Diversification Strategy and Its Influence on the Capital Structure Decisions of Manufacturing Firms in India

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***Abstract*—Indian corporate sector over the last two decades have 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.**

***Index Terms*—Capital structure, international market diversification, product diversification**

I. 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 [1]. This study attempts to study the relation between two dimensions of corporate scope, international market 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.

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II. Literature Review

A. Capital Structure Theories

The work of [2] 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 firms decide on their debt/equity ratio. Static trade off theory states that the optimal debt ratio is determined by tradeoffs of the costs and benefits of borrowing, holding the firm's assets and investment plan constant [3]. The basic idea of the trade-off theory is that the optimal capital structure of the firm will be determined such that the marginal benefits of debt are equal to the marginal costs of debt. The concept of asymmetric information was explained by [4]. 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 by using internal funds or low risk debt. This implies that leverage increases with the extent of the informational asymmetry. This is referred to as a "Pecking order theory" of financing, that is finance new investment first using internally generated funds, then with low risk debt and finally with equity as last resort. The agency cost concept was developed by [5] which mean 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.

B. Empirical Analysis of Capital Structure Theories

Many researchers have attempted to understand the applicability of capital structure theories (static trade off, pecking order, agency cost) to approximate and explains the firm's financial behaviour of the firm. [6] studied the leverage decisions using three different measures of debt that is short term, long term, and convertible debt. They concluded that firms with unique products have low debt ratio, smaller firms use more to market value of equity. [7] used multiple indicators and multiple clause models with refined indicators for their study and found that important determinants of capital structure followed in order are profitability, collateral

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value of asset, volatility, non debt tax shield and uniqueness. [8] summarizes the results from several studies on the determinants of capital structure choice and find that in general leverage increases with fixed assets, non debt tax shields, growth opportunities, and firm size and decreases with volatility, advertising expenditures, research and development expenditures, bankruptcy probability, profitability and uniqueness of the product. [9] studied capital structure decisions among G7 countries (US, UK, Germany, Italy, Japan and France) by taking consolidated balance sheet and also considered accounting standards prevailing in different countries.

Many researchers such as [10] and [11] studied the capital structure of developing countries. Capital structure decisions of these countries are influenced by same variables as in the case of developed countries though the institutional structures of corporate firms of these developing countries are significantly different from that of the developed countries. [12] focused on Indian firms and showed that the optimal capital structure choice is influenced by factors such as growth, cash flow, size, and product and industry characteristics. Capital structure of Indian firms follows pecking order and static trade off theory and there is no evidence to support the agency cost theory [13].

C. Diversification Strategy

Reference [14] defined diversification as an increase in the number of industries a business participates in. Hence diversification implies a firm moving into a number of markets (sectors, industries, or segments) it was not previously engaged in. Diversification can improve debt capacity, reduce the chances of bankruptcy [15], and improve asset deployment and profitability ([16] and [17]). Most of the studies on the firm's diversification strategy are focused on developed countries. Developing countries have received little research attention in this regard. Most of the studies on diversification have been focused on aspects such as the "extent" of diversification (i.e. less or more diversification), the "directions" (i.e. related or unrelated), and the "mode" (i.e. diversification via internal expansion or mergers and acquisitions or choices of mergers and acquisitions strategies).

Reference [18] examined that the firms adopt international market diversification strategy in order to minimize the operating risk and it is based on exploiting foreign market (not perfectly correlated with each other) opportunities and imperfections and thus helps to achieve economies of scale and scope. Such strategies may yield new opportunities and also increases the competitive challenges from international and local competitors.

For several decades, product diversification has been a highly popular strategy among large and growing industrial firms in the United States, Europe, Asia, and other parts of the industrialized world [14]. Firm uses three main strategies to diversify across product segment like vertical integration, related diversification and unrelated diversification. Some studies claim that diversifying into related product-markets produces higher returns than diversifying into unrelated product-markets and less diversified firms perform better than highly diversified firms ([19], [20]).

D. Empirical Evidence on the Impact of Diversification Strategies on Capital Structure

The effect of diversification on capital-structure choice has been explained mostly through the coinsurance effect [15], the transaction cost theory [17], and the agency cost theory [5]. According to "Co insurance effect" 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 firm diversify their activities in response to the existence of unutilized resources and nature of these resources affects the type of. Agency cost theory regards debt financing as a governance device that reduces the conflict of interest between shareholders and managers.

Reference [21] analyzed number of factors related to MNC's cost of capital. [18] empirically showed that foreign operation variable proxied as foreign to total operations (F/T) is inversely related to risk after allowing for size, industry classification, and other factors. [22] found that US based MNCs have significantly lower target leverage ratio than their domestic counterparts. [23] 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. [24] extends the study by Lee et al., (1988). They used multivariate analysis unlike univariate analysis used by [23] to study the impact of incremental effect of international activity on capital structure after controlling for traditional capital structure determinants. They found an explicit relationship between international activities and capital structure and concluded that consistent with prior results MNCs have lower debt than DCs after controlling for bankruptcy costs and growth options. [25] points out that several studies have either ignored international factors or they proxied it all under business risk measures. The results showed that DC's are significantly more sensitive to exchange rate fluctuations than MNC's. On the other hand MNC's have higher agency cost than DC's. Contrary to conventional wisdom they found that international diversification does not translate into lower earnings volatility. [26] focuses on the relationship between international diversification, financial structure, and their individual and interactive implications for combined debt and equity cost of capital for a sample French corporations and found that international diversification positively associates with higher total and long-term debt ratios and thus the result is consistent with [27].

The empirical evidence on the impact of product diversification on capital structure is limited. [28] made an attempt to understand the effect of diversification strategy on firm capital structure using a panel data analysis for a sample of 480 Spanish manufacturing firms. He incorporated four different measures of debt ratio (such as the total debt ratio, a logistic transformation of total debt ratio, short term debt ratio, the long term debt ratio) in the empirical analysis and also

used the revenue-based Herfindahl index and the entropy measure as proxies of firm diversification. After controlling for firm characteristics such as business risk, growth opportunities, firm size, intangible assets and firm profitability, he finds no significant relationship between capital structure and the degree of firm diversification. [29] 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. [30] found that equity financing is preferred for related diversification and debt financing for unrelated diversification because related diversification introduces more specific assets whereas unrelated diversification adds assets less specific to the firm.

Reference [31] concluded that there exists an inverse relationship between international and product and their interaction lead to improved firm performance. [32] employed switching regression model originally to understand the influence of interactive effects of product and international diversification on leverage for US multinationals. The results shows that MNCs with higher degree of product and international involvement have lower levels of default risk. According to [26] 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 firms as well and most of the studies are focused on its influence on the performance of the firm. [33] 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.

III. Research Methodology

A. 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 [9]. 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.

B. 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. Independent sample t test is conducted to compare the firms in the two groups i.e. MNC and DCs while fixed effect regression technique is employed to understand the factors influencing the leverage decisions of firms following different diversification strategies. The fixed effect model is 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 [12]. International market diversification and product diversification is used as the strategy variables that represent the diversification strategies adopted by the firms in the sample. International market diversification (MUL) is measured as investment outside India as a percentage of total assets [34]. Data on overseas investment is readily available in the database and it helps to readily disseminate firms as MNCs and DCs. According to [21] 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 [35] 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 economics [17] 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 [12] is used to measure profitability. Tangibility is defined as ratio of net fixed assets to total assets [13]. Logarithm of total assets is used as the proxy for the size of the firm. [36] 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. 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 [5]. A common measure of [37] 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.

IV. Hypothesis Development

A. Comparison between MNCs and DCs

Reference [38] showed that how MNCs and DCs differ in their financial choices by comparing their capital structure after taking into account the impact of environmental factors (political risk, exchange rate risk) and firm related factors (agency cost, bankruptcy costs) and they found that MNCs have lower debt ratio than DCs. According to [15] since MNCs operate in imperfectly correlated economies, they tend to have stable cash flows. Reduction of cash flow variability reduces the probability of bankruptcy and thereby enhancing corporate debt capacity. MNCs have higher agency costs due to higher future investment opportunities in comparison to their domestic counterparts as per [37] underinvestment problem. [25] pointed out that political risk and exchange rate risk plays an important role to the multinational capital structure decision and also found that MNCs have higher agency cost than DCs and argued that international diversification does not lower earnings volatility for multinational corporations. Hence the following hypothesis is formulated to examine the difference in the leverage ratio of both MNCs and DCs.

Hypothesis 1: MNCs carry lower leverage than DCs

B. Impact of International Market Diversification on Capital Structure

International diversification strategy tends to lower volatility of earning as MNC has cash flow in imperfectly correlated economies and thereby reducing the bankruptcy risk and thus enables MNCs to utilize more leverage in their capital structure [21]. However, most of the empirical studies show that leverage is negatively related to leverage ratio for multinational corporations ([23]-[25]). [27] propose that capital structure of MNCs can differ between developed countries and developing countries based firms. They empirically showed that international diversification is negatively related to US based firms and positively related to emerging market based firms. The study relating international diversification and leverage ratio is rather limited in India. [33] had studied the impact of diversification on performance for group affiliates. Therefore considering the past studies especially that of developing countries, the following hypothesis is formulated:

Hypothesis 2: There exists a positive relationship between international market diversification and leverage.

C. Impact of Product Diversification on Capital Structure

Co-insurance effect predicts a positive relationship between leverage and the degree of firm diversification. [39] studied a sample of 2,286 firms and confirmed the existence of co-insurance effect in them. Transaction cost economics deals with the governance of contractual relations in transaction between two parties [17]. This regards debt and equity as governance structure rather than a financial tool. When the assets are highly specific, firms prefer equity as the financial instrument because such assets cannot be easily re-employed and therefore will have low liquidation value in case of default. In contrast, when a firm's assets are not specific debt is the preferred financial instrument because these general purpose assets have more collateral value and able to retain their value in the event of liquidation. Thus transaction cost economics suggests that firms following unrelated diversification strategies are more likely to prefer debt while those that follow related strategies may prefer equity financing. Considering the above arguments following hypothesis is postulated:

Hypothesis 3: There exists a positive relationship between product diversification and leverage

V. Empirircal Results

A. Results of Univariate Analysis

The means of leverage and other variables for multinational and domestic corporations are presented in Table I along with their T statistics. The mean leverage ratio for MNCs is significantly less than DCs which is consistent with the findings of [23], [22]. This is contrary to the notion that MNCs have higher debt carrying capacity since they are able to diversify their risk across national boundaries [15]. There exist a significant difference between MNCs and DCs with respect to tangibility, non-debt tax shield, age, size, and agency cost.

TABLE I: Results Of Mean Comparison

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

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

MNCs have significantly higher agency cost than DCs which signifies that MNCs may have high monitoring cost, research and advertising expenditure than DCs [23]. 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.

B. Results of Fixed Effect Regression Model

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 II.

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 [27] supporting the notion that the expansion across borders (imperfectly correlated economies) lowers earning volatility and reduces the risk of bankruptcy and thus enabling such firms to utilize more leverage in their capital structure [21].

TABLE II: FACTORS INFLUENCING LEVERAGE RATIO

Variables	Full sample	MNCs	DCs
Constant	1.173 (8.53)**	0.296 (3.3)**	1.39 (8.64)**
MUL	0.005 (1.7)*	-	-
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	0.6816	0.7861	0.6771
F value	274.99	56.88	272.87
P value	0.000	0.000	0.000

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

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 [13]. 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 [36] 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).

VI. CONCLUSION

The present study takes into account the diversification strategies (international and product) adopted by the manufacturing firms and identifies its influence on firm's leverage ratio after controlling for other determinants of capital structure for the period 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. The study reveals that domestic firms have higher debt in their capital structure as compared to multinational corporations.

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 shows a positive and significant relationship with 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.

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