Impact of Diversification Strategy on the Capital Structure Decisions of Manufacturing Firms in India

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Abstract. Indian corporate sector over the last two decades has experienced major policy changes after the initiation of certain measures of financial liberalization. As a result many companies have started diversifying their business and there is a significant increase in foreign direct investment (FDI) inflows as well as outflows. Against this background the research examines the impact of diversification strategies (international market and product diversification) on the leverage decisions of firms after controlling for other major determinants of capital structure.

Keywords: Capital Structure, International Market Diversification, Product Diversification

1. Introduction

The choice of financial policy is the most important decisions of the company. The financial policy refers to the decision regarding firm's capital structure. The capital structure of the firm consists of the mix of debt and equity instruments, used to finance firm's assets. This mix basically consists of common stock, debt, and preferred stock. The managers choose the capital structure that minimizes the cost of financing and hence maximizes the value of the firm. The biggest challenge for the managers at a firm is to choose the capital structure (mix of securities) that minimizes the cost of financing the firm's activities and thus maximizes the value of the firm. This right mix is referred to as the optimum capital structure; however in practice it is very difficult to attain the optimal level. There are several factors that may have an impact on firm's financial choice and several empirical studies have tried to explore the most important determinants of capital structure.

Firms diversify their operation either across different national markets (international market diversification) or across multiple lines of business (product diversification) or both to increase the economy of scale and economy of scope, thus increasing their efficiency, learning, and innovation respectively (Kochhar and Hitt, 1995). This study attempts to study the relation between two dimensions of corporate scope, geographic diversification, and product diversification and their impact on corporate leverage. The study also uses several control variable identified from the past research studies that affects the financial choices of the firm.

2. Literature Review

2.1. Capital Structure Theories

The work of Modigilani and Miller (1958) on capital structure irrelevance has generated considerable interest among academic scholars to study the capital structure and its impact on firm value. Several theories have been developed so far to explain how firm's decided on their debt/equity ratio. Myers,(1984) came up with static trade off theory which states that this optimal debt ratio is determined by tradeoffs of the costs and benefits of borrowing, holding the firm's assets and investment plan constant. The concept of asymmetric information was explained by Myers and Majluf, (1984) and this is referred to as "Pecking order theory". They showed that if the investors are less informed than firm insiders about the value of firm then it may lead to the undervaluation of firm by the market. Under such circumstances the firm may finance new projects either using internal funds or low risk debt. Jensen and Meckling, (1976) developed agency cost concept which means the costs due to conflict of interest. They identified two types of conflict: one between managers and shareholders and the other between shareholders and debt holders since debt contract gives equity holders an incentive to invest sub optimally. They said that managers can invest less effort in managing firm resources and may be able to transfer firm resources to their own, personal benefit.

2.2. Impact of Diversification Strategy on Capital Structure

Ansoff (1957) first used the term 'diversification' to illustrate corporate growth strategies involving entering new markets with a new product. The effects of both product and international diversification on capital structure choices can be explained through the co-insurance effect, the transaction cost theory and the agency cost theory. First due to "Co insurance effect" (Lewellen 1971), firms that diversify their activities can reduce the risk associated to operating in a single business. The reduced risk thus ultimately helps firms to improve their debt capacity. According to transaction cost explanation (Williamson 1988), firm diversify their activities in response to the existence of unutilized resources and nature of these resources affects the type of diversification (Eduardo et al, 2000). Agency cost theory regards debt financing as a governance device that reduces the conflict of interest between shareholders and managers. Fatemi (1988) found that US based MNCs have significantly lower target leverage ratio than their domestic counterparts. Lee and Kwok (1988) proposed a framework to examine the influence of international environmental factors (E.g. political risk, international market imperfections, complexity of operations) on the firm related capital structure determinants (such as agency cost and bankruptcy risk) and found that MNCs do not have lower bankruptcy cost and they have higher agency cost and lower debt ratio that DCs.

The empirical evidence on the impact of product diversification on capital structure is limited. Rocca et al., (2009) sorted the diversification strategy of multinational firms into related and unrelated category and concluded that firm following unrelated diversification strategy tries to reach their optimal debt level strictly while related diversifiers move slowly towards the target level. Equity financing is preferred for related diversification while debt is the preferred mode of financing for firm's following unrelated diversification strategy. Sambharya (1995) concluded that there exists an inverse relationship between international and product and their interaction lead to improved firm performance. According to Singh (2003) corporate leverage is positively related to diversification across product lines but negatively related to geographic diversification. . Most of the study is based on developed countries, however some focuses on developing countries as well. Many researchers have focused their work on diversification strategies of Indian business group. Khanna and Palepu (2000) studied the diversification strategies of business groups and compared the performance of group affiliates with the performance of unaffiliated firms. This study focuses on to study the impact of diversification strategy on the leverage decisions of manufacturing firms in India.

3. Research Methodology

3.1. Sample Selection

The sample consists of annual data for manufacturing firms for the period 2004-2010 which is derived from prowess database maintained by CMIE. Firms with missing observation for more than four years are dropped from the sample. The panel data set consists of 3103 companies aggregating to 21721 observations that include domestic as well as multinational corporations. Firms which operate in the financial sector are not included in this analysis since their balance sheets have a different structure from those of the non-financial firms (Rajan and Zindales, 1995). There are in total 579 multinational companies (MNCs) and 2524 domestic companies (DCs) in the sample which is classified on the basis of presence and absence of overseas asset investment in their balance sheet. This reveals that out of the total sample about 22% represent multinationals and the remaining domestic firms.

3.2. Empirical Model and Variable Measurement

Panel data regression analysis technique is employed to explore the impact of diversification strategy on the leverage decisions of firms after controlling for several control variables. Also comparing multinational and domestic corporations reveals the difference in the financial behavior of the two groups. In this study we intent to use fixed effects regression model as shown below:

$$LEVit = \beta_1 MULit + \beta_2 INDit + \beta_3 PROFit + \beta_4 TANG + \beta_5 NDTS + \beta_6 AGE + \beta_7 SIZE + \beta_8 PER + \beta_9 AGEN + \alpha i + uit$$

Where *LEV* represents leverage used as the dependent variable varying across cross section and time. And similarly *MUL, IND, PROF, TANG, NDTS, AGE, SIZE, PER, AGEN* are international market diversification, product diversification, tangibility, non-debt tax shield, age, size, performance and agency

cost respectively with $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9$ as its coefficients which is to be estimated. αi and *u*it stands for unknown intercept for each entity and error term respectively.

Leverage ratio is used as dependent variable, measured as the ratio of total borrowing (including short term and long term) to total assets. (Bhaduri 2002). Geographic diversification and product diversification is used as the strategy variable. International market diversification (MUL) is measured as investment outside India as a percentage of total assets (Madhumathi et al., 2009). The data on overseas investment is readily available in the database and it helps to readily disseminate firms as MNCs and DCs. According to Shapiro, 1992, diversifying across geographies reduces the operating risk, thereby increases the debt capacity of the firm, indicating a positive relationship between geographic diversification and leverage ratio. Herfindhal index approach (Jacquemin and Berry, 1979) is used as the measure to proxy product diversification. It measured as the as the sum of the squares of each industry's sales as a proportion of total group sales**.** Transaction cost (Williamson, 1988) economics proposes that firms following unrelated diversification strategies are more likely to prefer debt while those that follow related strategies may prefer equity financing. Several other control variables selected from the prior studies that influences the leverage decisions of the firm include profitability (PROF), tangibility (TANG), non-debt tax shield (NDTS), age (AGE), size (SIZE), performance (PER) and agency cost (AGEN). The ratio of cash flow to total assets (Bhaduri, 2002) is used to measure profitability. Tangibility is defined as ratio of net fixed assets to total assets (Indrani, 2010). Logarithm of total assets is used as the proxy for the size of the firm. DeAngelo and Masulis, (1980) argue that non-debt tax shields are substitutes for the tax benefits of debt financing and a firm with larger non-debt tax shield is expected to use less debt. It is defined as the ratio of depreciation and amortization to total assets (Huang and Song, 2006). Age is calculated as the difference between year of incorporation and the year in which firm exists in the sample. Agency cost refers to the conflict of interest between shareholders and managers or between lenders and shareholders of the company (Jensen and Meckling, 1976) and it differs between MNCs and DCs. A common measure of Myers, (1977) underinvestment agency cost is used as a proxy and is defined as ratio of research and development and advertisement to total sales. Return on asset which is an accounting measure is used for measuring performance and it is defined as the ratio of net income to total assets.

4. Empirical Results

4.1. Comparison between Multinational and Domestic Corporations

The means of leverage and other variables for multinational and domestic corporations are presented in table1 along with their t statistics. The mean leverage ratio for MNCs is significantly less than DCs which is consistent with the findings of Lee (1986) and Fatemi (1988). This is contrary to the notion that MNCs have higher debt carrying capacity since they are able to diversify their risk across national boundaries (Lewellen 1971). There exist a significant difference between MNCs and DCs with respect to tangibility, non-debt tax shield, age, size, and agency cost.

Table 1: Comparison between MNCs and DCs

	Period: 2004-2010									
	LEV	**MUL**	**IND**	**PROF**	**TANG**	**NDTS**	**AGE**	**SIZE**	**PER**	**AGEN**
MNC	0.360	4.51	0.103	0.113	0.302	0.028	29	8.64	0.051	0.042
DC	0.943	-	0.224	0.123	0.377	0.040	27	6.46	0.011	0.191
T Value	3.7*		-22.29*	0.08	16.43*	3.72*	-2.9*	-58.6*	-0.55	2.31*

(*) indicate that the mean comparison is significant at 5 percent level.

MNCs have significantly higher agency cost than DCs which signifies that MNCs may have high monitoring cost, research and advertising expenditure than DCs (Lee and Kwok, 1988). MNCs have significantly less tangible assets and non debt tax shield than DCs. MNCs are found to be larger than DCs,

due to the fact that large sized companies tend to have higher earnings and hence in order to reduce the variability of cash flow and to increase the economy of scope, they prefer exploiting foreign markets.

4.2. Factors Influencing Leverage Ratio

Strategy variables (international market and product diversification) and capital structure determinants identified from prior studies is used as the explanatory variables in the study and it is regressed against leverage ratio to run panel data regression. Both fixed effects and random effects models are evaluated. In order to decide between two models Hausman test is conducted. The null hypothesis of this test is that the estimations of fixed effects model are equal to random effects model. The result (Chi. Square=110 with probability=0.00) of the test is significant, indicating that fixed effects model is efficient and hence the results of the same is presented in Table 2.

Table 2: Factors influencing leverage ratio

Period 2004-2010		**Geographic diversification**	
Variables	**Full sample**	**Multinationals Corporations (MNCs)**	**Domestic Corporations (DCs)**
Constant	1.173 (8.53)**	0.296 (3.3)**	1.39 (8.64)**
MUL	0.005 (1.7)*	0.0006 (1.07)	-
IND	0.043 (0.58)	0.0006 (0.02)	0.078 (0.85)
PROF	-0.060 (-16.31)**	-0.403 (-16.96)**	-0.060 (-15.10)**
TANG	0.005 (0.07)	0.272 (4.98)**	0.000 (0.01)
NDTS	2.23 (11.71)**	1.17 (3.11)**	2.19 (10.56)**
AGE	0.061 (12.62)**	0.002 (0.98)	0.065 (1168)**
SIZE	-0.341 (-18.11)**	-.0097 (-0.73)	-0.396 (-17.97)**
PER	-0.310 (-40.82)**	-0.321 (-11.71)**	-0.317 (-38.12)**
AGEN	-0.011 (8.53)**	-0.0004 (-0.11)	-0.011 (-3.73)
Adj. R Square **F value** **P value**	0.6816 274.99 0.000	0.7861 56.88 0.000	0.6771 272.87 0.000

(**) and (*) indicates that coefficients are significant at 5 and 1 percent level, respectively.

The results indicate several interesting relationship between leverage and other capital structure determinants (strategy and control variables). The full sample statistics indicates that geographic diversification is positively related to leverage (Kwob et al., (2000) hence supporting the notion that the expansion across borders (imperfectly correlated economies) lowers earning volatility and thus reduces the risk of bankruptcy and hence enabling such firms to utilize more leverage in their capital structure (Shapiro, 1992).

Product diversification however does not show any significant relationship with leverage for the full and sub samples. There is no sufficient evidence to relate firm's product diversity with leverage ratio for group of firms used in the analysis. Profitability and performance shows a negative and significant relationship with leverage for the entire sample. Thus supporting pecking order theory of financing which proposes that firm's with higher profitability may prefer financing first using internally generated fund and rely less on debt financing. Only multinational firms exhibit a positive and significant relationship between tangibility and leverage ratio (Indrani, 2010). This may be due to the reason that manufacturing firms have higher proportion of tangible assets in their balance sheet and for multinational corporations with higher debt

capacity (due to lowering of earning volatility) these tangible assets can be used as the collateral for taking debt. All the firms in the full and sub groups shows a positive and significant relationship between non-debt tax shield and leverage; thus contradicting DeAngelo and Masulis, (1980) argument that firms will select a debt level which is inversely proportional to the level of available tax shield substitutes for debt (depreciation, deductions, and investment tax credits). Age shows a positive influence on debt ratio for full sample and domestic corporations.

For the full sample and domestic firms, size shows a negative and significant relationship with the leverage ratio. This indicates that large firms discloses more information to outsiders and have less information asymmetry, leading to more equity financing than depending on debt (pecking order theory). Agency cost and leverage exhibits a significant negative relationship with leverage for the overall sample. The possible reason for this may be that the manufacturing firms in the sample may have higher growth opportunity and the agency cost is found to be a positive function of growth opportunity. Free cash flow hypothesis suggests an inverse relation between growth opportunities and debt ratios, thereby predicting lower leverage for these firms. (Jensen, 1986).

5. Conclusion

The present study takes into account the diversification strategies (geographic and product) adopted by the manufacturing firms and identifies its influence on firm's leverage ratio after controlling for other determinants of capital structure from 2004-2010. This study intents to help corporate decision makers to know and select most preferred financial mix to maximize the overall market value of the firm. Study found that multinational and domestic firms differs significantly from each other with respect to leverage, tangibility, non-debt tax shield, age, size and agency cost. Regression result revealed that geographic diversification impacts leverage for the overall sample. Profitability, non- debt tax shield and performance are significant determinants of leverage for the entire sample. However tangibility has an impact on leverage only for MNCs while age and size shows significance for the overall sample and more specifically with domestic corporations. Agency cost shows a negative relationship with leverage for the overall sample. The study reveals that domestic firms have higher debt in their capital structure as compared to multinational corporations.

6. References

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