

AN EMPIRICAL STUDY OF IMPACT OF SIZE OF FIRM ON LEVERAGE

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Abstract

The purpose of this study is to look into the relationship between leverage and firm size in the business environment of India, a major growing country. Prior research studies have mostly surveyed developed countries; however, our analysis fills this vacuum by examining a sizable sample of companies throughout a 20-year span, from 2002 to 2021. Our data show a negative link between size and leverage, supporting the pecking order theory's claims. This implies that businesses tend to rely less on debt as they get bigger. Policymakers should take note of these findings, especially in light of how India's corporate loan market is developing. Policymakers can create an environment that is favorable by recognizing and comprehending the complexities of the size-leverage relationship and using this knowledge to inform their decisions.

Keywords: Leverage, Business Size, India, Pecking Order Theory, Financing Behaviour.

1. INTRODUCTION

The modern world is becoming more and more corporatized, and big businesses are essential to the globalization of the global economy. In actuality, the expansion of established businesses' sizes is largely accountable for the rise in the world economy. Just one-third of the progress in the world economy may be credited to the establishment of new businesses; the remaining amount is caused by the expansion of already-existing businesses (Kumar, Rajan, & Zingales, 2001).

There is not any upper threshold to the age and size that corporations aim to achieve; they seek to develop continuously. Growing a company's size is a common corporate objective since it communicates strength to competitors, solidity to internal stakeholders, and quality to the market. There is a big influence of the size of an establishment on how it interacts with its surroundings. Compared to smaller businesses, larger companies have a greater influence on their direct stakeholders. Anatomical changes in internal organization and financing occur when a firm grows in size. In the literature of finance, there has been much argument of the connection between business size and corporate finance.

Graham and Harvey's (2002) work is noteworthy in this regard. Their study discovered that firm size had a major impact on the practice of corporate finance. A company's reputation benefits from size, and this in turn affects the financing options the company makes (Berger & Udell, 1995). According to their outlook, the utilization of bank debt is influenced by business size, and the variables that determine leverage are probably going to vary between different sized firm groups. Of all the variables that determine financial leverage, business size is arguably the most theorized.

Nearly all capital structure models have a relationship between financial leverage and business size (Schoubben & van Hulle, 2004). Researchers from all across the world are still examining the size-leverage relationship to see if there are any notable differences in the relationship's direction between small and large businesses. Using a sizable panel data collection, our study aims to add to the current discussion from the perspective of emerging markets.

The article is organized as follows for the remainder of it: In the second section, the relevant literature is reviewed; in the third, the study's objectives are outlined; in the fourth, the methodology, data, and empirical model are discussed; in the fifth, the results and discussion are presented; in the sixth, the study's conclusion is provided; and in the seventh, the managerial and policy implications are highlighted.

2. REVIEW OF LITERATURE

The literature review delves into two primary theories explaining a firm's leverage decisions concerning firm size and financing behavior. Modigliani and Miller's trade-off theory, introduced in 1958, posits a positive linear correlation between size and leverage. Conversely, the pecking order theory by Myers and Majluf (1984) proposes a negative linear relationship. To evaluate these theories, we employ widely recognized leverage determinants, detailed in Table 2. Schwartz and van Tassel (1950) were the first to objectively confirm the positive size-leverage association, attributing it to small businesses' reliance on internal funds due to high registration fees.

Warner (1977) later supported this, suggesting reduced bankruptcy costs for larger firms. Other studies, including those by Ferri and Jones (1979), Antoniou et al. (2008), Chauhan (2017), and Ahmad and Etudaiye-Muhtar (2017), also found positive size-leverage correlations. These relationships are supported by factors such as larger collateral values, increased information disclosure, diversification benefits, enhanced investment opportunities, improved capital market access, favorable interest rates, and maximized tax shields. However, smaller businesses, with limited repayment capacity and collateral, prefer to avoid loan financing to mitigate bankruptcy and ownership risks. Banks are also cautious about lending to smaller businesses due to repayment constraints and collateral limitations. Noteworthy exceptions to the positive size-leverage correlation are observed in studies by Cosh and Hughes (1994), Handoo and Sharma (2014), and others.

They found an inverse link between a company's prior performance and its debt-to-total-assets ratio. Ezeoha (2008) investigated business size's role in leverage within a developing nation, revealing a negative link between leverage and profitability, indicating profitable firms tend to self-finance operations. These findings align with the pecking order hypothesis. Grinblatt and Titman (1998) suggest that smaller businesses, where managers are typically significant shareholders and have greater flexibility in investment decisions, experience more friction between owners and creditors, supporting the pecking order theory.

Moreover, tiny businesses have a larger degree of information irregularity between internal and external investors (Harris & Raviv, 1991). These studies primarily explain the negative relationship between size and leverage because large firms have lower equity costs than debt, less information asymmetry, a reputational advantage, better access to equity financing, smaller firms pay out lower dividends, and as a result, equity investors have less incentive.

Some particular studies have shown that there is no meaningful correlation between leverage and size. For example, Chadha & Sharma (2016) examined the impact of leverage on a firm's value with a trial of 422 manufacturing enterprises in India and found no meaningful correlation between a firm's size and leverage. Though, the unintended interpretation from their study requires additional testing because sample size was small and the industry-specific nature and characteristics of the manufacturing sector.

3. OBJECTIVE AND JUSTIFICATION FOR THE STUDY

This study delves into the size-leverage dynamics within India, a pivotal player in the 21st-century global economy. While evidence supports varied perspectives on this relationship, most research has focused on industrialized nations. Our study broadens the scope, analyzing a diverse enterprise sample spanning two decades (2002-2021). Findings affirm the pecking order theory, highlighting a negative size-leverage correlation.

4. METHODOLOGY AND DATA

I collected data from 3935 non-financial sector companies in India, obtaining information from CMIE prowest spanning 2002 to 2021. Utilizing panel data and panel data universal least squares (GLS) random effects regression, we analyzed the correlation between firm size and leverage. This dataset stands as the biggest in India for studying the size-leverage relationship. Financial sector entities, because of their distinct leveraging practices, were left out from the sample. Table 1 shows the included businesses, while Table 2 outlines variable definitions.

Table 1: The Sample

Industry	No. of Firms	Proportion
Manufacturing	1,758	44.68
Mining	31	0.79
Electricity	120	3.05
Non-financial services	1,640	41.68
Construction, Real State and Irrigation	318	8.08
Diversified	68	1.73
Total	3,935	100

Source: Authors' calculation based in CMIE Prowest.

Table 2: Variables and Their Definition

Variable	Definition
LTLR	Long – term leverage ratio = $\frac{\text{Long-term deb}}{\text{Total Assets}}$
STLR	Short – term leverage = $\frac{\text{Short – term debt}}{\text{Total Assets}}$
TLR	Total leverage ratio = $\frac{\text{Total debt}}{\text{total assets}}$
Size	Size of Firm; Total assets logged on the business
LIQ	LIQ = $\frac{\text{Cash and short – term investments}}{\text{Total Assets}}$
EV	Earnings variability; EV = $\frac{\text{EBIT}_t - \text{EBIT}_{t-1}}{\text{EBIT}_{t-1}}$
Prof_ty	Profitability; Prof_ty = $\frac{\text{EBIT}}{\text{Total Assets}}$
AT	Asset tangibility; EV = $\frac{\text{Tangible fixed assets}}{\text{Total assets}}$
FA	Number of years of existence

Source: Compiled by author on the basis of literature.

Empirical Model

The three models of leverage to analyze associations between size of a firm and leverage:

Total leverage model:

$$TLR = \beta_0 + \beta_1 \text{Size} + \beta_2 \text{LIQ} + \beta_3 \text{EV} + \beta_4 \text{Prof_ty} + \beta_5 \text{AT} + \beta_6 \text{FA} + \pi + \varepsilon$$

Long-term leverage model:

$$LTLR = \beta_0 + \beta_1 \text{Size} + \beta_2 \text{LIQ} + \beta_3 \text{EV} + \beta_4 \text{Prof_ty} + \beta_5 \text{AT} + \beta_6 \text{FA} + \pi + \varepsilon$$

Short-term leverage model:

$$STLR = \beta_0 + \beta_1 \text{Size} + \beta_2 \text{LIQ} + \beta_3 \text{EV} + \beta_4 \text{Prof_ty} + \beta_5 \text{AT} + \beta_6 \text{FA} + \pi + \varepsilon$$

Here, π denotes the time-invariant random effect unique to each firm, while ε stands for the residual. Additionally, we LIQ, EV, Prof_ty, AT, Size and FA as control variables in the analysis.

A company's liquidity serves as a reliable indicator of its capacity to repay banks. A company with good liquidity can take on additional debt. Liquidity is therefore anticipated to have a positive association with leverage. A company's earnings volatility serves as a gauge of its level of risk. The less able one is to satisfy fixed obligations due to variable incomes, the less leverage will be employed.

EV should therefore have a negative association with the leverage. Increased profitability is anticipated to lessen reliance on outside funding and boost inside capital in the form of retained earnings. However, if the company has lucrative commercial prospects and requires additional funding to capitalize on them, higher profits can also enhance the capacity to service debt and increase leverage.

Once again, having endured for a longer period of time will make older businesses more trustworthy, allowing them to raise more debt than younger businesses. However, in terms of demand, more established businesses could not want to employ more debt because they are not as aggressive and risk-takers as younger businesses.

They might rely on their total retained earnings to fund their future endeavours. Banks consider a company's fixed assets to be collateral. As a result, companies with large amounts of physical fixed assets would be able to borrow more money.

5. RESULTS AND DISCUSSION

Table 3: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
TLR	0.875614	1.352387	0	8.532861
LTLR	0.764187	1.156335	-0.0001506	8.262231
STLR	0.795843	1.274814	2.86e-07	8.572752
AT	0.442516	0.4765984	0	8.686344
LIQ	0.973547	1.598635	-0.0005085	8.911506
EV	0.943526	0.648676	-4.01	17.15
Prof_ty	0.089543	0.236055	-4.505066	6.544026
Size	7.184648	3.188640	-2.363465	15.71752
FA	42.556356	19.375946	10	161

Source: The authors.

Table 3 depicts the exogenous factors and descriptive statistics pertaining to the measures of above mentioned leverages. 78.28 % is the STLR, and 74.11% is the LTLR. That suggests Indian businesses are more interested in short-term loans. Matched to short-term leverage, Indian enterprises' long-term leverage does not differ significantly, as indicated by the reduced LTLR standard deviation.

Table 4: Correlation among Variables

Variables	TLR	LTLR	STLR	AT	LIQ	EV	Prof_ty	Size	FA
TLR	1								
LTLR	0.4355	1							
STLR	0.4544	0.1638	1						
AT	0.2263	0.2534	0.1367	1					
LIQ	-0.2948	-0.0532	-0.1745	-0.0145	1				
EV	-0.0093	-0.0287	-0.0226	-0.0768	0.0095	1			
Prof_ty	-0.0665	-0.0821	-0.0850	-0.0301	-0.1546	-0.0185	1		
Size	-0.2765	-0.1145	-0.1655	-0.1688	-0.1465	0.0511	0.1489	1	
FA	-0.0192	-0.0123	-0.0172	-0.0242	-0.0591	-0.0494	0.0555	0.2106	1

Table 4 displays the outcomes of the correlation study for each variable of the three leverage models. Both short-term ($r = 0.45$) and long-term ($r = 0.43$) leverage have a positive association (correlation) with total leverage. No strong pairwise inter correlation is seen among the predictors.

Table 5: Leverage Models

Variables(Independent)	Total Leverage (1)	Long-Term Leverage (2)	Short-Term Leverage (3)
AT	0.047*** (0.00514)	0.054*** (0.00458)	0.012*** (0.00300)
LIQ	-0.074*** (0.00259)	-0.050*** (0.00231)	-0.083*** (0.00292)
EV	-0.035*** (0.00317)	-0.059*** (0.00289)	-0.112*** (0.00381)
Prof_ty	-0.071*** (0.00618)	-0.090*** (0.00574)	-0.036*** (0.00787)
Size	-0.073*** (0.00197)	-0.093*** (0.00171)	-0.050*** (0.00205)
FA	0.00712** (0.000478)	0.00479*** (0.000356)	0.00526*** (0.000355)
Constant	0.026*** (0.0024)	0.030*** (0.0018)	0.033*** (0.0014)
Observations	49,657	49,657	49,657

Source: The authors' calculation.

(**, *** respectively represent 1% and 0.1% significance level.)

Table 5 displays the conclusive results of GLS random effects regressions for all three models of leverage. In line with the Pecking Order Theory, there's a consistent and significant negative association between firm size and all leverage metrics, suggesting a decrease in debt utilization as company size increases. These results corroborate with the results of earlier research conducted that there is a positive association between the size of firm and leverage (Gupta, 1969; Titman and Wessels, 1988; Cooley & Quadri, 2001; Handoo & Sharma, 2014). In contrast to the predictions of the Trade-off Theory, it's observed that larger Indian corporations lean more towards internal capital, possibly due to limited access to favorable bank financing in India's less developed bond market (Frank & Goyal, 2009; Rajan & Zingales, 1995; and Ferri & Jones, 1979). The dominance of banks in expertise makes securing favorable loan conditions challenging, prompting larger enterprises to prioritize internal resources over bank loans.

6. ROBUSTNESS VERIFICATION

Table 6: Leverage Models with Dummy (Large Firms)

Variables	TLR (1)	TLR (2)	STLR (3)
AT	0.043*** (0.00603)	0.052*** (0.00558)	0.024*** (0.00472)
LIQ	-0.069*** (0.00204)	-0.051*** (0.00189)	-0.076*** (0.00455)
EV	-0.036*** (0.00388)	-0.060*** (0.00360)	0.118*** (0.00439)
Prof_ty	-0.072*** (0.00802)	-0.096*** (0.00749)	-0.037*** (0.00959)
Size	-0.0916***	-0.0964***	-0.12.6***

	(0.0122)	(0.0111)	(0.0124)
FA	-0.00121**	-0.00276***	-0.00205***
	(0.000389)	(0.000335)	(0.000323)
_cons	0.029***	0.028***	0.0079***
	(0.0017)	(0.0015)	(0.0015)
Observations	51,865	51,865	51,865

Source: The author's calculation.

(**, *** respectively represent 1% and 0.1% significance level.)

Table 6 displays the outcomes of leverage models using the dummy variable huge. I included the large dummy variable, whose value is equal to 1 for large enterprises and 0 for small firms, in order to inspect the robustness of our findings. The sample of 3935 companies was categorized into small and large companies according to the time-averaged total assets (TAVTA) statistical range. 985 of the 3935 businesses were classified as large businesses, and 2,950 as small businesses. The categorization point for dividing businesses into small and large businesses was the choice of TAVTA/2.

In comparison to small enterprises, data in table 6 indicate that TLR, LTLR, and STLR fall by 9.16%, 9.64%, and 12.6%, respectively, for larger firms. This demonstrates that the size-leverage link is highly negative and significant for larger enterprises. These findings show that Indian businesses finance their operations in accordance with the pecking order theory.

7. SUMMARY

This study contributes to our understanding of financing behaviors within Indian enterprises. Concentrating on the evolving dynamics of the Indian market, this investigation explores the correlation between firm size and leverage. The research affirms the validity of the pecking order theory, demonstrating that more financially robust, larger, older, and more profitable companies tend to prefer alternative funding avenues over conventional loans. Significantly, it utilizes the most comprehensive panel data collection ever undertaken in the Indian context. In line with the pecking order theory, the study uncovers a positive relationship between leverage and tangible fixed assets, while liquidity, profitability, earnings variability, and firm age are found to have negative correlations.

8. MANAGEMENT AND POLICY CONSEQUENCES

One finding from the research is that Indian businesses typically rely more on their own resources and choose short-term debt when seeking outside funding. Such actions may cause the company to become very narrow-minded, which could lead to the loss of long-term growth prospects in the market. The underdeveloped corporate debt market in India may possibly be the cause of the negative size-leverage connection. The study's findings emphasize to policymakers the necessity of developing and strengthening the corporate bond and debenture markets.

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