FINANCIAL LEVERAGE AND FIRM'S VALUE: A STUDY OF AGRICULTURE SECTOR FIRMS

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ABSTRACT

The relationship between financial leverage and firm value is one of the central question in finance and has been investigated extensively both theoretically and empirically. The seminal work by Modigliani and Miller argues that financial leverage is irrelevant to firm value. Further studies by researchers have reached a paradoxical stage where an empirical issue has been raised that whether debt financing enhances or destroys firm value.The present study will rely on the data collected from secondary sources. The financial statements of the firms under study are collected from various sources such as Annual reports of the companies, CMIE (Centre for Monitoring the Indian Economy) and Capitaline database.This study is spread over a period of 9 years from 2001-2009 for the Agriculture Sector Firms, which are listed on the Bombay Stock Exchange (BSE-500). The total numbers of firms which are selected from Agriculture Sector is 18. The overall findings of the study show that there is a negative relationship existing between return on assets and financial leverage in case of Agriculture Sector Firms. The reason attributed for the same is that the return could not be maximized because it employed lower financial leverage to minimize the financial risk of the firms.The findings of the study suggest that debt to assets ratio in case of Agriculture Sectoris negatively related to financial leverage.The operating profit margin in Agriculture Sectoris positively related to financial leverage. The fixed assets turnover ratio revealed a positive relationship in case of Agriculture Sectorand being positive is a good predictor of debt-equity ratios.It is also concluded that the larger the proportion of fixed assets, the higher should be the debt equity ratio.In case of Agriculture Sector firms, the reason attributed for negative correlation of earning per share with financial leverage is because of the risk taking ability of owners and management. The negative correlation with financial leverage also depicts that successful companies do not need to place much dependence on external funding, since they can place reliance on internal reserves.The findings of this study does not support the theoretical foundation put forward by Modigliani and Miller in 1958 and corrected in 1963. The theory suggests that there is a positive relationship between the financial leverage and value of the firm by reducing the cost of capital and magnifying returns to owners.

Keywords: Financial leverage, capital structure, firm value, financial ratio.

Financial Leverage and Firm's Value: A study of Agriculture Sector Firms

1. Introduction:

Capital structure plays an important role in corporate finance and still there is inconclusive evidence with regard to increasing debt as financial leverage can impact the total value of the firm. Thus, in finance theory there is a disagreement which exists with respect to the impact of capital structure on the firm value. Value of a firm refers to the worth of a firm, and its value is derived from the firm's future benefits. Value of a firm is equal to the total capital employed which is also equal to the employment of that capital. Any decision that is made within a firm should be done to maximize the value of the firm and minimize the risk of the firm. Decisions that maximize the value of a firm result, in greater returns generated by the firm, Kriek et al. (2005).

The extent to which a firm uses debt funding or financial leverage has implications for the firm. Without increasing the investment shareholders are able to maintain control by raising funds through debt. If a firm earns more on the investment financed with debt than the interest due on debt, than shareholders returns are leveraged Erhardt and Brigham (2006). Firer et al 2004 states that capital structure is the relative amount of debt and equity a firm utilizes to finance its operational activities. The higher the debt-equity ratio, the greater the amount of debts used to generate profits Gitman (2006) According to trade - off theory debt offers the benefit of tax -shield but also increases the likelihood of bankruptcy.

In the present study, financial statements are considered for doing the quantitative analysis taken from Capitaline database. Financial statements are considered to be important from investor's perspective for predicting future earnings, dividends, and free cash

flows. From a management perspective, they provide insight into the future conditions and provide a point of departure for planning how best to effect improved performance, Erhardt and Brigham (2006). While carrying out capital structure research, corporate finance researchers have suggested that a link exists between a firm value and capital structure, such that one cannot isolate the terms from each other. The evaluation of various Agriculture Sector Firms for determining the capital structure is done with the help of financial ratios. The various determinants of capital structure are considered for evaluating the financial performance and its impact on the value of the firm. Conducting comparison using ratios avoids the problem of comparing firms of different size,Firer et al(2004). In order to study the impact of financial leverage on firm's value relevance of financial ratios utilised as a measure of a firm's financial performance.

2. Review of Literature

Aggarwal and Zhao (2006) conducted a study on "The leverage-value relationship puzzle: An industry effects resolution" and re estimated the relationship between leverage and firm value controlling for industry effects using a set of panel data on publicly traded non- financial US firms for the period 1980-2003. The paper document that, for US firms, higher leverage is always negatively associated with firm value (for both high and low growth firms). This evidence seems to resolve the leverage value relationship puzzle and may at least partially explain the puzzling phenomenon of debt consumerism. The results also revealed that the leverage value relationship seemed to have ignored the industry consideration. Leverage deviations from the industry median are negatively associated with the firm value deviation from the industry median. The results also suggest that the tax advantage of the debt financing is more than offset by the agency cost resulting from underinvestment problem among high growth firms, but the opposite seems to be correct for low growth firms. The findings also revealed that firm value effect of leverage seems to depend on firm growth opportunities.

Abor, Joshua (2007) conducted a study on "Industry classification and the Capital Structure of Ghanaian SMEs" for 150 SMEs for the period (1998-2003) to find out the effect of industry classification on capital structure from the Ghanaian perspectives. The analytical technique employed is regression framework with various capital structure measures as dependent variables, and with industry as the independent variable. Analysis of variance (ANOVA) and other non-parametric tests were also used to examine the differences in the capital structure of the SMEs across industries. The results of this study indicate that SMEs in the agricultural sector exhibit the highest capital structure and asset structure or collateral value, while the wholesale and retail trade industry have the lowest debt ratio and asset structure. The regression results indicate that agriculture and pharmaceutical and medical industries depend more on long-term and short-term debt than does the Manufacturing sector. Information and communication, and wholesale and retail trade sectors are more likely to use short-term credit than the Manufacturing sector. The results also show that the construction and mining industry is less likely to depend on short-term debt, whereas, hotel and hospitality depend more on long-term debt and less on short-term finance. The results clearly indicate that industry effect is important in explaining the capital structure of SMEs and that there are variations in capital structure across the various industries.

Ravi J., Kifle Samuel, Rao D.Prabhakara (2009) conducted a study on "Determinants of Capital structure: A study of selected firms in Ethiopia" for 78 firms operating in all sectors of the economy except those in the financial sector for the time period 2005-2007. The study investigated the determinant of capital structure in a setting where firms have thin market to raise long term finance. The analysis is done with linear regression of the independent variables over financial leverage is applied to investigate what variations of the leverage is explained by the independent variables and how each of the explanatory variables is related to leverage. The study concluded that, in the context of Ethiopian firms, the determinants of capital structure are able to explain much of the variation in financial leverage. The result also indicates that there is sufficient evidence and theoretical justification for the impact of the macro economic variables, industry classification, age, ownership. The result also shows that the pecking order theory better explains the financing behavior of Ethiopian firms.

Vyas, Vijay H. (2010) conducted a study on "An impact of leverage on Profitability: A case study on MRF Ltd." from 1999-2008. The study attempted to utilize leverage for improvement in profitability. The objectives of the study are to examine the methods of raising finance and financial leverage practices. The study also focused on examining the impact of leverage on earning per share. For analyzing the

degree of association between degrees of financial leverage and earning per share, Pearson's correlation coefficients have been used. The findings of the study suggested that the company is not successful in using leverage as a tool for better profitability. The declining tendency shown by both degree of financial leverage and debt equity ratio also indicate that the conservative policies are adopted in using the financial leverage in its capital structure.

Odit M.P., Gobardhun YD (2011) conducted an empirical analysis on "The determinants of financial leverage of SME's in Mauritius" over a panel data sample of 25 firms for the period 2002-2008 using quantitative analysis. The key purpose of this paper is to test the relevance of the deferent financing theories for explaining capital structure considering the most relevant theories of capital structure. The panel data methodology is used to test empirical hypotheses and controls for firm heteroskecedasticity and corrects for autocorrelation among the variables that are involved. The results describe that short term debt constitutes a relatively high proportion of total debt of Mauritian SME's. Furthermore, there is a positive association between the debt ratios and both asset structure and growth are very crucial in influencing SME's access to debt finance. The finding shows that some theories are not in line as such with the results obtained from the analysis as the Pecking Order Hypothesis. The findings also support the asset maturity matching principle in SME's. The other theories like agency cost, information, asymmetry, and liquidity and cash flow patterns are also considered in determining the financial leverage.

3. Research Methodology

The present study will rely on the data collected from secondary sources. The financial statements of the firms under study are collected from various sources such as Annual reports of the companies, CMIE (Centre for Monitoring the Indian Economy) and Capitaline database.This study is spread over a period of 9 years from 2001-2009 for the Agriculture Sector Firms, which are listed on the Bombay Stock Exchange (BSE-500). The total numbers of firms which are selected from Agriculture Sector is 18 and the firms listed for a period of less than 9 years (period taken under study) are not considered.the study was carried out by quantitative analysis of financial information using appropriate statistical techniques. The techniques used in this study were regression analysis and correlation analysis. Regression analysis is a statistical technique that is used to determine the value relationship between a dependent and an independent variable. Regression analysis is one of the most pervasive of all statistical analysis methods due to its generality and applicability although it does not account for cause and effect relationships. Regression analysis was used to see how far the explanatory variables were related with capital structure variable and to see the fitting of equation with the help of various tests under study. Under regression analysis, I have calculated the Descriptive Statistics, ANOVA and the value of R2, adjusted R2 to determine the relationship between the variation in firm value and capital structure of Agriculture Sector Firms.The variables considered in the present study are financial ratios and financial ratios are considered as a proxy for the firm value. The financial ratios are independent variable and used as a measure of capital structure of Agriculture Sector Firms as depicted in Table 1.1

Table 1.1: Financial Ratios as a measure of Capital Structure of Agriculture Sector Firms

4. Objectives of the Study

1. To study the capital structure of selected Agriculture Sector Firms and its impact on the value of the firm.
2. To assess the determinants of capital structure and its influence in deciding the financial structure.

5. Hypotheses

Hypothesis 1: The capital structure of selected manufacturing sector firms has no impact on the value of the firm.

Hypothesis 2: The firm-specific determinants of capital structure do not have any impact on the financial structure.

6. Financial Leverage and Firm Value for Agriculture Sector Firms

The objective of the empirical analysis is to determine, by regression analysis, the relationship between financial leverage and firm value for Agriculture Sector firms and to interpret the observed relationship in context of various theoretical propositions. The empirical study is done to determine the effect and to what degree the difference in the financial leverage is explained by valuation ratios considered as proxy for the value of the firm. The summary of regression statistics is shown in Table1.2 and the significance of model for depicting the relationship between capital structure and firm value of Agriculture Sector firms are shown in Table 1.3. Table 1.4 shows the parameter estimates for the regression results of Agriculture Sector firms.

Table 1.2 Regression Statistics of Agriculture

Sector

Table 1.3: Significance of the Model on the Relationship between Capital Structure and Firm Value of Agriculture Sector

Table 1.2 depicts the summary of regression analysis results in order to study the impact of the valuation ratios considered as a proxy for the firm value on the financial leverage of Agriculture Sector. In terms of the relationship between overall valuation ratios and financial leverage, the adjusted R2 = 0.361859541 was statistically significant. The various valuation ratios are considered as predictors and financial leverage as criterion variable as shown in Table 1.3. It is suggested that, the valuation ratios explained 36 per cent of the variance in the capital structure of Agriculture Sector firms and concluded that the financial ratios do not have impact on the variations in the capital structure and found to be consistent with earlier research and leads to accepting the null hypothesis that there is no impact on the firm value. The findings suggest that the debt financing does not dominate equity financing in case of Agriculture Sector firms. FromTable 1.3, it is observed that the overall regression model is significant ($F=2.927981$, $p<0.00$).The reason attributed for the same is that Agriculture Sector firms are less sensitive in expanding debt to meet their financing requirements than in retiring debt to absorb surpluses. It is evident that the Agriculture Sector firms has not obtained the benefits of leverage, has maintained a low debt and resulted into not much magnified returns to the shareholders.

Table 1.4: Parameter Estimates for the Regression Results of Agriculture Sector

The t-values reported in Table 1.4 indicate that several variables are important in explaining a significant portion of the variation in debt capacity. It is concluded that t-value of 1.617532 with a significance level of 0.131731for the constant (intercept) is not statistically significant. The coefficient of Fixed Assets Turnover Ratio (FATR) is positive and is not statistically significant. The coefficient of Earnings per Share (EPS) is negative and is not statistically significant. The coefficient of Operating Profit Margin (OPM) is positive and is not statistically significant. The coefficient of Debt to Assets Ratio (DAR) is negative and is not statistically significant. The coefficient of Return on Assets (ROA) is negative and again is not statistically significant. The operating profit margin and assets turnover are the two basic components of return on investment.The findings of Agriculture Sector show that three of the five variables that were the proxies for the firm value were negatively correlated with the financial leverage. The variables that show no significant relation were EPS, ROA and DAR. The findings also suggest that Agriculture firms have positive values for operating profit margin and fixed assets turnover ratio. The reason for the same is that larger the proportion of fixed assets, the higher should be the debt equity ratio since the collateral value of fixed assets is likely to be higher for these firms resulting into lower cost of financial distress. Thus, the profitable firms face less low expected cost of financial distress and find interest tax shields more valuable. Thus, the tax and the bankruptcy costs predict that profitable firms use more debt. In case of Agriculture Sector firms, the reason attributed for negative correlation of earning per share with financial leverage is because of the risk taking ability of owners and management. The return on assets are negatively related to financial leverage, and the reason for the same is that the Agriculture Sector firms employed lower financial leverage to minimize the financial risk. The negative correlation with financial leverage also depicts that successful companies do not need to place much dependence on external funding, since they can place reliance on internal reserves.

Table 1.5 Descriptive Statistics for the Independent and Dependent Variable for Agriculture Sector

Note: - FL = Financial Leverage; RONW= Return on Net worth; ROCE= Return on capital employed; ICR= Interest coverage Ratio; NDTs= Non Debt Tax Shield; PROF= Profitability; CVA= Collateralized Value of Assets; SIZE= Natural Logarithm of Sales; GROWTH= Investment opportunities

The Descriptive Statistics of the dependent and independent variables for Agriculture Sector are presented in the Table 1.5. It can be observed from the Table that dependent variable (Financial leverage) ranges from 0.004 to 0.694 with an average of 0.452 i.e. the mean for all selected Agriculture Sector firms during the period of study. The aggregate financial leverage shown in the Table above depicts that the Agriculture Sector firms are relying on very low levels of debt in their capital structure. As far as total assets are concerned, financial leverage indicate that 50 % contribution is being made by the external funds as opposed to internal funds as the mid value of financial leverage is 0.507. The coefficient of financial leverage are dispersed in between 0.452 to 0.182.The average return on net worth and return on capital

employed is 14.88 and 15.78 respectively for the Agriculture Sector firms selected under study. The average of growth is highest i.e. 25.097 which depicts that there is a high prospect of growth for Agriculture Sector firms and thus considered as one of the most important factor in deciding the capital structure. The mean of interest cover ratio is 7.143 and the mid value of interest cover ratio is 4.649. The coefficient of interest cover ratio is dispersed in between7.143 and 8.553.The mean of non-debt tax shield, profitability, collatralizable value of assets and size are 0.040, 0.108, 5.665 and 6.820 respectively. The coefficients of non-debt tax shield are dispersed in between 0.040 and 0.014, profitability is dispersed in between 0.108 and 0.061, collatralizable value of assets is dispersed in between 5.665 and 2.329 and size is dispersed with 6.820 and 0.918. The result also indicates that numerous investment opportunities result from the high growth rate that cannot be financed by their low profits or by securing debts due to low profitability but has to be financed through equity and therefore, resulting into the low financial leverage for the Agriculture Sector firms. The growth is considered to be an important variable in determining the capital structure of Agriculture Sector firms. The results also indicate that mean value of collatralizable value of assets is 5.665 and mean value of financial leverage is 0.4528 depicting that the variable is not considered very important while taking the capital structure decisions. In case of Agriculture Sector Firms, tangible assets are not considered important while borrowing from outside. The reason attributed for the same is that Agriculture Sector Firms are growing firms and has stable cash flow to pay back in future. The size of the Agriculture Sector firms also indicates the ability to provide collateral for securing debt finance. Further, the firm related information can also be provided to the market creating information asymmetry. The results can also be interpreted for Agriculture Sector which depicts a low profitability and high interest cost has resulted in a low interest cover ratio. The interest coverage ratio is a measurement of default probability and it is concluded that the Agriculture Sector firm are highly geared coupled with low interest cover ratio and that has further resulted in low return on capital employed by the firms.

7. Conclusion:

In order to determine the optimal capital structure for Manufacturing Sector Firms in the process of maximizing shareholder value has been an elusive target and a challenging pursuit for a number of years.The decision is important because of the need to maximize returns to various organizational constituencies in case of Agriculture Sector Firms. The decision is also considered to be important because of firm's ability to deal with its competitive environment.The summary of regression statistics are discussed and interpreted in this study where the financial ratios are considered as a proxy for the firm value and their relationship with the financial leverage is being analyzed.Agriculture Sector firms registered the highest average debt ratio of 1.4 and it is interpreted that the government is quite strategic to the growth of the economy by supporting the Agriculture Sector firms and hence shown constant decline in the average financial leverage.The findings of Agriculture Sector depicts that there is a positive relationship between fixed assets turnover ratio, operating profit margin and financial leverage. The reason attributed for the same is that larger the proportion of fixed assets, higher should be the debt-equity ratio, as the collateral value of fixed assets is higher i.e. 5.6656 resulting into lower profitability thus leads to reduced cost of financial distress. The lower profitability and high interest cost has resulted in a low interest cover ratio i.e. 7.1433.The findings of Agriculture Sector depicts that there is a negative relationship between earning per share, debt to assets ratio, return on assets and financial leverage. The reason attributed for the same is that the return could not be maximized because it employed lower financial leverage to minimize the financial risk of the firms and resulted in lowest return on capital employed i.e. 15.789 and return on net worth i.e. 14.885. The study presented the various findings based upon evaluating the impact of capital structure decisions on the value of the firm of Agriculture Sector Firms and the findings of this study does not support completely the theoretical foundation put forward by Modigliani and Miller in 1958.

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Table 1.1: Financial Ratios as a measure of Capital Structure of Agriculture Sector Firms

Financial Ratios	Calculation
Debt to Assets Ratio (DAR)	Total liabilities/Total assets
Fixed Assets Turnover Ratios (FATR)	Cost of Goods sold/Average fixed assets
Operating Profit Margin (OPM)	Operating Profit/Revenue*100
Return on Assets (ROA)	Net Profit after Taxes/Average total assets*100
Earnings Per Share (EPS)	Net profit available to equity holders/Number of ordinary shares outstanding

Table 1.2 Regression Statistics of Agriculture Sector

Multiple R	0.741314988
R Square	0.549547911
Adjusted R Square	0.361859541
Standard Error	0.145924388
Observations	18

Source: Capitaline database 2010

Table 1.3: Significance of the Model on the Relationship between Capital Structure and Firm Value of Agriculture Sector

ANOVA					
	Df	*SS*	*MS*	*F*	*Significance F*
Regression	5	0.311741027	0.062348	2.927981	0.059098771
Residual	12	0.255527123	0.021294		
Total	17	0.567268151			

Source: Capitaline database 2010

Table 1.4: Parameter Estimates for the Regression Results of Agriculture Sector

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.554323076	0.342696812	1.617532	0.131731
FATR AVG.	0.028670091	0.030668187	0.934848	0.368298
EPS AVG.	-0.00426760	0.003507907	-1.21657	0.247157
OPM AVG.	0.004884187	0.007333545	0.666006	0.518006
DAR AVG.	-0.01859487	0.353055144	-0.05267	0.958863
ROA AVG.	-193.246074	104.0618073	-1.85703	0.088011

Source: Capitaline database 2010

Table 1.5 Descriptive Statistics for the Independent and Dependent Variable for Agriculture Sector

	FL	RONW	ROCE	ICR	NDTS	PROF	CVA	SIZE	GROW
Mean	0.452809	14.8858	15.78914	7.143333	0.04061	0.108112	5.665651	6.820217	25.09761
Standard Error	0.043056	1.608921	1.263018	2.015991	0.003328	0.014426	0.549001	0.2164	5.649325
Median	0.50703	16.09333	14.56556	4.649444	0.040621	0.097395	5.449977	6.78161	17.80667
Standard Deviation	0.182671	6.826076	5.358531	8.553124	0.014119	0.061204	2.329214	0.918106	23.96805
Range	0.689994	28.20444	15.35	36.90778	0.05058	0.231139	9.581473	3.901144	71.53611
Minimum	0.004493	1.308889	8.743333	1.142222	0.014898	0.003825	1.935209	4.129112	-1.34111
Maximum	0.694487	29.51333	24.09333	38.05	0.065478	0.234964	11.51668	8.030256	70.195
Count	18	18	18	18	18	18	18	18	18

Source: Capitaline database 2010