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Capital Structure, Firms' Growth and Shareholders' Value: A System GMM Approach

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Capital structure; Firms' growth; Shareholders' value; Intangible assets

JEL Classification

G30; G32

Abstract: This study explores the impact of capital structure on firms' growth and shareholders' value for NSE-200 listed manufacturing firms over 20 years, from 2001-02 to 2019-20. It also highlighted how firms' growth and shareholders' value were influenced by capital structure decisions, with the moderating effect of intangible assets. The data has been collected from the PROWESS database of CMIE (Centre for Monitoring Indian Economy). Using the two-step system GMM method, the study found that capital structure significantly influenced firms' growth and shareholders' value in Indian manufacturing firms.

1. Introduction

Capital structure research has been ongoing since the foundational work of Modigliani and Miller (1958) which remained central to corporate finance research, capturing the interest of academics, researchers, and practitioners alike. Decisions related to a company's capital structure are among the major analysed subjects in this field; however, a unified perspective still needs to be discovered, even after years of exploration. Modigliani and Miller originally posited that, under ideal conditions, capital structure of a firm don't affect its value. Since then, two prominent theories, the trade-off theory and the pecking order theory, have been conceptualised as pillars of contemporary capital structure theory. The trade-off theory posits that firms aim to achieve optimal capital structure by balancing the debt tax-shield with the likely costs of bankruptcy (Baxter, 1967; Leland, 1994; Leland & Toft, 1996). This theory later expanded to include agency costs, encompassing issues such as free cash flow dilemmas, asset substitution, and under-investment (Jensen & Meckling, 1976; Myers, 1977; Jensen, 1986). In contrary, the pecking order theory argues that asymmetric information influences capital structure decisions, creating a financing hierarchy within firms (Myers & Majluf, 1984).

With the advent of globalisation and industrialisation, many large companies, particularly joint-stock corporations, require capital to sustain and grow in competitive markets. Investors rely on a firm's market value and relevant influencing factors to purchase. They forecast value and price changes based on understanding these factors, informing their decision to buy or sell shares (Neveu, 1981). Capital structure denotes to the combination of debt and equity finance to increase the long-term market value of a firm. An optimal capital structure minimises the weighted average cost of capital, which maximises market value (Vatavu, 2015). Minimised cost of capital ultimately boosts return, maximising shareholder wealth (Tak, 2016). Financing decisions, among the most challenging for

financial managers, significantly influence a firm's performance (Atiyet, 2012). Various determinants, such as company size, growth potential, asset tangibility, liquidity, and profitability, have been identified by scholars as factors influencing capital structure (Serghiescu & Vaidean, 2014).

Financial managers frequently use metrics like return on assets (ROA), earnings per share (EPS) and return on equity (ROE), to measure firm's performance. However, investors and finance experts increasingly question these traditional metrics, arguing they fall short of capturing economic value (Eljelly & Alghurair, 2001). In response, newer metrics, such as "created shareholder value (CSV)", "shareholder value added (SVA)", "economic value added (EVA)", and "market value added (MVA)" have emerged. These metrics align with value-based management frameworks to offer a more comprehensive measure of shareholder wealth (Bhasin & Shaikh, 2013; Chen & Dodd, 1997; Nel, 2010).

The linkage of capital structure with firm value has been amply explored across various regions and sectors. Nonetheless, consensus still needs to be improved on the applicability of capital structure theories, particularly in manufacturing industries. This study aims to add to the literature in two main ways. First, it examines how capital structure influences firms' growth and shareholder value in the Indian manufacturing firms. Second, it employs a two-step System GMM approach, allowing for a rigorous investigation of the relationships among these variables. The study seeks to examine the effect of capital structure on the firm's growth and shareholders' value taking 75 manufacturing firms listed on the National Stock Exchange (NSE) in India, spanning 20 years from 2000-01 to 2019-20. The remainder of this paper is depicted as follows: The section "Review of Literature" highlights relevant empirical research, the Section "Research Methodology" outlines the data and econometric model, the Section "Results and Discussion" interprets the results, and the Section "Conclusion" offers closing remarks.

2. Literature review

The link between capital structure, firm's growth and shareholders' value has become a significant focal point of researchers in financial economics, particularly in emerging markets like India. Modigliani and Miller (1958) pioneered the theory that capital structure is immaterial in a frictionless market. However, subsequent research has indicated that market distortions, such as taxes, liquidation costs, and managerial conflict, influence capital structure decisions and their impact on firms' growth and shareholders' value (Myers, 1984). Irawan et al. (2022) found an inverse relationship between capital structure and profitability while highlighting a modest positive influence of firm size and growth on profitability and firm value. Similarly, Linawati (2022) demonstrated that profitability and bank size significantly enhance the firm value, with capital structure as a mediating factor in the context of Indonesian banks. Mills and Mwasambili (2022) extended this discourse by establishing bidirectional causality between different types of debt and firm growth in Ghana.

In Vietnam, Dang and Do (2021) investigated the effect of capital structure on firm value across various industries, concluding that while capital structure negatively affects specific sectors like construction and real estate, it positively influences the food and beverage industry. This complexity is further supported by Khanh et al. (2020), who found that good corporate governance significantly affects firm value, mediated by capital structure, thereby underscoring the importance of governance mechanisms in shaping financial outcomes. Hirdinis (2019) explored the mining sector, revealing that while capital structure positively influences firm value, larger firm size negatively impacts value, contradicting Irawan et al.'s findings. Mandala et al. (2019) focused on firm age, concluding that it influences the link between capital structure and firm value. Rachmat et al. (2019) reinforced the significant roles of capital structure and profitability in determining firm value, particularly in Indonesia.

Faccio and Xu (2018) broadened the scope by examining the effects of tax reforms on equity value in OECD countries, indicating that higher tax evasion rates diminish the impact of tax changes on firm value. In contrast, Jiraporn and Liu (2008) focused on the effect of staggered boards on capital structure choices and subsequent firm value, concluding that while staggered boards lead to lower debt levels, they do not affect firm value post-Sarbens-Oxley Act. Bereznicka (2017) and Doorasamy (2021) further illustrate the regional and sectoral nuances affecting the capital structure-firm value relationship, with Bereznicka emphasising the dominance of country-specific factors over industry characteristics, particularly in medium-sized firms. Meanwhile, Nursetya and Hidayati (2021) affirmed that while capital structure affects performance, it does not influence firm value, aligning with Al-Slehat (2020), who found in significant relationship of financial leverage with firm value in Jordan's industrial sector.

The findings of Cheng et al. (2020) introduced the concept of an inverted U-shaped relationship between ideal capital structure and firm value, suggesting that optimal levels of capital structure exist where firm value peaks. Conversely, Nguyen et al. (2020) demonstrated a favourable link between capital structure and firm value in Vietnam's food and beverages sector, adding a nuanced understanding of the prevailing narratives. Rahman et al. (2019) and Rosario and Chavali (2019) explored profitability's mediating role, with the former indicating that equity and debt ratios significantly impact ROA, while the latter confirmed a positive association between capital structure and profitability in India's hotel industry. Gunawan et al. (2018) and Ngatemin et al. (2018) also highlighted the positive influence of capital structure on firm value, although the latter indicated firm size negatively affects firm value.

Alfi and Safarzadeh (2016) and Gharaibeh and Sarea (2015) showed a multifaceted influence of capital structure and other firm-specific factors on firm value, emphasising the importance of financial leverage and liquidity. Mule et al. (2015) and Priya et al. (2015) corroborated the positive impact of capital structure on financial performance and firm value, while Chowdhury and Chowdhury (2010) underscored capital structure's significant influence on firm value. Mujahid and Akhtar (2014) and Atiyet (2012) further explored the intersection of capital structure, shareholder value, and financial performance, revealing that capital structure positively affects shareholder wealth. Sudheer and Vishnu (2022) and Aggarwal and Padhan (2017) reiterated the favourable effect of equity on firm value, while Sinha (2017) and other studies added to the growing body of evidence on capital structure's role in determining corporate value.

Existing work depicting the influence of capital structure on firm growth and shareholder value highlights significant relationships but reveals notable gaps that necessitate further exploration. Studies like Irawan et al. (2022) and Linawati (2022) indicated mixed impacts of capital structure on firm value and profitability, suggesting a need for contextual understanding specific to the Indian market. Moreover, while Mills and Mwasambili (2022) and Dang and Do (2021) explored the dynamics in different countries, their findings may not be directly applicable to Indian firms due to their unique economic and regulatory environments. Additionally, studies like Perwito and Disman (2021) emphasised the role of intangible assets, an area less examined in Indian contexts. Furthermore, while many studies focus on specific industries, the multidimensional effects of capital structure across diverse sectors in India remain underexplored. This research aims to bridge these gaps by comprehensively analysing capital structure's impact on firms' growth and shareholders' value among selected NSE-listed companies in India, considering industry variations.

3. Research methodology

3.1. Data and Sample

The data are gathered from the CMIE PROWESS database and firms' annual reports, covering 20 years from 2001 to 2020. Data from 2021 and 2022 are omitted due to aberrant industry performance following the Covid-19 epidemic. Annual reports, audited and distributed to shareholders, are used as they are reliable sources of information (Maama & Appiah, 2019). Based on data consistency, 2,140 firm-year observations are gathered for 107 sample companies, excluding companies with incomplete data. Figure 1 depicts the conceptual research model.

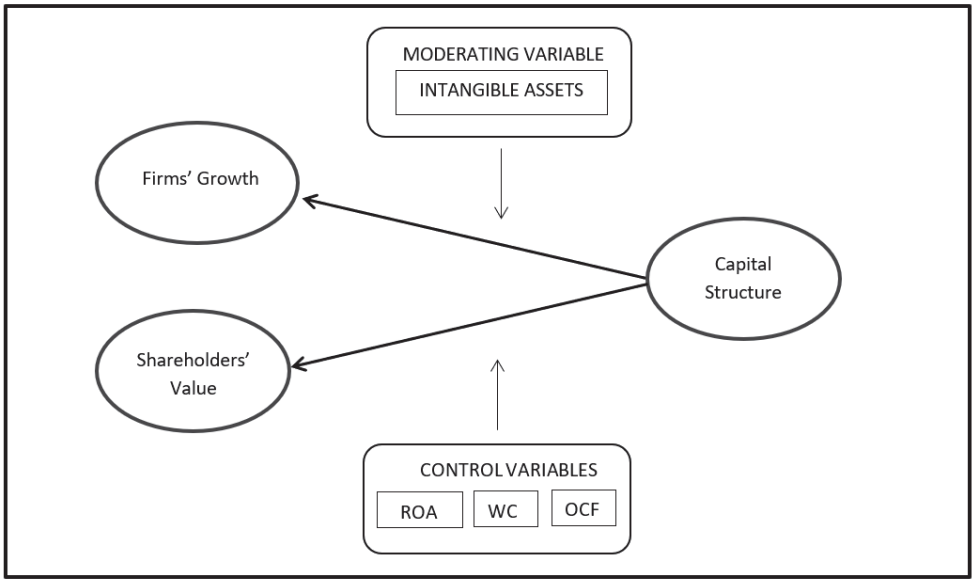

Figure 1: Conceptual Research Model

3.2. Variables

Consistent with the literature, firms' growth (Total Sales, Total Assets) and shareholders' value (Earnings Per Share, Market Value Added) have been considered as the dependent variable, and debt-equity ratio, interest coverage ratio, total equity to total assets have been used as the explanatory variables to assess the capital structure. This study uses ROA, operating cash flows, and working capital as control variables to mitigate omitted variable bias. Table 1 reports the definition of the viable.

Table 1: Variable Description

Variable	Symbol	Description
Total sales	$TOTALSALES_{it}$	Total Sales generated by the firm in a financial year
Total assets	$TOTALASSETS_{it}$	Total assets reported in the Balance Sheet
Earnings per share	EPS_{it}	(Net income-preferred dividends) ÷ Average outstanding common shares
Market value added	MVA_{it}	Market value of the firm – Capital contributed by shareholders
Debt-equity ratio	D/E_{it}	Total debt ÷ Total equity
Interest coverage ratio	ICR_{it}	Earnings before interest and tax ÷ Interest expense
Total equity to total assets	$TETA_{it}$	Total equity ÷ Total assets
Return of total assets	ROA_{it}	Profit after tax ÷ Total assets

Working capital	WC_{it}	Total Current Assets – Total Current Liabilities
Operating cash flows	OCF_{it}	Operating Income + Depreciation + change in working capital - Taxes
Intangible assets	IA_{it}	Total intangible assets reported in the Balance Sheet

Source: Authors' Compilation

3.2. Estimation method and econometric model

This study applies a Generalized Method of Moments (GMM) regression model within a panel data framework to estimate model parameters. The dynamic panel approach through GMM effectively addresses heterogeneity from unobserved firm and time-invariant effects and issues such as measurement error, missing variable bias, persistence, and endogeneity (Caselli et al., 1996). Specifically, the system GMM estimator is well-suited for datasets with modest periods, especially when variables are endogenous and interdependent relationships exist (Sheikh et al., 2018). Given the structure of the data, covering 107 firms across 20 years (i.e., N>T), system GMM is appropriate for this analysis.

The study considers TOTAL SALES, TOTAL ASSETS, EPS, and MVA as dynamic variables, as they exhibit persistence influenced by prior values. This persistence reflects a firm's competitive standing within its industry (Mueller, 1977; Mueller, 1986), particularly prominent in emerging and developed markets where firms leverage innovation to build competitive advantages. Past research, including work by Goddard et al. (2005), Isik and Soykan (2013), Pattitoni et al. (2014), Nunes and Serrasqueiro (2015), Vatavu (2014), Challe et al. (2016), and Isik and Tasgin (2017), supports this view. Consequently, this study captures this persistence effect using the GMM model.

We assume all explanatory variables as endogenous, following the assumptions of Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998), which state that present observations are likely influenced by prior values, resulting in correlations between explanatory factors and errors. Lags of these variables are used as instruments to manage endogeneity concerns. Lag lengths are specified using lag (0 1 2) in all cases. A two-step system GMM approach is used to estimate dynamic panel data (using the Stata command xtdpdgmm).

The dynamic panel model is estimated as follows:

$$\text{TOTAL SALES}_{it} = \alpha_i + \beta_1 \text{TOTAL SALES}_{it-1} + \beta_2 \text{TOTAL SALES}_{it-2} + \beta_3 D/E_{it} + \beta_4 ICR_{it} + \beta_5 TETA_{it} + \beta_6 ROA_{it} + \beta_7 WC_{it} + \beta_8 OCF_{it} + \beta_9 IA_{it} + \beta_{10} IAXD/E_{it} + \varepsilon_{it} \text{ ---- (1)}$$

$$TOTAL\ ASSETS_{it} = \alpha_i + \beta_1 \text{TOTAL ASSETS}_{it-1} + \beta_2 \text{TOTAL ASSETS}_{it-2} + \beta_3 D/E_{it} + \beta_4 ICR_{it} + \beta_5 TETA_{it} + \beta_6 ROA_{it} + \beta_7 WC_{it} + \beta_8 OCF_{it} + \beta_9 IA_{it} + \beta_{10} IAXD/E_{it} + \varepsilon_{it} \text{ ---- (2)}$$

$$EPS_{it} = \alpha_i + \beta_1 EPS_{it-1} + \beta_2 EPS_{it-2} + \beta_3 D/E_{it} + \beta_4 ICR_{it} + \beta_5 TETA_{it} + \beta_6 ROA_{it} + \beta_7 WC_{it} + \beta_8 OCF_{it} + \beta_9 IA_{it} + \beta_{10} IAXD/E_{it} + \varepsilon_{it} \text{ ---- (3)}$$

$$MVA_{it} = \alpha_i + \beta_1 MVA_{it-1} + \beta_2 MVA_{it-2} + \beta_3 D/E_{it} + \beta_4 ICR_{it} + \beta_5 TETA_{it} + \beta_6 ROA_{it} + \beta_7 WC_{it} + \beta_8 OCF_{it} + \beta_9 IA_{it} + \beta_{10} IAXD/E_{it} + \varepsilon_{it} \text{---- (4)}$$

4. Results and Discussion

4.1. Descriptive statistics

Table 2 shows the features of the variables. The mean of total sales is 1.1010, which lies between two extreme values, i.e., minimum 0.0050 and maximum 2.2039. It indicates that the mean is well representative of the total sales, which is further substantiated by less standard deviation, i.e., 0.6769 or cv of 0.6148. The mean of total assets, EPS, MVA, debt-equity ratio, interest coverage ratio, total

equity to total assets, ROA, working capital, operating cash flows and intangible assets are 10.940, 0.001, 1.580, 0.640, 0.801, 0.467, 9.609, 0.111, 1.079 and 0.001, respectively. The median value of all the variables lies between the minimum and maximum values. It is almost in the middle of the series.

Table 2: Descriptive Statistics

Variables	Mean	Median	S. D.	Minimum	Maximum	C.V.
TOTAL SALES	1.1010	1.1004	0.6769	0.0050	2.2039	0.6148
TOTAL	10.9400	10.8700	1.6290	6.9230	16.0900	0.1489
ASSETS EPS	0.0013	0.0012	0.0031	-0.0035	0.0071	2.3846
MVA	1.5800	1.5700	2.5610	-0.8558	4.0298	1.6208
D/E	0.6403	0.6341	1.1680	0.0000	1.3500	1.8241
ICR	0.8010	0.7913	2.0250	-0.1084	1.7206	2.5280
TETA	0.4675	0.4555	0.1665	0.0350	0.8921	0.3561
ROA	9.6090	9.5650	8.3180	-31.7900	51.0040	0.8656
WC	0.1117	0.1083	0.1637	-0.4697	0.6955	1.4655
OCF	1.0791	1.0702	3.9970	-115.3000	117.4582	3.7040
IA	0.0012	0.0010	0.0040	0.0000	0.0030	3.3333

Source: Author's calculation

4.2.Correlation matrix

Table 3 shows the correlation coefficients and VIFs of the variables. The correlation coefficients between the variables range from 0.000 to 0.603, which is less than the 0.80 cutoff limit. It suggests that there is no collinearity, as Gujarati (2004) stated. Furthermore, the maximum VIF value is 1.528, which is less than the threshold limit of 10, as mentioned by Chatterjee and Hadi (1977) and O'brien (2007). So, there is the absence of multicollinearity issues among the independent variables.

Table 3: Correlation Matrix and Variance Inflation Factor

	TOTAL SALES	TOTAL ASSETS	EPS	MVA	D/E	ICR	TETA	ROA	WC	OCF	IA	VIFs
TOTAL SALES	1.000	-0.011	0.103	-0.303	-0.037	0.040	0.073	0.203	0.175	-0.024	0.017	
TOTAL ASSETS		1.000	0.231	-0.087	-0.250	0.051	0.242	0.603	-0.034	-0.009	0.019	
EPS			1.000	-0.134	-0.080	-0.004	-0.212	0.306	-0.058	-0.036	-0.036	
MVA				1.000	-0.044	-0.053	0.013	-0.171	-0.395	0.046	-0.040	
D/E					1.000	-0.046	-0.514	-0.352	-0.107	-0.001	-0.035	1.413
ICR						1.000	0.026	0.091	0.057	0.000	-0.012	1.011
TETA							1.000	0.389	0.242	-0.016	0.093	1.528
ROA								1.000	0.160	-0.011	-0.014	1.242
WC									1.000	-0.050	0.017	1.074
OCF										1.000	0.014	1.003
IA											1.000	1.012

Source: Author's calculation

4.3.Regression Analysis

Table 4 shows the regression results of Model 1, which evaluates the relationship between capital structure and total sales using the GMM regression model. The GMM diagnostic test is performed using the Sargan-Hansen test, which determines the overall validity of the instruments with a null hypothesis indicating that "instruments as a group is exogenous."

Table 4: Regression showing the effect of capital structure on total sales

	Dependent Variable		**TOTAL SALES**
Independent Variables	**Coefficient**	**Std. Err.**	**P-value**
Intercept	0.508***	0.051	0.000
TOTAL SALES L1	0.754***	0.023	0.000
TOTAL SALES L2	-0.183***	0.021	0.000
D/E	-0.228***	0.010	0.004
ICR	-0.220***	0.000	0.000
TETA	-0.412***	0.065	0.000
ROA	0.015***	0.000	0.000
WC	0.344***	0.057	0.000
OCF	-0.295***	0.026	0.000
IA	-2.353	1.605	0.143
IA x D/E	-13.332***	2.140	0.000
Firm-year observations	1500		
No. of firms	75		
No. of Instruments	43		
AR (1) test p-value	0.000		
AR (2) test p-value	0.188		
AR (3) test p-value	0.237		
Sargan-Hansen test p-value	0.107		

Source: Author's calculation

Note: ***, **, and * represents statistical significance at 1%, 5%, and 10%, respectively.

Since the p-value of the Sargan-Hansen test accepts the null hypothesis in all cases ($p>0.10$), the instruments are valid. Another requirement for the model is that the number of instruments should be equal to or less than the group in order to prevent over-identification in the model. This requirement is also satisfied. Other diagnostic procedures include checking for autocorrelation or serial correlation with AR (1), AR (2), and AR (3) statistics. AR (1) demonstrates first-order serial autocorrelation (i.e., the differenced error term is serially correlated at AR (1)), while AR (2) is regarded as a required test for detecting autocorrelation at levels. The null hypothesis of AR (2) statistics states, "there exists no autocorrelation in the error term," which is accepted in all situations, demonstrating no autocorrelation in the model. The AR (3) test is used to determine the presence of autocorrelation at subsequent lag. AR (3) results also reveal that there is absence of autocorrelation in the model.

The result reveals that the total sales are positively impacted by their first lag and negatively impacted by their second lag, confirming their dynamic nature. The coefficient of the debt-equity ratio stands negative with a p-value of 0.004, which means that capital structure has a significantly negative

impact on firms' growth. Lenders and investors consider a substantial debt-equity ratio to be risky, as a substantial amount of debt carries high interest, which leads to insufficient working capital. The shortage of working capital will affect the production process, and consequently, sales are also affected. The manufacturing sector's overall sales are significantly and negatively impacted by the interest coverage ratio. This indicates that an increase in the interest coverage ratio reduces total sales, and the manufacturing sector's revenues are less reliable and inconsistent with the higher interest coverage ratio. Total sales are significantly negatively correlated with total equity to total assets. The less leveraged a corporation is, the greater the equity-to-asset ratio, which shows that a company's assets were created through issuing equity shares rather than by taking on debt. When the financing of assets is done mostly through equity, and no or less amount of debt leads to an imbalance in capital structure, which increases the weighted average cost of capital. Costs that are too high have an adverse effect on revenue, output, and sales. ROA and working capital positively influence the firm's growth, while operating cash flows negatively affect the firm's growth. The interaction effect of intangible assets with the debt-equity ratio as a combined factor negatively affects total sales. The link between a firm's growth and capital structure is negatively moderated by intangible assets. The firm managers should consider investing less in intangible assets and more in tangible assets to increase their production ability and sales.

Table 5: Regression results showing the effect of capital structure on total assets

	Dependent Variable		**TOTAL ASSETS**
Independent Variables	**Coefficient**	**Std. Err.**	**P-value**
Intercept	0.943***	0.095	0.000
TOTAL ASSETS L1	0.960***	0.012	0.000
TOTAL ASSETS L2	0.019*	0.010	0.069
D/E	-0.038***	0.004	0.000
ICR	0.101***	0.000	0.000
TETA	-1.171***	0.071	0.000
ROA	0.050***	0.001	0.710
WC	-0.324***	0.057	0.000
OCF	0.228***	0.025	0.000
IA	14.328***	1.758	0.000
IA x D/E	-3.878**	2.410	0.100
Firm-year observations	1500		
No. of firms	75		
No. of Instruments	43		
AR (1) test p-value	0.003		
AR (2) test p-value	0.254		
AR (3) test p-value	0.360		
Sargan-Hansen test p-value	0.118		

Source: Author's calculation

Note: ***, **, and * stand for statistical significance at 1%, 5%, and 10%, respectively.

Table 5 shows the impact of capital structure on the total assets of sample companies. The result shows a negative effect of debt-equity ratio on total assets, which means that in the manufacturing sector, total assets decline in response to an increase in the debt-equity ratio. Lenders and investors consider substantial debt-equity ratio to be risky, as a substantial amount of debt carries high interest,

leading to insufficient capital for asset financing. The interest coverage ratio positively and significantly influences total assets in the manufacturing sector. The fewer debt expenses the corporation needs to pay, the more cash it has available for other uses, such as investment in assets. Total equity to total assets has a significant negative association with total assets. A corporation is less indebted if it has a larger shareholder-equity ratio, which shows that its assets were created through the issuance of equity shares rather than by taking on debt. So, the manufacturing sector firms must include debt to finance assets and maintain long-term financial stability. ROA and operating cash flows positively influence the firm's growth, while working capital negatively affects the firm's growth. The interaction effect of intangible assets with the debt-equity ratio as a combined factor negatively and significantly affects total assets. The firm managers should consider investing less in intangible assets and more in tangible assets to increase their total assets.

Table 6: Regression results showing the effect of capital structure on EPS

	Dependent Variable		**EPS**
Independent Variables	**Coefficient**	**Std. Err.**	**P-value**
Intercept	-0.000*	0.000	0.098
EPS L1	0.369***	0.002	0.000
EPS L2	0.058***	0.001	0.000
D/E	-0.167**	0.000	0.050
ICR	-0.205***	0.000	0.000
TETA	-0.119***	0.000	0.000
ROA	0.230***	0.000	0.000
WC	0.221***	0.000	0.000
OCF	-0.040***	0.000	0.000
IA	0.030**	0.007	0.000
IA x D/E	0.031***	0.010	0.002
Firm-year observations	1500		
No. of firms	75		
No. of Instruments	43		
AR (1) test p-value	0.105		
AR (2) test p-value	0.947		
AR (3) test p-value	0.998		
Sargan-Hansen test p-value	0.277		

Source: Author's calculation

Note: ***, **, and * represents statistical significance at 1%, 5%, and 10%, respectively.

Table 6 reports the impact of capital structure on earnings per share in the manufacturing sector. The debt-equity ratio's detrimental effect on earnings per share means that in the manufacturing sector, earnings per share decline in response to rise in the debt-equity ratio. A high debt-equity ratio can lead to a decrease in profits. For shareholders, this might indicate a reduction in earnings as the profits can be used to pay interest or payments on debt. The manufacturing sector's earnings per share are

significantly and negatively impacted by the interest coverage ratio. A corporation is more capable of repaying its debt if it has a higher interest coverage ratio. However, if the debt component is more in its capital structure, then more interest will be diverted for payment. So, earnings may not be sufficient to magnify the shareholder earnings.

Earnings per share is significantly and negatively correlated with the total equity to total assets ratio. This depicts that the more the assets are financed with equity, the lower the earnings per share will be. A corporation is less indebted if it has a larger shareholder-equity ratio, which shows that its assets were created through the issuance of equity shares rather than by taking on debt. So, the manufacturing sector must include debt to finance assets to maintain financial stability and magnify the earnings per share in the long run. ROA and working capital positively influence the shareholders' value, while operating cash flows negatively affect the shareholders' value. The debt-equity ratio, paired with the interaction effect of intangible assets, has a positive and considerable impact on earnings per share. The opportunities to boost firm value are provided by sustained investment in intangible assets. The company's ability to make money will be higher if a company owns more intangible assets, and investors will value the company more, raising its worth.

Table 7: Regression results showing the effect of capital structure on MVA

	Dependent Variable		**MVA**
Independent Variables	**Coefficient**	**Std. Err.**	**P-value**
Intercept	0.932***	0.244	0.000
MVA L1	0.536***	0.011	0.000
MVA L2	0.032***	0.009	0.001
D/E	0.195*	0.050	0.057
ICR	0.044***	0.000	0.000
TETA	-0.489	0.431	0.257
ROA	0.023***	0.003	0.000
WC	-2.019***	0.349	0.000
OCF	0.462***	0.167	0.006
IA	-29.588**	12.703	0.020
IA x D/E	12.256	15.796	0.438
Firm-year observations	1500		
No. of firms	75		
No. of Instruments	43		
AR (1) test p-value	0.000		
AR (2) test p-value	0.546		
AR (3) test p-value	0.752		
Sargan-Hansen test p-value	0.297		

Source: Author's calculation

Note: ***, **, and * stand for statistical significance at 1%, 5%, and 10%, respectively.

Table 7 reports the impact of capital structure on market value added in the manufacturing sector. The debt-equity ratio depicts a positive and significant association with the market value added. Debt is usually cheaper than equity, and interest payments are tax deductible. Therefore, the higher the debt, the higher the return to shareholders, and therefore, the greater the value of the company. The interest

rate positively affects the market value added in the manufacturing sector. The increase in interest coverage ratio determines the company's capacity to repay debt, and the company is not vulnerable to volatile interest rates, consequently increasing market value. Total equity to total assets negatively affects market value added but is insignificant. ROA and operating cash flows positively influence the shareholders' value, while working capital negatively affects the shareholders' value.

The interaction effect of intangible assets with the debt-equity ratio as a combined factor positively affects market value added but is insignificant. Sustainable intangible asset investment offers chances to boost market value. The more intangible assets a company owns, the greater its perceived value and profitability potential, enhancing its overall attractiveness to investors.

5. Conclusion

The study attempted to examine the effect of capital structure on firms' growth and shareholders' value of the manufacturing sector listed on the National Stock Exchange for twenty years as a whole and the moderating effect of intangible assets on the relation between capital structure, firms' growth and shareholders' value. Total sales, Total assets, Earnings per share, and Market value added were considered as the dependent variables. In contrast, the Debt-Equity ratio, Interest coverage ratio, and Total equity to Total assets were considered as independent variables for the study. Return on total assets, working capital, and Operating cash flows were considered as control variables, while intangible assets were considered as moderating variable. It was found that the selected independent variables significantly affected firms' growth and shareholders' value for manufacturing sector.

This study provides critical insights for policymakers in formulating capital structure policies that foster sustainable firm growth and maximise shareholder value. For academicians and researchers, it enriches the existing literature on corporate finance with empirical findings using the System GMM approach, supporting robust data analysis. The government can use these findings to frame regulations promoting optimal capital structures and driving economic growth.

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