

# Capital Structure and Company Success: Insights from India

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232PGF004

## Abstract

This paper examines the impact of capital structure or debt financing on firm's financial performance. A sample of 2063 manufacturing companies listed on the Bombay Stock exchange over a 14-year period from 2009 to 2023 is used to analyze the relationship between debt financing and performance of firm. Ratio analysis and panel data approach have been applied to do empirical study. Measures like Return on asset, Return on equity and Tobin's Q are taken as proxy for firm's financial performance. The study discovered that the level of financial leverage doesn't seem to affect how well a company performs financially, measured by things like return on assets and tobin's Q. However, it does have a negative impact on return on equity. On the other hand, factors like company size, tangible assets, how efficiently assets are used and the ownership structure do play significant roles in determining a company's financial performance in the Indian manufacturing sector. These findings are valuable for Indian manufacturing businesses when making decisions about their capital structure. The study looked at recent data covering after 2008-2009 recession, shedding light on how economic downturns can affect financial performance in this sector.

## Keywords

Capital Structure, Financial leverage, Firm performance, Panel Data, Manufacturing Firms, Return on Asset, Return on Equity, Tobin's Q, Manufacturing Companies

## Introduction

Capital Structure decision is one of the most important decisions taken by the firm. When a company is deciding how to finance its operations and projects, one of the big decisions is figuring out the best mix of different types of funding, like debt and equity. This decision is crucial because it affects things like how much the company need to pay back and how much ownership it will have to give up. The financial manager of the company has to carefully gauge the pros and cons of each option and choose the one that will minimize cost and maximize the overall value of the company. This decision isn't just a one time thing rather it's an ongoing process that happens whenever the company needs more funds for new projects.

Capital Structure refers to the mix of debt and equity that a company uses to finance its operations. It comprises debt, common stock and preferred stock that is used to raise money for projects. Equity comes from diluting or selling shares of ownership in the company, while

debt comes from things like loans or bonds. Shareholders, who own equity, are looking for the company to grow so their investment pays off in the long run. On the contrary, debt holders just want their money back with interest.

The Financial Manager's goal is to invest the company's money wisely for future growth, while shareholders typically want regular dividends. So, deciding how to structure the company's financing is a big deal and it's something the manager has to consider carefully.

Financial leverage is like a seesaw between money a company borrows and money it gets from owners. It's about how much debt versus owner money is used to fund a company's operations. Some companies only use money from owners, while others use a mix of owner money and borrowed money. So Companies with both are called "levered firms." The financial manager has to figure out the right balance. Too much debt can be risky because it means the company owes a lot of money, which could lead to bankruptcy if things go wrong. So, finding an optimal mix between debt and equity is super important. It affects how much money the owners can make and how safe the company is in the long run.

James C. Van Horne talks about how companies get money to run their business. They have three main options: Borrowing money (debt), getting people to invest in their business (equity), or using a mix of both. When deciding how to get money, companies have two big goals: making sure their business is worth as much as possible and keeping their overall costs low.

Debt financing means borrowing money, like taking out a loan. This could be short-term or long-term loans, or issuing bonds, The company pays back the loan with interest over time. One benefit is that they can deduct the interest they pay on taxes. But if they can't make their payments, it can cause big problems. Equity financing means selling part of the company to investors. This doesn't involve borrowing money, so there's no fixed payment schedule. This can make it less risky than debt financing because there's no pressure to make regular payments. However, giving up part of the company means sharing profits and decisions with others. So, companies have to decide which option works best for them, considering how much they want to grow and how much risk they are willing to take.

Modigliani and Miller theory(1958) suggests that in a perfect world where everything is ideal( like no taxes, transactions costs, or conflicts of interest), how a company gets its money (its capital structure) doesn't affect its overall value. Basically, in this ideal scenario, it doesn't matter if a company uses debt or equity to finance its operations because the value of the firm remains the same. Trade off theory says that there's a balance companies need to strike between the advantages of borrowing money (like tax benefits) and the risks involved (like financial distress if they can't repay the debt). So, the best capital structure for a company is one where it balances these factors to maximize its overall value.

Pecking order theory (Myers and Majluf, 1984) suggests that companies have a preferred order for funding for operations. They Prioritize to use internal funding or their own profits( retained earnings) first, then they do debt financing and equity financing as a last resort.

Agency cost theory (Jensen and Meckling, 1976) postulates that agency costs arise when the people managing a company (agents) don't always act in the best interests of the owners. This theory highlights the potential conflicts of interest between these parties and the resulting loss for the owners. These costs can include the expense of monitoring the agents, the bonding costs to ensure trustworthy behavior, and any losses incurred due to mismanagement or conflicts.

## Literature Review

Capital structure refers to the mix of different sources of funding that a company utilizes to finance its operations and investments. It typically includes a combination of debt and equity.

**Determining Capital Structure Factors:** Based on empirical evidence, a company's capital structure is mostly determined by firm-specific characteristics or micro factors performance. Donaldson (1985) argued that the dependence on debt or equity changes as the firm stock ownership changes and results in changes in the firm's financial goals.

Harris and Raviv and Ranjan and Zingales (1995) summarized many studies and suggest that most studies share the following variables for determination of capital structure like tangibility, depreciation tax shields, growth prospects, size, risk, advertisement expenses, R&D expenses, profitability, uniqueness, etc.

**Factors Affecting Capital Structure:** Different things can influence how a company decides to raise funds. Some of these include how tangible its assets are, tax benefits from depreciation, potential for growth, size of the company, level of risk involved, and even how much it spends on advertising and research. Graham and Harvey (2001) mention that companies often wait for the price of their shares to go up before selling more shares, and they pay attention to their credit rating before taking on more debt. Cook and Tang (2010) found that companies tend to adjust how they raise money depending on how the economy is doing.

**Effects of Borrowing Money:** When a company borrows money, it can have different effects on how well the company does financially. Chandra (1997) looked at how borrowing money affects how much shareholders make. Pandey (2004) argued that it's important to carefully consider how a company decides to raise money, as it can impact the overall value of the company.

**Impact on Company Performance:** Some studies have found that borrowing money can actually help a company make more profit. Others have found that borrowing too much money can hurt how well a company does. For example, Fama and French (2002) and Gill, Biger, and Mathur (2011) found that borrowing money is often linked with making more profit. However, Pouraghajan and Malekian (2012) discovered that borrowing too much money can actually make a company perform worse.

**Debt and Profitability:** Goyal (2013) discovered that there's a positive connection between a company's debt and its profitability. This means that, in some cases, borrowing money can actually lead to higher profits for a company.

**Leverage and Firm Performance:** Pouraghajan and Malekian (2012) found something different. They observed a significant and negative relationship between leverage (which is how much a company relies on borrowed money) and how well the company performs overall. In other words, borrowing too much money might harm a company's performance. Impact of Capital Structure: Ibrahim (2009) found that the way a company structures its finances, known as its capital structure, does not seem to have much of an effect on how well the company does. This suggests that whether a company relies more on debt or equity might not be a big factor in its overall performance.

Negative Effects of Leverage: Olokoyo (2013) discovered something concerning. They found that relying too much on borrowed money can actually have a significant negative effect on how well a company performs. This highlights the importance of managing debt carefully.

**Ownership Structure and Performance:** Wang (2003) revealed a positive relationship between a company's ownership structure and its performance. This suggests that how a company is owned can impact how well it does financially.

**Correlations with Firm Performance Metrics:** Salim and Yadav (2012) found some interesting correlations. They noticed a negative relationship between return on assets (ROA) and return on equity (ROE) with financial leverage, but a positive relationship with Tobin's Q, which measures a company's market value relative to its assets.

**Asset Turnover and ROA:** Muritala (2012) demonstrated that factors like asset turnover, size, age, and tangibility are positively linked to a company's return on assets (ROA). This implies that efficiently using assets and having certain characteristics can lead to higher returns.

## Objective of the Study

To examine practically how the structure of capital or the financial leverage influences the financial performance of chosen manufacturing companies in India.

## Rationale of the study

One crucial aspect of corporate finance is deciding how a company should arrange its finances, known as capital structure. Many companies struggle with bankruptcy because they either have too much debt or don't have the right optimal mix of financing. In a rapidly growing economy like India its especially important for manufacturing companies to get this balance. So, to plan finances properly and reach their financial goals, it's essential to understand how the level of debt a company carries affects its financial performance.

## Research Methodology

### Sample

The sample consists of all the manufacturing companies listed on the Bombay Stock Exchange (BSE), categorized by industry, from the financial years 2009–2010 to 2022–2023. At first, we had a list of about 3,800 companies. We then removed any companies that didn't have data available for both the factors we're studying throughout the entire period. After this filtering process, we were left with a sample of 422 manufacturing companies listed on the Bombay Stock Exchange (BSE). We chose to study a period of 14 years, from 2009–2010 to 2022-23, to get a clearer picture. By using a large sample size and a longer time frame, we aim to make our analysis more reliable and reduce any errors in measurement. This sample of 422 companies will allow us to conduct a meaningful regression analysis.

**Table I.** Sample Classification

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### Indian Manufacturing Sector Classification

Industry	No. of Companies	% of Total Sample
Chemicals	60	14
Heavy equipment	53	13
Drugs & pharmaceuticals	38	9
Cement	10	2
Textile	54	13
Machinery	88	21
Automobile & ancillaries	36	9
Food, sugar and beverage	42	10
Paper and plastics	41	10
<b>Total Sample</b>	<b>422</b>	<b>100</b>

Source. CMIE Prowess.

Table 1 displays how the 422 companies in our sample are categorized. We've divided the Indian manufacturing industry into nine sub-industries. The largest portion of the sample consists of machinery companies, with chemical, heavy equipment, and textile firms following closely behind.

#### Source

The study relies on existing data collected from a source called Prowess, which is part of the Centre for Monitoring Indian Economy (CMIE) database. This database contains financial information about Indian companies, gathered from their annual reports. CMIE has been around since 1976 and is known for providing reliable business information. The study relies on existing data collected from a source called Prowess, which is part of the Centre for Monitoring Indian Economy (CMIE) database. This database contains financial information about Indian companies, gathered from their annual reports. CMIE has been around since 1976 and is known for providing reliable business information.

For analysis of data, R-programming statistical software has been used for applying the required statistical analysis technique like panel data fixed effect regression model.

### Theoretical Framework

The study examines how financial leverage impacts a company's financial performance. After conducting the Hausman test, we chose to use a panel data fixed effect regression approach to analyze the relationship empirically. Panel data offers more information, greater variability, and less correlation among the variables compared to other methods. By using a fixed effect model, we can account for individual differences among companies and control for the influence of unobserved or missing variables. This model adds a dummy variable for each company, helping to address individual-specific effects. The panel data fixed effect regression model can be modelled as:

$$FP_{nt} = C_n + \sum_{n=1}^k \beta_n X_{nt} + U_{nt}$$

FP = Firm performance parameters as dependent variable

C = Constant

X = Leverage ration as the independent variable

B = Coefficient of Leverage ratio

U = An error term

n = Number of cross-sectional Individuals  
t = Time period of the study

Short, Ketchen, Palmer, and Hult (2007) reviewed several past studies and found that commonly used indicators to measure a firm's performance include Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q.

Consequently, 3 regression models have been developed using the above approach to test the empirical relationship between firm's performance and financial leverage.

**Model 1:** Return on assets has been used as a representative for firm's performance with debt-equity ratio, size, tangibility, asset turnover and ownership as the independent variables. It gives us a practical view of how well a company is doing because it shows how efficiently it uses its assets to make profits. It's calculated by dividing the company's net income by all its assets (Bauwhede, 2009).

**Model 2:** Return on equity (ROE) has been used as a representative for firm's performance with debt-equity ratio, size, tangibility, asset turnover and ownership as the independent variables. ROE tells us how much profit a company is giving back to its shareholders. It's calculated by dividing the company's net income by its total equity. This helps us understand how well the company is performing for its shareholders (Krishnan & Moyer, 1997).

**Model 3 :** Tobin's Q has been used as a representative for firm performance with debt-equity ratio, size, tangibility, asset turnover and ownership as the independent variables. It indicates how a company's market value compares to what it would cost to replace its assets. If the ratio is higher, it means the company is performing better. It is the ratio of market value (Market capitalization + Market or book value of debt) divided by total assets (King & Santor, 2008).  
where,  
Leverage ratio (D/E) is calculated by dividing total debt by total equity (King & Santor, 2008).

The size is gauged as the natural logarithm of total assets (King & Santor, 2008). It implies firm having large size exhibits lower asset volatility and better performance.

Tangibility refers to ratio of net fixed assets divided by total assets (Wiwattanakantang, 1999). It exhibits the fixed asset investment and long-term resources held by the firm.

Asset Turnover is the ratio of net sales divided by total assets (Muritala, 2012). It shows how efficiently firm utilize their assets to generate revenue.

Ownership Structure is represented by the percentage of shareholding held by promoters of the firms.

**Table 2.** Regression Equations

Regression Equation	Alternative Hypothesis(H <sub>1</sub> )
<b>Model 1</b> $ROA_{nt} = C_n + \beta(D/E)_{nt} + \beta_1(Size)_{nt} + \beta_2(Tangibility)_{nt} + \beta_3(Turnover)_{nt} + \beta_4(Ownership)_{nt} + U_{nt}$	<b>H<sub>1</sub>:</b> Significant relationship between ROA and leverage ratio, size, tangibility, turnover and ownership structure
<b>Model 2</b> $ROE_{nt} = C_n + \beta(D/E)_{nt} + \beta_1(Size)_{nt} + \beta_2(Tangibility)_{nt} + \beta_3(Turnover)_{nt} + \beta_4(Ownership)_{nt} + U_{nt}$	<b>H<sub>1</sub>:</b> Significant relationship between ROE and leverage ratio, size, tangibility, turnover and ownership structure
<b>Model 3</b> $Tobin's\ Q_{nt} = C_n + \beta(D/E)_{nt} + \beta_1(Size)_{nt} + \beta_2(Tangibility)_{nt} + \beta_3(Turnover)_{nt} + \beta_4(Ownership)_{nt} + U_{nt}$	<b>H<sub>1</sub>:</b> Significant relationship between Tobin's Q and leverage ratio, size, tangibility, turnover and ownership structure

Source: CMIE Prowess

Note: C = constant, U = residual component, n = 1,.....,422 and t = 1,.....,14.

Table 2 displays three regression equations created by analyzing panel data using the fixed effect approach. Considering an alternative hypothesis (H<sub>1</sub>) and anticipating a meaningful connection

between a company's financial performance indicators (ROA, ROE, and Tobin's Q) and its financial leverage (D/E), along with other factors like size, tangibility, asset turnover, and ownership structure.

Size is an important control variable that influence how well the firm performs. Bigger companies and those that have been around longer tend to have more advantages, like greater abilities, a wider range of products or services, stronger trust from customers, and savings from operating at a larger scale. These factors can all affect the outcomes we see. Firms with tangible assets can borrow more money because they have valuable things to offer as collateral. This borrowing affects the firm's returns. Additionally, strong sales growth and efficient use of assets directly boost a firm's profitability. The ownership structure, especially the stake held by promoters, significantly influences profitability due to concerns about how they manage the company on behalf of other shareholders. Therefore, all the factors we're considering play a big role in determining how well a firm performs.

## Data Analysis, Findings and Interpretation

**Table 3.** Correlation matrix of independent variables

	D/E	Size	Tangibility	Asset Turnover	Ownership
D/E	1.00	0.01	0.03	0.03	0.01
Size	0.01	1.00	0.12	0.06	0.19
Tangibility	0.03	0.12	1.00	0.23	0.10
Asset Turnover	0.03	0.01	0.23	1.00	0.12
Ownership	0.01	0.19	0.10	0.12	1.00

Source: CMIE Prowess, Statistical Tool: R-programming.

Table 3 exhibits the correaltion between all the Independent variables under consideration. It was found that there was no high degree of correaltion between any of the independent variables and hence, the model are free from the problem of multicollinearity.

To study how leverage affects the performance of 422 Indian manufacturing companies, researchers created three regression models. They used a panel data fixed effect refression method after conducting a Hausaman test. They analyzed the data using R-statistical software. The following are the key empirical finding from the regression models.

**Table 4.** Model 1 (ROA as the proxy for firm performance)

Empirical Findings				
Independent variables	Coefficient	Std. error	T value	P value
D/E	0.00233	0.00155	1.5046	0.1324
Size	-40.866	2.7124	-15.0661	0.0000022***
Tangibility	-0.12985	0.016385	-7.9251	0.000000000000002374***
Ownership	-0.12985	0.21411	1.4183	0.00000000000000022***
Asset turnover	0.10934	0.0074694	14.6383	0.1561
Period	14			
Cross sections	2063			
Total panel(unbalanced) observation	26817			
R <sup>2</sup>	0.053604			

F-statistics	280.357			

Source: CMIE Prowess, Statistical Tool: R-programming, \*\*\* imply statistically significant, the p-value associated with these coefficients is typically less than 0.001.

signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

- The Debt-to-Equity Ratio's coefficient is 0.00233, and its p-value is 0.1324. This means that there isn't enough evidence to say it has a big impact on the dependent variable.
- The Size coefficient is -40.866, and its p-value is very low (less than 0.001). This means that there's strong evidence to suggest that as Size increases, the dependent variable decreases. In simpler terms, larger Size is associated with a lower value of the dependent variable.
- The Tangibility coefficient is -0.12985, and its p-value is extremely low (less than 0.001). This indicates strong evidence that Tangibility has a significant negative impact on the dependent variable. In simpler terms, higher Tangibility is linked with a decrease in the dependent variable.
- The Ownership coefficient is -0.12985, and its p-value is very low (less than 0.001). This means there's solid evidence suggesting that Ownership has a significant negative influence on the dependent variable. In simpler terms, higher Ownership is associated with a decrease in the dependent variable.
- The Asset Turnover coefficient is 0.10934, and its p-value is 0.1561. This indicates that there isn't enough evidence to conclude that Asset Turnover has a big impact on the dependent variable. In simpler terms, changes in Asset Turnover might not have a significant effect on the dependent variable.

**Table 5.** Hausman test

#### Hausman Test

```
data: Roa ~ De + Size + Tangibility + Assetturnover + Promoters
chisq = 127.5, df = 4, p-value < 2.2e-16
alternative hypothesis: one model is inconsistent
```

In this table 5, the P value is less than 0.05, hence we fail to reject null hypothesis. So, Fixed effect model will be used.

**Table 6.** Model 2 ( ROE as the proxy for firm performance)

Empirical Findings				
Independent variables	Coefficient	Std. error	T value	P value
D/E	0.000000000099729	0.00000000059737	0.1669	0.86741
Size	-0.000019413	0.000010612	-1.8293	0.06737



Tangibility	0.000000013672	0.000000063208	0.2163	0.82876
Asset turnover	-0.0000000083347	0.000000028818	-0.2892	0.77242
Promoters	0.0000065391	0.00000085056	7.6879	0.00000000000001552***
Period	14			
Cross sections	2063			
Total panel(unbalanced) observation	26817			
R <sup>2</sup>	0.0024321			
F-statistics	11.8828			

Source: CMIE Prowess, Statistical Tool: R-programming

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

**Table 7.** Hausman Test

### Hausman Test

```
data: (ROE) ~ (De) + (Size) + (Tangibility) + (Assetturnover) + (Promoters)
chisq = 10.506, df = 4, p-value = 0.03271
alternative hypothesis: one model is inconsistent
```

In this test, the p value is less than 0.05, hence we fail to reject null hypothesis. So, we take resort to fixed effect regression model.

**Table 8.** Model 3 (Tobin's Q as the proxy for firm performance)

Oneway (individual) effect within Model					
Call: plm(formula = (TobinQ) ~ (De) + (Size) + (Tangibility) + (Assetturnover) + (Promoters), data = Book2, model = "within", index = c("Variable", "Year"))					
Unbalanced Panel: n = 2063, T = 1-15, N = 26817					
Residuals:					
Min.	1st Qu.	Median	3rd Qu.	Max.	
-5692535.65	-4225.52	-406.37	3253.70	8949483.76	
Coefficients:					
	Estimate	Std. Error	t-value	Pr(> t )	
De	3.716756	0.037177	99.9751	< 2.2e-16	***
Size	3804.310753	650.491020	5.8484	5.027e-09	***
Tangibility	3.383923	3.929448	0.8612	0.389153	
Assetturnover	-0.383466	1.791319	-0.2141	0.830495	
Promoters	163.054532	51.347810	3.1755	0.001498	**
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Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Total Sum of Squares: 5.4182e+14					
Residual Sum of Squares: 3.833e+14					
R-Squared: 0.29257					
Adj. R-Squared: 0.23349					
F-statistic: 2047.08 on 5 and 24749 DF, p-value: < 2.22e-16					
Source: CMIE Prowess, statistical software: R-programming					
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					

**Table 9.**

Hausman Test	
data:	(TobinQ) ~ (De) + (Size) + (Tangibility) + (Assetturnover) + ...
chisq =	58.808, df = 4, p-value = 5.163e-12
alternative hypothesis:	one model is inconsistent

In this table, the p value is less than 0.05. Hence, we fail to reject null hypothesis and Fixed effect regression model is used.

## Conclusion

This research examines how financial leverage impacts the financial performance of 2063 Indian manufacturing companies. It uses metrics like ROA, ROE, and Tobin's Q to gauge a firm's financial health. The study reveals that while financial leverage doesn't affect ROA and Tobin's Q, it does have a negative and significant correlation with ROE. Other factors such as company size, tangibility, asset turnover and ownership structure play crucial roles in determining financial performance in the Indian manufacturing sector. These findings contribute to our understanding of capital structure and can guide decisions in the Indian manufacturing industry, especially considering both pre and post recession data from 2009-2023. The study highlights the negative impact of recession on the Financial performance of Indian manufacturing firms, providing valuable insights for corporate managers who must navigate these challenges to improve their companies' operational and financial performance.

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