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EFFECT OF DETERMINANTS OF CAPITAL STRUCTURE ON FINANCIAL LEVERAGE: A STUDY OF SELECTED INDIAN AUTOMOBILE COMPANIES

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Abstract *The objective of this paper is to investigate the relationship between financial leverage and determinants of capital structure of four topmost companies of Indian Automobile Industry. Selected companies for the study include Tata Motors Ltd, Mahindra and Mahindra Ltd, Maruti Suzuki India Ltd, and Hero MotoCorp Ltd. The determinants we have taken for the study include liquidity, size, profitability, growth rate, and tangibility. The data collected for the study are of 10 years from 2005-2014. Multiple regression analysis and correlation analysis are used as statistical tools in the present paper. The inter correlation matrix is formulated with reference to selected independent variables in order to detect the problem of multi-collinearity. There is an average support of explanatory variables or independent variables on dependent variable. The independent variables that are statistically significant in explaining the variation in dependent variable are profitability, growth rate, and liquidity at 5% level of significance. The results have been indicated by the calculated p values that are less than the .05 at 5% level of significance. The outcome may be useful for companies in their financing decisions.*

Keyword: *Capital Structure, Multi-collinearity, Profitability, Growth Rate, Liquidity*

INTRODUCTION

Going through the literature related to financial management we find there are three basic functions of financial management. These are 1) raising finance, 2) investing it in assets, and 3) distributing returns earned from assets to shareholders. These three functions are respectively known as Financing decision, Investment decision and Dividend policy decision. Financing decision is very important decision of any company and is concerned with the financing mix i.e. sources the company use to arrange money in order to meet its investment needs. Capital structure is synonym of financing mix. The formation of an appropriate capital structure is not an easy task, it requires a lot of knowledge and investigation. The presence of higher leverage in capital structure of any firm can lead it to bankruptcy. So there is a need to determine the proper mix of debt and equity, which is also called an optimal capital structure but practically it is not as easy as it seems to us. There are different factors that determine the capital structure of a firm. Some of them are size of the firm, stability of earnings, degree of competition, stage of life cycle of the firm, cash flow ability of the firm, rate of corporate tax, capital market conditions, credit standing of the firm, profitability of the firm, nature of investors, attitude of management, and so many. Financial manager should consider all the factors that affect capital structure before taking any decision regarding financing mix.

The present paper investigates the determinants of capital structure in the selected automobile companies. There are various theories regarding capital structure but still it is one of the main unsolved issues. There are different factors that determine the capital structure of a firm. We have taken five important determinants as independent variables. The selection of the independent variables is confined to the fact of availability of relevant data. As a result the final set of proxy variables includes five factors namely: tangibility, profitability, growth rate, size, and liquidity. To summarise it can be said that the focus of the present study revolves around the term determinants of capital structure and the efforts have been made to conclude the major determinants that influence the capital structure in the context of automobile companies.

IMPORTANT CAPITAL STRUCTURE THEORIES

In general we cannot ignore the fact that decision regarding the determination of capital structure is among the most

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influencing decisions for an enterprise. Net Income Approach proposed by David Durand (1952) states that capital structure influences the value of a firm and overall cost of capital. The theory states that as a firm increases debt in capital structure its value increases and overall cost of capital decreases. We can say that the Net Income Approach argues that capital structure decisions are related to the value of the firm.

Net Operating Income Approach which is also proposed by David Durand, is just opposite of Net Income Approach. The theory states that value of the firm and the overall cost of capital are not related to the financing mix of the firm. Value of the firm remain constant, whether the firm apply debt or not in its capital structure. According to this approach, in the real sense, value of a firm depends on its net operating income and business risk. So as per Net Operating Income Approach capital structure decision is irrelevant to the valuation of a firm.

Another theory of capital structure available in literature is the Traditional Approach or Intermediate Approach. As the name suggests it highlights the mid-way i.e. using debt at a certain level will maximise the value of a firm and minimise the overall cost of capital but after crossing that level the cost of capital increases since the presence of excess debt may increase the financial risk of the shareholders.

There is a lot of contribution of Modigliani and Miller (1958) with respect to capital structure. They developed capital structure irrelevance proposition under some assumptions. They state that the value of the firm and the financing decision of the firm are two separate and independent issues. But this holds true only in absence of taxes. In absence of taxes, capital structure is irrelevant to the value of the firm. However this does not hold true particularly when corporate taxes are present. In the presence of taxes capital structure is related with the value of the firm as stated by Modigliani and Miller (1963). The other theories of capital structure available in literature are Pecking order theory and Static trade of theory. Pecking order theory (Myers, 1984) states that for financing firms investment financial manager should first use retained earnings and then debt financing. Static trade of theory explains that there should be a proper balance in using the debt. Any type of unbalance may lead a company in the position of financial distress.

REVIEW OF LITERATURE

A short review of various studies conducted on this topic which has engaged academicians for decades is as follows:

Malavalli and Sathyanarayana (n.d.) have conducted an analytical study on determinants of capital structure in Indian automobile Sector. They concluded that the independent variables, i.e. growth rate, size, NDTS, and business risk are not influencing leverage whereas tangibility and earnings have average influence on financial leverage.

Riyazahmed (2012) has done an empirical study on a case study of automobile manufacturing companies listed in NSE and the study shows that the dividend payout and debt service capacity, degree of leverage, and business risk are statistically significant determinants of financial leverage.

Saravanan and Gowri (2014), in their study 'Capital Structure of Select Companies in Indian Automobile Industry: A SEM Approach' concluded that tangibility, profitability, and size are among the variables consistent with our study that influence the capital structure of selected company.

Yadav (2014) in his study concluded that only debt service capacity has significant impact on leverage.

Aurangzeb and Anwar ul Haq (2012) studied impact of various determinants of capital structure on leverage of the firm and concluded that firm size, tangibility of assets, and profitability have positive relation with leverage, on the other hand growth has negative relation with leverage.

Akinyomi and Olagunju (2013) examined connection between determinants of capital structure and leverage. The study revealed that firm size and tax have a negative relation with leverage and tangibility, profitability. and growth rate have a positive relation with leverage. Jani and Bhatt (2015) have conducted a study on 'Determinants of Capital Structure – A case study of automobile industry'. The results of the study reveal that the determinants suggested by the capital structure theories are useful for firms.

Azlan, Jamal, Geetha, Mohidin, Rahimie, Karim, Sang and Ching (2013) make efforts to find out the factors that affect the financial decisions in Malaysia. Their result shows that size has a positive relation with leverage whereas liquidity, profitability, and tangibility have a significant negative relation with leverage. The most important factor which determines capital structure is profitability as shown by the study.

Afza and Hussain (2011) have conducted a study on 'Determinants of Capital Structure across Selected Manufacturing Sector'. The result found that firms having good liquidity position should use firstly retained earnings, secondly debts, and lastly equity in their capital structure. Their study is in favour of Static Trade off Theory and Pecking order theory.

Ashraf and Rasool (2013) have done an empirical study on 'Determinants of Leverage of Automobile Sector firms listed in Karachi stock Exchange by Testing Pecking Order Theory'. There are three factors i.e. size, growth, and tangibility which are found significant in the study. The study is consistent with Pecking order theory of capital structure.

Mand and Singh (2014) have conducted a study, 'An Empirical Investigation into the Determinants of Capital

Structure in Indian Iron & Steel Industry'. They found that non-debt tax shield is significantly and positively related with leverage. On the other side, size, tangibility, profitability, debt service capacity, degree of operating leverage, and age have negative and significant relation with leverage.

Gill and Mathur (2011) examine the 'Factors that influence Financial Leverage of Canadian firms' and found that the collateralised assets, profitability, tax, size, growth rate influence capital structure of selected firms significantly.

Manjule (2014) in his study 'Impact of Capital structure in Indian Industries' concluded that the determinants of capital structure are industry specific i.e. the variable those affect the capital structure of any firm may varies from sector to sector.

Apart from above there may be various other studies conducted on different sectors but the issue still remains unsolved.

OBJECTIVES OF THE STUDY

1. To suggest some determinants which are of considerable attention for capital structure decision of automobile sector.
2. To investigate the relation that exists between the capital structure and defined independent variables.

DATA DESCRIPTION

The proposed study has been based on secondary data only. The data for the study have been collected from the website www.moneycontrol.com. The samples are collected from topmost Indian Automobile Companies from the website www.business.mapsofindia.com. The financial data for the study are of ten years from 2005-2014.

RESEARCH METHODOLOGY

The study type is analytical in nature. The present study will attempt to examine the impact of selected independent variables on financial leverage. So in our study we consider financial leverage as dependent variable. The statistical tool used in the study includes multiple regression model.

Specification of the Model

W=a+b1A1+b2A2+b3A3+b4A4+b5A5……..

where,

W = financial leverage

A1=Tangibility

A2=Profitability

A3=Growth Rate

A4=Size

A5=Liquidity

a=constant term of the model

b's=coefficients of the model

Dependent Variable (W)

It is defined as the ratio of debt to equity. Only long term liabilities are included in debt whereas net worth is included in equity. It is given by

Financial Leverage= Debt / Equity.

Independent Variables

Tangibility (A1) = It is defined as the ratio of total fixed assets to total assets. It is given by

Tangibility = Total Fixed Asset / Total Asset.

Profitability (A2) = It is defined in term of return on total assets. It is given by

Profitability= Earnings before interest and tax / Total Assets.

Growth rate (A3) =It is defined as a compound growth rate of total assets. It is given by

Growth rate= Total assets at the end of the selected period / Total assets at the beginning of selected period.

Size (A4) =It is defined as the logarithm of total asset of the firms. It is given by

Size= Log (Total Assets)

Liquidity (A5) = It is defined as ratio of current assets to current liabilities. It is given by Liquidity= Current Assets / Current Liabilities.

HYPOTHESIS OF THE STUDY

Based on the objectives stated above, the following null hypotheses have been tested:

H0: There is no significant relation between the selected independent variables and financial leverage.

H1: There is a significant relation between the selected independent variables and financial leverage.

DETECTION OF MULTI-COLLINEARITY

If two variables are highly correlated then this situation

Table 1: Inter Correlation Matrix for Independent Variables

	Tangibility	Profitability	Growth Rate	Size	Liquidity
Tangibility	1				
Profitability	-0.06931	1			
Growth Rate	0.172377	-0.111449085	1		
Size	-0.05953	-0.658246064	-0.122524772	1	
Liquidity	-0.45987	-0.28568166	-0.051757356	0.158406160	1

is termed as multi-collinearity. In this situation results of regression are not accurate. The independent variables, whose correlation value are greater than 0.80, would not be included in study. In order to find if there is a problem of multi-collinearity we take inter correlation matrix (Table 1) of independent variables and find that there is absence of multi-collinearity among independent variables.

ANALYSIS OF REGRESSION RESULTS

For analysis of regression results we have to look at regression summary output in Table 2 (a) (b) (c). In order to identify the relationship between financial leverage and determinants of capital structure, Debt Equity ratio is regressed on determinants of capital structure. There is a presence of significant correlation with R= 0.76938654 as per the regression summary output shown in Table 2 (a). R square is 59% (approx) which reveals 59 % variation in financial leverage is explained by the defined independent variables and rest due to some other variables.

Table 2(a): Regression Summary Output

Regression Statistics	
Multiple R	0.76938654
R Square	0.591955648
Adjusted R Square	0.531949125
Standard Error	0.215448077
Observation	40

Tangibility

The beta coefficient of tangibility is –0.5276126342 (Table 2(c)) which shows tangibility has a negative relation with leverage. The relation is not statistically significant. Though null hypothesis is accepted but in this case tangibility does not affect the capital structure of the selected companies.

Profitability

Beta coefficient associated with the profitability is -1.168098666 (Table 2(c)) which is found to be negative. In other words profitability has negative relation with leverage

Table 2(b): Regression Summary Output- ANOVA

ANOVA					
	df	SS	MS	F	Significance F
Regression	5	2.289528002	0.4579056005	9.864855079	0.000006812287588
Residual	34	1.578207717	0.04641787404		
Total	39	3.86773572			

Table 2(c): Regression Summary Output – Coefficient of Variables

	Coefficients	SE	t-stat	P-value
Intercept	1.308571184	0.5083314949	2.574247705	0.01457438464
Tangibility	-0.5276126342	0.325727099	-1.619799629	0.1145151086
Profitability	-1.168098666	0.2838950945	-4.1145433252	0.0002329095617
Growth Rate	0.6299686662	0.2415557105	2.607964286	0.01343393107
Size	0.007798863375	0.07189386426	0.1084774543	0.9142546333
Liquidity	-0.6683155387	0.1644660361	-4.063547431	0.0002697942757

Table 3: Relationship

Independent Variables	Observed relationship	Significant with P- value	Insignificant with P- value
Tangibility	_		0.1145151086
Profitability	_	0.0002329095617	
Growth Rate	+	0.01343393107	
Size	+		0.9142546333
Liquidity	_	0.0002697942757	

in selected automobile companies and the relation is statistically significant at .05 level. Therefore null hypothesis is rejected in this case, it can be stated that profitability has been considered as an important determinant of capital structure. The implication is that there should be a decrease in debt level with the increase in profitability.

Growth Rate

The relationship between growth rate and leverage has been found to be positive with beta coefficient of 0.6299686662 (Table 2(c)) and the relation is statistically significant at .05 level. Null hypothesis is rejected. It implies that debt level should increase with the increase in the growth rate of the company. So the growth rate can be considered as a useful factor in determining the capital structure for automobile companies.

Size

The beta coefficient of size is 0.0077988633375 (Table 2(c)) which is positive but not statistically significant at .05 level. Null hypothesis is accepted. Hence, it can be said that size is not an important factor in determining the capital structure for automobile industry.

Liquidity

The beta coefficient of liquidity is -0.668315539 (Table 2(c)) which has a negative relationship with leverage although the relation is statistically significant at .05 level. So it can be concluded that liquidity is an important factor which influence the financial leverage of automobile companies.

IMPLICATIONS

The present study has implications for companies, particularly automobile companies in their financing decisions. Among the selected independent variables i.e. tangibility, profitability, growth rate, size, and liquidity, three variables are significant, which implies that those automobile companies which are profitable, growth-oriented, and strong as per liquidity point of view should use the debt in their capital structure. This study also makes financial managers aware about how an appropriate mix of debt and equity, can be used in financing mix of any company. The factors that affect the capital structure are so many influencing each company as per situation.

CONCLUSION

In conclusion we can say that the independent variables that are statistically significant in explaining the variation in financial leverage are the profitability, growth rate, and liquidity as indicated by the calculated P-values (Table 3) that are less than the significance level of 5%. The F-statistics is 9.864855079 % and p value is 6.81229E.06 (Table 2(b)) which shows the validity and significance of the model. R square is 0.591955648 (Table 2(a)) which reveals that model explain 59% (appx.) variation in leverage with help of present model. The independent variable(s) which has/ have positive relation with leverage is growth rate and negative relation with leverage are liquidity and profitability. The p value for all these variables is less than 0.05 which shows that all the above relations are significant at .05 level. All the remaining variables included in the present study have turned out to be statistically insignificant for determining capital structure in automobile industry.

LIMITATIONS

The present study has following limitations:

1. The study focuses on secondary data which have its own limitations so the limitations of using secondary data remain in this paper.
2. The study is based on only single sector. i.e. automobile sector.
3. This study is limited to a small sample of Indian Automobile Industry.
4. The independent variables and no of observations can be more than taken in the study.

FUTURE RESEARCH

Future research should investigate generalisation of the findings beyond the Indian Automobile Sector. The sample size can be larger and sample period can also be of more than 10 years to bring out the comprehensive and best results.

REFERENCES

Afza, T., & Hussain, A. (2011). Determinants of capital structure across selected manufacturing sector. *International Journal of Humanities and Social Science*, 1(12), 254-260.

Akinyomi, O. J., & Olagunju, A. (2013), Determinants of capital structure in Nigeria, *International Journal of Innovation and Applied Studies,* 3(4), 999-1005.

Ashraf, T., & Rasool, S. (2013). Determinants of leverage of automobile Sector firms Listed in Karachi stock exchange by testing pecking order theory. *Journal of Business Studies Quarterly,* 4(3), 73-83.

Aurangzeb & Anwar Ul Haq (2012). Determinants of capital structure: A case from textile industry of Pakistan. *International Journal of Academic Research in Business and Social Sciences*, 2(4), 408-421.

Azlan, A., Jamal, A., Geetha, C., Mahidin, R., Rahimie, M., Karim, A., Sang, L.T., & Ching, Y. (2013). Capital structure decisions: Evidence from large capitalized companies in Malaysia, *Journal of Contemporary Research in Business,* 5(5), 30-49.

Durand, D. (1952). Cost of debt and equity funds for business trends and problems of measurement, in conference on research in business finance. *National bureau for economic research*, New York

Das, S. C. (2013). *Business accounting and financial management.* PHI Learning Private Limited, Delhi.

Drake, P. P. (n.d.) *Regression step-by-step using Microsoft Excel*. James Madison University.

Gill, A., & Mathur, N. (2011). Factors that influence financial leverage of Canadian firms, *Journal of Applied finance and Banking,* 1(2), 19-37.

Goel, D. K., Goel, R., & Goel, S. (2010). *Financial Management.* Avichal Publishing Company, Delhi.

Goel, D. K., Goel, R., & Goel, S. (2011). Management Accounting and Financial Management, Avichal Publishing Company, Delhi.

Gupta, S. K., & Aggarwal, N. (n.d.). Financial Services, Kalyani Publishers, Ludhiana.

Jani, R. R., & Bhatt, S. J. (2015). Capital structure determinants: A case study of automobile industry *International Journal of Research and Analytical Reviews,* 2(1), 67-71.

Khan, J., & Jain, P. K. (2004). *Financial Management*. Tata McGraw-Hill Publishing Company Limited, New Delhi.

Manjule, R. (2014). Impact of Capital Structure In Indian Industries. *International Journal of Scientific and Engineering Research,* 5(1), 2239-2249.

Mand, H. S., Singh, I., & Singh, M. (2014). Determinants of capital structure in the Indian Chemical Industry, Kundu, S. C, Punia, B. K., Sheera, V. P., & Kumar, R. Business management: Current research issues, 257-265, Wisdom Publication, Delhi.

Mand, H. S., & Singh, M. (2014). An empirical investigation into the determinants of capital structure in Indian iron and steel industry. *Indian Journal of Accounting*, , 46(2), 111-116.

Malavalli, N., & Sathyanarayana, S. (n.d.). An analytical study on the Determinants of Capital Structure in Indian Automobile, IT and Hotel Sectors, AIMS International conference on management, 2238-2243.

Modigliani F., & Miller, M. (1958). The cost of capital, Corporation finance and the theory of investment., *The American Economic Review*

Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: A correction. *American Economic Review*, 53, 433-43.

Myers, S., & Majluf, N. (1984). Corporate financing and investment when firms have information that investors do not have. *Journal of Financial Economics*, 11, 187-221.

Riyazahmed, K. (2012). Determinants of capital structure : A case study of automobile manufacturing companies listed in NSE. *International Journal of Marketing, Financial Services & Management Research,* 1(4), 47-52.

Sarvanan, R., & Gowri, K. (2014). Capital structure of select companies in Indian automobile industry: A SEM approach. *Research Journal of Science and Management,* 3(11), 243-255.

Yadav, C. S. (2014). Determinants of the capital structure and financial leverage:

Evidence of selected Indian companies. *Asia Pacific Journal of research,* 1(12), 121-129.