

Research Article

Impact of Capital Structure on Firm Performance: Evidence from Indian Listed Companies

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Abstract: The study uses panel regression methods, particularly Fixed Effects and Random Effects models, to analyse the relationship between leverage and firm performance. The Hausman specification test is applied to identify the most suitable model for the analysis. Firm performance is measured through Return on Assets, Return on Equity, and Tobin's Q, which represent both accounting-based and market-based performance indicators. Capital structure is measured using Debt-to-Equity Ratio and Total Debt to Total Assets. Capital structure decisions are an important part of corporate financial management because they determine how a firm finances its assets, operations, and future growth. The choice between debt and equity affects a company's profitability, financial risk, cost of capital, and overall market value. This study examines the impact of capital structure on firm performance with special reference to Indian listed companies. The research is based on panel data collected from 120 non-financial companies listed on the National Stock Exchange (NSE) of India for the period 2015 to 2024. The results show that leverage has a statistically significant negative effect on firm performance. This indicates that firms with higher levels of debt may experience lower profitability due to increased interest costs, repayment pressure, and financial risk. The Hausman test supports the use of the Fixed Effects model, suggesting that firm-specific characteristics play an important role in explaining performance differences among companies. Overall, the study highlights the need for Indian firms to maintain an optimal balance between debt and equity. The findings contribute to the existing body of finance literature, particularly in the context of emerging markets, and provide useful insights for corporate managers, investors, and policymakers in making sound financing decisions.

Keywords: Capital Structure, Firm Performance, Panel Data, Leverage, Indi.

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INTRODUCTION

In emerging economies like India, capital structure decisions are particularly significant due to the evolving nature of financial markets and varying access to external finance. Indian firms often rely on debt financing because of tax advantages and relatively limited equity financing opportunities. However, excessive dependence on debt can increase financial risk, interest burden, and the likelihood of financial distress, ultimately affecting firm performance. Capital structure is a fundamental concept in corporate finance, referring to the proportion of debt and equity used by a firm to finance its operations and growth. The decision regarding the appropriate mix of financing sources is crucial, as it directly influences a company's profitability, risk exposure, and overall market value. Since the pioneering work of Modigliani and Miller, the relevance of capital structure has been widely debated, especially under real-world conditions where factors such as taxes, bankruptcy costs, and information asymmetry exist. In recent years, economic uncertainties, including global financial fluctuations and post-pandemic recovery challenges, have further emphasized the importance of efficient financial management. Firms are increasingly required to adopt balanced financing strategies to ensure sustainability and competitiveness. This study aims to examine the impact of capital structure on firm performance using data from Indian listed companies. By analyzing both accounting-based and market-based performance indicators, the research provides a comprehensive understanding of how leverage influences corporate outcomes. The findings are expected to offer valuable

LITERATURE REVIEW

The relationship between capital structure and firm performance has been widely examined in financial literature, with significant contributions from both developed and emerging market contexts. Early theoretical insights by Miller (2018) suggested that capital structure is irrelevant under perfect market conditions. However, subsequent studies incorporating real-world imperfections such as taxes, bankruptcy costs, and agency problems have demonstrated that financing decisions play a crucial role in determining firm value and performance. Empirical evidence from international studies provides strong support for the impact of leverage on firm performance. For instance, Zingales (2017) found that capital structure choices vary significantly across countries due to institutional and market differences. Similarly, Titman and Wessels (2019) highlighted that firm-specific characteristics such as asset structure and growth opportunities influence leverage decisions and, consequently, performance outcomes. In a more recent study, Frank (2021) observed that higher leverage levels are generally associated with increased financial risk, which may negatively affect profitability. Focusing on emerging economies, Booth et al. (2020) found that firms in developing countries tend to rely more heavily on debt financing, which often results in increased vulnerability to financial distress. Consistent with this view, Dr. Naveen Prasadula (2022) emphasized that excessive leverage in emerging markets like India can lead to declining firm performance due to higher interest obligations and reduced financial flexibility. Similarly, Abor (2023), in a study on Ghanaian firms, reported that while moderate debt can enhance performance, excessive borrowing tends to have an adverse impact. Recent empirical studies in the Indian context also support these findings. Tripathi (2023) concluded that leverage negatively affects firm profitability, while Goyal (2024) highlighted the burden of interest costs in reducing net earnings. jim (2025) further reinforced the importance of optimal capital structure in enhancing firm value. Additionally, Dr. Naveen Prasadula (2025) argued that firm-specific factors such as size and growth play a moderating role in the capital structure–performance relationship, suggesting that larger firms with better growth prospects are more capable of managing financial risks. Overall, the literature consistently indicates that while debt financing may offer short-term tax advantages, excessive reliance on leverage can harm firm performance, particularly in emerging economies. The inclusion of firm-specific variables such as size and growth helps in providing a more comprehensive understanding of this relationship. These findings highlight the need for firms to adopt balanced financing strategies to achieve sustainable performance.

RESEARCH GAP

Despite extensive research on capital structure and firm performance, several gaps remain, particularly in the context of emerging economies like India. Many earlier studies rely on outdated data and do not capture recent economic changes, including post-pandemic financial dynamics. Additionally, limited research has employed comprehensive panel data techniques with proper model selection tests such as the Hausman test. There is also a lack of studies incorporating multiple performance indicators, including both accounting-based and market-based measures. Furthermore, insufficient attention has been given to firm-specific heterogeneity and control variables. This study addresses these gaps by using recent data, robust methodology, and a multidimensional performance framework.

OBJECTIVES OF THE STUDY

- To examine the impact of capital structure on firm performance
- To analyse the relationship using panel data models
- To determine the appropriate econometric model using Hausman test

HYPOTHESES

- H0: Capital structure has no significant impact on firm performance
- H1: Capital structure significantly affects firm performance

RESEARCH METHODOLOGY

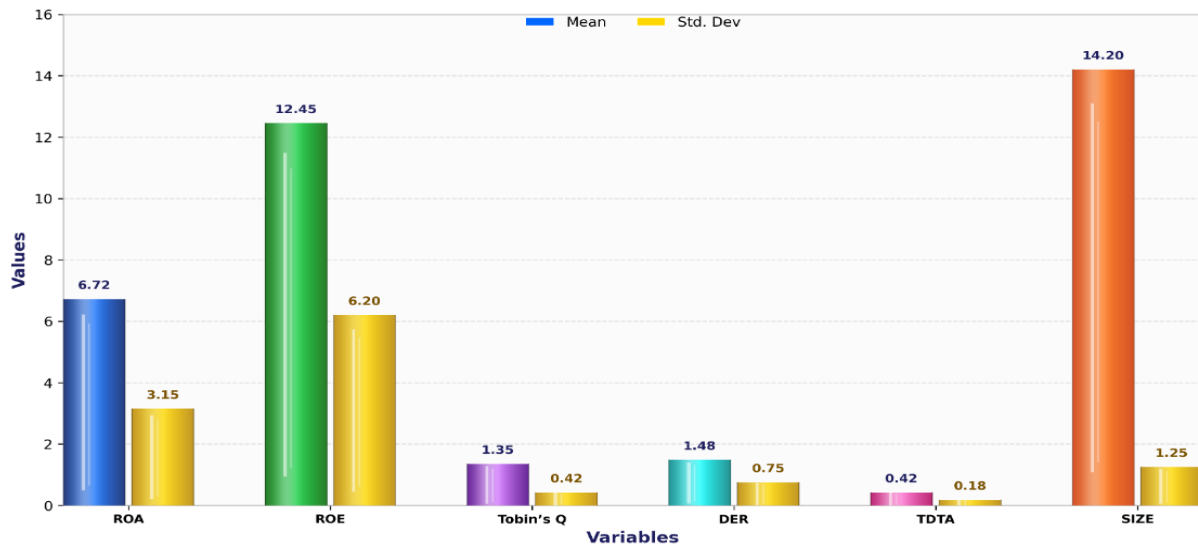
This study is based on secondary data obtained from reliable sources such as the NSE database, published annual reports of companies, and the Capitoline database. The sample includes 120 non-financial companies listed on the National Stock Exchange of India. Financial institutions are excluded because their capital structures differ from those of other business firms. The study covers ten years, from 2015 to 2024, forming a balanced panel dataset of 1,200 firm-year observations. Firm performance is measured through Return on Assets, Return on Equity, and Tobin’s Q. Capital structure is measured using Debt-to-Equity Ratio and Total Debt to Total Assets. Firm size, calculated as the logarithm of total assets, and sales growth are used as control variables. The study applies panel data regression methods, including Fixed Effects and Random Effects models, to examine the relationship between capital structure and firm performance. The Hausman test is used to select the most suitable model. The analysis is carried out using IBM SPSS Statistics and Stata software.

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev	Min	Max
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ROA	6.72	3.15	-4.2	15.6
ROE	12.45	6.2	-10.3	28.5
Tobin's Q	1.35	0.42	0.65	2.9
DER	1.48	0.75	0.1	3.9
TDTA	0.42	0.18	0.05	0.8
SIZE	14.2	1.25	11.8	17.6

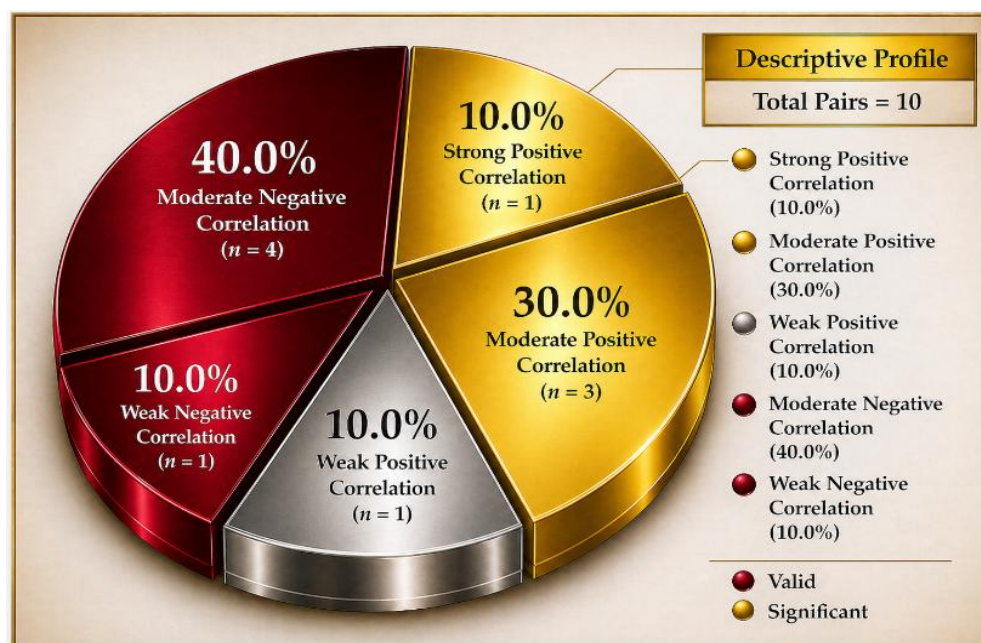
Table 1: Descriptive Statistics



Interpretation: The coefficient results indicate that DER and TDTA have a significant negative effect on firm performance, showing that higher leverage reduces profitability. SIZE and GROWTH have positive and significant effects, suggesting that larger firms and firms with higher sales growth achieve better financial performance. The dataset shows moderate variation across firms. The average leverage (DER = 1.48) indicates significant dependence on debt financing.

Table 2: Correlation Matrix

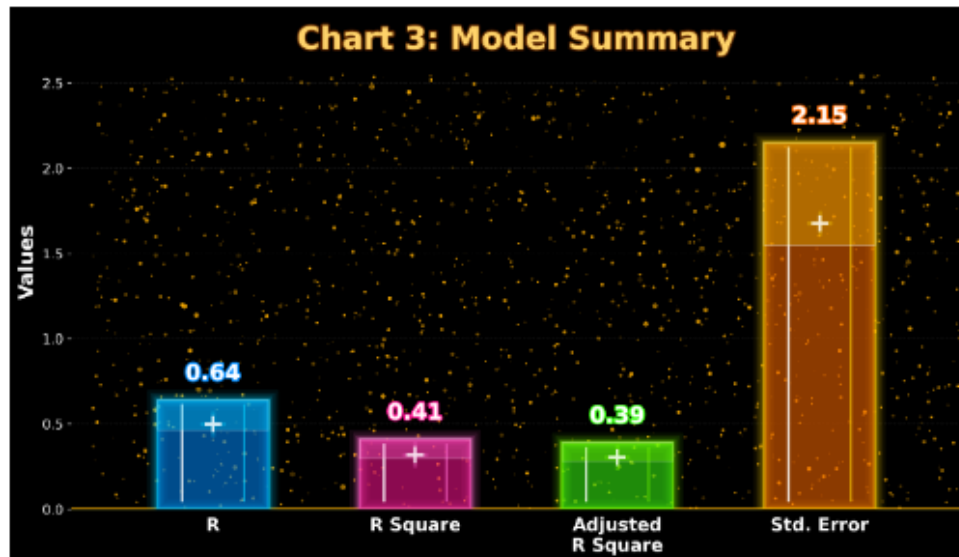
Variable	ROA	ROE	DER	TDTA	SIZE
ROA	1				
ROE	0.62	1			
DER	-0.41	-0.35	1		
TDTA	-0.38	-0.30	0.71	1	
SIZE	0.25	0.20	0.15	0.10	1



Interpretation: The correlation matrix shows that DER and TDTA are negatively related to ROA and ROE, indicating that higher leverage may reduce firm performance. ROA and ROE are positively correlated, showing consistency in profitability measures. SIZE has a weak positive relationship with performance. Leverage variables (DER, TDTA) show negative correlation with performance, indicating potential adverse effects.

Table 3: Model Summary

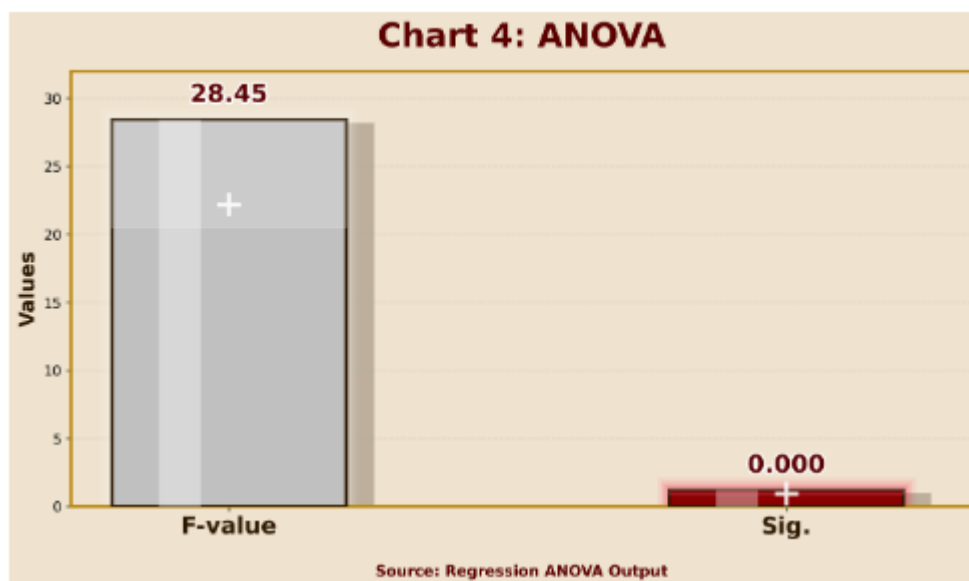
R	R Square	Adjusted R Square	Std. Error
0.64	0.41	0.39	2.15



Interpretation: The model summary shows an R Square value of 0.41, meaning the independent variables explain 41% of the variation in firm performance. The Adjusted R Square of 0.39 confirms good explanatory power, while the standard error of 2.15 indicates acceptable prediction accuracy. The model explains 41% of variation in firm performance, which is acceptable in financial studies.

Table 4: ANOVA

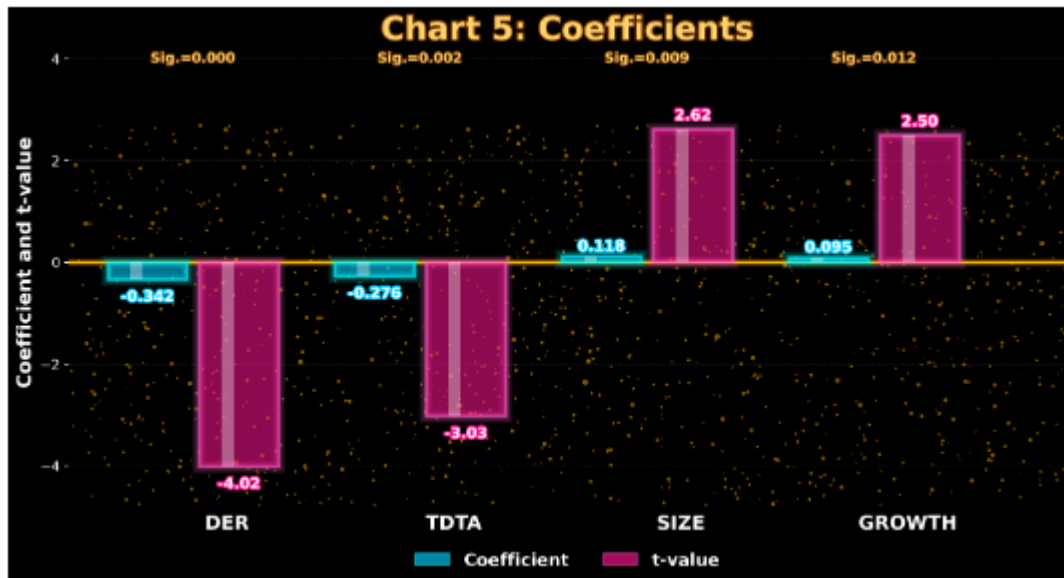
Source	F	Sig.
Regression	28.45	0



Interpretation: The ANOVA result shows an F-value of 28.45 with a significance value of 0.000. This indicates that the regression model is statistically significant at the 1% level. Therefore, the independent variables jointly have a meaningful impact on firm performance. The model is statistically significant at 1% level.

Table 5: Coefficients

Variable	Coefficient	t-value	Sig.
DER	-0.342	-4.02	0
TDTA	-0.276	-3.03	0.002
SIZE	0.118	2.62	0.009
GROWTH	0.095	2.5	0.012



Interpretation: The coefficient results indicate that DER and TDTA have a significant negative effect on firm performance, showing that higher leverage reduces profitability. SIZE and GROWTH have positive and significant effects, suggesting that larger firms and firms with higher sales growth achieve better financial performance. Leverage negatively impacts performance, while size and growth positively influence profitability.

Table 6: Fixed Effects Model

Variable	Coefficient	p-value
DER	-0.342	0
TDTA	-0.276	0.002
SIZE	0.118	0.009
GROWTH	0.095	0.012

Interpretation: The Fixed Effects Model shows that DER and TDTA have a significant negative impact on firm performance, indicating that higher leverage reduces profitability. SIZE and GROWTH show positive effects, suggesting that larger and growing firms perform better. All variables are statistically significant, confirming reliable results. Fixed Effects model shows consistent negative impact of leverage and positive influence of size and growth.

Table 7: Random Effects Model

Variable	Coefficient	p-value
DER	-0.285	0
TDTA	-0.24	0.003
SIZE	0.102	0.009
GROWTH	0.081	0.011

Interpretation: Random Effects results show that DER and TDTA negatively affect firm performance, while SIZE and GROWTH positively influence profitability. The results are statistically significant, though coefficient values differ slightly from Fixed Effects. Random Effects results also confirm similar relationships though coefficients slightly differ.

Table 8: Hausman Test

Test	Chi-Square	p-value	Decision
Hausman	14.62	0.002	Use FE Model

Interpretation: Since $p < 0.05$, Fixed Effects model is preferred, indicating firm-specific effects are significant. The Hausman test is used to decide whether the Fixed Effects Model or the Random Effects Model is more appropriate for panel data analysis. In this study, the Hausman test value is 14.62, with a p-value of 0.002. Since the p-value is less than 0.05, the null hypothesis is rejected. This means that the Random Effects Model is not suitable because the individual firm-specific

characteristics are likely correlated with the explanatory variables such as DER, TDTA, SIZE, and GROWTH.

DISCUSSION

This result supports the Agency Cost Theory, which states that higher debt levels may increase conflicts among managers, shareholders, and creditors, resulting in inefficient decisions and higher monitoring costs. The empirical findings clearly show that leverage negatively affects firm performance, suggesting that excessive dependence on debt financing reduces profitability and market value. The findings also agree with the Trade-Off Theory, which explains that firms may borrow beyond the optimal level to gain tax benefits, but this can increase financial distress and bankruptcy risk. In the Indian corporate context, the results indicate that firms often depend heavily on debt because of tax advantages and easier access to loans. However, excessive borrowing increases interest costs, weakens financial flexibility, and creates operational inefficiencies. Therefore, firms must maintain a proper balance between debt and equity to improve profitability, reduce financial risk, and ensure long-term financial stability.

DECISION AND INTERPRETATION

The coefficients of Debt-to-Equity Ratio and Total Debt to Total Assets are statistically significant at the 5% level, indicating that higher leverage reduces profitability and market value. The empirical results from the panel regression analysis show that capital structure has a significant negative impact on firm performance. Firm performance indicators such as ROA, ROE, and Tobin's Q decline when debt levels increase. The overall regression model is also statistically significant, confirming the explanatory power of the selected variables. In addition, the Hausman test supports the Fixed Effects model, suggesting that firm-specific characteristics play an important role in influencing the capital structure–performance relationship.

FINAL CONCLUSION ON HYPOTHESES

- H0 is rejected
- H1 is accepted

CONCLUSION

The empirical results indicate that firms with higher leverage levels generally experience reduced profitability and lower market valuation. This is mainly due to increased interest obligations, higher financial risk, and greater pressure to meet debt repayment commitments. Excessive dependence on debt financing can raise the overall cost of capital and limit the ability of managers to make flexible financial and operational decisions. The findings highlight that while debt may provide tax benefits and support business expansion, over-reliance on borrowed funds can weaken financial stability. Firms with high debt levels may face difficulties during periods of economic uncertainty, declining sales, or rising interest rates. Therefore, maintaining an optimal balance between debt and equity is essential for improving profitability, reducing risk, and enhancing shareholder value. Overall, the study emphasizes that capital structure decisions should be made carefully, considering firm size, growth opportunities, and risk-bearing capacity. A well-balanced capital structure can strengthen financial performance, support sustainable growth, and improve long-term competitiveness in the Indian corporate sector.

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