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Panel Data Analysis of Determinants of Leverage in the Automobile Industry in India

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Abstract

The study tries to investigate the key determinants of capital structure of leading automobile companies and the Automobile Industry in India. The study also tracks the theory implications, i.e. trade off vs. pecking order in these firms and the industry in general. An attempt is to see, if individually each sample company and the whole industry are influenced by the same determinants of capital structure. Pooled ordinary least squares and panel data econometric techniques such as fixed effect models are used to investigate the most significant determinants that affect the capital structure choice of 10 leading companies categorized as BSE Auto Top 100 and the Automobile Industry as a whole for a period of 14 years from 2000–2001 to 2013–2014. The study reveals some interesting facts and results. Multiple regression analysis reveals that while profitability and size are significant determinants in most of the leading companies; NDTS, Growth, and Debt service coverage ratio are not significant for these companies. While the Panel data results of the Automobile Industry as a whole reveals that profitability is the only significant determinant having negative relationship with debt equity ratio; and the other variables are insignificant. Also individual companies coefficient results shows implications of mix of pecking order and trade off theories while the panel data results of the whole Industry strongly supports the Pecking order theory.

Keywords: Capital Structure, Trade-off, Pecking Order, Panel Data Analysis

Introduction

Since the famous work of Modigliani and Miller (1958) appeared, researchers started reviewing MM propositions providing their propositions, suggestions, and empirical evidence about the determinants of corporate structure and its financing decisions using debt and/or equity. These factors cannot be just size or fixed assets but also many other factors that affect corporate financing decisions. Some approaches were developed later for other theories of capital structure such as the pecking order theory, trade off theory, free cash flow theory, and market timing theory. Therefore, the determinants of capital structure were magnifying with each of the new research work in capital structure field, trying to validate each of these theories. Most empirical research in this area has been done in the USA, the UK and developed European economies, though during the last decade some research has been done in emerging economies too.

Financing or capital structure decision is a significant managerial decision. It influences the shareholders' return and risk. Consequently, the market value of the share may be affected by the capital structure decision. Managers cannot view capital structure as a simple one-dimensional process. It is outcome of many forces, and only some are under the control of managers, (Welch, 2009). Recently many Indian firms have faced bankruptcy issues due to the over reliance on debt or due to improper capital structure decisions. For an emerging economy like India, it becomes important for the Indian manufacturing firms to have an optimal capital structure. With strong backward and forward linkages, the Automobile sector has been identified as one of the sunrise industries in the manufacturing sector. The fact that auto industry is cyclical in nature and is highly capital intensive, which requires large financial commitments, an important metric for evaluating auto companies would be the debt to equity ratio. The debt equity ratio represents the capital structure, which measures a company's overall financial health and indicates its ability to meet its financing obligations. The managers of these firms will always face the dilemma whether one capital structure is better than the other. This creates research interest to know which of the factors particularly affect the choice of debt or equity in the leading Automobile Companies in India.

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Literature Review

Both recent and past studies have tried to find out significant determinants of capital structure. The core findings of determinants of capital structure are relatively robust across firms and over time periods. According to Booth et al. (2001) "In general, debt ratios in developing countries seem to be affected in the same way and by the same types of variables that are significant in developed countries. However, there are systematic differences in the way these ratios are affected by country factors, such as GDP growth rates, inflation rates, and development of capital market." The stylized relations between leverage and determinants are presented in Table 1 and different researchers show different results pertaining to the country that they are dealing in. For the sake of brevity, variables presented in Table 1 focuses only on factors that are frequently used in empirical capital structure research. Most of these factors are part of what Frank and Goyal (2009) call the "core model of leverage." It provides a summary of central predictions of the trade-off theory and the pecking order theory regarding the relationship between leverage and selected capital structure factors. However, the expected sign of the relationship is not always unambiguous, and hence sorting out the factors that are reliably signed and economically important for predicting leverage is important.

Table 1: Stylized Facts

Factor	*Trade-off Theory*	*Pecking Order Theory*
Tangibility	+	-
Firm Size	+	-
Growth Opportunities	-	+/-
Profitability	+	-
Business Risk	-	-
Uniqueness	-	No specific relation
Liquidity	+	_
Non-Debt Tax shield	-	No specific relation
Debt Service Coverage	No specific relation Expected sign +	No specific relation

An extensive literature review and the results of study on Determinants of Capital Structure in Indian & Global Context have been presented in Table 2.

The theoretical underpinnings have been tested empirically in both developed and developing countries globally with different financial systems. However, these were more country-based results for few of the selected sectors or combined results of several industries. It is also imperative to know that though the companies operate in a similar environment within a particular Industry there could be different factors influencing the choice of debt vs. equity for each of the companies. Thus, the present study is an attempt to know the most significant determinants in the leading Automobile companies in India. It further tries to investigate which capital structure theory is more applicable to each of these companies and the Automobile Industry as a whole: Trade off Theory of Pecking Order?

Research Relating to Capital Structure Determinants: Global Scenario / Cross Country Analysis

Titman and Wessels (1988) conducted an empirical study on "The determinants of Capital structure choice" for 469 US firms and supported some of the implications of Myres & Majluf that past profitability had a significantly negative relationship with current debt levels scaled by market value of equity. They observed that growth, non-debt tax shield, volatility, and asset structure were not associated with the leverage. Further, small sized firms had more short-term debt financing than large firms, due to the high transaction cost when issuing long-term securities. In their opinion debt levels were negatively related to the "uniqueness" of a firm's line of business.

Fischer, Heinkel, and Zechner (1989) undertook a study on Dynamic Capital Structure Choice: Theory and Tests. They concluded that firm-specific properties affect the range of optimal leverage ratios. They observed that smaller, riskier, lower-tax, lower-bankruptcy-cost firms exhibit wider swings in their debt ratios over time. Their empirical results revealed that even small recapitalization costs lead to wide swings in a firm's debt ratio over time.

Harris and Raviv (1991) conducted an extensive survey of the capital structure models and concluded that that leverage increases with fixed assets, non-debt tax shields, investment opportunities, and firm size, and it decreases with volatility, advertising expenditure, the probability of bankruptcy, profitability, and uniqueness of the product. Observable leverage factors should be related to capital structure theories because they are assumed to proxy for

the underlying forces that drive these theories, such as the costs of financial distress and information asymmetry.

Rajan and Zingals (1995), the authors of the pioneer paper **"**What do we know about capital structure? Some evidence from international data" studied determinants of capital structure among G7 countries namely Canada, France, Germany, Italy, Japan, UK, and US. They examined institutional differences and impact of firm's size, growth opportunity, profitability, and tangibility on capital structure choice across these countries. They found that firm's size and tangibility were positively correlated with leverage, while firm's profitability and growth opportunity were negatively related to leverage across G7 countries. The empirical results showed that using Earnings before interest, taxes, and depreciation (EBIDTA) scaled by book value of assets as measure of profitability, there exist negative relationship with the leverage. Also they concluded that large firms (size) are likely to be more diversified and less prone to bankruptcy.

Pandey (2001) analyzed the determinants of capital structure of 106 Malaysian companies over different time period and concluded that Malaysian firms have low debt ratio. He analyzed different variables and found that size and growth has significant influence and profitability has a significant negative influence on all types of debt (Short, Long, and Total) over the period of study. The results revealed that risk (earnings volatility) is negatively related with long-term debt ratios and positively with short-term debt ratios. Further the results proved that tangibility (fixed-assets-to-total assets ratio) has a negative association with book value and market value short-term and market value long-term debt ratios. The study also confirmed the existence of pecking order approach in an emerging market like Malaysia.

Eriotos (2007) in his study on firm characteristics affecting capital structure of Greek companies concluded that Interest coverage ratio, growth, and quick ratio are negatively correlated with debt equity ratio while size is positively related to debt equity ratio. They also concluded that there is an indication of pecking order theory. Conditional theories may apply to approach the capital structure, each from different aspect.

Frank and Goyal (2009) in their studies on capital structure decisions: which factors are really important? specifically for the publicly traded American firms claimed that the median industry leverage, tangibility, log of assets, expected inflation had a positive relationship with leverage. Firms having more tangible assets have high leverage while firms having high market to book assets ratio and profits have less leverage. Also larger firms tend to have high leverage. They also found that specifically dividend paying firms have lower leverage. Their conclusions supported the trade off theory.

Sheikh and Wang (2011) conducted a study on Determinants of capital structure of 160 firms listed on the Karachi Stock Exchange during 2003–2007 in manufacturing industry of Pakistan. Their results revealed that profitability, liquidity, earnings volatility, and tangibility (asset structure) were negatively related to the debt ratio, whereas firm size was positively linked to the debt ratio. Non-debt tax shields and growth opportunities were insignificant in determining the debt ratio. The findings of the study were consistent with the predictions of the trade-off theory, pecking order theory, and agency theory which signaled that capital structure models derived from western settings does provide some help in understanding the financing behavior of firms in Pakistan.

Owolabi and Inyang (2013) conducted a study on International pragmatic review and assessment of capital structure determinants of some countries across the globe which included Pakistan, Libya, Turkey, Ghana, Sri Lanka, India, South Africa, Nepal, Egypt, United States, China, and United Kingdom. They reviewed major popular theories of capital structure to include Agency theory, MM theory, Trade-off theory, Signalling theory, Pecking Order theory, and Free Cash Flow theory. Empirical evidence showed that tangibility, size, tax structure, solvency, managerial ownership, dividend policy, non-debt tax shields, and income variability are major determinants of capital structure. In addition some specific country factors were identified as the major determinants of capital structure rather than firm-specific factors. These factors included cultural setting, development of capital market, monetary policy, political risk, and fiscal policies.

Ashraf and Rasool (2013) in their study on determinants of capital structure in Pakistan during 2005–2010, concluded that the non-financial firms in automobile sector of Pakistan used pecking order theory for their long-term financing decision. They also observed that size, tangibility, and growth were significant determinants of leverage while profitability, tax, risk, and non-debt tax shield were insignificant.

Alipour, Mohammadi, and Derakhshan (2015) analyzed the Determinants of capital structure of 1562 firms in Iran from 2003 to 2007. Their results suggest that variables such as firm's size, financial flexibility, asset structure, profitability, liquidity, growth, risk, and state ownership affect the capital structure of Iranian corporations. Short-term debt was found to represent an important financing source for corporations in Iran. The results were also consistent with some capital structure theories like trade off theory, agency theory, pecking order theory and market timing theory suggesting mix of theories in Iranian firms.

Research Relating to Capital Structure Determinants and Theories: Indian Context

Sinha (1993) undertook a study on inter-industry variations in capital structure by using data of private and public limited companies in India. The results supported the existence of trade off theory. Variables like size growth, profitability, assets, risk were used for analyzing the variations in the capital structure in India. In case of public limited companies the debt equity ratio was influenced by the return on assets and in private limited companies it was influenced by the margin on sales. The study also revealed that the asset type and profitability were the most significant variables for determining the patterns of capital structure.

Guha-Khasnobis and Bhaduri (2002) examined the determinants of capital structure of 697 manufacturing and non-financial firms in India over the period 1990–1998. They concluded that size, assets structure, profitability, and short-term financial distress are the factors influencing optimal capital structure choice. The results suggested a possibility of costly restructuring for the Indian firms and differential costs of adjustment for long-term and short-term borrowing.

Bhaduri (2002) further extended the study and addressed the possibility of adjustment costs incurred in reaching an optimal capital structure and studied the determinants of capital structure for Indian corporate sector for 363 firms across nine broad industries. The evidence presented through results suggested that the optimal capital structure choice can be influenced by factors such as growth, cash flow, size, uniqueness, and industry characteristics. The results also confirmed the existence of restructuring costs and preference of short-term borrowing over long-term borrowing in attaining an optimal capital structure.

Bhole and Mahakud (2004) in their study on trends and determinants of corporate capital structure in India over several time period found that cost of borrowing, cost of equity, size of the firm, collateral value of assets, liquidity and non-debt tax shield were significant of leverage but size and liquidity were the most significant determinants of corporate capital structure for all the different period under study. Also the dependence of debt is more in public limited companies than in private limited companies. Their studies do not completely support pecking order theory in Indian companies.

Sahoo and Omkarnath (2005) in their study "Capital structure of Indian Private Corporate Sector" found that non-debt tax shield, assets structure and profitability are the most important determinants of long-term capital structure. They observed that public limited companies rely more on external than internal sources before 1991, but in later years the companies depend more on internal finance. They interpreted these changes as a result of liberalization and their study did not support the pecking order theory in these firms.

Bhayani (2005) examined the capital structure of the Indian private corporate sector for a sample of 504 companies listed on stock exchange of India during 1994–1995 to 2003–2004. He concluded that the debt ratio of the Indian companies is positively related to its asset structure and negatively to its profitability, business risk and non-debt tax shield. Empirical evidence also supported the fact that firms that maintain a large proportion of fixed assets tend to maintain a higher debt ratio than smaller firms. Also, firms with high profitability ratios tend to use less debt than firms that do not generate high profits. The study found that Indian companies follow a target capital structure during the examined period.

Das and Roy (2007) conducted a study on the inter- industry variation in capital structure of 12 Indian manufacturing Industries and found evidence that the capital structure of firms are systematically different across industry classes so far as the debt financing as a proportion of total capital is concerned. Both firm size and industry-classification contribute to the existing variation in capital structure across industry classes but nature of the industry seems to dominate. The results revealed that the differences in external fund requirement based on technology differences played a leading role in determining the inter-industry variation in capital structure.

Singh and Kumar (2008) intended to study the financing behavior of the Indian firms from a period of 1991 to 2007. Automobile Industry was one of the sample industries out of 10 Industries. For cross-sectional studies they analyzed variables like total assets, profit before depreciation, interest and tax by sales, market-to-book ratio, intangible assets by total assets, age, depreciation, beta, promoter and non-promoter equity holding and listing dummy which is equal to 1 if listed. They found that leverage is positively related to the market-to-book ratio, depreciation and intangibility and beta for the whole industry on the average. The debt-to-equity is negatively related to the rest of the explanatory variables. For automobile industry market-to-book and intangibility were the most significant variables. Their results were consistent with the results found by Booth et al. (2001) for India. The study revealed that none of the industry variables were significant under the cross-sectional analysis contrary to what was found in many developed countries (Bradley et al., 1984). They observed existence of Trade off theory in Indian firms rather than pecking order theory.

Panigrahi (2010) in his study on Capital Structure of Indian Corporate: Changing Trends for 300 Indian private sector companies found that Indian companies rely heavily on debt. He found that corporate enterprises in India seem to prefer long-term borrowings over short-term borrowings and over the years, they seem to have substituted short-term debt for long-term debt. He also observed that the foreign controlled companies used more long-term loans relatively to the domestic companies. Further the results supported pecking order approach in Indian companies. Also, small sized companies relied more on debt capital as compared to large-sized companies.

Pathak (2010) undertook a study on "What Determines Capital Structure of Listed Firms in India? Some Empirical Evidences from Indian Capital Market" and examined 135 publicly traded BSE listed firms post liberalization period from 1999–2009. They observed that tangibility of assets, growth, firm size, business risk and profitability having a positive and significant relationship with leverage while liquidity and R&D were insignificant determinants.

Mukherjee and Mahakud (2012) undertook a study on Dynamic adjustment towards target Capital Structure of 891 Indian manufacturing firms over a period of 1993–1994 to 2007–2008 .The empirical results confirmed the Trade off theory i.e. firms have a specific target leverage ratio. The study revealed that the variables like non-debt tax shield, profitability, inflation, and industry median played a significant role in determination of optimal leverage ratio in India. They further found that the factors like size of the company, growth opportunity and the distance between the target and observed leverage determine the speed of adjustment to target leverage for the Indian manufacturing companies.

Majumdar (2012) conducted a study on "The determinants and role of secured and unsecured borrowing: Evidence from the Indian corporate sector" for 619 BSE listed manufacturing firms. Empirical results suggested that tangibility and the use of secured debt are directly related, while unsecured debt ratio and tangibility are inversely related. The results further suggest that growth opportunities and the proportion of secured debt in its balance sheet are directly related, indicating that collateralized borrowing address agency issues that hinder borrowing capacity of growth firms. But the results did not have any evidence supporting the role of secured debt in mitigating agency issues and problem of asymmetric information. Also secured debt is higher in firms endowed with tangible assets and is inversely related to firm size & growth opportunities. Also age and risk were insignificant in determining the secured debt ratio.

Purohit and Khanna (2012) examined the determinants of Capital Structure in the Indian Manufacturing Sector from 2000–2001 to 2010–2011 and found that size, R&D, advertisement, profitability are negatively related to leverage and selling expense, collateral value of assets, growth and NDTS are positively related with leverage. They also found information asymmetry problem where outside investors are weakly informed of the firms' growth options and also hinted towards agency problems in these firms.

Mohapatra (2012) undertook a study on capital structure determinants of 626 Indian non-government and non-financial public limited companies (RBI DATA) over a period of 23 years. The findings proved that capital structure of Indian industries gets significantly influenced by the size of the industry and also the industry class. Factors like profitability, operating leverage, external financing, and income gearing too have bearings on the capital structure in Indian industries. Firms depend more and more on debt financing when they grow in size. Profit earning capacity of the firms as an indicator of the firms'

ability to serve debt determines the firms' ability to attract debt capital in the total capital structure

In a further study by Mukherjee and Mahakud (2012) they attempted to provide an empirical evidence for the mutual exclusivity between the Trade-off and Pecking order theories of capital structure in 891 Indian manufacturing companies for a period of 1992–1993 to 2007–2008. Their results showed that firm-specific variables like size, tangibility, profitability, market-to-book ratio are statistically significant across both the book and market definition of leverage. A conclusion was drawn that companies follow a target capital structure .Their study showed that costs of benefits of debt as well as asymmetric information costs play the significant role for determination of optimal leverage ratio for the Indian firms. Their study confirmed the existence of both the theories in Indian companies but trade off theory is better applicable in Indian context as firms have a target debt ratio.

Dutta (2013) investigated the lemon problem and pecking order theory in 652 firms in Indian Corporate sector over a period of 2002–2010. The evidence did not support the use of the pecking order theory by Indian firms during the period of the study. They found that tangibility, size and financial deficit were positively related to leverage but market to book ratio and profitability were negatively related to leverage

Sinha and Ghosh (2013) in their study on critical review of the survey of capital structure theories concludes that in a dynamic time framework model, a firm's financing decision may have financing flexibility in shifting its decision frameworks from one "point of view" framework to the other. They gave a practical approach that in a dynamic framework any one theory may not work. Thus new line of examining firms' financing decisions should include a super-set of decision variables rather than the segregated sub-sets simply. Firms behave differently with regard to their firm-value identity, whether they are high-value or low-value firms, and with regard to their objectives, whether they would utilize existing reserve debt capacity or create the same. Both high-value and low-value firms utilize their internal and external equity for creating their low-risk and high-risk reserve debt capacity where they show greater reliance on their new issues of equity than their uses of internal equity.

Chadha and Sharma (2015) in their study on determinants of capital structure: an empirical evaluation of 422 listed manufacturing Indian companies from 2003–2004 to 2013–2014 found that size, age, asset tangibility, growth, profitability, non-debt tax shield, business risk, uniqueness and ownership structure are key determinants of capital structure in Indian manufacturing sector. They also concluded that there is a mix of pecking order and trade off theory in this sector.

For empirical analysis the paper has been organized in two sections:

Section 1

The first section explores the determinants that influence the capital structure choice of each of the leading automobile companies. It describes the objectives, variables, methodology, models and the hypothesis to answer the research questions. It also includes the empirical mapping of the observed relationships for each of the variable with the previous studies.

Objective of the Study

To examine the determinants that influences the capital structure decisions of the leading companies and the Automobile Industry as a whole in India.

Data and Research Methodology

Sources of Data

The information relating to the capital structure and other variables for the leading Automobile companies has been collected from the Prowess IQ – the latest version of Prowess CMIE Database.

Period of the Study

The leading automobile companies and the Industry have been analyzed for 14 years from 2000–2001 to 2013–2014.

Sample Selection

Sample selection consists of listed Automobile companies on Bombay Stock Exchange (BSE) from 2000–2001 to

2013–2014. The preliminary list of sample companies was around 56 companies. Firms having missing values in either dependent variable or independent variables and Inactive firms in terms of business operations throughout the period of the study were excluded. The firms are selected on the basis of leading Automobile companies as per top BSE 100 AUTO under Auto 2/3 wheelers, Auto LCVs and HCVS and Auto Cars and Jeeps based on market capitalization, sales, and net profit. After applying the above filters, a sample size of 10 leading companies has been undertaken to do the capital structure analysis.

Note: These 10 companies form 95% of the market share in the Automobile Industry in India and therefore a true representative of the Automobile Industry.

Table 3: List of Sample Companies

Company Name	*Abbreviation*	*Incorporation Year*	*Segment*	*Market Capitalization (Rs crore)*
Ashok Leyland Ltd.	AL	1948	LCVS,HCVS	28,074.57
Atul Auto Ltd.	AAL	1986	Two & Three wheelers	1,114.15
Eicher Motors Ltd.	EM	1982	LCVS,HCVS	50,916.60
Force Motors Ltd.	FM	1958	LCVS,HCVS UVS & three wheelers	3,795.03
Hero Motocorp Ltd.	HM	1984	Two & three wheelers	60,470.15
Mahindra & Mahindra Ltd.	M&M	1945	LCVS,HCVS,CARS ,UVS, Three wheelers	83,347.49
Maruti Suzuki India Ltd.	MS	1981	CARS & UVS	124,151.88
S M L Isuzu Ltd.	SML	1983	LCVS,HCVS	1,570.46
T V S Motor Co. Ltd.	TVS	1992	Two & three wheelers	13,891.55
Tata Motors Ltd.	TM	1945	LCVS, HCVS, CARS UVS	157,287.91

Source: Published Financial Statement and SIAM Company Profile.

Theoretical Framework

Debt equity ratio has been used as a proxy for capital structure/ leverage with size, growth, debt service coverage ratio, non-debt tax shield, and profitability as independent variables. Other variables like uniqueness, age, liquidity, and cash flow coverage ratio were also tested, but due to high VIF statistics, they were dropped. Table 4 presents the key variables used in the study.

Table 4: Key Variables and Their Definition

Variables	*Definition*	*Measurement*	*D/I*
PROF	Profitability	PBDITA to Total Assets	I
GR	Growth	Growth in sales YoY growth in sales	I
Size	Size	Natural logarithm of total assets Total assets refer to sum of all current and non-current assets held by a company as on the last day of an accounting period.	I
NDTS	Non-debt tax shield	Depreciation to Total Assets	I
DSC	Debt Service Capacity	Debt service capacity i.e. proportion of profit before Interest, depreciation and tax to Interest is taken as measure of Debt service coverage ratio.	I
D/E ratio	Debt to Equity ratio Leverage	Debt to Equity ratio is taken as a measure of capital structure/ leverage. It is calculated by dividing the total debt by total assets. Total debt is same as above and Shareholder's equity or net worth is arrived at by adding up equity capital and reserves.	D

I = Independent Variable D = Dependent Variable

Hypothesis

H_0 There is no significant relationship between the determinants of capital structure and Debt equity ratio of the leading automobile companies in India.

For the dependent variable debt equity ratio following null hypothesis (sub hypothesis) have been tested for each of the independent variables:

Sub Hypothesis

H_{01} There is no significant relationship between growth and Debt Equity Ratio.

H_{02} There is no significant relationship between Debt service capacity and Debt Equity Ratio.

H_{03} There is no significant relationship between profitability and Debt Equity Ratio.

H_{04} There is no significant relationship between Non-Debt tax shields and Debt Equity Ratio.

H_{05} There is no significant relationship between size and Debt Equity Ratio.

Research Methodology

Multiple regression analysis has been applied to know the significant determinant in each of the leading Automobile Companies in India. After the individual company analysis, Panel data regression is also applied using the combined data of all these companies since they are representative of the Auto Industry for finding out which determinants influence the Automobile Industry as a whole. Results presented for individual companies include VIF statistics. For the present study VIF < 10 is considered. (Kennedy, 1992; Marquardt, 1970; Hair, Anderson, Tatham, & Black, 1995; Neter, Wasserman, & Kutner, 1989).

Regression Equation

$$D/E = \beta o + \beta_1 GR + \beta_2 DSC + \beta_3 PROF + \beta_4 NDTS + \beta_5 SIZE + \mu \quad \text{Model I}$$

Simple Least square Model (Multiple regression)

Where,

βo = common y-intercept.

$\beta_1 - \beta_5$ = coefficients of the concerned independent variables.

μ - Error term.

Empirical Results and Discussion

Table 5 presents the regression results for each of the Automobile companies and Table 6 presents the Model Summary.

Table 5: Regression Results

Determinants of capital structure of Leading Automobile companies in India

(Dependent Variable: Debt equity ratio)

Company B		*Unstandardized Coefficients* B	*t*	*Sig.*	*VIF Statistics*
AL	(Constant)	-.719	-.486	.640	
	GR	.001	.316	.760	2.436
	DSC	-.007	-.539	.604	2.835
	PROF	-.076	-2.540	.035	6.373
	NDTS	23.679	2.126	.066	2.619
	CS	.166	1.527	.165	2.871
AAL	(Constant)	-2.460	-4.884	.001	
	GR	-.002	-1.714	.125	1.709
	DSC	-.004	-2.360	.046	4.349
	PROF	-.039	-4.179	.003	8.202
	NDTS	-6.738	-1.664	.135	2.579
	CS	.631	7.067	.000	3.213

Company B		Unstandardized Coefficients B	t	Sig.	VIF Statistics
EM	(Constant)	.031	.065	.950	
	GR	.003	4.210	.003	1.354
	DSC	.000	-1.048	.325	2.127
	PROF	-.015	-2.448	.040	1.620
	NDTS	16.779	6.653	.000	1.566
	CS	.004	.070	.946	1.355
FM	(Constant)	18.400	1.958	.086	
	GR	-.006	-.512	.623	1.287
	DSC	-.038	-.829	.431	1.291
	PROF	-.020	-1.194	.267	1.228
	NDTS	-57.591	-1.808	.108	6.256
	CS	-1.562	-1.799	.110	5.875
HM	(Constant)	-3.515	-2.769	.024	
	GR	.007	2.083	.071	2.053
	DSC	-.001	-4.207	.003	3.112
	PROF	.009	.926	.382	2.860
	NDTS	-6.144	-2.850	.021	6.068
	CS	.358	3.554	.007	6.164
M&M	(Constant)	3.292	3.692	.006	
	GR	.003	.820	.436	2.653
	DSC	.002	.783	.456	2.370
	PROF	-.047	-2.770	.024	4.986
	NDTS	-7.106	-1.023	.336	2.431
	CS	-.167	-2.453	.040	2.720
MS	(Constant)	1.485	4.937	.001	
	GR	.002	1.035	.331	2.416
	DSC	-.001	-1.284	.235	2.583
	PROF	-.012	-4.711	.002	1.723
	NDTS	-.449	-.428	.680	1.984
	CS	-.093	-4.187	.003	1.665
SML	(Constant)	9.722	3.562	.007	
	GR	-.023	-1.571	.155	2.848
	DSC	-.018	-.886	.401	2.025
	PROF	-.098	-1.111	.299	3.903
	NDTS	-120.552	-2.559	.034	1.408
	CS	-.713	-2.361	.046	1.531
TVS	(Constant)	-.022	-.007	.994	
	GR	.003	.795	.449	1.839
	DSC	-.023	-1.389	.202	6.065
	PROF	-.029	-1.200	.265	7.579
	NDTS	6.659	.416	.688	8.245
	CS	.096	.400	.700	5.670

TM	(Constant)	4.644	3.467	.008	
	GR	.000	-.113	.913	2.179
	DSC	-.020	-.614	.557	2.436
	PROF	-.044	-1.685	.130	8.896
	NDTS	-20.666	-3.109	.014	2.122
	CS	-.208	-2.429	.041	3.143

Table 6: Model Summary [Dependent Variable: D/E Ratio]

Company	*R Square*	*Adjusted R Square*	*SE*	*F*	*Sig.*
Ashok Leyland Ltd.	0.868	0.785	0.15282	10.481	0.002
Atul Auto Ltd.	0.954	0.925	0.113747	33.128	0.000
Eicher Motors Ltd.	0.932	0.89	0.102206	22.097	0.000
Force Motors Ltd.	0.502	0.191	0.799904	1.612	0.261
Hero Motocorp Ltd.	0.802	0.678	0.107297	6.463	0.011
Mahindra & Mahindra Ltd.	0.833	0.729	0.116633	7.985	0.006
Maruti Suzuki India Ltd.	0.888	0.819	0.047592	12.733	0.001
S M L Isuzu Ltd.	0.737	0.573	0.519649	4.482	0.03
T V S Motor Co. Ltd.	0.793	0.664	0.180677	6.146	0.013
Tata Motors Ltd.	0.819	0.706	0.136323	7.249	0.008

The model summary of the Regression results for determinants of capital structure of each of the leading Automobile companies is presented in Table 6. As seen in the Table 6, R^2 value in all the leading Automobile Companies is more than 73% and in some cases more than 90%. This shows that the explanatory variables used in the model were able to explain the variations in the capital structure (presented by D/E ratio) of all the leading Automobile Companies. Also, the p value suggests that the model is statistically fit for all the companies except Force Motors where p value is 0.261 which is insignificant at 5%. Low R^2 value and insignificance of all the variables used in the study for Force Motors calls for further analysis with a comprehensive data set.

Findings and Interpretations for Leading Automobile Companies

Since individual Analysis of the companies is involved further, summarized results of relationships between variables and hypothesis results have been presented in Table 7 and Table 8.

The Empirical Mapping of the Observed Relationships for Each of the Variable with the Previous Studies is as Under

***Growth*:** From Table 8 it is clear that Growth has a positive relationship with debt equity ratio for Ashok Leyland, Eicher Motors, Hero Motocorp, Mahindra and Mahindra, Maruti Suzuki, TVS and Tata Motors thus supporting the pecking order theory. Whereas for Atul Auto Ltd ,Force Motors and TATA Motors it has a negative relationship with the debt equity ratio thus showing implications of trade off theory for growth coefficient in these Industries. The negative relationship shows that automobile firms with more growth opportunities do not opt for debt as the first option.

Table 8 shows that growth is significant at 5% in determining the capital structure of only Eicher Motors Ltd and it is insignificant for the remaining 9 leading Automobile companies in India.

Debt Service Coverage Ratio: The second variable Debt service coverage ratio has a positive relationship with debt equity ratio only in Eicher Motors and Mahindra & Mahindra Ltd. Usually a positive sign is expected between debt service coverage ratio and debt equity ratio as per trade off theory. However, as seen in Table 7 the results are contradictory for rest of the 8 companies as they show a negative relationship thus suggesting a further investigation into this matter. The negative relationship signals towards the fact that though companies have a capacity to deal with the fixed financial costs; it does not have any impact on the debt equity ratio of the company thus indicating towards reliance on other sources (pecking order) i.e. internal funds to finance their activities. Table 8 shows that except for Atul Auto Ltd and Hero Motocorp it is insignificant for the remaining 8 leading Automobile companies in India.

Profitability

As observed in Table 7, Profitability is showing negative relationship for 9 companies except Hero Motocorp thus showing strong implications of Pecking order theory. It seems majority of the firms are following pecking order theory and uses retained earnings first and then debt and then equity. According to Pecking Order Theory, firms that are more profitable borrow less, because they have more internal financing available and less profitable firms require external financing, and consequently accumulated debt.

Also, as seen in Table 8 for 50% of the Automobile companies viz. Ashok Leyland, Atul Auto, Eicher Motors, M&M and Maruti Suzuki Ltd profitability is the most significant determinant after size. It is also supported by the panel data results, which show that profitability is the only significant determinant of capital structure in the Automobile Industry in India.

Non-Debt Tax Shield

Non-Debt tax shied has a positive relationship for three companies Ashok Leyland, Eicher Motors and TVS Ltd as shown in Table 7. Empirical findings are also mixed on this issue. It has a negative coefficient for 7 companies thus showing an inverse relationship as expected by trade off theory. This implies that the companies having substantial non-debt tax shield in terms of depreciation, research & development expense opt for less debt in capital structure. The results are in line with previous empirical studies as under:

Table 8 shows it is significant in 4 companies i.e. Eicher Motors, Hero Motocorp, SML and Tata Motors Ltd while for the rest of the companies it is insignificant at 5% level.

Size

From Table 7 it is clear that size has a positive relationship with debt equity ratio in 5 of the companies viz. Ashok Leyland, Atul Auto Ltd, Eicher Motors, Hero Motocorp, and TVS. This shows existence of the Trade-off theory in these companies and the fact that large-sized companies can opt for more debt due to their ability to diversify the risk and to take the benefit of tax shields on interest payments, they are less prone to bankruptcy and have lower bankruptcy costs. While in the other five companies i.e. Force Motors, Mahindra and Mahindra, Maruti Suzuki Ltd, SML and Tata Motors it shows a negative relationship with the debt equity ratio thus showing implications of pecking order theory in these companies. According to pecking order, problem of information asymmetry is less in large firms and therefore they can opt for informationally sensitive equity too. As observed in Table 8 , size is the most significant determinant as it is significant in 60% of the sample companies viz. Atul Auto, Hero Motors, M&M, Maruti Suzuki, SML & Tata Motors Ltd and insignificant at 5% level for rest of the companies.

Dependent Variable: Debt Equity Ratio

Table 7: Observed Relationship between Debt Equity Ratio and Explanatory Variables

Cos Determinants	*AL*	*AAL*	*EM*	*FM*	*HM*	*M&M*	*MS*	*SML*	*TVS*	*TM*
GR	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	POSITIVE	POSITIVE	NEGATIVE	POSITIVE	POSITIVE
DSC	NEGATIVE	NEGATIVE	POSITIVE	NEGATIVE	NEGATIVE	POSITIVE	NEGATIVE	NEGATIVE	NEGATIVE	NEGATIVE
PROF	NEGATIVE	NEGATIVE	NEGATIVE	NEGATIVE	POSITIVE	NEGATIVE	NEGATIVE	NEGATIVE	NEGATIVE	NEGATIVE
NDTS	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	NEGATIVE	NEGATIVE	NEGATIVE	NEGATIVE	POSITIVE	NEGATIVE
SIZE	POSITIVE	POSITIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	NEGATIVE	NEGATIVE	POSITIVE	NEGATIVE

Table 8: Summary of Hypothesis Results of the Determinants of Capital Structure

Companies Hypothesis	*AL*	*AAL*	*EM*	*FM*	*HM*	*M&M*	*MS*	*SML*	*TVS*	*TM*
H_{01} :There is no significant relationship between Growth and debt equity ratio	NOT REJECTED	NOT REJECTED	REJECTED	NOT REJECTED	NOT REJECTED	NOT REJECTED	NOT REJECTED	NOT REJECTED	NOT REJECTED	NOT REJECTED
H_{02} :There is no significant relationship between DSC and debt equity ratio	NOT REJECTED	REJECTED	NOT REJECTED	NOT REJECTED	REJECTED	NOT REJECTED	NOT REJECTED	NOT REJECTED	NOT REJECTED	NOT REJECTED
H_{03}:There is no significant relationship between PROF and debt equity ratio	REJECTED	REJECTED	REJECTED	NOT REJECTED	NOT REJECTED	REJECTED	REJECTED	NOT REJECTED	NOT REJECTED	NOT REJECTED
H_{04}:There is no significant relationship between NDTS and debt equity ratio	NOT REJECTED	NOT REJECTED	REJECTED	NOT REJECTED	REJECTED	NOT REJECTED	NOT REJECTED	REJECTED	NOT REJECTED	REJECTED
H_{05} :There is no significant relationship between Size and debt equity ratio	NOT REJECTED	REJECTED	NOT REJECTED	NOT REJECTED	REJECTED	REJECTED	REJECTED	REJECTED	NOT REJECTED	REJECTED

Source: Author's Own Analysis

SECTION II

After the individual company analysis, Panel data regression is applied for finding out the determinants that influence the capital structure of the Automobile Industry as a whole. Same variables have been used for the companies and the Industry to know if they are influenced in a similar way or not.

Panel Data Analysis for the Automobile Industry

Since the present study includes both cross-sectional and time series data, panel data regression is used to empirically investigate the determinants of capital structure across 10 leading companies for 14 years. Panel data by blending inter individual differences and intra individual dynamics have advantages over cross-sectional or time series data. Panel data usually contain more degrees of freedom and more sample variability than cross-sectional data or time series. It controls the impact of omitted variables i.e. reduces omitted variable bias.

Methodology and Model Estimation

Under the hypothesis that there are no groups or individual effects among the firms included in the sample, first estimated pooled OLS model is tested. Since Panel data contains observations on the same cross-sectional units over several time periods there might be cross-sectional effects on each firm or on a set of group of firms. Therefore, Lagrange Multiplier test was applied to see which model is better Pooled/Ordinary Least square or Panel. According to results presented in Tables 11, the Lagrange multiplier test is statistically significant (31.6408/0.00) at 5%, suggesting the suitability of panel models over the pooled model. Further panel data have cross-section effects, either Fixed or Random. Fixed Effect redundant Test was applied and the results of the Test were significant suggesting the use of fixed effect Model (FEM). Descriptive Statistics, Correlation Matrix, and VIF values have also been presented. The data analysis has been done with the help of statistical software E-Views and SPSS.

Hypothesis

H_0 There is no significant relationship between the determinants of capital structure and Debt equity ratio of the Automobile Industry as a whole in India.

For the dependent variable debt equity ratio following null hypothesis (sub hypothesis) have been tested for each of the independent variables:

Sub hypothesis:

H_{06} There is no significant relationship between growth and Debt Equity Ratio

H_{07} There is no significant relationship between Debt service capacity and Debt Equity Ratio

H_{08} There is no significant relationship between profitability and Debt Equity Ratio

H_{09} There is no significant relationship between Non-Debt tax shields and Debt Equity Ratio

H_{010} There is no significant relationship between size and Debt Equity Ratio

Panel Regression Model

$$DE_{it} = \beta o + \beta_1 (GR)_{it} + \beta_2 (DSC)_{it} + \beta_3 (PROF)_{it} + \beta_4 (NDTS)_{it} + \beta_5 (SIZE)_{it} + \varepsilon_{it} \quad \text{Pooled Model (1)}$$

$$DE_{it} = \beta o_i + \beta_1 (GR)_{it} + \beta_2 (DSC)_{it} + \beta_3 (PROF)_{it} + \beta_4 (NDTS)_{it} + \beta_5 (SIZE)_{it} + \mu_{it} \quad \text{Fixed Effect Model (2)}$$

Where,

DE_{it} = Debt equity ratio of firm i at time t.

GR_{it} = Growth of firm i at time t.

DSC_{it} = Debt Service capacity of firm i at t

$PROF_{it}$ = Profitability of firm i at time t.

$NDTS_{it}$ = Non-debt tax shields of firm i at time t.

SIZE = Size of firm i at time t.

βo = common y-intercept.

βo_i = the y-intercept of firm i

$\beta_1 - \beta_5$ = coefficients of the concerned explanatory variables.

ε_{it} = error term of firm i at time t.

μ_{it} = error term of firm i at time t.

Descriptive Statistics

Table 9 presents the descriptive statistics of the dependent and explanatory variables over the sample period. It includes the mean, median, maximum, & minimum values and the standard deviation for each of the variable. The mean debt equity ratio indicates that average 55.81 percent of the firms' assets are financed with total debt during the study period. Maximum debt equity ratio in the research sample is 3.55 percent, indicating a moderate ratio in leading Indian Automobile firms while minimum is 0. Growth represented by YOY growth in sales shows a significant increase in sales, as the mean growth is 17.17%. The mean Debt service coverage ratio is 78.93, which indicates higher debt appetite of the companies and its paying capacity. While mean profitability, NDTS, and size are 17.49, 0.04, and 9.95 respectively.

Table 9: Descriptive Statistics

	DE	*GR*	*DSC*	*PROF*	*NDTS*	*SIZE*
Mean	0.55814	17.1691	78.9251	17.4944	0.03614	9.9528
Median	0.44	16.92	6.58	15.575	0.03	10.174
Maximum	3.55	124.37	1352.28	57.5	0.11	13.2255
Minimum	0	-69.31	-5.75	-0.71	0.01	5.25437
Std. Dev.	0.51756	24.4462	218.105	9.95441	0.01977	1.88301

Source: CMIE Prowess Database

Correlation Analysis

Table 10 represents the correlation matrix and it was found that there was statistically no high degree of correlation between the variables. There is a negative correlation between the independent and all the explanatory variables. The variables Debt Service Coverage and Profitability are having negative relationship with D/E ratio but are significant at 1% and the variable growth is also having negative relationship with D/E ratio but significant at 5% level. While the variables NDTS and Size are having negative correlation with D/E ratio. Within the independent variables profitability is positively correlated with variables growth, DSC & NDTS and significant at 1%. Size is negatively correlated to growth and significant at 5% level.

Table 10: Correlation Matrix

Correlations							
		DE	*GR*	*DSC*	*PROF*	*NDTS*	*SIZE*
DE	Pearson Correlation	1					
	Sig. (2-tailed)	-					
GR	Pearson Correlation	-.192*	1				
	Sig. (2-tailed)	(.023)	-				
DSC	Pearson Correlation	-.314**	.148	1			
	Sig. (2-tailed)	(.000)	.080	-			
PROF	Pearson Correlation	-.535**	.278**	.530**	1		
	Sig. (2-tailed)	(.000)	(.001)	(.000)	-		
NDTS	Pearson Correlation	-.161	-.063	-.083	.254**	1	
	Sig. (2-tailed)	.057	.462	.331	(.002)	-	
SIZE	Pearson Correlation	-.071	-.175*	.086	.055	.096	1
	Sig. (2-tailed)	.407	(.038)	.310	.519	.259	-
*. Correlation is significant at the 0.05 level (2-tailed).							
**. Correlation is significant at the 0.01 level (2-tailed).							
P value in parentheses							

Empirical Results and Discussion for the Automobile Industry

Results of fixed effect redundant test are reported in Table 11 and the $\chi 2$ (df 9) [41.25617/0.00] value indicates that the null hypothesis of no cross-section fixed effect is rejected and supports panel data fixed effect model approach.

From the p value results 0.0000 of the variable Profitability presented in Table 11 it is very clear that profitability is significant at 5% and has a strong impact on the capital structure in the Automobile Industry in India. The other determinants like growth, debt service coverage ratio, non-debt tax shield, and size are insignificant in determining the capital structure of the Automobile Industry as a whole.

Size: The variable size is insignificant and the coefficient of size is 0.0154 having a negative relationship with debt equity ratio. This finding supports the pecking order theory, which suggests that large-sized firms use more retained earnings to finance their projects and the issue of information asymmetry is less severe for large firms. Owing to this, large firms borrow less due to their ability to issue informationally sensitive securities like equity.

Growth: The growth coefficient 0.000221 shows positive relationship with debt equity ratio. Firms with great growth opportunities opt for more funds and therefore the finding is consistent with the pecking order hypothesis rather than with the predictions of the trade-off theory. However, growth is insignificant (at 5 % confidence level) in determining the debt equity ratio for the Automobile Industry as a whole.

Profitability: Profitability coefficient 0.01528 had a negative relationship with debt equity ratio. These results are in line with the pecking order theory, which suggests that retained earnings are a less costly type of financing than debt and new equity. Profitability is the only significant determinant influencing the capital structure of the Automobile Industry.

Non-debt tax shield coefficient has a positive relationship with the debt equity ratio showing increase in NDTS will also lead to increase in debt equity ratio of Automobile Industry. This result contradicts the trade off theory, which suggests that higher NDTS will lower the D.E ratio. Debt service coverage ratio is not expected to have any specific sign under Trade off theory but a positive relationship is expected. For the Automobile Industry DSC shows a negative coefficient which means there is an inverse relationship with the debt equity ratio.

In Table 11, R^2 value of 0.5050 shows that 51% of the variations in the dependent variable i.e. the Debt Equity ratio is due to the combined effect of the independent variables. F-statistics value accepts the fitness of the model. Durbin-Watson statistic is near to 2, which shows that there is no serious auto correlation problem. The VIF value of all the variables is under the acceptable limit. (V<10) showing no serial multi collinearity problem.

The panel data results of theoretically predicted signs and the observed relationship between debt equity ratio and the determinants of the Automobile Industry are presented in a summarized way in Table 12.

Table 11: Regression Results – Fixed Effect Model [Dependent Variable: Debt Equity Ratio]

Variable	*Coefficient*	*S E*	*t-value*	*p-value*	*VIF*
GROWTH	0.000221	0.000822	0.269532	0.7880	1.148
DEDT SERVICE COVERAGE RATIO	-0.00021	0.000127	-1.6449	0.1025	1.510
PROFITABILITY	-0.01528	0.002789	-5.477955	0.0000	1.718
NON-DEBT TAX SHIELDS	0.456944	1.31999	0.346172	0.7298	1.183
SIZE	-0.015423	0.028272	-0.545514	0.5864	1.056
C	0.816003	0.294527	2.770558	0.0065	
Total panel (balanced) observations	140				
Cross-sections included	10				
Periods included	14				
R^2	0.505054727				
Adjusted R-squared	0.449621				
F-statistic	9.110941048				

Variable	Coefficient	S E	t-value	p-value	VIF
Prob. (F-statistics)	0.0000				
Durbin-Watson stat	1.974955				
Lagrange Multiplier test/prob	31.6408/0.00				
Redundant Fixed Effects Tests Statistic/prob.					
Cross-section F	4.75/0.00				
Cross-section $\chi 2$ (df 9)	41.25617/0.00				

Sources: CMIE Prowess; statistical tool: E-Views

Table 12: Summary of Panel Data Results for the Automobile Industry [Dependent Variable: Debt Equity Ratio]

Results Determinants	Predicted Relationship as Per		Observed Relationship	P value-Significant / Insignificant at 5%	Hypothesis for the Determinants of Capital Structure	Results
	Trade-off Theory	Pecking Order Theory				
GROWTH	-	+	+	Insignificant	H_{06} :There is no significant relationship between Growth and debt equity ratio	NOT REJECTED
DEBT SERVICE COVERAGE	Expected sign + No specific relation	No specific relation	-	Insignificant	H_{07} :There is no significant relationship between DSC and debt equity ratio	NOT REJECTED
PROFITABILITY	+	-	-	Significant	H_{08}:There is no significant relationship between PROF and debt equity ratio	REJECTED
NON-DEBT TAX SHIELD	Expected relationship -	No specific relation	+	Insignificant	H_{09}:There is no significant relationship between NDTS and debt equity ratio	NOT REJECTED
SIZE	+	-	-	Insignificant	H_{010} :There is no significant relationship between Size and debt equity ratio	NOT REJECTED
R^2	51%					

Source: Author's Own Analysis

Conclusions

This study examined the determinants of capital structure of leading Automobile companies in the context of emerging markets like India. The study first specifically focused on determinants affecting individual firms and then additionally showed Panel Data Regression results to have a holistic view of the Industry. There may be many factors influencing the capital structure, but in this research considering the stylized facts and VIF statistics, five variables have been studied as determinants of capital structure. This paper examines the debt equity ratio as a proxy for leverage/Capital Structure.

The study reveals some interesting facts and results. The empirical analysis showed that companies like Force Motors, have very different results compared to other leading Automobile companies. In the regression analysis, R^2 value was also very low which shows that some other variables which are not included in the present study affect the capital structure of these companies. None of the variables is significant as well as the p value is more than 0.05 which calls for further analysis with a comprehensive data set.

Multiple regression analysis reveals that while profitability and size are significant determinants in most of the leading companies; NDTS, Growth and Debt Service Coverage

ratio are significant only for few of the companies. Panel data approach for the Automobile Industry as a whole shows that profitability is the only significant determinant having negative relationship with debt equity ratio and the other variables are insignificant.

As far as the theoretical approach is concerned it seems that there is a mix of both the theories in the each of the Automobile Companies and there is no one theory followed by the company.

Theoretical Implications

Most of the studies have just identified the significant determinants that affect the capital structure in Indian context. The present study distinguishes itself from previous research studies by investigating the theories applicable in each of the leading companies through empirical mapping of the observed signs of the variables used for the analysis of determinants with the predicted signs. This helps in validation of the empirical results of the present study. Based on the observed relationship, the theory implications in each of the leading automobile companies are presented in Table 13. As far as the theoretical approach is concerned, it seems that there is a mix of trade off and pecking order theories in the each of the Automobile Companies and there is no single theory followed by the companies. However, the summarized results of the Panel data in Table 12 and its mapping with the predicted signs strongly suggests that Automobile Industry as a whole follows pecking order approach and the results are in line with survey evidence presented by Manoj Anand (2002) and Suresh Babu and P. K. Jain (1998) in Indian firms.

The above differences in empirical results of individual companies and the Industry suggests that firm dynamics are very different and each firm could have their own policies, financial constraints, different ownership perspective and they may not be affected like the Automobile Industry as a whole due to their distinct characteristics. On the other side, the Automobile Industry could have some intervening forces, which cannot be controlled due to various tax policies, economic, and political conditions in a country like India. Thus, the companies can have individually different financial behavior than the Industry and consequently can have variations in the capital structure decisions too.

Table 13: Applicability of Pecking Order or Trade off Theories in Leading Automobile Companies in India

DETERMINANTS	*COMPANIES(COS)*	*AL*	*EM*	*HM*	*M&M*	*MS*	*TVS*	*TM*	*AAL*	*FM*	*SML*
GROWTH	OBSERVED SIGNS	+	+	+	+	+	+	+	-	-	-
	THEORY	PECKING ORDER THEORY							TRADE OF THEORY		
DEBT SERVICE COVERAGE	COS	EM	M&M	AL	AAL	FM	HM	MS	SML	TVS	TM
	OBESRVED SIGNS	+	+	-	-	-	-	-	-	-	-
	THEORY	TRADE OFF THEORY		PECKING ORDER THEORY							
PROFITABILITY	COS	HM	AL	AAL	EM	FM	M&M	MS	SML	TVS	TM
	OBESRVED SIGNS	+	-	-	-	-	-	-	-	-	-
	THEORY	TRADEOFF THEORY	PECKING ORDER THEORY								
NON-DEBT TAX SHIELD	COS	AL	EM	TVS	AAL	HM	FM	M&M	MS	SML	TM
	OBESRVED SIGNS	+	+	+	-	-	-	-	-	-	-
	THEORY	PECKING ORDER THEORY (EXPECTED SIGN)			TRADE OFF THEORY						
SIZE	COS	AL	AAL	EM	HM	TVS	FM	M&M	MS	SML	TM
	OBESRVED SIGNS	+	+	+	+	+	-	-	-	-	-
	THEORY	TRADE OFF THEORY					PECKING ORDER THEORY				

Relationship: (+) Positive (-) Negative
Source: Author's Own Analysis

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