incurred is 6.30%
c. The estimated time for superseding the expense to the income ratio is estimated for 11.3 years, if the same pattern is continued as per tariff regime. Then after overall industry will suffer underwriting loss.
d. The insurance regulatory (Nepal Insurance Authority) has to take corrective measures in the pricing and coverage terms of insurance policy as per the changing scenario of higher loss ratio. Higher loss ratio might have occurred from the climate change, pandemics, perennial natural disasters.
e. The insurer's management have to revisit their existing recruitment pattern to make the workforce more efficient and economic.
f. Operating expenses are increased in recent years. These are yet to be control efficiently.
g. The insurers have to explore alternative insurance market in order to take benefit of economies of scale.

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