

CORPORATE FINANCING PATTERN AND CAPITAL STRUCTURE ANALYSIS OF LEADING AUTOMOBILE COMPANIES IN INDIA: A PANEL DATA REGRESSION

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Abstract *Recently many Indian firms have faced bankruptcy issues due to the over reliance on debt or due to improper capital structure decisions. The fact that auto industry is cyclical in nature and highly capital intensive (which requires large financial commitments), an important measure for evaluating auto companies would be the capital structure analysis. The central theme in capital structure is whether an optimal or at least a target capital structure exists. Thus the present study examines the financing pattern by analysing mean, coefficient of variance, and CAGR of every component of capital structure. Further, panel data regression has been used to empirically investigate the impact of components of capital structure on D/E ratio of 10 sample units for 11 years 2003-04 to 2013-14. The findings of the study were consistent with the previous literature that majority of firms in India follow pecking order approach. The ANOVA results suggest that there is a significant difference in the components of capital structure. The panel data regression results show that borrowings have a positive and significant effect on D/E ratio while reserves and surplus have a negative and significant effect on D/E ratio. Total capital did not have any impact on D/E ratio.*

Keyword: *Capital Structure, Leverage, Components, Automobile Industry, Debt Equity Ratio*

BACKGROUND AND RATIONALE OF THE STUDY

Capital structure is the mix of debt, preferred stock, and common equity that minimises the weighted average cost of capital, and maximises the firm value. The mixture chosen will affect both the risk and value of the firm (Ross, Westerfield, & Jordan, 2010). The most important financial function is the efficient utilisation of the funds provided by the owners or obtained from external sources together with those retained or ploughed back out of surplus or undistributed profits. The presumption is that funds from both sources are used for acquiring income-producing assets. The valuation and structure of physical assets depends on the financing mix. Those interested in a company's capital structure are primarily concerned with comparing the percentages of total funding for income-producing assets that come from each source - that is, they are primarily concerned with knowing proportion of debt and equity. Thus, role of each component is very important in the evaluation of capital structure.

When a company includes debt in its capital structure it provides a tax shield as interest paid on debt is tax deductible. From a practical viewpoint, a firm cannot expect to gain the benefits associated with tax deductibility of interest payments without also increasing certain other costs (Welch, 2009). At

very high debt levels, the possibility of financial distress is a chronic problem for the firm, so the benefit of debt financing may be more than offset by the financial distress cost. Thus, leverage (employing debt in capital structure) affects the liquidity of the company as with more debt there will be more cash outflow in terms of payment of fixed financial obligations. However if the company chooses to be debt free it loses on the benefits of tax shield. Thus it also affects the profitability of the company which ultimately affects the financial performance of the firm. Thus, in the times of rapid changes in corporate finance, the prime factor to be monitored is combination of debt and equity in the capital structure. With dynamic changes in the capital market there is also a good reason to presume that pattern of corporate financing decisions might have changed over the decades. Due to high competition in the manufacturing sector, the CFOs of these companies have to make a conscious choice for the components of the capital structure as it has a long term effect on the value of the company too.

If we look at the debt equity ratio of automobile sector in Table 1 it ranges between 30 to 70 % for last 15 years and as on 2015 it is 45%. (Source: CMIE prowess database). Within the automobile segments, commercial vehicles segment (CVS) has opted for sizeable debt exceeding the ratio of 1 and for passenger vehicles (PVS) and two & three wheelers it is 0.20 to 0.50 (20 to 50%).

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Table 1: Debt Equity Ratio of Leading Automobile Companies and the Segments

	Ashok Le	Atul Auto	Eicher Mo	Force Mo	Hero Mo	Mahindra	Maruti Sur	S M L Isuzu	T V S Mo	Tata Motd	Industry	CVS	PVS	Two whee
Mar-04	0.5	0.33	1.05	0.31	0.15	0.42	0.12	0.18	0.21	0.35	0.28	0.38	0.2	0.27
Mar-05	0.78	0.56	0.59	0.3	0.14	0.54	0.09	0.42	0.3	0.61	0.34	0.63	0.13	0.23
Mar-06	0.5	0.66	0.4	1	0.09	0.31	0.03	1.71	0.55	0.53	0.29	0.55	0.08	0.25
Mar-07	0.35	1.07	0.49	1.34	0.07	0.46	0.09	1.45	0.84	0.59	0.38	0.57	0.24	0.28
Mar-08	0.42	1.27	0.44	3.55	0.04	0.6	0.15	1.52	0.87	0.8	0.51	0.78	0.34	0.41
Mar-09	0.93	1.04	0.02	0.71	0.02	0.77	0.08	2.28	1.21	1.06	0.69	1.02	0.45	0.39
Mar-10	0.95	0.69	0.03	0.52	0.02	0.37	0.08	0.45	1.18	1.11	0.63	1.04	0.28	0.33
Mar-11	0.97	0.15	0.04	0.75	0.73	0.23	0.03	0.4	0.77	0.8	0.52	0.79	0.26	0.35
Mar-12	1.07	0.07	0.03	0.06	0.4	0.3	0.09	0.41	0.71	0.84	0.49	0.79	0.26	0.24
Mar-13	1.39	0	0.03	0.06	0.18	0.24	0.08	0.61	0.52	0.89	0.46	0.88	0.23	0.13
Mar-14	1.44	0	0.04	0.04	0.05	0.24	0.09	0	0.37	0.8	0.42	0.82	0.27	0.07

Source: Computed from CMIE Database

The debt to equity during the period of study clearly shows that debt as a choice of financial instrument is gaining popularity amongst corporates and the magnitude and significance of debt funds again justifies an in depth research on the capital structure analysis from different aspects for the selected Indian automobile firms.

Reasons for Selecting Automobile Industry

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 automobile industry currently contributes 22% of the manufacturing GDP and 7% of the country's GDP. The Indian auto industry has left behind many other auto manufacturers with an annual production of 23.96 million vehicles in financial year 2015 and is going to be third largest in the world by 2020. Auto industry is cyclical in nature, is highly capital-intensive and requires large financial commitments. This generates research interest to analyse the capital structure of these companies in terms of the components used in funding the capital requirements.

REVIEW OF LITERATURE

60 years since the propositions by Modigliani and Miller (1958) and (1963), many researchers have tried to extend the theories related to corporate leverage and 100s of articles have been written on capital structure but the capital structure

is still a puzzle. The literature review has been divided in two parts as under:

Research Relating to Capital Structure Theories and Financing Pattern: Global and Indian Perspective

According to Pecking Order Theory by Myers and Majluf (1984), more profitable firms borrow less, because they have more internal financing available and less profitable firms require external financing, and consequently accumulated debt. However, as per trade-off theory, profitable companies would give preference to the use of debt financing in view of the attraction of tax shield benefit available on borrowed funds. Thus, trade-off theory predicts that there would be a direct relationship between profitability and leverage, while pecking order theory expects the opposite i.e. an inverse relationship between them. Substantial work has been done on these theories in global and Indian context. 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. The corporate enterprises in India seem to prefer long term borrowings over short term borrowings and follow the pecking order approach. The thesis work of Rajbhandary (1998) stressed on the fact that India and Korea had similar debt versus equity spectrum with greater reliance on debt. Specifically the tests on India indicate that debt issue is explained by both pecking order and static trade-off theories. Low bankruptcy costs in all countries encourage firms to take on high amounts of debt. Chirinko and Singha (2000) in their studies for 157 U.S. firms during the period from 1971 to 1989 argued against the support of pecking order model.

documented by Shyam-Sunder and Myers. The empirical evidence did not support either the pecking order or static trade-off models. Chua and Woodward (1993) examined the capital structure of 43 private companies in Canada from 1993-1998 and confirmed the pecking order hypothesis of reluctance to issue new equity to outsiders and utilising internal funds first. Singh and Kumar (2008) intended to study the financing behaviour of the Indian firms and found that for automobiles firms, market-to-book and intangibility are significant variables and positively related to the debt-to-equity level. They observed existence of trade-off theory in Indian firms rather than pecking order theory. Frank and Goyal (2003) tested the pecking order theory of capital structure of American firms and found evidence inconsistent with the pecking order hypothesis especially for smaller firms but agreed that larger firms follow the pecking order hypothesis. They found that internal financing is not enough to cover the investment spending and Equity becomes more important. Shahnazarian (2005) supports the pecking order approach under different regimes. The study provided empirical evidence that typical firm will start to finance a new investment by issuing new shares in combination with debt, then grow by financing its investments with retained earnings and borrowing, and eventually stop growing and distribute all profits. Das and Roy (2007) found evidence that the capital structure of firms are systematically different across 12 manufacturing firms in India 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. Thomas (2013) supported the pecking order theory in Indian Cement industry. She revealed the facts of mild effects of recession on cement industry due to strong internal sources and less reliance on external sources i.e. debt. Porwal and Kaur (2012) revealed that firms in majority of the industries have debt-equity ratios significantly different from the industry average and that the capital structures do not differ significantly. Singh and Luthra (2013) found that companies are trying to trade-off between Equity and finance options. Refinery companies use more debt compared to metal industries. Vijayakumar (2011) suggests that the pecking order theory is more appropriate to explain the capital structure choice of the Indian automobile firms compared to trade-off theory. The empirical findings suggest that there is a difference between capital structure choices for companies. More profitable companies had less debt, because these firms followed financial hierarchy i.e. the pecking order theory and contradicts the trade-off theory.

Eriotis, Vasiliou, and Ventoura-Neokosmidi (2007) in their 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.

Fischer, Heinkel, and Zechner (1989) undertook a study, 'Dynamic capital structure choice: Theory and tests' which provides predictions relating firm-specific properties to the range of optimal leverage ratios like smaller, riskier, lower-tax, lower-bankruptcy-cost firms will exhibit wider swings in their debt ratios over time. Their empirical results revealed that even small recapitalisation costs lead to wide swings in a firm's debt ratio over time.

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

Ahmed 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 found results consistent with the predictions of the trade-off theory, pecking order theory, and agency theory which shows that capital structure models derived from western settings does provide some help in understanding the financing behaviour of firms in Pakistan.

Mukherjee and Mahakud (2010) undertook a study on dynamic adjustment towards target capital structure of 891 Indian manufacturing firms over a period of 93-94 to 2007-08. The empirical results confirmed the trade-off theory i.e. firms have a specific target leverage ratio. 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.

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 1992-93 to 2007-08. 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 do wanted to achieve 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. The study also 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.

Bhaduri (2002) 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.

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 suggest a possibility of costly restructuring for the Indian firms and differential costs of adjustment for long term and short-term borrowing. They also found that an optimal capital structure is strongly influenced by factor the factors like size, asset structure, profitability, and short-term financial distress cost.

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 trade-off theory and variables like size growth, profitability, assets, risk were used for analysing the variations in the capital structure in India. In case of public limited companies the debt-equity ratio is influenced by the return on assets and in private limited companies it is influenced by the margin on sales.

Bhole and Mahakud (2004) in their study on trends and determinants of corporate capital structure in India found that cost of borrowing, cost of equity, size of the firm, collateral value of assets, liquidity, and non-debt tax shield are important determinants but size and liquidity are the most significant determinants of corporate capital structure. 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.

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 1994-95 to 2003-04. 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.

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. 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 use of internal equity.

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.

Research Related to Surveys of CFOS for Importance of Finance Decisions: Global and Indian Perspective

In some of the very popular surveys, globally and in India, CFOS have some definite and interesting options for the capital structure decisions as mentioned below:

According to a survey by Tufano and Servaes (2006) of CFOs, capital structure was at the top of the list followed by debt issuance and management and relationship with banks, but infact the most surprising fact was that equity issuance was at the bottom of the list as firms rarely issue new shares to investors. Issuing new shares is expensive and it sends a negative signal to the market. 68% of the respondents agreed to a target capital structure for their firms. In a survey by Cohen and Yagil (2007) from the US, UK, Germany, Canada, Japan, CFOs of levered companies (whose debt ratio exceeded 50%) opined that managing the firms' capital structure was even more important than the investment decision. The fundamental principle of leverage that applies here is that more a firm borrows, more volatile are its earnings. Anand (2002) conducted a survey of 81 CFOs from a cross section of 474 private Indian firms and 54 public Indian firms where 89% of the respondents consider retained earnings as the most favoured source of finance, followed by loans from financial institutions and private placement of debt. Only 16.9% CFOs preferred Equity capital as a source of finance. In a survey of CFOs by Babu and Jain (1998), 66% of the respondents preferred retained earnings as a long term source of finance. Their study indicated probably for the first time the existence of pecking order approach in Indian firms. Graham and Harvey (2001) showed that most firms operate with an idea of optimum capital structure in mind. 44% of the CFOs believed that firms had a very strict or tight capital structure target and another 37% said that their firms had flexible targets. Less than 1/5th of the CFOs said that their firms had no target debt ratio or range. Pinegar

and Wilbricht (1989) found that 84.3% respondents ranked internal equity as their first choice while 39.7% external equity as their last choice. Most managers follow financial hierarchy i.e. pecking order theory than to follow target debt level.

The empirical analysis support two well-known models, trade-off and pecking order theory under different economic, political, and country specific situations. The results of the popular survey by eminent researchers show that Indian firms follow pecking order approach.

OBJECTIVES OF THE STUDY

- To study the financing pattern of each leading automobile company in India through components of capital structure and to examine the capital structure/leverage represented by debt equity ratio of these companies for the study period covering 11 years from 2004-2014.
- To examine the impact of components of capital structure on the debt equity ratio.

DATA AND RESEARCH METHODOLOGY

Sources of Data

The information relating to the capital structure and leverage ratios for the leading Automobile companies have been collected from the Prowess IQ – the latest version of Prowess CMIE. Established in 1976, CMIE is a leading

business information company, which provides financial performance time series data of Indian companies through paid subscription. Annual reports of individual companies are the principal source of this database. For listed companies, the database includes data sourced from the stock exchanges.

Period of the Study

The study on capital structure analysis of leading automobile companies is conducted from 2003-04 to 2013-14, i.e. for 11 years.

Sample Selection

Sample selection consists of listed automobile companies on Bombay Stock Exchange (BSE) from 2003-2004 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 capitalisation, sales, and net profit. After applying above filters, with information availability constraint, a sample size of 10 leading companies has been undertaken to do the capital structure analysis.

List of Top Ten Auto Companies

Table 2: List of Sample Companies

Company Name	Abbreviation	Incorporation Year	Segment	Market Capitalisation (Rs crore)
Ashok Leyland Ltd.	AL	1948	LCVS, HCVS	28,074.57
Atul Auto Ltd.	ALL	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

Theoretical Framework: Key Variables and Their Definition

The capital structure analysis is done through examining various components of capital structure and leverage is analysed through debt equity ratio of the company.

Table 3: Description of Capital Structure Indicators

Variables	Theoretical construct	Measurement
S.CAP	Share Capital	Share capital includes paid up equity capital, forfeited equity capital, paid up preference capital, capital contribution and funds by government, money received against share warrants and minority interest reserves.
R&S	Reserves and Surplus	Reserves are shareholders' funds, largely (though not entirely) generated through the surpluses of the business. It is the accumulated surplus of the company.
Debt	Debt/Borrowings	Debt also known as total borrowings. 'Borrowings' is the sum of secured and unsecured borrowings. It includes different types of borrowings like borrowing from banks, financial institutions, central and state government, inter-corporate loans etc. includes both secured and unsecured loan
NW	Net worth	Equity share capital + Total Reserves& Surplus excluding Revaluation Reserves
CE	Capital Employed	Total Share capital + Total Reserves& Surplus excluding Revaluation Reserves+ Total Borrowings
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.

Hypothesis

The following hypotheses have been framed:

H₀: There is no significant difference in the components of capital structure among the selected companies.

H₀: There is no significant relationship between debt equity ratio and components of capital structure of the leading automobile companies in India.

Research Methodology

For analysing the individual components of capital structure and the leverage of leading automobile companies in India, mean, coefficient of variation, and CAGR were used. For knowing the mean differences for the components amongst the leading automobile companies ANOVA was used. For investigating the impact of different components on debt equity ratio Panel Data Regression were used.

DATA ANALYSIS AND INTERPRETATION

The relative proportion of debt, equity, and other outstanding securities of a firm constitute its capital structure. Capital structure planning is the key to the objective of profit maximisation, ensuring the minimum cost of capital and the maximum rate of return to equity holders. Identifying the precise percentage of debt that will maximise per share is almost impossible. In theory one can speak of optimum

capital structure, but in practice it is very difficult to design one. There are significant variations among industries as also among individual companies within the same industry in respect of capital structure. Therefore it is important to know the capital structure of each company i.e. analysis of the components or the debt equity mix.

Mean, CAGR and Coefficient of Variance of Components of Capital Structure (Table 4)

To have an in-depth view of capital structure the mean, CAGR & CV for various components has been presented for individual leading companies in Table 5.

Total Capital

Tata Motors showed the highest mean amongst all companies (5004.1) followed by M&M (2429.264) and AL (1657.036) while ALL had the lowest mean (69.16). M&M had the highest CAGR showing growth in equity capital at 9.79% which was double the Industry CAGR followed by AL at 8.39%, TVS at 7.48 % and TM at 6.19%. The other companies like EM, MS, and SML had comparatively low CAGR showing reluctance to issue capital and more reliance on other sources of capital either internal or external. This approach is followed in the pecking order theory where equity issuance is the last resort for the company, while FM and HM had no change in the equity capital during the study period. The coefficient of variation suggested that FM (2.26),

HM (1.49), and MS (0.44) were consistent in terms of value of equity capital over the study period. The other companies like TVS, AL, ALL, and M&M showed high fluctuations in equity capital compared to other companies like EM, SML, and TM. Though AL was one of the companies showing highest mean capital it was inconsistent in total equity capital.

Borrowings

Amongst all ten companies TM showed the highest mean value of borrowings (Rs. 101183.2) while ALL showed the least mean value (Rs. 144.52). The CAGR of the company shows that there is highest growth in debt in SML i.e. 41.30 % only until recently when they paid off all the debts. The other companies which had a significant increase in CAGR were AL, TATA, Maruti Suzuki, TVS, and M&M while companies like ALL, EM and FM had negative CAGR. If we look at the mean values results it also falls in line with the CAGR which shows that on an average AL TATA, Maruti Suzuki, TVS, M&M have high debt values compared to EM, FM ALL, and SML. The overall Industry CAGR shows a positive growth rate of 20.92% in debt in automobile companies in India. The coefficient of variation suggests that the variable with the smaller CV is less dispersed than the variable with the larger CV. It means that debt of Eicher, Hero Motors, ALL, and AL have high fluctuations compared to FM, M&S, M&M, SML, TVS, and TATA.

Reserves & Surplus

Like other components the mean of TM is the highest amongst all the ten companies at 115901.9 while ALL had the least mean at 332.21. The CAGR showed that M&M had a significant growth in reserves and surplus over the study period at 25.82% followed by SML at 24.05 % which is even more than the industry CAGR and ALL at 22% and FM at 21.15% quite near the industry norm of 22.16%. The other companies also showed quite high % increase in the CAGR with MS at 19.71%, TM at 19.06%, HM at 17.60%, and EM at 16.89%. Amongst all ten companies TVS had the lowest CAGR of 9.51% showing less growth in reserves and surplus. The variability measured in terms of coefficient of variation suggests that there is highest fluctuation in FM followed by M&M, quite high when compared to industry CV of 59%. The other companies which had greater fluctuations in reserves and surplus were ALL at 67%, SML at 66%, TM at 57%, and MS at 54%. The companies which were

relatively low CV were AL at 48%, EM at 39%, and TVS at 27% depicting stability in the retained earnings during the study period.

Capital Employed

If we look at the mean values of different companies, Tata Motors have recorded the highest value i.e. 2, 21,828 while Atul Auto has the least of all ten companies i.e. 546.9 during the study period. The mean value of the industry is 1039443. The coefficient of variation suggests that the variable with the smaller CV is less dispersed than the variable with the larger CV. It means that capital employed of FM, M&M, AL, MS, and TM have larger fluctuations compared to ALL, EM, HM, SML, and TVS. The CAGR of companies show that there is highest growth in capital employed by M&M at 23.71% followed by TataMotors Ltd at 21.71%, SML at 19.21%, MS at 19.04%, and AL at 18.20%. The CAGR of these companies is quite near to Industry CAGR of 19.10% while other companies like FM at 17.73%, HM at 16.18%, ALL at 15.37% showed a significant growth rate. Out of all the leading companies EM had the least CAGR at 8.33% implying a slow pace of capital employed.

Net worth

If we look at the figures it is quite evident that Tata Motors has the highest mean of 120644.7 while ALL has the least mean of 402.37. The CAGR shows that M&M had the highest growth in net worth at 25.36% during the study period followed by SML at 21.07% and FM at 20.42%. Infact these companies have a CAGR more than the industry CAGR of 18.94%. As seen in Table 4, the other companies like ALL, TM, MS, and HM had a CAGR near to the industry CAGR.

TVS had the lowest CAGR of 9.67% while AL had a moderate CAGR of 12.59%. If we see the CAGR of all the companies over the study period there is a noticeable growth in the companies due to constant increase in reserves and surplus. But if we look at the coefficient of variation, FM has the highest fluctuations in net worth as its CV is very high compared to even industry CV followed by M&M., SML, and ALL with high CV. Other companies like MS and TM have CV more close to the Industry numbers showing relatively less fluctuations in net worth over the study period but companies like TVS, AL, EM, and HM have relatively stable net worth since coefficient of variation is quite low.

Table 4: Mean, CV and CAGR of Components of Capital Structure from 2004-2014

Variables		AL	ALL	EM	FM	HM	M&M	MS	SML	T V S	TM	Industry
Total Capital	Mean	1657.036	69.16364	255.5273	131.8	399.4	2429.264	1456.818	123.0818	323.3091	5004.1	56687.65
	CAGR	8.39%	7.22%	3.06%	0.00%	0.00%	9.79%	0.44%	3.28%	7.48%	6.19%	4.00%
	CV	0.390507	0.317151	0.190736	2.26E-16	1.49E-16	0.281137	0.018049	0.168941	0.372271	0.254245	0.145747
Reserves & Surplus	Mean	27332.12	333.2091	4345.336	4655.727	31614.77	71689.31	106255.6	1343.545	8892.636	115901.9	354711.5
	CAGR	16.19%	22.00%	16.89%	21.15%	17.60%	25.82%	19.71%	24.05%	9.51%	19.06%	22.16%
	CV	0.484107	0.678595	0.392591	0.96821	0.44573	0.732959	0.547764	0.659291	0.273619	0.566654	0.5916
Borrowings	Mean	20430.07	144.5272727	925.1818182	1545.136	5539.618	24855.38	8788.182	953.3636	6031.882	101183.2	198612
	CAGR	25.12%	-4.52%	-17.02%	-1.10%	4.99%	18.68%	15.98%	41.30%	16.06%	28.37%	20.92%
	CV	0.736513	0.880270565	0.955075214	0.685972	1.319592	0.503984	0.616016	0.704238	0.462913	0.654194	0.56618
Capital Em- ployed	Mean	42076.66	546.9	5530.991	6332.664	37553.79	98763.93	116485.8	2419.991	14921.25	221828	603717.1
	CAGR	18.20%	15.37%	8.33%	17.73%	16.18%	23.71%	19.04%	19.12%	11.05%	21.71%	19.10%
	CV	0.53316	0.364604	0.261437	0.629128	0.465694	0.641327	0.538698	0.463364	0.308415	0.594898	0.529725
Net worth	Mean	21646.59	402.3727	4605.809	4787.527	32014.17	73908.55	107697.6	1466.627	8889.364	120644.7	400898.2
	CAGR	12.59%	18.72%	15.96%	20.42%	17.27%	25.36%	19.36%	21.07%	9.67%	18.29%	18.94%
	CV	0.36100618	0.613955	0.374198	0.941555	0.440169	0.719042	0.540803	0.617467	0.309672	0.555018	0.5325
	Mean		CAGR	CV								
Highest												
Lowest												

Analysis of Components of Capital Structure or Capitalisation

Analysis of Variance (ANOVA) is used to tests whether means of different component are significantly different among the leading companies

Hypothesis

H₀: There is no significant difference in the capital employed among the selected companies.

H₀: There is no significant difference in the total debt among the selected companies.

H₀: There is no significant difference in the net worth among the selected companies.

H₀: There is no significant difference in the total capital among the selected companies.

H₀: There is no significant difference in the reserve and surplus among the selected companies.

H₀: There is no significant difference in the debt equity ratio among the selected companies.

Table 5: Analysis of Variance of Components of Capital structure and Leverage

		Sum of Squares	Df	Mean Square	F	Sig.
Borrowings	Between Groups	93700238764.142	9	10411137640.460	21.432	.000
	Within Groups	48578172099.924	100	485781720.999		
	Total	142278410864.066	109			
CE	Between Groups	507642143926.173	9	56404682658.464	21.517	.000
	Within Groups	262139207158.305	100	2621392071.583		
	Total	769781351084.479	109			

		Sum of Squares	Df	Mean Square	F	Sig.
NW	Between Groups	210022866800.172	9	23335874088.908	21.231	.000
	Within Groups	109915138213.385	100	1099151382.134		
	Total	319938005013.557	109			
TC	Between Groups	243496105.855	9	27055122.873	107.265	.000
	Within Groups	25222794.500	100	252227.945		
	Total	268718900.355	109			
RS	Between Groups	196519966404.985	9	21835551822.776	20.096	.000
	Within Groups	108656102897.431	100	1086561028.974		
	Total	305176069302.416	109			
DE	Between Groups	8.237	9	.915	4.024	.000
	Within Groups	22.743	100	.227		
	Total	30.980	109			

Source: CMIE prowest Data base and computed through SPSS.

Table 5 shows the output of the ANOVA analysis and whether there is a statistically significant difference between the companies for means of various components. The significance level is ($p=0.00$) which is below 0.05. Since $p<0.05$ null hypothesis stands rejected for each of the component and it is proved that there is a significant difference in the mean of different components of capital structure i.e. Total Capital, Reserves, and Surplus, Capital Employed, Net worth, and Borrowings. As p value for debt equity ratio is 0.000 which is less than 0.05 null hypothesis stands rejected and it is proved that there is a significant difference in the capital structure of leading automobile companies.

PANEL DATA REGRESSION

Since the present study includes both cross sectional and time series data, panel data regression is used to empirically investigate the impact of components of capital structure on the debt equity ratio across all leading companies for 11 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. Panel data help in

uncovering dynamic relationships. The following regression model has been developed and a panel data random effect regression approach has been used after applying Hausman test. Data analysis has been done with the help of statistical software e-views.

Empirical Model

To capture the relationship between debt-equity ratio and components of capital structure the following regression model has been framed (Table 8):

$$DE_{it} = \beta_0 + \beta_1 (\text{Borrowings})_{it} + \beta_2 (\text{TC})_{it} + \beta_3 (\text{RS})_{it} + e_{it}$$

where DE_{it} is debt equity ratio for firm i in time t ;

Borrowings_{it} is the borrowings for firm i in time t ;

TC_{it} is the total capital for firm i in time t ;

RS_{it} is the reserves and surplus for firm i in time t ;

β_0 is the common y-intercept; β_1 - β_3 the coefficients of the concerned explanatory variables;

e_{it} the stochastic error term of firm i at time t .

Empirical Results

Table 6: Descriptive statistics

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Borrowings	110	0	170997.70	17039.66	3444.77	36129.03
RS	110	114	208270.00	37236.42	5045.05	52912.95
TC	110	55.8	6437.80	1184.95	149.71	1570.13
DE	110	0	3.55	0.54	0.05	0.53
Valid N	110					

Table 4 provides a summary of the descriptive statistics of the components of capital structure and the debt equity ratio of the sample industries for 11 years. The borrowings of all the sample companies represent the minimum and maximum values ranging between 0 and 170997.7. The standard deviation of all the firms is 36129.03 and the mean of borrowings of all firms is 17039.66. The reserves and surplus of all firms represents the minimum and maximum value ranging between 37236.42 to 5045.05. The standard deviation is 52912.95 and the average R&S is 37236.42. Total capital of the companies represents the minimum and maximum values ranging between 55.8 to 6437.80. The standard deviation is 1570.13 and the average capital is 1184.95. The debt equity ratio ranges from minimum value of 0 to maximum value of 3.55 showing the huge variations in amount of debt taken by the companies. The mean is 0.53 and the standard deviation is 0.54.

Results of the Hausman test (Table 7) show that p value is greater than 0.05 thus accepting the null hypothesis that random effect model (REM) is more appropriate and rejects the fixed-effect model (FEM).

Table 7: Hausmen Test

Correlated Random Effects - Hausman Test Equation: Untitled Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.691151	3	0.6389

Source: CMIE Prowess, Statistical Tool E views

Table 8: Regression Results for Debt Equity and Components of Capital Structure

Sample (adjusted): 3/01/2004 3/01/2014				
Periods included: 11				
Cross-sections included: 10				
Total panel (balanced) observations: 110				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RS	-4.20E-06	1.64E-06	-2.553949	0.0121
TC	-7.21E-05	8.90E-05	-0.810264	0.4196
BORROWIN	1.03E-05	3.26E-06	3.173396	0.0020
C	0.607140	0.094883	6.398812	0.0000
Effects Specification			S.D.	Rho
Cross-section random			0.179370	0.1291
Idiosyncratic random			0.465976	0.8709
Weighted Statistics				
R-squared	0.121469	Mean dependent var	0.333993	
Adjusted R-squared	0.096604	S.D. dependent var	0.487221	
S.E. of regression	0.463090	Sum squared resid	22.73195	
F-statistic	4.885298	Durbin-Watson stat	1.067455	
Prob(F-statistic)	0.003204			

Source: CMIE Prowess, Statistical Tool E views

From the empirical analysis of Random effect Regression Model (Table 8) it has been found that there is a negative and significant correlation between debt-equity and reserves and surplus which supports the studies done previously, which means higher the reserves and surplus lower the debt equity ratio while borrowings is positively and significantly correlated with the debt equity ratio, which means firms with high rate of borrowings have higher debt equity ratio. Total capital did not have any impact on the debt equity ratio of the companies and had a negative relationship with debt equity ratio. The R^2 value shows the combined effect of the above model in explaining the relevant correlation between the dependent and predictors. This means that 12.15% variation in debt equity ratio is because of the components like borrowings, reserves and surplus, total capital and the remaining variation is due to other internal or external factors. Durbin Watson statistics (1.07) shows that there is no serious auto correlation problem between variables. Prob (F-statistics) value (0.003204) shows that the model is significant.

CONCLUSION

Amongst all the leading companies Tata Motors had the highest mean for all the components of capital structure and Atul Auto Limited had the least mean. Except for the borrowings the CAGR of Mahindra and Mahindra was highest for all the components of capital structure. It showed the pace of growth that the company has maintained over the years in the LCVS and MCVS sector. The coefficient of variation (CV) suggested that there were high fluctuations in Force Motors for total capital and reserves and surplus and therefore the net worth. Hero Motors showed the highest fluctuations in borrowings while M&M had very high fluctuations in Capital Employed. TVS was the most consistent company as the CV was low for almost all the components i.e. borrowings, reserves, and surplus, net worth, and capital employed showing the stability in maintaining the different components over the study period. ANOVA results showed that there are significant differences in the components used for funding the capital requirements of all the leading automobile companies in India.

The reducing debt equity ratio (Table 1) clearly indicates that 60% of the sample Indian automobile companies are following pecking order approach as all these companies have paid off their debts and also maintained a low debt equity ratio except TM, TVS, SML, and AL. Infact TVS has a very high ratio compared to the two-wheeler industry ratio too. Also SML recently had a zero debt equity ratio in 2014 and so is the case of ALL which maintains a zero debt equity ratio since last two years. Thus the results are consistent with Vijayakumar (2011) suggesting pecking order approach for Indian companies. The results are also consistent with

the popular survey findings of Babu and Jain (1998) and Anand (2002) where majority of the CFOs of Indian firms considered retained earnings as the first preference compared to other sources of finance. Thus reserves and surplus and subsequently the net worth, have a very high mean and CAGR for all the companies.

The panel data regression results show that borrowings have a positive and significant effect on D/E ratio and reserves and surplus have a negative and significant effect on D/E ratio. Total capital did not have any impact on D/E ratio.

Implications

In a dynamic capital market companies can take some risk and opt for some more debt as most of the companies seem to be conservative and follow the pecking order theory. Also further research on what type of sources company use in funding their capital requirements may depict more clarity on capital structure of these companies. Thus there is a future scope of research by including types of sources and its long term impact on capital structure of the company.

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