



Original Article

Determinants of Earnings Per Share (EPS): An Empirical Analysis Using Panel Data Methods in Indian Insurance sector

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Abstract

Earnings Per Share (EPS) is a fundamental financial metric used to gauge a company's profitability and financial health. This study investigates the determinants of EPS using panel data methods, incorporating financial performance indicators such as Gross Profit, Net Profit, Return on Net Worth to Equity, Return on Capital Employed, Liquidity Ratio, Turnover Ratio, and Valuation Ratio. Employing Pooled OLS, Fixed Effects, and Random Effects models, this research assesses the explanatory power of these financial ratios in influencing EPS. Empirical findings suggest that Net Profit and Return on Net Worth to Equity are the primary drivers of EPS, while other financial ratios exhibit limited influence. A Hausman test confirms that the Fixed Effects model is the most appropriate for this study. These findings provide valuable insights for investors and financial analysts in making informed decisions regarding firm profitability and valuation.

Keywords: Earning per Share, Gross Profit, net profit, return of net worth to equity

Introduction

Earnings Per Share (EPS) is one of the most widely used financial indicators to assess a company's profitability and investment potential. It serves as a key metric for investors, analysts, and stakeholders in evaluating financial performance. The determinants of EPS are influenced by various firm-specific and macroeconomic factors, making its prediction and analysis crucial for financial decision-making.

Despite extensive research on financial performance determinants, there remains a lack of empirical evidence comparing different econometric models—such as Pooled OLS, Fixed Effects, and Random Effects—in evaluating EPS. Prior studies have largely focused on individual financial ratios, neglecting the interaction between profitability, liquidity, and valuation metrics. Additionally, panel data diagnostics such as autocorrelation, heteroscedasticity, and normality tests are often overlooked, leading to biased results.

This study aims to bridge these research gaps by conducting a robust empirical analysis to determine the key financial indicators affecting EPS. The research employs multiple panel data models and diagnostic tests to enhance the accuracy and reliability of findings, contributing to the literature on financial performance and firm valuation.

Review of Literature

Several theoretical frameworks and empirical studies have explored the determinants of EPS. The following sections summarize key contributions from existing literature. Firms use EPS to signal financial stability and future growth potential to investors (Spence, 1973). Highlights the role of managerial decisions and corporate governance in influencing EPS (Jensen & Meckling, 1976). Suggests that EPS incorporates all relevant available information, making it a crucial indicator of financial health (Fama, 1970).

Studies show a strong positive relationship between Net Profit, Return on Net Worth to Equity, and EPS (Athanasoglou et al., 2008). Larger firms tend to have higher EPS due to economies of scale and diversification advantages (Chen & Wong, 2004). The debt-equity ratio has mixed findings, with some studies suggesting higher leverage improves EPS while others indicate increased financial risk (Titman & Wessels, 1988).

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Firms with higher liquidity levels may have better EPS due to their ability to meet short-term obligations and reinvest in growth opportunities (Ozkan, 2001). Companies with higher dividend payouts may experience an impact on retained earnings, which in turn influences EPS (Lintner, 1956). Changes in interest rates impact firms' investment income, affecting EPS (Flannery & James, 1984). Inflationary trends can erode profitability and influence EPS due to changes in operational costs and pricing strategies (Boyd & Champ, 2006). Economic growth positively correlates with firms' performance and EPS levels (Chen et al., 2017). Stringent regulatory policies may impose capital requirements, indirectly affecting EPS (Barth et al., 2004).

Research Gap

Despite extensive research on financial performance determinants, there is limited empirical evidence comparing Pooled OLS, Fixed Effects, and Random Effects models in evaluating Earnings Per Share (EPS). Prior studies have focused on individual financial ratios, but the interaction between profitability, liquidity, and valuation metrics remains underexplored. Additionally, panel data diagnostics such as autocorrelation, heteroscedasticity, and normality tests are often neglected, leading to biased results. This study addresses these gaps by conducting robust model selection tests (Hausman, Breusch-

Pagan) and normality assessments to identify the most suitable model.

Objectives

1. To analyze the impact of Gross Profit, Net Profit, Return on Net Worth to Equity, Return on Capital Employed, Liquidity Ratio, Turnover Ratio, and Valuation Ratio on EPS.
2. To assess the statistical significance and explanatory power of financial ratios in influencing EPS.
3. To provide policy recommendations for investors and financial analysts based on empirical findings.

Methodology

The data collected for the present study is completely relating to Secondary Data Earnings per Share, Gross Profit, net profit, return of net worth to equity, return on capital employed, liquidity ratio, turnover ratio and valuation ratio are the financial performance variables that were used in the study to analyze financial performance. This study used purposive sampling, which selected samples based on predefined criteria for five years (2020–2024) using panel data from ten insurance companies. Secondary information obtained from the Bombay Stock Exchange. Descriptive statistics, fixed-effects models, and random-effects models are the statistical tools used to test the research and provide answers to the study's concerns.

Table 1 - Listed insurance companies

| Sr. No. | Companies |
|---------|--|
| 1 | LIC – Life Insurance Corporation |
| 2 | Bajaj FinServ Ltd |
| 3 | SBI Life Insurance |
| 4 | HDFC Life Insurance Company |
| 5 | ICICI Prudential Life Insurance Company |
| 6 | General Insurance Corporation of India |
| 7 | ICICI Lombard General Insurance Co. |
| 8 | New India Assurance Company Ltd |
| 9 | MAX financial services |
| 10 | Star Health and Allied Insurance Company |

Source: Bombay Stock Exchange

Analysis and Interpretation

1. Normality Of Unit

Table 2 - Test for Normality of Unit

| | |
|---|---|
| Doornik-Hansen test = 5.1109, with p-value 0.07 | Lilliefors test = 0.105557, with p-value ≈ 0.17 |
| Shapiro-Wilk W = 0.936375, with p-value 0.009 | Jarque-Bera test = 3.122, with p-value 0.20 |

Source: - Author Compilation

Doornik-Hansen Test ($p = 0.0777$), Suggests marginal non-normality (close to significance at $p < 0.1$). Shapiro-Wilk Test ($p = 0.0097$) Rejects normality ($p < 0.05$) → Residuals are not normally distributed. Lilliefors Test ($p \approx 0.17$) Does not reject normality. Jarque-Bera Test ($p = 0.2099$) Does not reject normality.

Shapiro-Wilk test suggests non-normality, but Doornik-Hansen, Lilliefors, and Jarque-Bera tests do not

strongly reject normality. Possible issue with small sample size affecting normality.

2. Pooled OLS

The Pooled Ordinary Least Squares (OLS) regression was conducted to examine the relationship between Earnings Per Share (EPS) and various financial performance indicators. The following insights can be drawn from the results. R-squared 0.9368, this indicates that

93.68% of the variation in EPS is explained by the independent variables included in the model. This suggests a highly explanatory model, meaning the selected financial indicators are strong predictors of EPS. Adjusted R-squared 0.9263, After accounting for the number of predictors, the explanatory power slightly decreases but remains strong, reinforcing the model's robustness. F-statistic ($F(7,42) = 88.98$, $p\text{-value} = 4.11e-23$), the overall model is statistically significant, meaning that at least one of the independent

variables has a meaningful impact on EPS. The very low p-value (<0.0001) confirms that the explanatory variables jointly influence EPS. Durbin-Watson = 0.9088, this suggests the presence of positive autocorrelation, meaning that the residuals (errors) are correlated over time, which may indicate that a panel-data approach (Fixed or Random Effects) could be more appropriate than a simple Pooled OLS model.

Table 3 - Pooled OLS
Dependent variable: EPS

| | Coefficient | Std. Error | t-ratio | p-value |
|-------------------------------|-------------|--------------------|---------|------------|
| const | 3.740 | 2.021 | 1.851 | 0.0712* |
| Gross Profit | -0.940 | 0.473 | -1.986 | 0.0536* |
| Net Profit | 1.229 | 0.611 | 2.009 | 0.0509* |
| Return on Net worth to Equity | 0.716 | 0.029 | 24.08 | <0.0001*** |
| Return on Capital Employed | 0.375 | 0.165 | 2.275 | 0.0281** |
| Liquidity Ratio | 0.006 | 0.008 | 0.7549 | 0.4545 |
| Turnover Ratio | -0.294 | 0.466 | -0.6322 | 0.5307 |
| Valuation Ratio | -0.003 | 0.0039 | -0.9585 | 0.3433 |
| Mean dependent var | 18.622 | S.D. dependent var | | 39.84233 |
| Sum squared resid | 4913.610 | S.E. of regression | | 10.81622 |
| R-squared | 0.936 | Adjusted R-squared | | 0.926301 |
| F(7, 42) | 88.980 | P-value(F) | | 4.11e-23 |
| Log-likelihood | -185.64 | Akaike criterion | | 387.2809 |
| Hannan-Quinn | 393.105 | Durbin-Watson | | 0.908825 |

Source: - Author Compilation

The Pooled OLS model explains a high proportion (93.68%) of the variation in EPS, but autocorrelation concerns (Durbin-Watson = 0.9088) suggest the need for a panel data model. Net Profit, Return on Net Worth to Equity, and Return on Capital Employed have statistically significant positive effects on EPS, making them crucial drivers of earnings performance. Gross Profit has a weak negative effect, which may indicate cost inefficiencies or profit allocation issues. Liquidity Ratio, Turnover Ratio, and Valuation Ratio are not significant, meaning they do not strongly determine EPS in this dataset.

3. Fixed Effect Module

The Fixed Effects Model (FEM) accounts for firm-specific characteristics that may influence Earnings Per Share (EPS) but are not included as explanatory variables. The results provide insights into the key determinants of

EPS while controlling for unobserved heterogeneity across firms. LSDV R-squared = 0.9612 (Within R² = 0.9420), The LSDV (Least Squares Dummy Variable) R-squared is higher than in Pooled OLS (0.9368), suggesting a better model fit. The Within R² (0.9420) indicates that 94.2% of the variation in EPS is explained by the independent variables after controlling for firm-specific effects. F-statistic ($F(7, 33) = 76.58$, $p\text{-value} = 1.46e-18$) The model is highly statistically significant ($p < 0.0001$), confirming that at least one of the independent variables significantly affects EPS. Test for Differing Group Intercepts ($F(9, 33) = 2.305$, $p = 0.0389$) This test examines whether each firm has a unique intercept (fixed effect). The p-value (0.0389) is significant, suggesting that the firms do not share a common intercept, meaning Fixed Effects is necessary to account for firm-level variations.

Table 4 - Fixed Effect Module
Dependent variable: EPS

| | Coefficient | Std. Error | t-ratio | p-value |
|-------------------------------|-------------|------------|---------|------------|
| const | -1.339 | 4.926 | -0.271 | 0.7874 |
| Gross Profit | -0.657 | 0.530 | -1.239 | 0.2239 |
| Net Profit | 1.334 | 0.600 | 2.220 | 0.0334** |
| Return on Net worth to Equity | 0.765 | 0.033 | 22.60 | <0.0001*** |
| Return on Capital Employed | -0.204 | 0.235 | -0.870 | 0.3903 |
| Liquidity Ratio | 0.021 | 0.017 | 1.266 | 0.2144 |
| Turnover Ratio | -0.089 | 0.47 | -0.188 | 0.8516 |
| Valuation Ratio | -0.010 | 0.005 | -1.77 | 0.0849* |

| | | | |
|--------------------|---------|--------------------|--------|
| Mean dependent var | 18.622 | S.D. dependent var | 39.842 |
| Sum squared resid | 3016.73 | S.E. of regression | 9.561 |
| LSDV R-squared | 0.961 | Within R-squared | 0.942 |
| LSDV F(16, 33) | 51.116 | P-value(F) | 1.16 |
| Log-likelihood | -173.44 | Akaike criterion | 380.88 |
| Schwarz criterion | 413.39 | Hannan-Quinn | 393.26 |
| rho | 0.345 | Durbin-Watson | 1.054 |

Source: - Author Compilation

Net Profit and Return on Net Worth to Equity remain significant across models, confirming their strong influence on EPS. Gross Profit, which was weakly significant in Pooled OLS, is no longer significant in Fixed Effects, meaning firm-specific factors might have influenced its earlier significance. Return on Capital Employed lost significance, indicating possible omitted variable bias in Pooled OLS, which is now corrected in the Fixed Effects Model. The test for differing group intercepts confirms that firms have unique characteristics affecting EPS, justifying the use of the Fixed Effects Model.

4. Random Effect Module

The Random Effects Model (REM), estimated using Generalized Least Squares (GLS), assumes that the individual firm effects are randomly distributed and uncorrelated with the independent variables. This model is an alternative to Fixed Effects, particularly when there is little variation within firms over time. Chi-square (7) 622.866, p-value < 0.0001 The overall model is highly significant, confirming that at least one of the independent variables significantly influences Earnings Per Share (EPS). This suggests that the chosen financial indicators play a crucial role in explaining EPS variations

Table 5 - Random Effect Module
Dependent variable: EPS

| | Coefficient | Std. Error | t-ratio | p-value |
|-------------------------------|-------------|--------------------|---------|------------|
| const | 3.740 | 2.021 | 1.851 | 0.0642* |
| Gross Profit | -0.940 | 0.473 | -1.986 | 0.0470** |
| Net Profit | 1.229 | 0.611 | 2.009 | 0.0445** |
| Return on Net worth to Equity | 0.716 | 0.029 | 24.08 | <0.0001*** |
| Return on Capital Employed | 0.375 | 0.165 | 2.275 | 0.0229** |
| Liquidity Ratio | 0.006 | 0.008 | 0.754 | 0.450 |
| Turnover Ratio | -0.294 | 0.466 | -0.632 | 0.527 |
| Valuation Ratio | -0.003 | 0.003 | -0.958 | 0.337 |
| Mean dependent var | 18.622 | S.D. dependent var | | 39.842 |
| Sum squared resid | 4913.610 | S.E. of regression | | 10.689 |
| Log-likelihood | -185.640 | Akaike criterion | | 387.28 |
| Schwarz criterion | 402.577 | Hannan-Quinn | | 393.10 |
| rho | 0.345 | Durbin-Watson | | 1.054 |

Source: - Author Compilation

Net Profit and Return on Net Worth to Equity remain consistently significant across all models, confirming their importance in EPS determination. Return on Capital Employed is significant in Random Effects but not in Fixed Effects, indicating its impact varies depending on firm-specific factors. Gross Profit is significant in Random Effects but not in Fixed Effects, suggesting firm-level variations influence its role in EPS. The Random Effects

model identifies Net Profit, Return on Net Worth to Equity, and Return on Capital Employed as key drivers of EPS. However, statistical tests suggest that Fixed Effects is a more appropriate model, as firm-specific factors are correlated with the independent variables. Additionally, the Breusch-Pagan test suggests that Pooled OLS may also be a reasonable alternative.

Table 6 - Fixed Effects Model V/S Random Effects Model

| Breusch-Pagan test | Hausman test |
|--|---|
| Null hypothesis: Variance of the unit-specific error = 0 Asymptotic test statistic: Chi-square(1) = 0.28 with p-value = 0.593304 | Null hypothesis: GLS estimates are consistent Asymptotic test statistic: Chi-square(7) = 28.26 with p-value = 0.000196529 |

Source: - Author Compilation

Breusch-Pagan test suggests that Pooled OLS may be preferable over Random Effects, meaning that firm-level variations are not substantial. Hausman test confirms

that Fixed Effects is the better model choice over Random Effects. Since the Hausman test suggests Fixed Effects over



Random Effects, and Pooled OLS has some omitted variable bias, the Fixed Effects model is the best choice.

Conclusion

The study finds that Net Profit and Return on Net Worth to Equity are the primary drivers of EPS, while other financial ratios have limited influence. Fixed Effects is the most appropriate model, as firm-specific factors play a crucial role in explaining variations in EPS. The findings highlight the importance of firm-level profitability metrics over liquidity and valuation ratios. Future research could incorporate macro-economic factors and industry-specific variations to refine the analysis further.

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Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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