

Financial Leverage and Firm Value: A study of Manufacturing Sector Firms

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Abstract: *The capital structure decision is crucial for understanding the dynamics of business growth for any business organization because organizations are oriented towards maximizing output as it has greater impact on a firm's ability to deal with its competitive environment. This study synthesizes the capital structure determinants theory and empirically examines both the determinants and suggested firm behavior patterns in relation to financing decisions of 145 Manufacturing Sector Firms for the period from 2001-2009. Such analysis is carried out by using a relatively new and innovative factor-analytic structural equation modelling (SEM) methodology. The objective is to study the capital structure of selected Manufacturing sector firms and its impact on the value of the firm. The findings also revealed that non-debt tax shield is considered as an important determinant of financial leverage and it is verified that Manufacturing Sector Firms with high non-debt tax shield use more debt as compared to other Manufacturing Sector Firms. The return on capital employed is highest in FMCG Sector among all Manufacturing Sector Firms resulting into higher profitability maximizing the shareholders return and impacting the firm value. The study concluded that the Manufacturing Sector Firms Capital Structure is too rigid to offer any scope for adjustment.*

I. Introduction:

Capital structure has always been one of the popular fields among the studies related to financial management. Its importance derives from the fact that capital structure is tightly related to the ability of firms to fulfill the needs of various stakeholders. The capital structure decision is crucial for any business organization. The decision is important because of its need to maximize returns to various organizational constituencies, and also because of the impact such a decision has on a firm's ability to deal with its competitive environment. However, it attempts to find the particular combination that maximizes its overall market value. There is a controversy that has surrounded the question of whether using debt to create financial leverage can affect the average cost of capital and the total value of the firm. However, empirical evidence remains inconclusive and puzzled various researchers by how firms choose the debt, equity or hybrid securities they issue. There are theories in corporate finance that propounded the relationship between capital structure and valuation of a firm. While those propositions focus more on the theoretical aspect, this study has gathered financial information of selected Manufacturing sector firms and attempted to establish a relationship between financial leverage and firm's value and its impact on the capital structure. The study focuses on assessing the determinants of capital structure and its influence in deciding the financial structure. The study also deals with examining the inter-industry difference in determinants of capital structure of different Manufacturing sector firms.

II. Review of Literature:

Titman Sheridan, Wessels Roberto (1988) conducted a study from 1974-1982 on "The determinants of capital structure choice" for 469 firms. The paper also focuses on recent theories of optimal capital structure. The study extends empirical work on capital structure theory in three ways. First it examines a much broader set of capital structure theories, many of which have not previously been analyzed empirically. Second, since the theories have different empirical implication in regard to different types of debt instruments. Thirdly the study focuses on factor analytic technique that mitigates the measurement problems encountered when working with proxy variables. Thus, factor analytic technique is being used for estimating the impact of unobservable attributed on the choice of corporate debt ratio. The findings of the study are that firms with unique or specialized products have relatively low debt ratios. The model also explained that there is no variation in convertible debt ratios across firms and finds no evidence to support theoretical work that predicts that the debt ratio is related to a firms expected growth, non-debt tax shields volatility or the collateral value of its assets. The findings also supported the proposition that profitable firms have relatively less debt relative to the market value of their equity.

Hovakimian Armen, Opler Tim, Titman Sheridan (2002) conducted a study on “The Capital Structure Choice: New evidence for a dynamic trade off model” to examine changes in the leverage ratio of a broad set of U.S. publicly traded companies over the 19 –year period from 1979-1997. The study was performed by estimating the optimal leverage ratios and then computing the extent of deviations from leverage targets. Further, the study has focused on making a clear choice between issuing debt or equity. The statistical regression methods were developed to frame a model of optimal capital structure for determining the factors that explain the leverage ratios of the companies. The findings suggest that the past profits are an important predictor of observed debt ratio, companies often make financial and repurchase decision that offset these earnings driven deviation from their capital structure targets. The findings of the study are consistent with the dynamic trade-off theory.

Bevan and Danbolt (2004) provide evidence suggesting that the relationship between leverage and its determinants is affected by the methodology used to analyse the sample data, specifically whether it controls for the firm and time-specific heterogeneity or not. They found that there have been significant differences in the results of pooled data and panel data analysis. The study utilised market-to book value, natural logarithm of sales (size), profitability, and tangibility of assets as determinants of capital structure. In addition to the time invariant and firm specific heterogeneity, the focus was on the variety of long - run and short run debts components rather than on the aggregate measures. They found that large firms use long and short term debt more than small ones. Tangibility is found to be positively related to both short and long-term debt, while profitability is found to be negatively related. However, they find that profitable firms tend to use short-term debt more than less profitable one.

Munyo (2004) conducted the study on “The determinants of capital structure: Evidence from an economy without stock market” analyzes the determinants of the source of funding for the firms from Uruguay through a cross section econometric models. The analysis casts out that size, tangibility, and profitability are influencing variables for the financial structure. The study also focused on analyzing the capital structure factors of the most represented firms from developing economies, taking into account that, they have severe constraints to access stock market for funding and access to information is, in general, only available for the firms listed on the stock market. For this reason, the empirical evidence faces to a trade-off between availability of information and accuracy of the firms. The less profitable firms are those mainly financed through external funding. The firms with a bigger proportion of tangible assets have easier access to long-term banking credit. On the other hand, the firms which do not possess these features, are the ones which present a smaller relative proportion of this type of assets will tend to be financed through trade credit lines. The study also revealed that there is a statistical significant regarding the influence of size.

Chingfu Chang, Alice C. Lee and Cheng F. Lee (2005) conducted a study on “Determinants of Capital Structure Choice: A Structural Equation Modeling Approach” with refined indicators to cross-sectional and pooled samples for the period 1988-2003 and find more convincing results than those obtained by Titman and Wessels. With the capital structure measured simultaneously by the ratios of long-term debt, short-term debt, and convertible debt to the market value of equity, the study concluded that growth is the most important determinant of capital structure choice, followed in order by profitability, collateral value, volatility, non-debt tax shields, and uniqueness. Moreover, we find that long-term debt is the most important proxy of capital structure, followed by short-term debt and then convertible debt.

III. Hypothesis of the study:

Hypothesis 1: The firm specific determinants of capital structure do not have any impact on the financial structure of Manufacturing Sector Firms.

H₁ (a) There is a positive relationship between financial leverages and return on net worth.

H₁ (b) There is a positive relationship between financial leverages and return on capital employed.

H₁ (c) There is a negative relationship between financial leverages and interest cover ratio.

H₁ (d) There is a negative relationship between financial leverages and non-debt tax shield.

H₁ (e) There is a negative relationship between financial leverages and profitability.

H₁ (f) There is a positive relationship between financial leverages and collateralizable value of assets.

H₁ (g) There is positive relationship between financial leverage and size.

H₁ (h) There is negative relationship between financial leverage and growth.

Hypothesis II: There is no significant difference between the mean scores of various financial parameters between the various sectors.

H₂ (a) : There is no significant difference between the mean scores of financial leverages with the return on net worth.

H₂ (b): There is no significant difference between the mean scores of financial leverages with the return on capital employed.

H₂ (c): There is no significant difference between the mean scores of financial leverages with the interest cover ratio.

H₂ (d) : There is no significant difference between the mean scores of financial leverages with the interest cover ratio.

H₂ (e): There is no significant difference between the mean scores of financial leverages with the profitability.

H₂ (f): There is no significant difference between the mean scores of financial leverages with the collateralizable value of assets.

H₂ (g): There is no significant difference between the mean scores of financial leverages with the size.

H₂ (h): There is no significant difference between the mean scores of financial leverages with the growth.

IV. Data Analysis and Interpretation:

Capital structure has aroused intense debate in the corporate finance and numerous attempts to explain capital structure have proved to be inconclusive. The present study is focused on examining the determinants of capital structure and its influence in deciding the financial structure of Manufacturing Sector Firms and also focuses on examining the inter-industry difference in determinants of capital structure of different Manufacturing Sector Firms by applying AMOS in structural Equation Modeling and ANOVA. An investigation of the determination of the capital structure choice in developing countries helps in determining whether the capital structure choice in these countries is related to factors similar to those influencing the capital structure choice in developed countries. The capital structure is a more realistic term in corporate finance and the determinants of capital structure are considered to be the most debatable topics in the finance literature since the capital structure irrelevance proposition introduced. The optimal capital structure leads to maximum market valuation and minimum cost of capital is enduring and reflects the composition of debt and equity. There have been different views regarding the factors impacting the capital structure decisions of the developing countries so therefore, the present study is an effort to contribute in this field by determining the impact of various explanatory variables on the debt equity mix and ascertaining the inter industry variations existing in case of Manufacturing Sector firms in India. The study computes the value of all the independent and dependent variables taking the data of Overall Manufacturing Sector Firms as depicted in Table 1.1 i.e. ANOVA of Overall Manufacturing Sector Firms.

Table 1.1: ANOVA of Overall Manufacturing Sector Firms

Test of Homogeneity of Variances						
	Levene Statistic	Sig.	F	Sig.	Welch	Sig.
Financial leverage	2.106	.068	2.286	.051		
Collateralizable value of assets	3.132	.010			11.667	.000
Size	23.194	.000			4.076	.003
Growth	1.025	.405	1.416	.222		
Profitability	4.753	.000			4.191	.003
Non-debt tax shield	2.519	.032			8.965	.000
Interest Cover Ratio	10.670	.000			3.471	.008
Return on Capital Employed	8.659	.000			7.459	.000
Return on Net Worth	12.412	.000			3.845	.004

From the table 1.1 it is interpreted that there is a significant difference between the mean scores of various financial parameters i.e. Collateralizable value of assets, Size, Profitability, Non-debt tax shield, Interest Cover Ratio, Return on Capital Employed and Return on Net Worth for the various sectors of economy. The statistical tool applied is One way ANOVA to study the various financial parameters. When there are two or more categories to compare we can apply One way ANOVA (Malhotra & Dash 2009). One of the assumptions for one way ANOVA is that there must be equality of variance among the various categories under consideration. The other test applied here is Levene's test which measure for the homogeneity of variance among the various categories of Manufacturing Sector Firms. It is interpreted that sig value is less than 0.05 in

Collateralizable value of assets, Size, Profitability, Non-debt tax shield, Interest Cover Ratio, Return on Capital Employed and Return on net worth which shows that there is a variance among various Manufacturing Sector Firms. The null hypothesis is rejected and it implies that there is a significant difference between the mean score of dependent variable between the various categories of independent variable. The other financial parameter i.e. Financial leverage and Growth have Levene’s test significance value greater than 0.05 hence for them ANOVA values are considered and for the rest Welch’s values are considered. It is concluded that there is no significant difference between the mean score of dependent variable between the various categories of independent variable and resulting into acceptance of null hypothesis. So in the Table-1.1 when Sig value of Levene’s test is less than 0.05, Welch’s Sig values are considered else the usual ANOVA Sig values are taken. Table 1.2 depicts the descriptive statistics of Manufacturing Sector Firms given below.

Table 1.2: Descriptive Statistics of Manufacturing Sector Firms:

Statistics= Mean	Agriculture	FMCG	Healthcare	Metals Metal Products & Mining	Oil & Gas	Transport Equipment
Financial leverage	.45	.05	.33	.45	.34	.38
Collateralizable value of assets	.85	.78	.52	.77	.85	.96
Size	1438.20	2237.71	941.96	3123.05	24903.69	3283.73
Non-debt tax shield	.0406	.0485	.0302	.1196	.0428	.0653
Profitability	.11	.36	.19	.12	.18	.23
Interest Cover Ratio	1.24	1.02	29.89	23.28	81.31	22.13
Return on Capital Employed	7.14	26.24	23.14	18.54	21.50	18.07
Return on Net Worth	15.79	38.53	22.42	19.30	18.57	16.07

From Table 1.2 it is interpreted that financial leverage in FMCG Sector Firms is the least among the various Manufacturing Sector Firms thereby suggesting that profitable firms prefer internal financing and rely less on debt. In case of Metals Metal Products & Mining, cost of borrowing financial distress is one of the main determinants of leverage ratio. The findings revealed that firms can use their fixed assets as collateral to secure debt financing and tangible assets can be used as raising low cost secured debt. It was interpreted that Metals Metal Products & Mining have higher liquidation value of tangible assets have more debt than Healthcare Sector Firms and FMCG Sector Firms. The findings of the study suggest that relationship between collateralizable value of assets and financial leverage corroborates the arguments of the trade-off theory in case of Healthcare Sector, Metals Metal Products & Mining Sector and Transport Equipment Sector Firms but it is not found in case of FMCG Sector and Agriculture Sector Firms. The possible explanation for the same is that the firms with higher level of tangible assets are more able to offer collateral security therefore, turn more towards debt. The findings also revealed that non-debt tax shield is considered as an important determinant of financial leverage and it is verified that Manufacturing Sector Firms with high non-debt tax shield use more debt as compared to other Manufacturing Sector Firms. The return on capital employed is highest in FMCG Sector among all Manufacturing Sector Firms resulting into higher profitability maximizing the shareholders return and impacting the firm value. The return on net worth is highest in case of FMCG Sector Firms indicate that the reserves and surplus to return on net worth shows that there is an effective use of internal source of funds in expansion programme as compared to Manufacturing Sector Firms. The Interest Cover Ratio is lowest in case of FMCG Sector Firms thus depicting firms preferring internal to external funds because of the availability of sufficient retained earnings and hence depend less on debt. There is a tendency on the part of the profitable firm to repay debt as quickly as possible. The path analysis was employed for predicting financial leverage with independent variables i.e. collateralizable value of assets, size , growth, profitability, non-debt tax shield, interest cover ratio, return on capital employed and return on net worth. Table 1.3 also depicts the summary statistics of regression analysis for Manufacturing Sector Firms.

Table 1.3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Linear	.627	.393	.356	.37372

From Table 1.3 it is interpreted that almost 39 percent of the variations of Financial Leverage were explained by 8 independent variables i.e. Collateralizable value of assets, size, growth, profitability, Non-debt tax shield, Interest cover ratio, Return on capital employed and Return on net worth. It depicts R which is the square root of R-Square and is showing the correlation between the observed and predicted value of dependent variable i.e. Financial Leverage. The correlation between dependent variable and predictor is represented as (0.627) which is considered to be a high value and it shows that they are positively and significantly correlated with each other. The value of r square (0.393) explains the degree of variation that is explained by all the independent variables or predictors i.e. determinants of capital structure taken together. It is considered to be an overall measure of the strength of association and does not reflect the extent to which any particular independent variable is associated with the dependent variables.

Figure 1.1: Standardized Estimates:

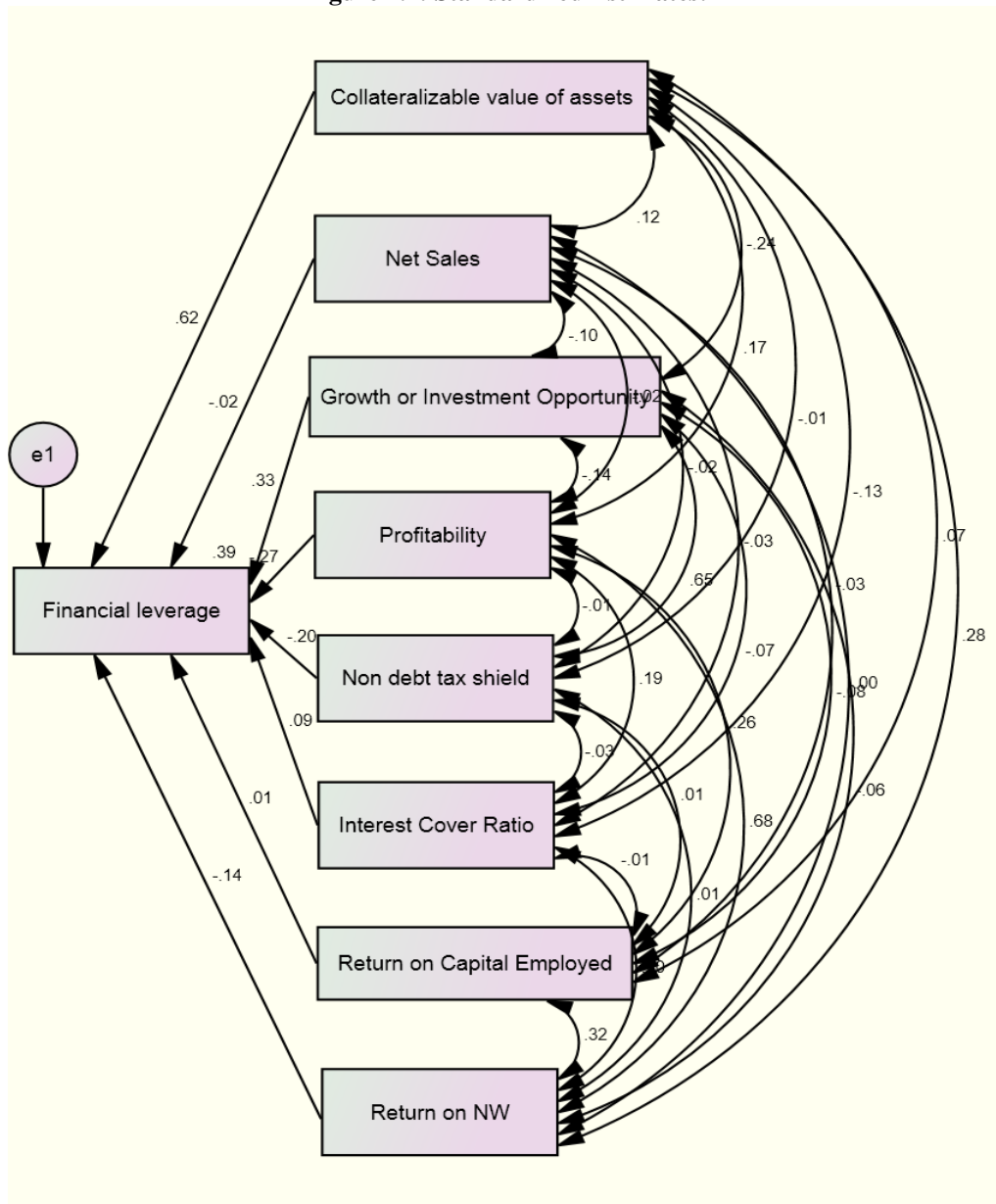


Figure 1.1 gives the details of various Beta values as well as the correlations between various independent variables.

Figure 1.2 Unstandardized Estimates:

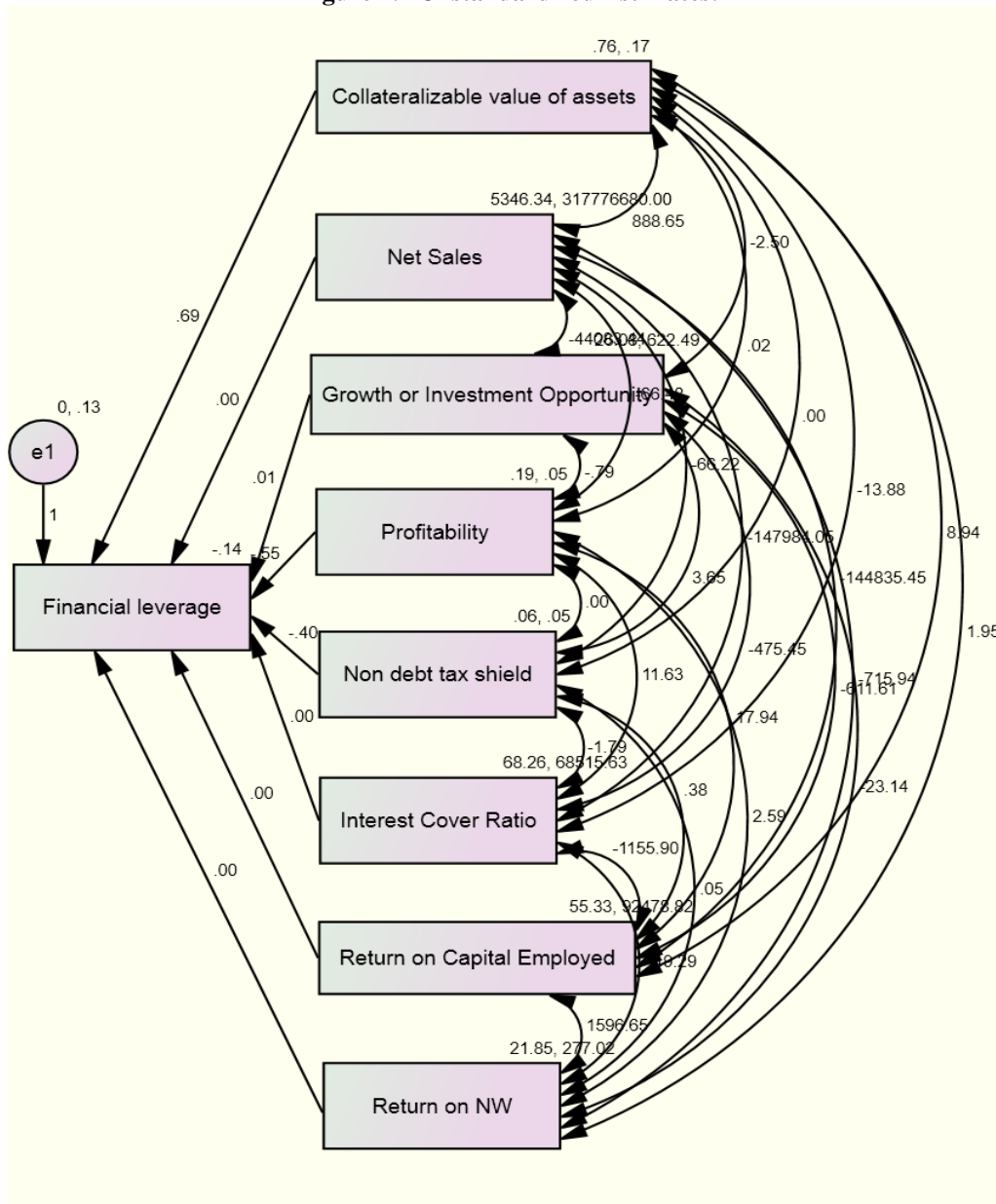


Figure 1.2 gives the details of various coefficient values of independent variables along with their mean and variances and co-variances.

Table 1.3: Regression Model results

Linear Model of Regression Dependent Variable: Financial Leverage	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.140	.094		-1.500	.136
Collateralizable value of assets	.692	.085	.616	8.119	.000
Size	.000	.000	-.016	-.227	.821
Growth	.006	.002	.335	3.480	.001
Profitability	-.549	.191	-.272	-2.871	.005
Non debt tax shield	-.404	.188	-.197	-2.149	.033
Interest Cover Ratio	.000	.000	.086	1.228	.221
Return on Capital Employed	.000	.000	.009	.125	.901
Return on net worth	-.004	.003	-.140	-1.433	.154

From Table 1.3 it is interpreted that collateralizable value of assets is found to be the most important predictor for the financial leverage. Profitability and Non debt tax shield were found to be negatively correlated with the financial leverage. Other variables like size, interest cover ratio, return on capital employed and return on net worth were almost uncorrelated with the dependent variable. Since many variables have almost zero coefficients, Stepwise regression was run again to remove unyielding variables.

Method: Stepwise	Unstandardized Coefficients		Standardized Coefficients		
Dependent Variable: Financial Leverage	B	Std. Error	Beta	t	Sig.
(Constant)	-.137	.091		-1.514	.132
Collateralizable value of assets	.640	.080	.570	7.959	.000
Profitability	-.693	.139	-.343	-4.978	.000
Growth or Investment Opportunity	.006	.002	.309	3.276	.001
Non debt tax shield	-.380	.187	-.185	-2.034	.044

Table 1.3 depicts that the financial leverage is positively correlated to collateralizable value of assets and Growth or Investment Opportunity. The positive relationship between collateralizable value of assets and financial leverage suggest that Manufacturing Sector Firms have tangible assets with high collateral value that can back more debts. Besides, the Manufacturing Sector Firms have tangible assets that retain more value on liquidation. The other possible explanation attributed for the same is the high ratio of fixed assets to current assets is associated with high barriers to entry, lower earnings risk and greater care of raising debt as fixed assets may be used as collateral thus resulted into positive relationship with collateralizable value of assets. The positive relationship between growth and financial leverage suggest that higher growth provides opportunity as well as demand for funds that can be made possible with external debt financing. The growth is estimated to have a positive impact on the financial leverage and the result contradict with Static Trade-off Theory and Agency Cost Theory but support the Pecking Order Theory and the possible reason for the same is that Manufacturing Sector Firms ought to use external financing they prefer debt over equity. The collateralizable value of assets is considered to be most important determinant of capital structure. The positive relationship between collateralizable value of assets and financial leverage is due to the reason that the cost of financial distress depends partly on the type of the assets held by the firm. Besides, the tangible assets and fixed assets have higher resale value compared with non-tangible assets. It also suggests that the Manufacturing Sector Firms have tangible assets with high collateral value thus can back more debts. The negative relationship between profitability and financial leverage indicate that manufacturing Sector Firms that are profitable are very much likely to rely on internal capital in financing their operations. The study concluded that the Manufacturing Sector Firms Capital Structure is too rigid to offer any scope for adjustment. So, the finance managers are advised to factor and carefully analyze sector specific attributes before attempting to achieve the so-called optimal structure as they are vital in the Indian context.

Bibliography:

- [1]. Chingfu Chang, Alice C. Lee and Cheng F. Lee, “ Determinants of capital structure choice: A structural equation modeling approach”, *The Quarterly Review of Economics and Finance*, 2009, vol. 49, issue 2, pages 197-213.
- [2]. Harris, M.,Raviv, A.(1991), “The theory of Capital Structure”, *Journal of Finance*, Vol 46 No. 1, pp.297-355
- [3]. Hovakimian Armen, Opler Tim, Titman Sheridan. “The Capital Structure Choice: New evidence for a dynamic trade off model.” *Journal of Applied Corporate Finance*. Vol. 15, No. 1, 2002: 24-30.
- [4]. Jensen M. and W. Meckling, 1976, “Theory of the Firm: Managerial Behavior, Agency Costs, and Capital Structure”, *Journal of Financial Economics* 3, 305-360.
- [6]. Modigliani, F. and Miller M. (1958), “The cost of capital, corporation finance and the theory of investment”, *American Economic Review*, Vol.48, pp.261-97.
- [7]. Munyo, I. “The determinants of capital structure: Evidence from an economy without stock market.” *Econometric Society 2004 Latin American Meetings* 267, *Econometric Society*. 2004.
- [8]. Myers, S. (1984), “The Capital Structure Puzzle” *Journal of Finance*, Vol. 39, PP.575-92.
- [9]. Titman, Sheridan and Roberto Wessels, 1988, “The Determinants of Capital Structure Choice,” *Journal of Finance* 43, 1-19.

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