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A PANEL DATA EXPLORATION OF MACROECONOMIC FACTORS INFLUENCING THE OPTIMAL CAPITAL STRUCTURE OF THE INDIAN AUTOMOTIVE SECTOR

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ABSTRACT

Economic instability in emerging economies presents substantial challenges for firms, particularly in accessing debt funding, due to heightened perceived risk. This often results in a less favorable debt-to-equity ratio and complicates the overall composition of capital structure. Macroeconomic conditions play a pivotal role in influencing investor sentiment and risk perceptions, which in turn complicate capital structure decisions. This study aims to investigate the impact of various macroeconomic variables on the capital structure decisions of firms within the Indian automobile and automobile ancillary sectors over a comprehensive 17-year period from 2004 to 2020. They are utilizing secondary data collected from reputable sources like ProwessIQ, the Reserve Bank of India, and financial reports. The study employs various statistical tools, including descriptive statistics, correlation analysis, and dynamic panel data regression models, to analyze the data. The findings indicate that macroeconomic variables significantly shape the optimal capital structure decisions in the Indian automotive sector. Key variables such as the bank rate, GDP growth rate, inflation rate, and public debt substantially impact leverage ratios. For instance, an increase in the bank rate or public debt levels correlates with higher leverage ratios, suggesting that firms adjust their capital structures in response to changes in these macroeconomic indicators. This study provides valuable insights into the complex interplay between macroeconomic conditions and capital structure financing decisions. By highlighting the significant influence of these broader economic factors, the research underscores the necessity for firms, especially in emerging economies like India, to consider these determinants when making financial decisions. The findings thus contribute to a deeper understanding of capital structure dynamics in the face of macroeconomic challenges within the Indian automotive sector.

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INTRODUCTION

The manufacturing sector is integral to the growth and development of the Indian economy, underpinning the advancement of various industries (Chadha & Sharma, 2016). It is pivotal in fostering equitable growth through modernization and increased output. Beyond profit generation, this sector contributes to capital accumulation, job creation, infrastructure development, and overall economic progress, thereby enhancing the standard of living (Huong, 2018). The automotive industry, a cornerstone of this sector, has been vital since the first car appeared in Mumbai in 1898. Today, India is the fourth-largest automobile producer and the third-largest market by sales, with passenger vehicle sales reaching 3.89 million units in 2023. This industry's GDP contribution has grown from 2.77% in 1992-1993 to approximately 7.1%, employing around 19 million people. Government policies promoting foreign direct investments (FDIs) underscore its significance, attracting US$ 34.74 billion in FDI equity inflows between April 2000 and March 2023.

In emerging economies, macroeconomic factors significantly influence capital structure financing decisions (Bokpin, 2009; Zafar et al., 2019). Given the global economic integration, these factors have profound implications at both national and global levels (Amjed & Shah, 2016). Capital structure has garnered considerable attention from finance researchers, reflecting its critical importance to stakeholders (Nha et al., 2016). Financial managers must strategically determine the optimal capital structure to maximize organizational wealth, considering both external and internal factors (Altman, 1984). The complexities of capital structure decisions, influenced by macroeconomic conditions, affect a firm's

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risk profile and profitability, necessitating a comprehensive analysis by financial managers (Zafar et al., 2019).

Despite the evolution of capital structure theories, there needs to be a definitive solution (Myers & Majluf, 1984; Zafar et al., 2019). Research has predominantly focused on developed economies, leaving a gap in understanding for developing countries like India (Chakrabarti & Chakrabarti, 2019). Existing studies on Indian capital structure are insufficient, highlighting the need for further exploration. The expansion of financial markets due to globalization offers companies easier access to funds, necessitating well-informed capital structure decisions (Handoo & Sharma, 2012). Maintaining a robust capital structure in the automotive industry is crucial for sustaining success and gaining global investor trust. Recognizing factors influencing capital structure choices enables managers to make informed decisions (Haron, 2014).

This research aims to address the literature gap by examining macroeconomic variables' impact on capital structure in the Indian automotive sector. Economic instability and macroeconomic fluctuations affect investor sentiment and risk perceptions, complicating capital structure decisions (Sheikh & Wang, 2011). To optimize capital structures, businesses must analyze macroeconomic conditions comprehensively. This study uses secondary data from 2004 to 2020, employing statistical tools like descriptive statistics, correlation analysis, and dynamic panel data regression models. The findings reveal that macroeconomic variables significantly influence capital structure decisions, with notable impacts from bank rates, GDP growth rates, inflation rates, and public debt. This research contributes to understanding the complex dynamics of capital structure financing in the Indian automotive sector, providing valuable insights for financial decision-makers.

The study, comprising five chapters, offers a comprehensive examination of the capital structure of Indian automotive firms. Chapter 1 introduces the significance of the manufacturing sector, the automotive industry's role, and the importance of capital structure decisions, highlighting the problem and objectives. Chapter 2 reviews the literature on capital structure, examines firm-specific and macroeconomic factors, and identifies gaps. Chapter 3 outlines the research design, data collection, and the use of a dynamic panel data regression model to explore the impact of macroeconomic variables on capital structure. Chapter 4 presents and discusses the findings, showing the effects of various factors on capital structure with statistical support. Chapter 5 concludes with key findings, implications for financial decision-makers, and suggestions for future research on capital structure determinants in emerging markets.

LITERATURE REVIEW

The mystery surrounding capital structure, as noted by Myers (2001), has endured for more than five decades. Initially proposed by Modigliani and Miller (1958) in a hypothetical perfect capital market where debt and equity are deemed interchangeable, the notion that firm value is unaffected by capital structure choices has been challenged by subsequent research since 1963. Factors such as bankruptcy costs, transaction costs, agency costs, and taxes have led to the rejection of the perfect capital market assumption, prompting the development of alternative capital structure theories to maximize firm value globally. The trade-off theory (Kraus & Litzenberger, 1973), the pecking order theory (Myers & Majluf, 1984), the agency theory (Jensen & Meckling, 1976), and the market timing theory (Baker & Wurgler, 2002) are among the theories that elucidate how various factors influence capital structure decisions under different macroeconomic and microeconomic conditions (Frank & Goyal, 2009; Haron, 2014). The Trade-off theory posits capital structure as a trade-off between the costs of financial distress and the benefits of tax shields. Literature on this theory discusses concerns regarding tax-shield advantages, financial distress costs, cash flow volatility, and potential bankruptcy costs, extensively discussed in DeAngelo and Masulis (1980) and Myers (2001). Pecking order theory suggests that firms prioritize retained earnings as an internal funding source over external funding. When internal funds are inadequate to cover capital expenditures, firms opt for external borrowing over equity issuance (Myers & Majluf, 1984). Kayhan and Titman (2007) introduce a modified pecking order theory, proposing that trade-off theory guides long-term capital structure decisions while pecking order theory influences short-term decisions. According to agency cost-based theory, using debt in capital structures results in agency costs, as outlined by Haider et al. (2018) and Jensen and Meckling (1976). Jensen and Meckling (1976) identify two primary types of conflicts arising from agency costs: conflicts between managers and shareholders and conflicts between shareholders and bondholders (Myers, 2001).

Research has increasingly focused on emerging countries, aiming to elucidate potential deviations in factors stemming from events like the 1997 Asian financial crisis. Early investigations, such as those by Rajan and Zingales (1995), examined the notable firm-specific determinants impacting capital structures across various countries alongside the country-specific factors influencing leverage choices within those same countries. Initial empirical inquiries into leverage decisions primarily scrutinized U.S. firms (Titman & Wessels, 1988), while subsequent studies by Rajan and Zingales (1995), Zafar et al. (2019), Deesomsak, Paudyal, and Pescetto (2014) delved into cross-country comparative analyses. Numerous researchers have extensively explored this phenomenon across diverse nations, industries, and temporal periods. Investigations conducted within the Indian context by scholars like Mukherjee and Mahakud (2012) have underscored the influence of factors such as asset structure, profitability, taxes, and growth rates (Hussain & Rahman, 2022). on companies' capital structures. Analyses undertaken by academics such as Tomschik (2015) in E7 and G7 countries and Haron (2014) in the Asian Pacific region have focused on the impact of macroeconomic factors such as GDP, inflation, and interest rates. These studies underscore the importance of institutional and country-specific factors in shaping decisions regarding capital structure.

In addition, studies focusing on particular industries, such as the automobile business (Haider et al., 2018) and leasing companies in Pakistan, have provided detailed insights into the factors that influence these industries, including their scale, profitability, liquidity, and tax implications. Ramli et al. (2019) and Lim (2012) researched the Chinese contexts and discovered intricate relationships among capital structure, financial performance, and factors such as growth rate, tax shield, profitability, and liquidity. The literature review encompasses studies employing sophisticated methodologies, such as fixed effect models, system GMM, and seemingly unrelated regression. This demonstrates the diverse range of approaches that

can be used to examine capital structure dynamics. Furthermore, the studies include different timeframes, ranging from specific years to long periods, demonstrating a thorough comprehension of the development of capital structure theories. In summary, this comprehensive study offers a wide-ranging examination of the various factors that influence a company's capital structure. These factors include individual characteristics of the firm, broader economic conditions, institutional effects, and industry-specific dynamics.

Despite the extensive literature review on the factors influencing capital structure choices and their association with firm value across diverse contexts, there are notable research gaps. By and large, the above literature review was focused on developed countries, specific industries, or timeframes, limiting the generalizability of the findings; only a few studies were found in developing countries like India but not in the automobile and ancillaries sector. Additionally, most studies emphasise the impact of internal firm-specific factors and industry-specific dynamics. Still, there needs to be more comprehensive research considering the macroeconomic indicators or the interplay of these factors. Also, the literature uses many different methods, such as fixed effect models, random effect models, and seemingly unrelated regression that seem like they need to be more robust in the case of panel data. In contrast, the dynamic panel data regression model can give a more reliable result for the panel cause-and-effect relationship. Therefore, this study examined how firm-specific factors, as well as macroeconomic factors, determine the capital structure of the Indian automobile and ancillary sector by using a dynamic panel approach, as per the requirements of the data set in the study.

Variables and Hypotheses of the Study

Key variables used in this research are divided into three categories: Macroeconomic Variables used as independent variables, Firm-Specific Variables used as control variables, and Capital Structure Variables used as dependent variables. A detailed description of variables with a hypothesis is presented below:

Macroeconomic Variables

In the macroeconomic case, the variables GDP growth rate, Inflation rate, corporate tax, bank rate, market size, business confidence index, foreign direct investment, and public debt were chosen for the study.

GDP Growth Rate

A country's gross domestic product (GDP) growth rate indicates the percentage change in economic output, serving as a measure of the nation's growth. The available research suggests that firms with higher growth rates avoid external financing, which is anticipated to be negatively correlated with leverage ratios. This is because economic growth leads to increased profitability for companies, prompting them to utilize internally generated profits for further investments instead of seeking external financing (Bokpin, 2009; Magwai, 2014; Ayanle et al., 2022; Rehman, 2016; Zafar et al., 2019).

Hypothesis 1: GDP growth rate negatively affects capital structure variables.

Inflation Rate

The inflation rate refers to the overall rise in the costs of goods and services, accompanied by a decrease in the currency's value in purchasing power measured by utilisation of the GDP deflator. The GDP deflator serves as a metric for gauging fluctuations in the price level within an economy. Existing literature suggests that inflation has a varied effect on capital structure leverage ratios. Rising inflation leads to higher interest rates, providing tax advantages for companies. However, it also increases the cost of bankruptcy. Several studies (Bokpin, 2009; Magwai, 2014; Camara, 2012; Rehman, 2016; Zafar et al., 2019) have examined this relationship.

Hypothesis 2: Inflation rate has a mixed association with capital structure variables.

Corporate Tax

Modigliani and Miller (1963) initially introduced corporate tax incorporation in their research, owing to its significant role in influencing capital structure determinations. Based on the Modigliani-Miller theory of capital structure, when corporate taxes are taken into account, a corporation's valuation is predicted to rise due to tax benefits associated with debt. Consequently, a positive correlation is anticipated between leverage ratios and firm value. Several researchers, including Rehman (2016) and Tomschik (2015), have employed corporate tax to influence capital structure.

Hypothesis 3: ***Corporate Tax has a positive association with capital structure variables***.

Bank Rate

The bank rate refers to the interest rate at which the Reserve Bank of India (RBI) provides loans to commercial banks for an extended duration. The rise in the bank rate is anticipated, at times, to result in an elevation of debt financing for numerous organizations since firms can expect to generate more significant tax advantages from the utilization of debt. Simultaneously, specific organizations may decrease their borrowing to mitigate the potential escalation of bankruptcy costs. Multiple studies have been conducted to examine the effects of bank rates on leverage ratios, and the findings have been varied (Amjed & Shah, 2016).

Hypothesis 4: Bank rate has a mixed association with capital structure variables.

Market Size

Security markets are of utmost importance in fulfilling the financial needs of any business. A robust financial market mitigates the cost of financing and facilitates the acquisition of accurate information, thereby diminishing the overall risk exposure of a company. Market size is commonly measured through stock market capitalization, and it will favorably impact the degree of leverage at the company level. Higher capitalization enables enterprises to obtain leverage financing at a lower cost (Rehman, 2016; Bokpin, 2009). Thus, it can be hypothesized as: -

Hypothesis 5: Market Size has a positive association with capital structure variables.

Business Confidence Index

The Business Confidence Index (BCI) is a metric that gauges the degree of optimism businesses exhibit towards the prevailing economic conditions. A high Business Confidence Index (BCI) indicates a positive outlook among businesses regarding the state of the economy and tends to show a greater propensity to choose debt financing. This is attributed to their high confidence level in their capacity to create financial gains and fulfil their debt obligations. Hence, this suggests a positive correlation with leverage ratios.

Hypothesis 6: BCI has a positive association with capital structure variables

Foreign Direct Investment

In a thriving economic climate, Foreign Direct Investment (FDI) assumes a significant role in capital structure financing. As a result of an abundant influx of foreign direct investment (FDI), domestic enterprises may opt to transition to either debt or equity financing, depending on the prevailing economic conditions. When a nation possesses a conducive climate for debt financing, foreign direct investment (FDI) contributes to an increase in the level of debt inside the economy. Conversely, equity financing is deemed more favourable during economic expansion.

Hypothesis 7: FDI has a mixed association with capital structure variables

Public Debt

Public debt encompasses the aggregate amount of funds borrowed by the government. When a government engages in debt issuance, it garners a substantial share of the capital available in the market due to the perception that government debt offerings are relatively secure investments. Consequently, there will be a rise in the interest rate, which could encourage the corporation to pursue equity financing. Hence, this study posits a negative correlation between public debt and leverage ratios. Mokhova and Zinecker (2014) discovered an inverse correlation between governmental debt and capital structure in their study. This study hypothesized the association of public debt with leverage ratios as: -

Hypothesis 8: Public Debt has a negative association with capital structure variables.

Firm Specific Factors (Control Variables):

The study considered firm size, profitability, assets tangibility, short-term solvency, risk of bankruptcy, non-debt tax shield, growth rate, and earning volatility.

Firm Size

A firm's size indicates its overall value, as measured by its natural logarithm of the total assets of the firm. The Pecking Order Theory postulated a negative correlation, suggesting that larger firms exhibit a reduced adverse selection rate and possess greater ease in issuing stock than smaller firms. Nevertheless, a majority of empirical investigations have indicated a negative correlation between leverage and firm size, as demonstrated by Lim (2012), Handoo and Sharma (2012), Zafar et al. (2019), and Chakrabarti and Chakrabarti (2019).

Hypothesis 9: Firm Size has a negative association with capital structure variables.

Profitability

A firm's profitability refers to the degree of efficiency with which the company converts its business operations into financial gains. The Pecking Order Theory presents an alternative perspective, suggesting that an entity with significant profitability can fund its investments internally by retaining earnings, diminishing the necessity for external debt. This study assesses profitability by measuring return on assets (ROA), which evaluates the capacity of assets to generate income. The proxy has been extensively used by numerous researchers (Doan, 2019; Li & Islam, 2019; Deesomsak et al., 2014; Jaworski & Czerwonka, 2021; Sheikh & Wang, 2011; Zafar et al., 2019; Chakrabarti & Chakrabarti, 2019) as a determinant of capital.

Hypothesis 10: Profitability has a negative association with capital structure variables.

Assets Tangibility

Tangibility is a proxy for tangible assets in the asset structure. Trade-off theory has a positive association with leverage ratios because tangible assets can be considered collateral against the creditor's default risk. Some empirical studies also found a positive relationship between asset tangibility and leverage (Li & Islam, 2019; Nha et al., 2016; Raza et al., 2021;

Chaklader & Chawla, 2016; Ghani et al., 2023).

Hypothesis 11: Assets Tangibility has a positive association with capital structure variables.

Short-term Solvency

Short-term solvency refers to the ability of a business to fulfill its immediate financial obligations measured through the current ratio divided by current liabilities, as discussed by Doan (2019), Jaworski and Czerwonka (2021), Chaklader and Chawla (2016), and Chakrabarti and Chakrabarti (2019). Nevertheless, by the pecking order theory, this proxy favors leverage ratios because financially stable enterprises, which are often more liquid, tend to favor higher leverage levels in their capital structure.

Hypothesis 12: Short-term Solvency has a positive association with capital structure variables.

Risk of Bankruptcy

The measure of bankruptcy risk indicates a company's capacity to fulfil its financial obligations. When a firm cannot fulfil its financial obligations to its creditors, it declares bankruptcy. The bankruptcy was measured in this study by the utilization of the Altman Z score. The outcome of a credit strength test assesses the probability of insolvency for a manufacturing company (Bandyopadhyay & Barua, 2016). The model employs five critical criteria, profitability, leverage, liquidity, solvency, and activity, to forecast the likelihood of a company experiencing insolvency. It is anticipated that the possibility of bankruptcy will exhibit a negative correlation with the capital structure because enterprises facing a high risk of bankruptcy choose to employ less debt, a more expensive form of financing (Rehman, 2016).

Hypothesis 13: The Risk of Bankruptcy has a negative association with capital structure variables.

Non-Debt Tax Shield

DeAngelo and Masulis (1980) were the pioneering researchers who introduced the notion of a non-debt tax shield in their research work. A non-debt tax shield refers to the tax advantage derived from fixed expenses not associated with debt financing. There is a negative correlation between the leverage ratio and non-debt tax shielding. The measurement of the non-debt tax shield was based on the depreciation divided by operating profit, as indicated by previous research conducted by Nha et al. (2016), Deesomsak et al. (2014), Lim (2012), Chaklader and Chawla (2016), Chakrabarti and Chakrabarti (2019) and Zafar et al. (2019).

Hypothesis 14: Non-debt tax shield has a negative association with capital structure variables.

Growth Rate

The growth rate is commonly employed as a surrogate measure for the percentage change in sales; this measure has been adopted by numerous researchers (Nha et al., 2016; Malinic et al., 2013; Raza et al., 2021; Chakrabarti & Chakrabarti, 2019; Jaworski & Czerwonka, 2021). According to the Pecking Order Theory, a positive correlation exists between sales growth rate and debt ratios. This is primarily because growth-oriented enterprises often need more retained earnings, restricting their ability to finance additional investments.

Hypothesis 15: Growth rate has a positive association with capital structure variables.

Earning Volatility

Based on the findings made by both Trade-off Theory and Pecking Order Theory, an inverse relationship exists between earning volatility and leverage. According to theoretical assertions, economic distress is positively correlated with the degree of earnings volatility. Consequently, lenders will impose elevated interest rates, thereby increasing the expense of borrowing. A majority of the researchers observed identical correlations per the theory. The measurement of earning volatility in this study is conducted by the utilization of the standard deviation of operating profit, as indicated by previous research conducted by Malinic et al. (2013) and Sheikh and Wang (2011).

Hypothesis 16: Earning volatility has a negative association with capital structure variables.

Capital Structure Variables

The capital structure variables selected for the study are long-term debt ratio, short-term debt ratio, and total debt ratio.

Long-term Debt Ratio

The long-term debt ratio is a financial indicator adopted to evaluate a corporation's financial solvency. This ratio quantifies the relative amount of long-term debt in relation to the company's overall assets. A higher ratio signifies a more significant proportion of the company's assets being financed through debt, implying an elevated level of financial risk. The variable in question holds significance within the capital structure framework as it indicates a company's long-term economic stability.

Short-Term Debt Ratio

Short-term debt refers to a company's financial liability that must be repaid within one financial year. This financial indicator quantifies the ratio of a corporation's short-term liabilities to its overall assets. This ratio serves as a means of evaluating a company's imminent financial solvency and its capacity to fulfil its immediate financial obligations. The utilisation of short-term debt exposes a company to several risks that can impact its financial and economic health. Considering short-term debt to equity as a metric for assessing capital structure is essential.

Total Debt Ratio

The total debt ratio is an indicator of a company's total leverage over its total assets. This ratio assesses a company's financial leverage and risk. It tells us the percentage of the company's total assets financed by creditors. In other words, it is the total amount of a firm's total debt divided by total assets. This proxy serves as an essential measure of capital structure.

MATERIALS AND METHODS

Data

This study adopts the analytical research design. The relevant data for the study were collected from secondary sources. Out of the population of 148 listed automobile and automobile ancillary firms, a sample of 118 firms was selected based on data available for at least 10 years. The sample comprises 15 automobile and 103 automobile ancillary firms. Data from 17 years, from 2004 to 2020, were collected according to availability to make the data panel. Within the enormous automotive industry, our research sample is limited to two specific sub-sectors: automobile and automobile ancillaries. The selection of these sub-sectors is based on their homogeneity. The homogeneity pertains to the uniformity observed in both input and output aspects and the technological commonalities encompassing robots and automation, IoT technology, nanotechnology, cloud computing, and artificial intelligence (source: Investopedia.com and Sharpmeg.com). In addition, it is worth noting that these two industries operate inside comparable business contexts characterised by both backward and forward linkages.

The data utilized in this research were categorized into two main groups: country-level data encompassing macroeconomic factors and industry-specific data comprising microeconomic factors. Macro-level data were sourced from various repositories such as the World Bank Data Base, Reserve Bank of India (RBI) Database, and the Bombay Stock Exchange (BSE) database, depending on data availability and research requirements. On the other hand, industry-specific data were extracted from the financial reports of relevant companies and retrieved from the PROWESSIQ database. Various statistical techniques were employed for data analysis, including descriptive statistics, panel data assumption tests, and panel data regression analysis. Descriptive statistics involve measures such as covariance analysis and correlation analysis. Assumption tests included checks for stationarity, autocorrelation, multicollinearity, and heteroskedasticity. To achieve the research objectives, the Generalised Method of Moment (GMM) model was employed in panel data regression. Data was analyzed using statistical software tools, including MS Excel, E-Views, STATA, and R-Studio.

Based on the literature, a summary of the description of key variables used in the study is presented in Table 1 below.

Table 1. Measurement of determinants and the expected relationship with capital structure

	Variables	Measurement	Expected Relationship for This Study
Firm-specific Variables	Assets Tangibility	Total Tangible Assets / Total Assets	+ VE
	Profitability	Return on Assets	- VE
	Size	Natural Log of Total Assets	- VE
	Risk of Bankruptcy	Altman Z Score	- VE
	Short Term Solvency	Current Ratio	+ VE
	Growth Rate	Percentage Change in Sales	+ VE
	Earning Volatility	Standard Deviation of Operating Profit	- VE
	Non-Debt Tax Shield	Depreciation / EBIT	-VE
Macroeconomic Variables	GDP Growth Rate	Annual % Change in GDP	-VE
	Inflation Rate	GDP deflator	Mixed
	Corporate Tax	Corporate tax rate	+VE
	Bank Rate	REPO Rate	Mixed
	Market Size	Stock Market Capitalisation	+VE
	FDI	FDI Inflow	Mixed
	BCI	Business Confidence Index Value	+ VE
	Public Debt	Govt. Debt/ GDP	- VE
Capital Structure Variables	Lon-Term debt ratio	Long-Term Debt / Total Assets	NA
	Short-Term Debt Ratio	Short-Term Debt / Total Assets	NA
	Total Debt Ratio	Total Debt / Total Assets	NA

Empirical Model Selection

A panel data regression model is used to study the impact of macroeconomic variables on the capital structure of Indian automobile and automobile ancillary firms. However, several assumption tests were performed to choose the appropriate model. Assumption tests include covariance and correlation analysis, multicollinearity check, Stationarity test, a test of cross-section and time effect, autocorrelation, and heteroskedasticity test. According to the outcome of the assumption test,

the Generalised Method of Moment (GMM) model is used to examine the impact of macroeconomic variables on capital structure financing. The detailed model of the study is presented hereunder:

Dynamic Panel Model Specification

The dynamic panel regression model is used when the data exhibit both cross-sectional and time-series dimensions and the problem of autocorrelation and heteroskedasticity is present. The basic model specification behind dynamic panel regression is to include lagged dependent variables as explanatory variables in the regression model. This helps to capture the dynamic relationship between the variables and accounting for potential endogeneity issues. This study used the Generalised Method of Moment (GMM) to address the potential inconsistency caused by autocorrelation and heteroskedasticity by using a system of equations and instruments to estimate the parameters, providing more consistent estimates. The basic specification of the dynamic model is as follows:

$$\boldsymbol{Yit = \beta 1 Yit-1 + \beta 1 Yit-2 + \beta 3 MEFit + \beta 4 FSFit + \mu it + €it}$$

The above-shown model is the specification of difference Generalised Method of Moments (Difference GMM) Where Y_{it} represents three leverage measures (Short-Term Debt ratio, Long-Term Debt ratio, and Total Debt ratio) for firm i and in year t and Y_{it-1} and Y_{it-2} are used as first-order lag and second order lag for three leverage measures (Short-Term Debt ratio, Long-Term Debt ratio, and Total Debt ratio). MEF_{it} is the vector for the macroeconomic factors (Bank Rate, BCI, GDP Growth Rate, Inflation Rate, Corporate Tax, Public Debt, FDI, and Market Size), and FSF_{it} is the vector for the firm-specific factors (Earning Volatility, Size, Non-debt Tax Shield, Risk of Bankruptcy, Profitability, Solvency, Tangibility, and Growth Rate). μ_{it} represents time-invariant random heterogeneity, and $€_{it}$ is the error term of the model.

RESULTS

Checking of Covariance and Correlation

Both a covariance matrix and a correlation matrix are utilized to assess the statistical relationship between dependent and independent variables. As depicted in Table 2, the covariance matrix indicates that the covariance between dependent and independent variables was statistically significant across all variables with p-values less than 0.05. A similar conclusion is derived from the correlation matrix presented in Table 3.

Checking of Multicollinearity

Once again, the correlation matrix and Variance Inflation Factor (VIF) were utilized to examine the relationship between the independent variables in the study and determine whether any correlations existed. Table 4 displays the VIF values for all independent variables. According to theory, a VIF exceeding 10 indicates significant multicollinearity. The results indicate no evidence of multicollinearity among the macroeconomic and firm-specific variables, as all VIF values fall below the threshold of 10.

Table 2. Covariance Matrix of Key Variables

B. RATE	**1.2**								
B. SIZE	-1.59 (0.00)	24.9							
BCI	0.43 (0.00)	-2.8 (0.00)	1.16						
TAX	0.02 (0.00	-0.1 (0.00	0.01 (0.00	0.001					
CUR. STG.	-4.12 (0.00)	20.7 (0.00)	0.67 (0.01)	-0.15 (0.0)	114.9				
GDP	0.02 (0.00)	-0.14 (0.00)	0.02 (0.00)	0.00 (0.00)	-0.15 (0.00)	0			
INFL	0.35 (0.00)	0.14 (0.6)	-0.44 (0.00)	0.01 (0.00)	-21.4 (0.00)	-01 (0.86)	6.27		
MKT SIZE	-130719 (0.00)	692762 (0.00)	93910.7 (0.00)	-62471 (0.00)	381374 74	- 51598.4	- 644094		

	DE RATIO	LTD RATIO	STD RATIO	TD RATIO	TANG.	SOLV.	SIZE	RISK OF BR.	PROF.	N.D. TAX SLD.	G. RATE	ERN VOL	FDI	PUB. DBT
B. RATE	0.48 0.08	0.006 0.11	-0.007 0.18	-0.001 0.88	-0.01 0.12	-0.06 0.19	-438 001	0.19 0.65	0.01 0.00	0.01 0.97	0.05 0.00	-0.04 0.24	-5.7 0.00	-0.01 0.00
B. SIZE	-0.38 0.78	-0.12 0.00	0.05 0.04	-0.06 0.04	0.02 0.27	0.16 0.42	2468 0.00	-2.6 0.17	-0.06 0.00	-1.65 0.03	-0.36 0.00	0.45 0.01	48.1 0.00	-0.07 0.00
BCI	0.17 0.53	-0.01 0.00	0.002 0.69	0.01 0.02	-0.002 0.55	-0.02 0.57	74.5 0.65	1.63 0.00	0.01 0.01	0.21 0.22	0.05 0.00	0.1 0.01	-4.18 0.00	-0.01 0.00
TAX	0.01 0.37	0.001 0.00	-0.00 0.00	0.00 0.34	0.00 0.72	-0.001 0.26	-18.52 0.00	0.01 0.41	0.00 0.00	0.008 0.12	0.001 0.00	-0.01 0.00	-0.26 0.00	0.00 0.00
CUR. STG.	-2.15 0.43	-0.55 0.00	0.15 0.01	-0.39 0.00	0.04 0.26	0.09 0.83	10140 0.00	16.31 0.00	-0.13 0.00	1.57 0.36	-0.83 0.00	3.42 0.00	98.7 0.00	-0.12 0.00
GDP	0.01 0.42	0.001 0..0	-0.001 0.00	0.00 0.89	0.00 0.61	-0.001 0.34	-18.32 0.00	0.02 0.11	0.00 0.00	0.01 0.34	0.002 0.00	-0.003 0.01	-0.33 0.00	0.00 0.00
INFL.	-0.13 0.84	0.1 0.00	-0.02 0.06	0.07 0.00	-0.009 0.34	0.05 0.6	-1629 0.00	-3.69 0.00	0.02 0.01	-0.47 0.24	0.12 0.00	-0.55 0.00	-13.15 0.00	0.004 0.03
MKT. SIZE	-1219912 (0.22)	-195990.2 (0.00)	56058.26 (0.00)	-139869.5 (0.00)	5652.7 (0.70)	48439.97 (0.75)	3.77E (0.00)	6548554 (0.00)	-38829.29 (0.00)	201662 0.75	-197072 0.00	1520527 0.00	382855 68	-60914 0.00
PUB. DEBT.	-0.005 0.61	0.01 0.00	0.00 0.75	0.001 0.00	0.00 0.94	0.00 0.96	-14.5 0.01	-0.03 0.01	0.00 0.78	0.01 0.16	0.00 0.54	-0.007 0.000	-0.11 0.00	0.001
FDI	-3.64 0.27	-0.47 0.00	0.19 0.00	-0.28 0.00	0.04 0.44	0.19 0.7	10062 0.00	7.34 0.13	-0.18 0.00	-1.69 0.41	-1.05 0.00	3.35 0.00	168	
ERN VOL	-0.75 0.07	-0.06 0.00	-0.06 0.00	-0.12 0.00	-0.02 0.00	0.39 0.00	922.5 0.00	2.95 0.00	0.09 0.00	-0.28 0.28	0.07 0.00	2.61		
G. RATE	-0.19 0.05	0.005 0.00	-0.008 0.00	-0.003 0.22	-0.001 0.43	-0.01 0.55	-39.3 0.49	0.34 0.01	0.01 0.00	0.01 0.87	0.14			
N.D. TAX SLD.	0.22 0.89	-0.03 0.17	0.02 0.54	-0.01 0.76	0.07 0.01	-0.29 0.27	4701 0.00	-0.42 0.87	-0.02 0.27	48.22				
PROF.	-0.06 0.05	-0.01 0.00	-0.01 0.00	-0.02 0.00	-0.003 0.00	0.02 0.00	63.03 0.00	0.62 0.00	0.014					
RISK OF BR.	-3.75 0.37	-0.33 0.00	-0.51 0.00	-0.85 0.00	-0.36 0.00	-1.06 0.09	409733 0.00	266.2						
SIZE	-867 0.6	-47.3 0.06	-129 0.00	-177.2 0.00	-132 0.00	-652.1 0.01	43055162							
SOLV.	-0.31 0.46	-0.03 0.00	-0.07 0.00	-0.09 0.00	-0.08 0.00	2.87								
TANG.	-0.05 0.22	0.01 0.00	0.003 0.00	0.01 0.00	0.03									
TD RATIO	0.04 0.57	0.03 0.00	0.05 0.00	0.08										
STD RATIO	0.04 0.45	0.001 0.55	0.049											
LTD RATIO	-0.002 0.95	0.03												
DE RATIO	121.9													

Source: Calculated authors by using E-Views 10 software

Table 3. Correlation Matrix of Key Variables

LTD RATIO	STD RATIO	TD RATIO	TANG.	SOLV.	SIZE	RISK OF BR.	PROF.	N.D. TAX SLD.	G. RATE	ERN VOL	FDI	PUB. DBT	MKT SIZE	INFL	GDP	CUR. STG.	TAX	BCI	B. SIZE	B. RATE
0.04 0.11	-0.03 0.18	-0.003 0.89	-0.04 0.11	-0.03 0.19	-0.06 0.01	0.01 0.65	0.08 0.00	0.000 0.97	0.13 0.00	-0.03 0.24	-0.40 0.00	-0.36 0.00	-0.30 0.00	0.13 0.00	0.42 0.00	-0.35 0.00	0.46 0.00	0.36 0.00	-0.29 0.00	**1.00**
-0.14 0.00	0.05 0.04	-0.05 0.04	0.03 0.27	0.02 0.41	0.08 0.00	-0.03 0.16	-0.11 0.00	-0.05 0.03	-0.19 0.00	0.06 0.02	0.74 0.00	-0.39 0.00	0.35 0.00	0.01 0.36	-0.70 0.00	0.39 0.00	-0.59 0.00	-0.52 0.00	1.00	
-0.08 0.00	-0.01 0.69	-0.05 0.02	-0.01 0.55	-0.01 0.57	0.01 0.64	0.09 0.00	0.06 0.00	0.03 0.22	0.14 0.00	0.06 0.01	-0.29 0.00	-0.33 0.00	0.21 0.00	-0.16 0.00	0.38 0.00	0.06 0.01	0.29 0.00	1.00		
0.04 0.11	-0.03 0.18	-0.003 0.88	-0.04 0.12	-0.03 0.19	-0.06 0.01	0.02 0.41	0.08 0.00	0.04 0.12	0.12 0.00	-0.13 0.00	-0.65 0.00	0.09 0.00	-0.51 0.00	0.16 0.00	0.77 0.00	-0.47 0.00	1.00			
-0.14 0.00	0.05 0.04	-0.05 0.04	0.03 0.27	0.02 0.41	0.07 0.00	0.09 0.00	-0.10 0.00	0.02 0.36	-0.21 0.00	0.19 0.00	0.71 0.00	-0.31 0.00	0.89 0.00	0.79 0.00	-0.36 0.00	1.00				
0.10 0.00	-0.07 0.00	0.003 0.89	-0.02 0.34	-0.02 0.35	0.01 0.64	0.04 0.11	0.09 0.00	0.02 0.34	0.17 0.00	-0.06 0.00	-0.66 0.00	-0.07 0.00	-0.33 0.00	-0.004 0.86	1.00					
0.24	-0.04	0.11	0.01	0.01	-0.09	-0.09	0.06	-0.03	0.13	-0.14	0.41	0.05	-0.65	1.00						
-0.30 0.00	0.06 0.00	-0.13 0.00	-0.002 0.94	0.01 0.75	0.14 0.00	0.10 0.00	-0.08 0.00	0.01 0.75	-0.13 0.00	0.24 0.00	0.75 0.00	-0.42 0.00	1.00							
0.19 0.00	-0.01 0.75	0.11 0.00	0.02 0.44	-0.001 0.96	-0.07 0.00	-0.06 0.01	0.01 0.77	0.03 0.16	0.01 0.54	-0.12 0.00	-0.25 0.00	1.00								
-0.22	0.07	0.11	-0.07	0.01	-0.09	0.03	-0.12	-0.02	-0.21	0.16	1.00									
-0.21 0.00	-0.17 0.00	-0.25 0.00	-0.02 0.43	0.14 0.00	0.14 0.00	0.11 0.00	0.46 0.00	-0.02 0.27	0.11 0.00	1.00										
0.09 0.00	-0.09 0.00	-0.03 0.22	-0.02 0.43	-0.01 0.54	-0.02 0.49	0.06 0.02	0.21 0.00	0.004 0.87	1.00											
-0.03 0.17	0.01 0.54	-0.01 0.75	0.06 0.01	-0.03 0.27	0.10 0.00	-0.003 0.87	-0.03 0.27	1.00												
-0.06 0.01	-0.06 0.01	0.01 0.77	0.03 0.16	0.01 0.54	-0.12 0.00	-0.25 0.00	1.00													
0.12 0.00	0.03 0.13	-0.12 0.00	-0.02 0.41	0.215 0.00	0.16 0.00	1.00														
0.10 0.00	0.11 0.00	0.46 0.00	-0.03 0.27	0.11 0.00	1.00															
-0.02 0.49	0.05 0.01	0.21 0.00	0.004 0.87	1.00																
0.10 0.00	-0.004 0.87	-00.3 0.27	1.00																	
0.08 0.00	0.311 0.00	1.00																		
0.38 0.00	1.00																			
1.00																				

DE RATIO	0.04 0.09	-0.01 0.77	0.01 0.00	0.04 0.09	-0.01 0.76	0.02 0.42	-0.005	-0.03 0.23	-0.01 0.61	-0.03	-0.04 0.07	-0.04 0.5	0.002 0.89	-0.000 0.96	0.01 0.70	0.14 0.00	-0.01 0.54	0.03 0.27	0.11 0.00	-0.04 0.09	-0.06 0.01	1.00
	B. RATE	B. SIZE	BCI	TAX	CUR. STG.	GDP	INFL.	MKT. SIZE	PUB. DEBT.	FDI	ERN VOL	G. RATE	N.D. TAX SLD.	PROF.	RISK OF BR.	SIZE	SOLV.	TANG.	TD RATIO	STD RATIO	LTD RATIO	DE RATIO

Source: Calculated authors by using E-Views 10 software

Table 4. Variance Inflation Factor of Independent Variables after removing Bank Size and Currency Strength

VIF	**2.244**	**2.678**	**3.390**	**4.016**	**2.733**	**9.064**	**2.611**	**6.506**	**1.452**	**1.120**	**1.024**	**1.551**	**1.336**	**1.23**	**1.130**	**1.151**
VARIABLES	BANK RATE	BCI	CORP. TAX	GDP GR.	INFL	MKT SIZE	PUB DEBT	FDI	ERN VOL	G. RATE	N.D. TAX SLD	PROF	RISK OF BR	SIZE	SOLVENCY	TANG

Source: Calculated authors by using E-Views 10 software

Test of Stationarity of Key Variables

The concept of unit root is normally used in the case of time series analysis, but nowadays, it is also of similar importance in panel data analysis. There are several tests to check the unit root in the data set. This research uses the Levin, Lin, and Chu tests, which give a better approximation in the case of panel data analysis. The results of the Levin, Lin, and Chu tests presented in Table 5 indicate that all the firm-specific and capital structure variables are stationary at level except firm size, which is stationary at first difference. On the other hand, macroeconomic variables such as bank rate, BCI, market size, and public debt are stationary at this level. In contrast, other macroeconomic variables are stationary at the first difference.

Table 5. Test of Stationarity of Key Variables

Variables	Levin, Lin & Chu test Statistic (P-Value)	Result
Bank Rate	-3.264 (0.0005)	Stationary at Level
BCI	-30.910 (0.0000)	Stationary at Level
Corporate Tax	44.732 (1.0000)	Stationary at First Difference
GDP Growth Rate	81.658 (1.0000)	Stationary at First Difference
Inflation	6.045 (1.0000)	Stationary at First Difference
Market Size	-3.424 (0.0003)	Stationary at Level
Public Debt	-20.882 (0.0000)	Stationary at Level
FDI	-0.251 (0.4009)	Stationary at First Difference
Earning Volatility	-3.273 (0.0005)	Stationary at Level
Growth Rate	-12.712 (0.0000)	Stationary at Level
Non-Debt Tax Shield	-21.162 (0.0000)	Stationary at Level
Profitability	-11.345 (0.0000)	Stationary at Level
Risk of Bankruptcy	-3.595 (0.0002)	Stationary at Level
Size	-0.235 (0.4069)	Stationary at First Difference
Solvency	-3.430 (0.0003)	Stationary at Level
Tangibility	-3.977 (0.0000)	Stationary at Level
Long-term Debt Ratio	-32.355 (0.0000)	Stationary at Level
Short-term Debt Ratio	-6.304 (0.0000)	Stationary at Level
Total Debt Ratio	-9.940 (0.0000)	Stationary at Level

Source: Calculated authors by using E-Views 10 software

Autocorrelation and Heteroskedasticity Test

The Durbin-Watson (D-W) test was utilized to examine autocorrelation or serial correlation, while the Likelihood statistics were employed to assess heteroskedasticity. Table 6 presents the results of these assumption tests for all three models employed in this study. The D-W statistics yield values of 0.704, 0.445, and 0.577 for the long-term debt ratio, short-term debt ratio, and total debt ratio models, respectively, significantly lower than the standard value of 2.00. This indicates the presence of serial correlation issues across all models. Additionally, the Likelihood test rejects the null hypothesis of homoscedasticity at a 1 percent significance level with a probability value of 0.00 for all three models, indicating the presence of heteroskedasticity problems. Given the presence of serial correlation and heteroskedasticity issues in the models, relying on the static panel regression model may yield non-robust results. To address these concerns, this study transitions to a dynamic panel regression model capable of mitigating these issues.

Table 6. Durbin Watson test for Serial Correlation and Likelihood ratio test for Heteroskedasticity

Model	D-W test Statistics for Serial Correlation	Likelihood Ratio Test Statistics for Heteroskedasticity	
		Cross-section LR Value (P-Value)	**Period LR Value (P-Value)**
Model 1: Long-Term Debt Ratio	0.704	2011.084 (0.000)	558.339 (0.000)
Model 2: Short-Term Debt Ratio	0.445	3806.43 (0.000)	1598.42 (0.000)
Model 3: Total Debt Ratio	0.577	2459.77 (0.000)	723.24 (0.000)

Source: Calculated authors by using E-Views 10 software

The Difference GMM Model for Long-term Debt Ratio

Table 7 highlights the result of the difference in the GMM model for long-term debt ratio and Sargan J statistics for model fitness. The long-term debt ratio model shows that the lag1 and lag2 of the dependent variable have a significant impact on the long-term debt ratio. In macroeconomic variables, all the variables significantly impact the long-term debt ratio except market size. More specifically, corporate tax, business confidence index, and FDI have negative influences, while bank rate, GDP, inflation, and public debt positively impact long-term leverage. Likewise, firm-specific variables such as earning volatility, size, solvency, and tangibility have a significant positive impact. Still, growth rate, profitability, and risk of bankruptcy have a significant negative impact on long-term leverage. The result also found an insignificant impact of the non-dent tax shield on the leverage ratio. Sargan J statistics were used to check the instruments' robustness, and the result indicates that all the instruments are exogenous with a high p-value of 0.391.

Table 7. Difference GMM Model for Long-term Debt Ratio

Variables	Coefficient	t-Statistics	P-Value
L-T Debt Ratio Lag 1	0.786	208.00	0.000**
L-T Debt Ratio Lag 2	0.076	43.11	0.000**
Bank Rate	0.005	19.827	0.000**
BCI	-0.004	-9.33	0.000**
Corporate Tax	-0.072	-5.58	0.000**
GDP Growth Rate	0.120	9.133	0.000**
Inflation	0.003	18.602	0.000**
Market Size	-0.000	-0.206	0.795
Public Debt	0.442	27.416	0.000**
FDI	-0.0004	-10.98	0.000**
Earning Volatility	0.002	4.321	0.000**
Growth Rate	-0.007	-8.303	0.000**
Non-Debt Tax Shield	-0.0001	-1.420	0.155
Profitability	-0.045	-10.036	0.000**
Risk of Bankruptcy	-0.0002	-3.062	0.002**
Size	0.000	1.687	0.091*
Solvency	0.012	10.976	0.000**
Tangibility	0.087	13.351	0.000**
J-Statistics: **104.30** P-Value:**0.391** Instruments Used: **119**			

Source: Calculated authors by using E-Views 10 software

The Difference GMM Model for Short-term Debt Ratio

Table 8 shows the difference in the GMM model for the short-term debt ratio. The results indicate that the lag values of dependent variables significantly impact the short-term debt ratio. In macroeconomic variables, bank rate, BCI, market size, and FDI have a significant positive impact, whereas GDP growth rate, inflation rate, and public debt have a significant negative impact on the short-term debt ratio. Firm-specific factors such as growth rate, non-debt tax shield risk, and tangibility significantly positively impact the short-term debt ratio. On the other hand, profitability, size, and solvency significantly negatively impact the short-term leverage ratio. The J statistics indicate that all the instruments used in the models were exogenous, with a p-value of 0.219.

Table 8. Difference GMM Model for Short-term Debt Ratio

Variables	**Coefficient**	**t-Statistics**	**P-Value**
S-T Debt Ratio Lag 1	0.817	187.29	0.000**
S-T Debt Ratio Lag 2	0.302	87.26	0.000**
Bank Rate	0.004	9.548	0.000**
BCI	0.004	8.542	0.000**
Corporate Tax	-0.183	-8.694	0.000**
GDP Growth Rate	-0.219	-8.694	0.000**
Inflation	-0.001	-4.901	0.000**
Market Size	0.000	10.489	0.000**
Public Debt	-0.024	-1.180	0.238

FDI	-0.0004	-3.609	0.000**
Earning Volatility	0.001	1.725	0.085
Growth Rate	0.012	9.358	0.000**
Non-debt Tax Shield	0.0004	3.571	0.000**
Profitability	-0.250	-26.198	0.000**
Risk of Bankruptcy	0.0001	0.944	0.345
Size	0.000	-3.271	0.001**
Solvency	-0.011	-8.807	0.000**
Tangibility	0.019	2.480	0.013**
J-Statistics: **110.66**			
P-Value:**0.219**			
Instruments Used: **118**			

Source: Calculated authors by using E-Views 10 software

The Difference GMM Model for Total Debt Ratio

The outcome of model 3 presented in the following Table 9 indicates that, like the first two models, the lag value of the dependent variable has a significant positive impact on the total debt ratio. Likewise, public debt, bank rate, and market size have a significant positive impact on the dependent variable, whereas corporate tax, GDP growth rate, inflation rate, and FDI have a significant negative impact on the total debt ratio. In fir-specific factors, earning volatility, non-debt tax shield, and tangibility have a significant positive impact on the total leverage, while growth rate in sales, size of the firm, and profitability have a negative impact on the total leverage. The overall exogeneity of the instruments used in the model was tested using Sargan J statistics and found to be exogenous with a p-value of 0.413.

Table 9. Difference GMM Model for Total Debt Ratio

Variables	**Coefficient**	**t-Statistics**	**P-Value**
T Debt Ratio Lag 1	0.844	121.91	0.000**
T Debt Ratio Lag 2	0.259	54.436	0.000**
Bank Rate	0.002	5.327	0.000**
BCI	0.000	-0.111	0.911**
Corporate Tax	-0.113	-4.175	0.000**
GDP Growth Rate	-0.329	-8.885	0.000**
Inflation	-0.003	-8.286	0.000**
Market Size	0.000	9.915	0.000**
Public Debt	0.330	12.90	0.000**
FDI	-0.001	-8.277	0.000**
Earning Volatility	0.003	3.286	0.001**
Growth Rate	-0.001	-0.731	0.000**
Non-Debt Tax Shield	0.0003	3.192	0.001**
Profitability	-0.322	-20.401	0.000**
Risk of Bankruptcy	0.000	0.278	0.781
Size	0.000	-2.724	0.006**
Solvency	-0.001	-1.325	0.185
Tangibility	0.058	5.468	0.000**
J-Statistics: **102.45**			
P-Value:**0.413**			
Instruments Used: **118**			

Source: Calculated authors by using E-Views 10 software

DISCUSSIONS

The findings of the GMM model, which examines the drivers of the capital structure of Indian automobile and automobile ancillary industries, indicate that both macroeconomic factors and firm-specific factors significantly influence the capital structure of these sectors. Table 10 highlights the overall outcome of the different GMM models for long-term, short-term, and total debt ratios. The analysis reveals that the long-term leverage ratio is positively influenced by macroeconomic drivers, namely the bank rate, GDP growth rate, inflation rate, and public debt. These results align with the studies conducted by Bokpin (2009) and Tomschik (2015), reinforcing the assertion that favorable macroeconomic conditions encourage firms to increase their long-term borrowing. Conversely, the GDP growth rate, inflation rate, and public debt negatively influence the short-term leverage ratio. These findings corroborate with prior research, suggesting that during periods of economic expansion and high inflation, firms prefer to reduce short-term debt to mitigate financial risk (Bokpin, 2009). Moreover, the study finds that both corporation tax and foreign direct investment (FDI) exert a noteworthy adverse influence on the leverage ratio, which aligns with the conclusions given by Rehman (2016) and Mokhova and Zinecker (2014). This supports the widely held notion that a country's macroeconomic variables influence decisions about capital structure.

When considering firm-specific factors, the profitability of the industries above has a significant and negative impact on the capital structure. This finding is consistent with the Pecking Order Theory, where profitable firms prefer internal financing over debt (Deesomsak et al., 2014; Jaworski & Czerwonka, 2021; Chakrabarti & Chakrabarti, 2019). On the other hand, asset tangibility has a beneficial effect on the capital structure, supporting the Trade-Off Theory, which posits that firms with tangible assets have greater borrowing capacity (Chakrabarti & Chakrabarti, 2019). Furthermore, firm size and sales growth rate have a negative impact on Indian automobile and ancillary firms' capital structure decisions. These results are in line with previous studies by Chakrabarti and Chakrabarti (2019), Chadha and Sharma (2016), Nha et al.

(2016), Malinic et al. (2013), and Raza et al. (2021), which found that larger firms with higher growth prospects tend to rely less on debt financing due to better access to equity markets and internal funds.

The findings of this study are consistent with existing literature on capital structure determinants. For instance, Bokpin (2009) found similar positive impacts of macroeconomic conditions on long-term debt. The negative relationship between profitability and leverage observed in this study mirrors the results of Deesomsak et al. (2014) and Jaworski and Czerwonka (2021), emphasizing the preference for internal financing in profitable firms. Moreover, the adverse influence of corporation tax and FDI on leverage aligns with Mokhova and Zinecker (2014), who highlighted the negative impact of taxation and foreign investments on debt levels. The beneficial effect of asset tangibility on leverage corroborates with Chakrabarti and Chakrabarti (2019), supporting the trade-off theory.

Table 10. Overall Outcome of Difference GMM Model

Variables	Model 1: L-T Debt Ratio		Model 2: S-T Debt Ratio		Model 3: TD Ratio	
	Direction of Impact	Sig. at 5% LOS	Direction of Impact	Sig. at 5% LOS	Direction of Impact	Sig. at 5% LOS
Lag 1 of Dependent Variable	**+Ve**	Sig.	**+Ve**	Sig.	**+Ve**	Sig.
Lag 2 of Dependent Variable	**+Ve**	Sig.	**+Ve**	Sig.	**+Ve**	Sig.
Bank Rate	**+Ve**	Sig.	**+Ve**	Sig.	**+Ve**	Sig.
BCI	**-Ve**	Sig.	**+Ve**	Sig.	**-Ve**	Not Sig.
Corporate Tax	**-Ve**	Sig.	**-Ve**	Sig.	**-Ve**	Sig.
GDP Growth Rate	**+Ve**	Sig.	**-Ve**	Sig.	**-Ve**	Sig.
Inflation	**+Ve**	Sig.	**-Ve**	Sig.	**-Ve**	Sig.
Market Size	**-Ve**	Not Sig.	**+Ve**	Sig.	**+Ve**	Sig.
Public Debt	**+Ve**	Sig.	**-Ve**	Not Sig.	**+Ve**	Sig.
FDI	**-Ve**	Sig.	**-Ve**	Sig.	**-Ve**	Sig.
Earning Volatility	**+Ve**	Sig.	**+Ve**	Not Sig.	**+Ve**	Sig.
Growth Rate	**-Ve**	Sig.	**+Ve**	Sig.	**-Ve**	Sig.
Non-Debt Tax Shield	**-Ve**	Not Sig.	**+Ve**	Sig.	**+Ve**	Sig.
Profitability	**-Ve**	Sig.	**-Ve**	Sig.	**-Ve**	Sig.
Risk of Bankruptcy	**-Ve**	Sig.	**+Ve**	Not Sig.	**+Ve**	Not Sig.
Size	**+Ve**	Not Sig.	**-Ve**	Sig.	**-Ve**	Sig.
Solvency	**+Ve**	Sig.	**-Ve**	Sig.	**-Ve**	Not Sig.
Tangibility	**+Ve**	Sig.	**+Ve**	Sig.	**+Ve**	Sig.

Source: author's own representation based on the above results

The study suggests that both firm-specific and broader economic factors influence the capital structure choices made by Indian Automobile and Auxiliary Companies. Additionally, the prior financing patterns of these companies also play a role in shaping their capital structure decisions. Financial decision-makers operating within these sectors should consider the magnitude and nature of the association between macroeconomic variables (interest rates, GDP, inflation, FDI, and stock market development) and firm-specific factors (profitability, asset tangibility, size, risk of bankruptcy, and past financing patterns) when formulating capital structure decisions. The positive influence of macroeconomic factors on long-term leverage can be attributed to their stability and growth potential, encouraging firms to take on more debt for expansion. Conversely, the negative impact of macroeconomic conditions on short-term leverage may be due to firms' preference for reducing short-term obligations during economic volatility to maintain liquidity and mitigate risk.

Future research could expand on this study by exploring the impact of additional macroeconomic variables, such as exchange rates and commodity prices, on capital structure decisions. Additionally, a comparative analysis between different sectors within the Indian economy could provide deeper insights into sector-specific capital structure dynamics. Longitudinal studies examining the impact of economic cycles on capital structure choices also contribute to a more comprehensive understanding of the determinants of capital structure in emerging markets.

CONCLUSIONS

In conclusion, capital structure determinants are multifaceted and vary from sector to sector, country to country, and time to time. Hence, the capital structure of Indian automobile and automobile ancillary firms is affected by firm-specific and macroeconomic factors. In the dynamic business environment, where uncertainties are around while designing the capital structure of these two sectors, the financial manager must consider these factors to achieve the wealth maximization objective of the firm. Moreover, the optimal capital structure decision is important for the Indian automobile and automobile ancillary firms because the debt structure has a non-linear relationship. Studying capital structure and a firm's value is a dynamic and complicated phenomenon that demands a nuanced approach. Striking the right equilibrium requires a thorough understanding of the firm-specific as well as macroeconomic circumstances. In navigating these complexities, financial managers are pivotal in steering the firm towards optimal capital structure decisions that are positive for market value and the long-term sustainability of Indian automobile and automobile ancillary firms. In the future, this type of research can be conducted by taking the whole manufacturing sector and world-level data. Secondly, more macroeconomic variables like the political environment can be used for more robust findings. Besides, the perceptions of finance managers of different firms collected through primary sources can be used to make the findings more applicable in a practical field.

This study found that the capital structure of Indian automobile and automobile ancillary firms is affected by both firm-specific as well as macroeconomic factors of the country. Therefore, it is suggested to the financial decision-makers of these two sectors to consider the degree and direction of association of the macroeconomic determinants like interest rates,

Corporate tax, GDP, inflation, FDI, and the stock market development and firm-specific determinants like Profitability, assets tangibility, Size, risk of bankruptcy while making capital structure decisions. The financial managers may consider a conservative or aggressive approach to financing to find a balance between short-term leverage, long-term leverage, and equity financing depending on different economic conditions like interest rate, GDP growth rate, inflation rate, FDI inflow, and stock market development, which helps the firm achieve its wealth maximization objective.

Despite the valuable insights provided by this study, several limitations warrant consideration. Firstly, the study's focus on the Indian automotive industry may limit the generalizability of its findings to other industries or regions. Future research could broaden the scope to include a more diverse range of sectors or conduct comparative studies across different countries to explore variations in capital structure determinants. Secondly, the study predominantly utilizes secondary data, which may need to fully capture the qualitative aspects of firms' financial decision-making processes. Incorporating primary data, such as surveys or interviews with financial managers, could provide a more nuanced understanding of the factors influencing capital structure choices. Lastly, while this study considers a set of macroeconomic variables, it does not account for other potentially influential factors such as political stability, regulatory changes, or technological advancements. Future research should consider these elements to offer a more comprehensive analysis.

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