FINANCIAL LEVERAGE AND FIRM’S VALUE: A STUDY OF METAL, METAL PRODUCTS AND MINING SECTOR FIRMS

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ABSTRACT

The debate on capital structure has been pertinent for decades, with plausible arguments both for and against increased levels of financial leverage. The present study is devoted to studying the impact on the firm’s value with the help of various financial ratios. The whole study consists of analysis of the Metal, Metal Products and Mining Sector Firms. The main concern is to study the relationship between capital structure and firm value and whether it is in conformity with the MM approach. The various descriptive statistics have also been considered for studying the impact on the debt financing pattern in India for overall manufacturing sector firms and individual manufacturing sector firms. The financial literature and empirical evidences are also considered for studying the objectives of the study. The present study evaluated the relationship between capital structure and firm value of Metal, Metal Products and Mining Sector Firms listed on the BSE-500 for nine year period and the total number is 31. To determine the most beneficial proportions of equity and borrowed financing to create optimal capital structure is one of the main tasks for the process of financial management. The overall findings of the study show that there is a negative relationship existing between return on assets and financial leverage in case of Metal, Metal Products and Mining Sector. There is a positive relationship between debt to assets ratio and financial leverage in case of Metals, Metal products and Mining Sector. The operating profit margin in Metal, Metal Products and Mining Sector are positively related to financial leverage. There is a negative relationship between financial leverage and size in case of Metal, Metal Products and Mining Sector Firms. Thus, the study presented the various findings based upon evaluating the impact of capital structure decisions on the value of the firm.

Keywords: Capital Structure, Financial Leverage, Financial Ratio, Firm’s Value.
1. INTRODUCTION

The MM approach which came way back in 1958 and thereafter several studies have been conducted in the area but this being a dynamic concept needed periodical investigations and review. Thus, in the last two decades, a number of theories have been proposed to explain the variations in the debt-to-equity ratios among firms. In order to study the issues of corporate capital structure, a summary of literature is depicting the important theories that concern the value relevance of capital structure. Even today financial managers and researchers still grapple with the question regarding the sources of capital that are being used to affect the value of the firm. The various financial ratios are considered to explain the variations in the level of capital structure thus representing the impact on the firm value of Metal, Metal Products and Mining Sector Firms. The study is conducted to examine the pattern of financial leverage and firm value. It also involves the study of capital structure of Metal, Metal Products and Mining Sector Firms and focusing on analyzing capital structure with the help of financial coefficients that minimizes the cost of capital and maximizes the firm value. This study also provides further evidence of the capital structure theories pertaining to a developing country and examines the impact of financial leverage on firm’s performance in case of Metal, Metal Products and Mining Sector Firms. To determine an optimal capital structure for Metal, Metal Products and Mining Sector Firms is a multifaceted problem that has challenged and fascinated academics and practitioners for a long time. The present study provides insight into the long existing conflict between the pure Modigliani and Miller (MM) theory and the traditional theory having an impact of capital structure decisions on firm’s value.

2. OBJECTIVES OF THE STUDY

1. To study the capital structure of selected Metal, Metal Products and Mining 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 of Metal, Metal Products and Mining Sector Firms.

3. HYPOTHESES

Hypothesis 1: The capital structure of selected Metal, Metal Products and Mining Sector Firms has no impact on the value of the firm.

Hypothesis 2: The firm-specific determinants of capital structure of Metal, Metal Products and Mining Sector Firms do not have any impact on the financial structure.

4. REVIEW OF LITERATURE

Chung, K.H. (1993) conducted study "Asset characteristics and corporate debt policy: an empirical test" and concluded new managerial theories of the firm that have evolved in the context of agency theory. These new views bring more realism to the theory of capital structure by addressing agency problems in the context of the firm which is viewed as a nexus of contracts among various parties, where the contractual relationship involves incentive conflicts arising from the pursuit of self-interest. The findings suggest that there is a negative relationship between growth and the level of leverage as well as found no systematic association between firm size and total debt ratio. The study showed that there is no systematic association between firm size and capital structure. The study also indicates that the firm with a higher asset diversification and a larger fixed asset ratio...
tends to use more long-term debt and use less short-term debt. The effect of fixed asset ratio on total debt ratio is inverse, indicating that the effect on short-term debt dominates the effect on long-term debt.

Graham, J.R (2000) conducted the study “How Big Are The Tax benefits of Debt?” to find the impact of tax effect on corporate financing decisions. The study provided evidence of substantial tax effect on the choice between debt and equity. He concluded that changes in the marginal tax rate for any firm should affect financing decisions when already exhausted (with loss carry forwards) or with a high probability of financing a zero tax rate, a firm with high tax shield is less likely to finance with debt. The reason is that tax shields lower the effective marginal tax rate on interest rate deduction. The empirical question which many researchers investigate borders on tax-shield, which, constitutes the core basis for the choice of debt financing directly or inversely influence financial leverage decisions. While some results reveal some form of a positive relationship, others find instead that the relationship is a negative one.

Gangadhar, V. and Begum, Arifa (2003) conducted a study on “Impact of Financial Leverage on Profitability” on Hindustan Unilever Ltd., Tata tea and Reliance Industries Ltd. for the period, 1994-2001. The study is aimed at analyzing profitability, leverages, and earnings before interest and taxes and earnings per share with a view to examine their relative importance and impact on overall profitability and earnings per share. The findings of the study suggest that profit margin ratios of all companies are significantly higher than the asset turnover ratios. The study also focused on examining the pattern of leverage and the conditions under which the company’s profitability can be maximized, and earnings available to its equity shareholders have considerably increased. The focus is also on examining the pattern of operating, financial, and combined leverages to find out their variability.

Coleman, Susan (2006) conducted the study on “Capital structure in small Manufacturing firms: Evidence from the data” for 389 firms classified as Manufacturing firms and 3,172 firms classified as belonging to other industry sectors. The study focused on examining the various theories of capital structure pertaining to small firms. The findings of the study revealed that industry sector was not a significant determinant of capital structure. The findings of the study revealed that capital structure in small to mid-sized firms is determined by measures of firm size, firm age, organizational status, profitability, and asset structure. The univariate findings indicate that Manufacturing firms in the sample were larger in terms of assets, sales, and employees, more capital intensive in terms of the ratio of fixed assets to total assets and less profitable as measured by return on sales. Larger firms tend to use as a higher percentage of debt as do firms organized as limited liabilities entities. The findings are also consistent with pecking order hypothesis, which contends that, more profitable firms use lower levels of debt, because they are able to self-fund with retained earnings. The important implication of these findings is that firms with higher levels of fixed assets, which include manufacturing firms, do use and require higher levels of external capital in the form of debt financing.

Daskalakis Nikolaos, Psillaki Maria (2007) conducted a study “Do country or firm factors explain capital structure? Evidence from SMEs in France and Greece” on the sample firms for the period 1998 to 2002. The study applied panel data methods to identify that whether the capital structure determinants of SME’s (Small and Medium Enterprises) in the two countries driven by similar factors or there are potential differences driven by country-specific or firm-specific factors. The study also focused on the size and structure of their financial markets, to explain any cross-country differences on SME capital structure. The study assessed to which the debt to assets ratio of firms depends upon their asset structure, size, profitability and growth rate of small and medium sized enterprises (SMEs) using a sample of Greek and French firms. The results show that the SMEs in both countries exhibit similarities in their capital structure choices. The findings also revealed that asset structure and profitability have a negative relationship with leverage, whereas firm size is
positively related to their debt to assets ratio. Further the results also indicate that growth is statistically significant only for France and is positively related to debt. The reason attributed for these similarities to their institutional characteristics and in particular the commonality of their civil law systems. The results found differences in the intensity of the capital structure relationship between the two countries and reason for the same is due to differences in the firm-specific rather than country factors.

Abor Joshua (2008) conducted a study on “Agency theoretic determinants of debt levels: evidence from Ghana” for 120 firms covering the six-year period 1998-2003. The purpose of this study is to examine the relationship between agency factors and the debt level of Ghanaian small and medium enterprises (SMEs). The study specifically examined how percentage of shares closely held, number of shareholders, and family ownership influence the proportion of debt employed by SMEs. The results indicate that managerial ownership is negatively related to debt level. This suggests that SMEs with insider shareholders may prefer lower leverage to reduce the risk of insolvency. The results also show that SMEs with many shareholders are less likely to employ debt finance. The results also suggest that firms with many shareholders are not likely to entertain the fear of loss of control since the firm is seen as group-owned. The findings of this study generally suggest that managerial ownership is important in explaining the capital structure of Ghanaian SMEs. This study extends our understanding of the agency theory and the capital structure of SMEs from the Ghanaian context.

5. 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 Metal, Metal Products and Mining Sector Firms, which are listed on the Bombay Stock Exchange (BSE-500). The variables considered in the present study are financial ratios and financial ratios are considered as a proxy for the firm value. The techniques used in this study are regression analysis and correlation analysis. Under regression analysis, I have calculated the Descriptive Statistics, ANOVA and the value of $R^2$, adjusted $R^2$ to determine the relationship between the variation in firm value and capital structure of Metal, Metal Products and Mining Sector Firms. The total numbers of firms which are selected from Metal, Metal Products and Mining Sector Firms is 31 and the firms listed for a period of less than 9 years (period taken under study) are not considered.

6. ANALYSIS AND INTERPRETATION

6.1 Financial Leverage and Firm Value for Metal, Metal Products and Mining Sector

The results presented in the following Tables, depicts the regression result of the independent ratios over financial leverage the empirical study is done to determine the effect and to what degree the difference in the financial leverage is explained by the ratios considered as proxy for the firm value in case of Metal, Metal Products and Mining Sector. The results also explain that how each of the explanatory variables is related to financial leverage. The summary of regression statistics are shown in Table 1.1 and the significance of model for depicting the relationship between capital structure and firm value of Metal, Metal Products and Mining Sector firms are shown in Table 1.2. Table 1.3 shows the parameter estimates for the regression results of Metal, Metal Products and Mining Sector firms.
Table 1.1: Regression Statistics of Metal, Metal Products and Mining Sector

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
<td>0.670724758</td>
</tr>
<tr>
<td>R Square</td>
<td>0.449871701</td>
</tr>
<tr>
<td>Adjusted R Square</td>
<td>0.339846041</td>
</tr>
<tr>
<td>Standard Error</td>
<td>0.161638892</td>
</tr>
<tr>
<td>Observations</td>
<td>31</td>
</tr>
</tbody>
</table>

Source: Capitaline database 2010

Table 1.2: Significance of the Model on the Relationship between Capital Structure and Firm Value of Metal, Metal Products and Mining Sector

<table>
<thead>
<tr>
<th></th>
<th>Df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Significance F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>5</td>
<td>0.534141631</td>
<td>0.106828</td>
<td>4.088789</td>
<td>0.007525031</td>
</tr>
<tr>
<td>Residual</td>
<td>25</td>
<td>0.653178287</td>
<td>0.026127</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>1.187319918</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Capitaline database 2010

Table 1.1 is an extract of the regression results of Metal, Metal Products and Mining Sector used to test the primary hypothesis i.e. impact of valuation ratios on the capital structure. From Table 1.2 it is observed that the overall regression model is significant (F=4.088789, p<0.00). In terms of the relationship between overall valuation ratios and financial leverage, the adjusted $R^2 = 0.339846041$ was statistically significant. It is suggested that the valuation ratios explained 33 per cent of the variance in the capital structure. The reason attributed for the same is that Metal, Metal Products and Mining Sector firms are relying less on external debt and the reason for the variation could be explained by other explanatory factors like the adoption of credit policies in Indian banks and the removal of restrictions on interest rates on lending and deposits increased the cost of borrowing and deterred these firms from obtaining debt financing. The findings may also be explained by the relatively high interest cost on credit facilities granted in Indian scenario. Another possible explanation for the same is that the use of debt in capital structure increases the risk of financial distress and bankruptcy and lenders may also impose restrictions which limit the operating flexibility of the firm. The findings also revealed that in case of Metal, Metal Products and Mining Sector the puzzling phenomenon of debt conservatism may be able to resolve the leverage-value relationship puzzle and may at least partially explain the potential reasons for the variations existing among various firms in the sector as depicted below.

Table 1.3: Parameter Estimates for the Regression Results of Metal, Metal Products and Mining Sector Firms

<table>
<thead>
<tr>
<th></th>
<th>Coefficients</th>
<th>Standard Error</th>
<th>t Stat</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.27244618</td>
<td>0.62131524</td>
<td>-0.4385</td>
<td>0.664647</td>
</tr>
<tr>
<td>FATR AVG.</td>
<td>-0.02360346</td>
<td>0.013247238</td>
<td>-1.78176</td>
<td>0.086473</td>
</tr>
<tr>
<td>EPS AVG.</td>
<td>-0.00077408</td>
<td>0.00180176</td>
<td>-0.42963</td>
<td>0.671005</td>
</tr>
<tr>
<td>OPM AVG.</td>
<td>0.00038462</td>
<td>0.003204978</td>
<td>0.12009</td>
<td>0.905399</td>
</tr>
<tr>
<td>DAR AVG.</td>
<td>0.921642998</td>
<td>0.630498615</td>
<td>1.461768</td>
<td>0.155787</td>
</tr>
<tr>
<td>ROA AVG.</td>
<td>-0.01365473</td>
<td>0.003151986</td>
<td>-4.33211</td>
<td>0.000196</td>
</tr>
</tbody>
</table>

Source: Capitaline database 2010
From Table 1.3, it may be concluded that t-value of -0.4385 with a significance level of 0.664647 for the constant (intercept) is not statistically significant. The coefficient of fixed assets turnover ratio (FATR) is negative and is statistically significant. The coefficient of earnings per share (EPS) is negative and is statistically significant. The coefficient of operating profit margin (OPM) is positive and is statistically significant. The coefficient of debt to assets ratio (DAR) is positive and is statistically significant. The coefficient of return on assets (ROA) is negative and is statistically significant.

The findings of Metal, Metal Products and Mining Sector revealed the positive relationship between operating profit margin, debt assets ratio and financial leverage. The operating profit margin is considered as an indicator of Manufacturing firm’s competitiveness and its ability to manage effectively its production costs. Consequently, higher operating profit margin increases a firm’s credibility for long term financing. The variables i.e. fixed assets turnover ratio, earnings per share and return on assets are negatively related to financial leverage. The negative correlation between fixed assets turnover ratio and financial leverage indicate that Metal, Metal Products and Mining Sector firms with low total assets are basically capital intensive firms with high added value, which need higher amount of debt to finance their assets. The returns on assets are compared with estimated cost of debt and if results show that interest on debt is higher than it would lead to decrease in the firm value. The decrease in firm value implies that there is a negative relationship with the financial leverage. This can also lead to bankruptcy because the firm will not be in the position to repay its debt.

The Descriptive Statistics of the dependent and independent variables for Metal, Metal Products and Mining Sector are presented in the Table 3.24. It can be observed from the Table that dependent variable (Financial leverage) ranges from 0.058 to 0.931 with an average of 0.452 i.e. the mean for all selected Mining sector firms during the period of study from 2001-2009. The mid value of financial leverage is 0.424. The coefficient of financial leverage is dispersed in between 0.452 to 0.035. The average return on net worth, return on capital employed is 19.242 and 18.496 for the various firms selected under study. The mean of interest cover ratio is 23.660 and the mid value of interest cover ratio is 4.135. The coefficient of interest cover ratio is dispersed in between 23.660 and 11.866. The mean of non-debt tax shield, profitability,
collateralizable value of assets and size are 0.1202, 0.124, 0.770 and 6.787 respectively. The coefficients of non-debt tax shield are dispersed in between 0.120 and 0.485, profitability are dispersed in between 0.124 and 0.093, collateralizable value of assets are dispersed in between 0.770 and 0.334 and size are dispersed with 6.787 and 1.527. The results depict that Metal, Metal Products and Mining Sector firms are considered to have the highest financial leverage having a mean value of 0.4527 as compared to other Manufacturing Sector Firms which is having a negative impact on its overall profitability having a mean value of 0.1246. It can also be interpreted that the firm is having an excessive financial leverage in the capital structure but has low return on capital employed. The reason for this is that the firm is having a very high interest cost that has resulted in low interest cover ratio having a mean value of 23.660. Another important variable considered in determining the financial leverage is collateralizable value of assets which is having a mean value of 0.7704 thus resulting into high liquidation value. The tangible assets are required as a basic guarantee and collateral for loan thus considered as one of the important variable that can influence the capital structure and thus the firm value. Another explanatory variable considered here is size having a mean value of 6.7872 and there is no noticeable size difference among Manufacturing Sector Firms.

CONCLUSION

In case of Metal, Metal Products and Mining Sector, the valuation ratios explained 33 % of the variations in capital structure and the reason for the same is that variations could be explained by other explanatory factors like the adoption of credit policies in Indian banks and the removal of restrictions on interest rates on lending and deposits increased the cost of borrowing and deterred these firms from obtaining debt financing. It can also be interpreted that the Metals, Metal Products and Mining Sector firms are having an excessive financial leverage but has low return on capital employed. The reason for this is that the firms are having the relatively high interest cost on credit facilities granted in Indian scenario resulting into lowest interest cover ratio i.e. 23.660. The results depict that Metal, Metal Products and Mining Sector is considered to have the highest financial leverage compared to other Manufacturing Sector Firms which has resulted into negative impact on its profitability. The firms in this sector are having negative correlation between fixed assets turnover ratio and financial leverage which indicates that the firms with low total assets are basically capital intensive firms with high added value, which need higher amount of debt to finance their assets.

Bibliography