

Financial Performance of Select Public Sector Health Insurance Companies in India

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I. Introduction

The present paper deals with an analysis of the financial performance of select public sector health insurance companies in India, specifically United India Insurance Co. Ltd, New India Assurance Co. Ltd, and The Oriental Insurance Co. Ltd. This chapter examines key financial performance through CAMEL ratios, using descriptive statistics, correlation analysis, and panel OLS regression to assess the influence on net profit.

The objective of the study is to analyse the Financial Performance of select PUBLIC sector health insurance companies in India (United India Insurance Co. Ltd, New India Assurance Co. Ltd, and The Oriental Insurance Co. Ltd). The study focuses on evaluating key financial performance indicators measured through CAMEL ratios.

To achieve this, the study employs descriptive statistics, correlation analysis, and panel Ordinary Least Squares (OLS) regression. The financial factors serve as independent variables, while the net profits ratio is treated as the dependent variable to assess the relationship and influence between these dimensions of performance.

II. Review of Literature

Vadakam Sreeshailam (2022) The study conducted a comparative analysis of public and private sector health insurance companies in India. The study revealed that, due to the highly regulated nature of the health insurance industry in the country, there were no statistically significant differences in the overall financial performance between the two sectors. However, an exception was observed in the metric of Return on Equity (ROE), where a notable difference was identified. This finding highlights the impact of regulatory policies on standardizing financial performance across sectors. The study underscores the importance of further research into sector-specific factors influencing profitability and operational efficiency.

Geha Nath Khanal et al., (2023) Despite political commitments to reduce out-of-pocket healthcare expenses through Nepal's National Health Insurance Program (NHIP), implementation challenges persist, marked by low enrollment and high dropout rates. This study examines the organizational and systemic obstacles hindering NHIP's performance using a structured narrative review and political economy analysis. Challenges identified include inadequate reimbursement, bureaucratic dominance of providers over purchasers, weak monitoring, and leadership deficiencies. Beneficiaries faced compromised care quality, leading to high dropout rates. The study recommends institutional reforms, such as digitalizing claims, expanding coverage, introducing cost-sharing models, and leveraging external support to improve financial sustainability and implementation.

Samir Garg et al., (2023) In India, institutional deliveries have been promoted to reduce maternal and neonatal mortality, yet these often result in significant out-of-pocket expenditures (OOPE) and financial distress for families. To mitigate these financial burdens, publicly funded health insurance (PFHI) schemes have been implemented, including the Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (PMJAY) launched in 2018. This study assesses the impact of PFHI on OOPE and distress financing for both caesarean and non-caesarean deliveries post-PMJAY implementation. Analyzing data from the National Family Health Survey (NFHS-5) 2019-21, the study found no significant reduction in OOPE or distress financing associated with PFHI coverage. Private hospitals incurred five times higher OOPE than public hospitals, with a higher prevalence of caesarean sections in private facilities. The study concludes that private hospital utilization is strongly linked to increased OOPE and financial distress.

Shweta Jaiswal et al (2023) This study evaluates the financial performance of select private health insurance companies in India, focusing on key financial metrics such as profitability, solvency, and growth indicators. The research utilizes data from financial statements of various insurance companies over a specified period, applying ratio analysis and comparative evaluation techniques to assess their performance. The study aims to provide insights into the financial health of the private health insurance sector in India, highlighting areas of strength and potential challenges. The findings indicate variability in performance among the selected companies, with some exhibiting strong financial resilience while others face challenges related to profitability and growth.

Research Gap

Despite extensive research on health insurance, limited studies specifically address the analysis of financial performance of public sector health insurance companies, particularly in the Indian context. Most research focuses on each sector independently or examines broader market trends, such as premium growth and policy uptake. These gaps leave unexplored how financial efficiencies, financial stability, profitability, claim settlement rates, and customer service standards.. Public and private health insurance providers may respond differently to regulatory changes, cost pressures, and consumer demands. Current literature lacks a comprehensive and recent empirical analysis of how financial metrics impact on Profitability.

Statement of The Problem

The health insurance sector in India has witnessed significant growth, yet it faces several core challenges that affect its operational and financial sustainability, particularly among public and private insurers. Public sector health insurance companies often struggle with issues related to claim settlement delays, high claim ratios, and operational inefficiencies, impacting customer satisfaction and profitability.

Research Questions

The following are the research question framed based on the literature gap.

What are the financial performance indicators of select public health insurance companies in India, will Impact on Profitability?

Objectives of The Study

Keeping in view the importance of the study, the following objective was formulated.

To analyze the financial Performance of select public health insurance companies in India.

Hypotheses of The Study

The study has framed the following Null Hypothesis based on the objective.

H₀: There is no effect of financial Indicators on the Financial Performance of the select Public sector Health Insurance Companies in India.

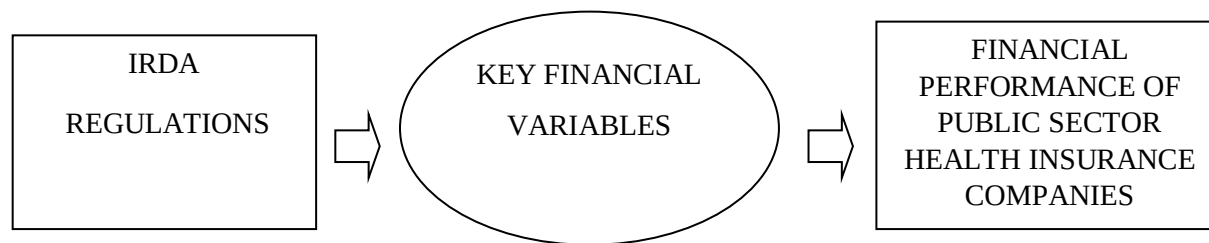
III. Research Methodology

This study adopts a quantitative research approach to examine the objectives. It utilizes secondary data spanning the period from 2013-14 to 2022-23, focusing primarily on analyzing the financial performance of select public health insurance companies in India.

Conceptual Frame work

The study framed the following conceptual frame work keeping in view of objectives. The role of operational efficiency ratios on the financial performance of the Public Health Insurance companies.

Figure – 1.1 Conceptual Frame work



Source: Compiled by the Researcher

The study utilizes secondary data collected from the annual reports of selected public health insurance companies, covering the period from 2013-14 to 2022-23. Key operational efficiency metrics were gathered to assess the companies' performance. Hypotheses were framed to examine the impact of financial ratios on the financial performance of public insurers, offering insights into their respective strengths and weaknesses in the health insurance market.

Methods of data Collection: Secondary data was collected from a variety of sources includes Annual reports, Journals, Research reports, Unpublished works.

Data Sources: This research necessitates the collection of information from the financial efficiency ratios data from Annual Reports

Scope and Period of the Study: The study collected secondary data from 2013-14 to 2022-23, focusing on information post the companies' enactment in 2013. This data spans financial performance indicators. The analysis includes three public sector health insurance companies in India.

Selection of Sampling Units: The study focuses on public sector health insurance companies. It selects the top three companies from Public sector based on their premium collections. The following are the considered sample units under the Public health insurance companies.

Public Sector Health Insurance Companies

- United India Insurance Co. Ltd.

- New India Assurance Co. Ltd.
- The Oriental Insurance Co. Ltd

Key Financial Efficiency Variables

Financial indicators such as Net Earnings Ratio, Net Premium Capital, Equity Total Assets, Net Premium/Gross Premium, Net Technical Reserves, Operational Expenses/Gross Premium, Combined Ratio, Invest Income/Net Premium and Liquidity.

Statistical Tools Used

To analyze and interpret the data effectively, various statistical tools are employed to ensure robustness and accuracy in the results. These tools help assess the relationships between variables, the distribution of data, and the reliability of findings. The statistical tools used in this study include:

Stationary test: Stationarity tests are essential in panel data analysis to ensure that variables do not exhibit unit roots, which can lead to spurious results. Several tests are commonly applied in panel datasets. The Levin, Lin, and Chu (LLC) t test* assumes a common unit root process across panels, providing a powerful test for stationarity with a null hypothesis that all panels contain a unit root. The Im, Pesaran, and Shin (IPS) W-stat test allows for individual unit root processes, making it more flexible by testing for stationarity across heterogeneous panels. The ADF-Fisher Chi-square and PP-Fisher Chi-square tests apply Augmented Dickey-Fuller and Phillips-Perron unit root testing, respectively, but combine p-values across cross-sections using Fisher's methodology. Both tests accommodate panel heterogeneity and test for unit roots with null hypotheses that all series contain a unit root, providing insights into individual and panel-wide stationarity across variables.

Descriptive Statistics: The descriptive statistics reveal key insights into the data across several performance indicators for public and private health insurance companies. The mean provides an average measure of performance, while the median indicates the central tendency, highlighting any deviations in the data. The maximum and minimum values capture the range of performance levels, showcasing the highest and lowest values observed. Standard deviation measures the dispersion, indicating variability in operational and financial metrics. Skewness assesses data symmetry, and kurtosis reveals the presence of extreme values. Lastly, the Jarque-Bera test checks for normality, assessing if the data follows a normal distribution.

Bivariate Correlation: The study employed bivariate correlation analysis to examine the relationship between various operational and financial ratios and the dependent variable, Net Earnings Ratio. This analysis helps identify the strength and direction of associations between Net Earnings Ratio and each selected ratio, providing insights into how operational and financial metrics may impact profitability.

Panel Regression Analysis: Fixed and Random Effects

To analyze the impact of operational and financial ratios on the financial performance of health insurance companies, panel regression models are suitable due to their ability to handle data across both cross-sections (different companies) and time (over several years). Panel regression captures variations across entities (health insurance companies) while considering time-specific influences. The general panel regression model can be represented as:

$$Y_{it} = \alpha + \beta X_{it} + U_{it}$$

where:

- Y_{it} : Dependent variable (e.g., Net Earnings Ratio) for entity i at time t
- α : Intercept
- β : Coefficients for independent variables (operational and financial ratios)
- X_{it} : Independent variables (e.g., operational ratios such as Net Claims Ratio, Claim Settlement Ratio, and financial ratios)
- U_{it} : Error term

Fixed Effects Model (FEM) : The Fixed Effects Model assumes that individual characteristics of each company (that may affect performance) are time-invariant and specific to each entity. Thus, the model accounts for heterogeneity by removing these entity-specific effects. This approach estimates how variables change over time within each company. The fixed effects model can be represented as:

$$Y_{it} = \alpha_i + \beta X_{it} + U_{it}$$

where α_i is an intercept that varies by entity, capturing all time-invariant differences among companies. FEM helps identify within-company effects by controlling for all individual-specific characteristics.

Random Effects Model (REM): The Random Effects Model assumes that individual differences across entities are random and uncorrelated with the independent variables. This approach is preferable if entity-specific effects are assumed to be random and not related to the explanatory variables, making it more efficient for estimation. The REM equation is as follows:

where μ_i is the entity-specific random effect, representing individual differences among companies.

Hausman Test: The Hausman test is used to determine the most appropriate model between fixed and random effects by checking if the unique errors (μ_i) are correlated with the regressors. The null hypothesis states that the random effects model is preferred (i.e., no correlation). The test statistic is calculated as:

$$H = (\hat{\beta}_{RE} - \hat{\beta}_{FE})' [\text{Var}(\hat{\beta}_{RE} - \hat{\beta}_{FE})]^{-1} (\hat{\beta}_{RE} - \hat{\beta}_{FE})$$

where $\hat{\beta}_{RE}$ and $\hat{\beta}_{FE}$ are the coefficients from the random and fixed effects models, respectively. A significant result suggests that the fixed effects model is more appropriate.

Wald Test: The Wald test evaluates the joint significance of coefficients in the regression model. It tests whether the independent variables (operational and financial ratios) significantly impact the dependent variable (Net Earnings Ratio). The null hypothesis for the Wald test is that all coefficients are equal to zero (i.e., no significant impact). The Wald statistic is calculated as:

$$W = \hat{\beta}' [\text{Var}(\hat{\beta})]^{-1} \hat{\beta}$$

where $\hat{\beta}$ represents the estimated coefficients. A high value of the Wald statistic suggests that the explanatory variables significantly impact financial performance.

This approach using panel regression, the Hausman test, and the Wald test provides a robust framework for analyzing the influence of operational ratios on the financial performance of health insurance companies, helping to identify key drivers and enhance sector insights.

Limitations of The Study

While this study provides valuable insights into the performance of public sector health insurance companies, certain limitations may affect the comprehensiveness and accuracy of the findings. These limitations are outlined as follows:

1. Using secondary data may lead to limitations in scope and potential inaccuracies due to incomplete or inconsistent records.
2. The study period (2013-14 to 2022-23) may not capture recent trends or long-term regulatory impacts on health insurance companies.
3. Focusing on selected public health insurance companies in India. The study not covering the all the health insurance companies.
4. The study's emphasis on quantitative analysis may overlook qualitative factors, such as management practices or customer satisfaction, that influence performance.
5. The operational ratios chosen may not fully encompass all aspects of a company's performance, potentially missing other influential metrics.

The present paper deals with an analysis of the financial performance of select public sector health insurance companies in India, specifically United India Insurance Co. Ltd, New India Assurance Co. Ltd, and The Oriental Insurance Co. Ltd. This paper examines financial indicators such as Net Earnings Ratio, Net Premium Capital, Equity Total Assets, Net Premium/Gross Premium, Net Technical Reserves, Operational Expenses/Gross Premium, Combined Ratio, Invest Income/Net Premium and Liquidity, using descriptive statistics, correlation analysis, and panel OLS regression to assess the influence on net profits.

To achieve this, the study employs descriptive statistics, correlation analysis, and panel Ordinary Least Squares (OLS) regression. The operational factors serve as independent variables, while the net profits ratio is treated as the dependent variable to assess the relationship and influence between these dimensions of performance.

Financial Performance of Public Health Insurance Companies

This paper assesses the Financial Performance of Public Health Insurance Companies by focusing on profitability, solvency margins, premium collections, and expense ratios. Financial indicators such as Net Earnings Ratio, Net Premium Capital, Equity Total Assets, Net Premium/Gross Premium, Net Technical Reserves, Operational Expenses/Gross Premium, Combined Ratio, Invest Income/Net Premium and Liquidity will be analysed. This section provides insights into how financially sustainable the public insurers are over time and their ability to meet financial obligations. The following is the Hypothesis of Financial performance Ratios:

H0: There is no effect of key financial performance Ratios on the financial performance of the select Public sector health insurance companies.

H1: There is an effect of key Financial Performance Ratios on the financial performance of the select Public sector health insurance companies.

- **Descriptive Statistics**, the method provides a summary of the data, such as averages, variances, and distributions, helping to understand the overall trends and patterns in financial metrics.

Table: 3.6 Descriptive analysis of Financial metrics of Public Health Insurance Companies

	Net Earning ratio	Net PreCap	Equity TA	NetPre GrossPre	NetTech Reserves	OpExp GrossPre	Combined Ratio	InvesInc NetPre	Liquidity Ratio
Mean	-0.324491	46.63953	1.631525	0.819319	2.469682	0.280240	1.852360	0.33198	0.492690
Median	0.030106	44.32754	0.658502	0.842546	2.377847	0.219928	1.163353	0.21870	0.504480
Maximum	0.150564	96.91687	13.13715	1.066900	3.174626	2.275088	11.37374	1.88778	0.950617
Minimum	-3.457608	2.662322	0.289131	0.087235	2.141735	0.113660	1.011725	0.16150	0.220537
Std. Dev.	0.836724	25.27826	3.242716	0.149776	0.247863	0.381067	2.243577	0.41263	0.195633
Skewness	-2.578860	0.124539	3.135586	-3.929810	1.325466	5.014220	3.430273	3.39554	0.428031
Kurtosis	8.973004	2.494349	11.28938	20.64664	4.153535	26.79551	13.74977	12.7604	2.233336
Jarque-Bera	77.84858	0.397154	135.0518	466.4720	10.44760	833.4946	203.2809	176.730	1.650769
Probability	0.000000	0.019897	0.000000	0.000000	0.005387	0.000000	0.000000	0.00000	0.038067
Sum	-9.734716	1399.186	48.94576	24.57957	74.09047	8.407207	55.57079	9.95944	14.78071
SumSq. Dev.	20.30311	18530.72	304.9410	0.650549	1.781653	4.211147	145.9755	4.93781	1.109900
Observations	30	30	30	30	30	30	30	30	30

Source: Secondary Data

The descriptive statistics table provides a comprehensive overview of the financial performance metrics for public health insurance companies. The mean of Net Earnings Ratio is negative (-0.3245), indicating a trend of losses on an average, while the median (0.0301) shows that some companies still report positive profitability. The high standard deviation (0.8367) and skewness (-2.5789) suggest considerable variability and the presence of extreme negative values, likely due to underperformance by some insurers.

The Net Premium to Capital and Equity to Total Assets ratios show a broad range, as seen in their maximum and minimum values, reflecting varying capital structures among companies. The Combined Ratio's mean (1.8524) exceeds 1, indicating that claims and expenses often surpass premium income, impacting profitability. The high kurtosis and significant Jarque-Bera probabilities across most variables indicate non-normal distributions, highlighting outliers and suggesting that financial performance varies widely across these companies. This variability emphasizes the need for targeted measures to improve financial stability and profitability in the sector.

Correlation Analysis, the technique is used to measure the strength and direction of relationships between independent variables (financial factors) and the dependent variable (Net profits ratio). It helps determine which factors have a significant linear association with profitability.

Table: 3.7 Correlation analysis between financial factors and Net Earnings ratio

	Net Earning Ratio	Net Pre-Cap	Equity TA	Net Pre Gross Pre	NetTech Reserves	OpExp GrossPre	Combined Ratio	InvesInc NetPre	Liquidity Ratio
Net Earning ratio	1								
Net PreCap	0.556969	1							
Equity TA	-0.909675	-0.580457	1						

NetPre GrossPre	0.078281	0.247908	0.135439	1					
NetTech Reserves	-0.158197	-0.157100	0.140156	0.357714	1				
OpExp GrossPre	-0.508903	-0.341527	0.667467	0.107450	0.053795	1			
Combined Ratio	-0.185352	-0.331670	0.056743	-0.710801	-0.244773	0.169205	1		
InvesInc NetPre	-0.027400	-0.205548	-0.113153	-0.719727	-0.323369	-0.090194	0.542314	1	
Liquidity Ratio	0.310525	0.104623	-0.246598	0.184667	-0.354320	-0.179073	-0.142638	-0.006766	1

Source: Secondary Data

The correlation analysis table shows the relationships between the Net Earnings Ratio and various financial factors for public health insurance companies. A strong positive correlation exists between Net Earnings Ratio and Net Premium Capital (0.5570), indicating that higher premium capital positively influences profitability. Conversely, there is a strong negative correlation between Net Earnings Ratio and Equity Total Assets (-0.9097), indicating that as equity to total assets increases, the profitability tends to decrease, possibly due to higher capital requirements or less efficient asset utilization.

The Operational Expenses to Gross Premium ratio show a moderate negative correlation (-0.5089) with the Net Earnings Ratio, implying that higher operational expenses reduce profitability.

The Combined Ratio has a weak negative correlation (-0.1854) with the Net Earnings Ratio, indicating minimal direct impact, while the Investment Income to Net Premium shows a very weak negative correlation (-0.0274), indicating that investment returns alone may not significantly drive profitability.

The Liquidity Ratio has a moderate positive correlation (0.3105), indicating that maintaining liquidity has a favorable, though not dominant, effect on earnings. The study results highlight the importance of efficiently managing premiums, operational expenses, and liquidity to enhance profitability while monitoring the impact of equity and assets.

Panel Ordinary Least Squares (OLS) Regression, is applied to analyze the influence of Financial factors on Net profitability over time, using both cross-sectional (across companies) and time-series (over periods) data. The study employs a rigorous statistical methodology to determine the most suitable approach for assessing the Financial performance of select public health insurance companies in India.

Hausman test for Public sector Insurance Companies

The Hausman test is a statistical tool commonly employed in econometrics and regression analysis to determine the suitability of using either a fixed effects or random effects model. From the context, the Hausman test helps us decide which model, either random effects or fixed effects, is better for the study. It can be identified with the help of p-values if the p-value is less than 0.05, the study rejects the null hypothesis that the random effects model is inappropriate, instead, the fixed effects model is a better fit for the analysis and vice versa (If the p-value is Greater than 0.05). This test helps conclude that the Fixed/Random effects model is better suited for the Financial Performance of select public health insurance companies. The hypotheses guiding the Hausman test are as follows:

H0: The Random effects model is appropriate.

H1: The fixed effects model is appropriate.

Table: 3.8 Hausman Test of Financial Performance of public health insurance companies

Correlated Random Effects – Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	13.44682	8	0.1785

Source: Secondary Data

The Hausman test table provides a statistical comparison to determine whether a fixed effects or random effects model is more suitable for analyzing the financial performance of public health insurance companies. The test summary indicates a Chi-Square statistic of 13.4462 with 8 degrees of freedom, and a p-value of 0.1785.

Since the p-value is greater than the 0.05 significance level, the null hypothesis (H0) that the random effects model is appropriate cannot be rejected. Therefore, the results suggest that the random effects model is more suitable for this study. This finding implies that variations across public health insurance companies are better captured by the random effects model, making it an appropriate approach for evaluating the influence of financial factors on net profitability.

Wald test for public sector Insurance Companies

The Wald test is a commonly used statistical method in econometrics and regression analysis for determining whether the Random/fixed effect regression model or the Pooled regression model is the more appropriate choice for the financial Performance of select Public health insurance companies. The test involves calculating the Wald statistic and determining its p-value. The null hypothesis is rejected if the computed p-value is less than 0.05 indicating that pooled effect is inappropriate and Fixed is appropriate is better fit. The following is the hypothesis framed:

H0: Pooled effect regression model is appropriate.

H1: Random effect regression model is appropriate.

Table: 3.9 Wald Test of Financial Performance of public health insurance companies

Wald Test:			
Equation: Untitled			
Test Statistic	Value	df	Probability
F-statistic	263.535	51	0.0000
Chi-square	19.5119	9	0.0000

Source: Secondary Data

The Wald test results provide crucial evidence for determining the appropriate regression model for analyzing the financial performance of public health insurance companies. The F-statistic value of 263.5359, with a corresponding p-value of 0.0000, indicates that the null hypothesis (H0) which indicates that the pooled effect regression model is appropriate should be rejected. Similarly, the Chi-square statistic of 19.51196, with a p-value of 0.0000, further confirms this rejection. These results demonstrate that the pooled regression model is not suitable for this analysis, and instead, the random effects model should be used. Given the results, the Random effects model is likely the most appropriate and accurate approach.

Random Effect Regression Model for Public Health Insurance Companies

Random Effect Regression Analysis is a statistical method employed in cross-sectional analysis concerning public insurance companies. This study examined three public health insurance entities throughout the period from 2013-14 to 2021-22. Prior to the analysis, the research performs tests such as the Hausman test and the Wald test to choose the best appropriate regression model. According to the findings of the Hausman and Wald tests, the study indicates that **Random Effect Regression Analysis** is suitable. The proposed theories are as follows:

H0: There is no significant impact of Financial Factors on Net Earnings Ratio of public health insurance companies.

H1: There is a significant impact of Financial Factors on Net Earnings Ratio of public health insurance companies.

Table: 3.10 Impact of Financial Factors on Net Earnings Ratio of Public Health Insurance Co's

Dependent Variable: NET_EARNING_RATIO				
Method: Panel Least Squares				
Sample: 2013 2022				
Periods included: 10				
Cross-sections included: 3				
Total panel (balanced) observations: 30				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.91623	0.8274	2.3159	0.045

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NET_PRECAP	-0.25640	0.1033	-2.4810	0.008
EQUITIES_TA	-2.83841	1.0274	-2.7626	0.000
NETPRE_GROSSPRE	2.11398	0.7062	2.9930	0.003
NETTECH_RESERVES	-0.60379	0.2811	-2.1476	0.044
OPEXP_GROSSPRE	0.395485	0.1879	2.1039	0.028
COMBINED_RATIO	1.007024	0.2360	4.2654	0.027
INVTINC_NETPRE	1.013663	0.2801	3.6180	0.034
LIQUIDITY_RATIO	-1.534765	0.5910	-2.5966	0.032
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.931056	Mean dependent var		-0.324491
Adjusted R-squared	0.894769	S.D. dependent var		0.836724
S.E. of regression	0.271427	Akaike info criterion		0.506331
Sum squared resid	1.399784	Schwarz criterion		1.020103
Log likelihood	3.405038	Hannan-Quinn criter.		0.670691
F-statistic	25.65848	Durbin-Watson stat		2.114227
Prob(F-statistic)	0.000000			

Source: Secondary Data

The Panel Ordinary Least Squares (OLS) regression analysis evaluates the influence of financial factors on the Net Earnings Ratio of public health insurance companies from 2013-14 to 2022-23. The results indicate that several financial variables significantly impact profitability. The Net Premium Capital has a negative coefficient (-0.2564, $p = 0.008$), indicating that as premium capital increases, profitability declines, possibly due to inefficiencies or higher costs related to maintaining premium capital.

Similarly, Equities to Total Assets show a strong negative relationship (-2.8384, $p = 0.000$), implying that higher equity levels relative to total assets may adversely affect profitability, potentially due to underutilization or conservative asset allocation strategies. Conversely, the Net Premium to Gross Premium ratio positively influences profitability (2.1140, $p = 0.003$), indicating that efficient premium management enhances earnings.

On the other hand, Net Technical Reserves negatively impact profitability (-0.6038, $p = 0.044$), as higher reserves might reduce available capital for operations. Operational Expenses relative to Gross Premiums positively correlate with profitability (0.3955, $p = 0.028$), highlighting the significance of managing expenses effectively to maximize net earnings.

The Combined Ratio (1.0070, $p = 0.027$) and Investment Income relative to Net Premium (1.0137, $p = 0.034$) both positively influence profitability, underscoring the importance of balancing claims, expenses, and investment returns. However, the Liquidity Ratio has a negative effect (-1.5348, $p = 0.032$), indicating that excess liquidity may hinder profitability due to lower returns on idle capital.

The study demonstrates strong explanatory power, with an R-squared value of 0.9311, meaning that approximately 93.11% of the variation in the Net Earnings Ratio is explained by these financial factors. The adjusted R-squared value of 0.8948 confirms the robustness of the model when considering the number of predictors included.

Additionally, the Durbin-Watson statistic (2.1142) indicates significant autocorrelation concerns, affirming the reliability of the results. However, the study results lead to the rejection of the null hypothesis (H_0), confirming that financial factors significantly impact the Net Earnings Ratio of public health insurance companies. This emphasizes the need for efficient management of equity, premiums, and liquidity to optimize profitability.

IV. Findings

The study has been emphasized to know the Financial Performance of Select Public Health Insurance Companies in India. The study collected the secondary data of time series nature and applied the Panel least square method and derived the following findings.

1. The negative coefficient for Net Premium Capital (-0.2564) suggests that an increase in premium capital leads to reduced profitability. This may stem from inefficiencies or higher costs related to managing large premium capital reserves.
2. A strong negative relationship between Equities to Total Assets and profitability (-2.8384) indicates that higher equity proportions relative to total assets may hinder profitability, potentially due to conservative asset allocations or underutilized funds.
3. The positive coefficient for the Net Premium to Gross Premium ratio (2.1140) highlights that efficient premium management enhances profitability. This finding underscores the importance of converting gross premiums into effective net earnings for insurers.
4. The negative effect of Net Technical Reserves (-0.6038) suggests that higher reserves can reduce profitability by limiting capital available for operational activities. Maintaining excessive reserves may thus constrain financial performance.
5. A positive correlation between Operational Expenses relative to Gross Premiums (0.3955) and profitability indicates that strategic expense management can improve net earnings. This finding underscores the value of cost efficiency in health insurance operations.
6. The positive coefficient for the Combined Ratio (1.0070) implies that balanced management of claims and expenses contributes positively to profitability. This balance between operational and claims efficiency is crucial for financial sustainability.
7. The positive impact of Investment Income relative to Net Premium (1.0137) suggests that investment returns significantly contribute to profitability. Effective investment strategies are essential for enhancing earnings in the health insurance sector.
8. The Liquidity Ratio's negative coefficient (-1.5348) indicates that excess liquidity can reduce profitability, likely due to lower returns on idle assets. Efficient liquidity management is key to avoiding unproductive capital and enhancing profitability.

V. Summary

The study reveals that financial factors crucially influence the profitability of India's public health insurance companies. Efficient claims management and prompt settlement play a positive role, highlighting the impact of effective processing and customer service on profitability. Proper premium management enhances earnings, though excessive reserves and premium capital can restrict profitability by tying up resources. Conservative equity allocations also limit returns, signalling the importance of optimized asset management. Balancing claims and expenses, reflected by the combined ratio, is essential for sustainable profitability, emphasizing cost control. Strategic investment income significantly boosts earnings, showcasing the value of a well-managed investment portfolio, while excess liquidity may dilute profitability, underlining the need for efficient liquidity management. Altogether, the findings underscore a complex interplay between cost control, asset optimization, and strategic investments in driving profitability for public health insurers in India.