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Structure of Indian Listed Firms:
Role of Business Groups
vis-a-vis Stand-Alone Firms

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Effects of Ownership Structure on Capital Structure of Indian Listed Firms: Role of Business Groups vis-a-vis Stand-Alone Firms

Indrani Chakraborty*

Abstract:

Indian corporate firms are characterized by 'promoter ownership', which means individuals or family members are the majority shareholders who exercise control over the management of the companies, even though external shareholders are allowed to participate. The objective of this study was to explore the relationship between promoter ownership and capital structure of firms using a sample of Indian publicly listed firms for the period from 2006 to 2013, differentiating between group-affiliated and stand-alone firms. We find that the relationship between promoter ownership and leverage is inverted U-shaped for group-affiliated firms whereas it is U-shaped for stand-alone firms. We argue that a substantial presence of family owners in group-affiliated firms and the selection of managers from within the family play some role for such relationship in the case of group-affiliated firms. On the other hand, the observed relationship for stand-alone firms can be explained in terms of the alignment hypothesis, entrenchment hypothesis, managerial risk aversion hypothesis and active monitoring hypothesis.

JEL Classification: C01; C23; G30; G32

Keywords: promoter ownership, capital structure, business groups, managerial risk aversion hypothesis, active monitoring hypothesis, India

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1. Introduction

Indian corporate firms are characterized by 'promoter ownership', which means individuals or family members are the majority shareholders who exercise control over the management of the companies, even though external shareholders are allowed to participate (Shleifer, 2005; Bertrand, Mehta and Mullainathan, 2002; Chong and Lopez-De-Silanes, 2007; Balasubramanian and Anand, 2013; Kumar and Singh, 2013). Thus, promoter ownership represents a form of dominant shareholding system which has been discussed extensively in the literature on corporate governance (La Porta et. al., 1997, 1998, 1999; Claessens et. al., 2000; Faccio et. al., 2002). These firms with dominant shareholders have a particular type of agency problem which arises between the controlling shareholders and external shareholders. This problem has an impact on a firm's decision regarding its capital structure. The existing literature in this context has mostly been concerned with those firms which have diffused ownership. Studies have found both positive and negative relationships between ownership structure and capital structure of firms (Leland and Pyle, 1977; Stulz, 1988; Berger et. al., 1997; Friend and Lang, 1988).

In this study we investigate the relationship between promoter ownership and capital structure of Indian firms. A good number of studies on the relationship between controlling shareholders' ownership and capital structure of firms already exist, which show mixed results. Kim and Sorensen (1986), Agrawal and Mandelkar (1987), Boubaker (2007) and Holmen et. al. (2004) found evidence of a positive relationship between the two. On the other hand, Neilsen (2006) found a negative relationship between debt and control. Grullon et. al. (2001), Brailsford et. al. (2002) and Ellul (2008) find curvilinear relationships between control and debt, positive at the beginning but becomes negative at a certain point of control.

Our hypothesis is that this relationship is curvilinear in nature and is different for group-affiliated and stand-alone firms.¹ We argue that capital structure decisions can be explained by at least four different hypotheses: alignment hypothesis, entrenchment hypothesis, managerial risk aversion hypothesis and active

monitoring hypothesis. We use a sample of firms listed in the Indian stock market over the period 2006-2013 to explore this relationship.

We have chosen to conduct our analysis in the Indian context which is important for several reasons. Following La Porta et. al. (1999), the corporate governance system in India is characterized by a high concentration of ownership in the presence of business groups with family controlled management and lack of good protection of external shareholders.

While examining the relationship between promoter ownership and capital structure of Indian firms, the present paper makes certain methodological contribution as well. Our study addresses the endogeneity problem between promoter ownership and capital structure by applying dynamic panel estimation method. Some recent papers show that the issue of endogeneity can be taken care of by using the Generalized Method of Moment (GMM) estimation (Wintoki et. al, 2009). We apply the system dynamic panel estimation technique, based on GMM method and take care of the problem of endogeneity. Our results show that the relationship between promoter ownership and capital structure is different for group-affiliated and stand-alone firms. For group-affiliated firms the relationship is inverted U-shaped whereas for stand-alone firms the relationship is U-shaped. The reason for getting different types of relationship between promoter ownership and leverage is that group-affiliated firms are family managed firms and hence the managers of these firms would not like to lose the family's control while making financing choices. On the other hand, in stand-alone firms as the managers are not from the family, the external shareholders have greater incentives and greater ability to monitor the managers and thereby reducing managerial opportunism. The curvilinear relationship confirms that a firm's financing choice depends not only on firm-specific factors but also on ownership structure of the controlling shareholders. Our findings support those of Brailsford et. al. (2002) and Marchica (2005).

The remainder of the paper is organized as follows. Section 2 reviews the previous studies on the effect of ownership on capital structure and develops the hypotheses. Section 3

discusses the methodology. Section 4 discusses the variables used. Section 5 presents the data. Section 6 reports the empirical results and section 7 concludes.

2. Review of Literature and Hypotheses Development

Agency conflicts within firms have been advocated as a possible explanation for the observed variation in capital structure across firms (Jensen and Mackling, 1976). Agency theory recognizes that the interests of shareholders and managers may be in conflict, which would, in turn, be reflected in the financing choice of firms. According to this theory, given the opportunity, the managers will make their choice between debt and equity in such a way that will serve their self-interest at the expense of value maximization of firms. Managers will have incentives to avoid risk when they make financing decisions so as not to increase the variance of the non-diversifiable component of their human capital (Amihud and Lev, 1981). One way in which this can be achieved is to reduce the use of debt financing as debt increases the bankruptcy risk of a firm and corresponding job loss of the managers (Friend and Hashbrouck, 1988).

Agency theory also suggests that managerial equity ownership and monitoring by major shareholders may help mitigate the agency conflicts between managers and shareholders. Some researchers, on the other hand, argue that instead of reducing managerial incentive problems, increased managerial equity ownership may entrench management (Fama and Jensen, 1983; Demsetz, 1983).

From the above arguments, it turns out that the direction of the effect of managerial equity ownership on capital structure of firms is ambiguous and it may also differ between group-affiliated firms and stand-alone firms. In contrast to stand-alone firms, in group-affiliated firms the managers are from within the family members that has implications for the relationship between managerial equity ownership and capital structure of firms. In group-affiliated firms, as managerial equity ownership increases, there will be a convergence of interests between managers and shareholders as managers have incentives to use more debt as leverage increases the share price, and thus, the value of their equity holdings.

Therefore, one can expect to have a positive relationship between managerial ownership and capital structure. On the other hand, at sufficiently high levels of managerial ownership, in group-affiliated firms, in order to avoid the risk of losing control over their firms by family members, the entrenched managers may try to avoid higher leverage. In group-affiliated firms, families have a long-term commitment to the firm and therefore, the family's reputation is largely related to the performance of the firm. The families do not view their firm as a stream of cash flows that should be consumed but rather as an asset that will be passed on to the next generations (Ellul, 2008). Therefore, in group-affiliated firms the owner-family will be interested in exerting control over the firms' decision for financing choice. Hence, one should expect a negative relationship between managerial ownership and capital structure of a firm. The above literature relates primarily to the allocation of some ownership stakes to managers in order to overcome managerial agency problems and align their interests with those of external shareholders. The evidence on the relationship between managerial ownership and capital structure produced in this literature is equally applicable to the inside ownership by promoters who hold direct or indirect control over their firms in India and play the role of controlling shareholders. From the above arguments, we propose the following hypothesis:

Hypothesis 1: In group-affiliated firms, as promoter ownership increases leverage first increases and then decreases.

In stand-alone firms, at low levels of promoter shareholding, as the interests of managers are aligned with the external shareholders' interests, it would be inefficient to use a further mechanism, such as debt, to mitigate agency costs. As the use of debt would restrict the availability of free cash flow at a manager's disposal, it would impose a constraint on the manager in pursuing maximization of self-interest at the expense of value maximization (Jensen, 1986; Grossman and Hart, 1982). Moreover, increases in debt can impose a high cost on the managers' human capital due to increased bankruptcy risk (Ahimud and Lev, 1981). Thus, managerial risk aversion hypothesis plays a role here. As a result, the relation between promoter ownership and leverage is expected to be negative

initially. On the other hand, at higher levels of promoter ownership an entrenchment effect could prevail and increase the expropriation risk for external investors. Entrenched managers would like to increase leverage in order to inflate the voting power of their equity stakes and reduce the possibility of takeover attempts (Stulz, 1988). When a firm does not have strong takeover defences, managers are exposed to threats by takeover. As argued by Zwiebel (1996) and Morellec (2004) in their theoretical models, entrenched managers of stand-alone firms would prefer to choose higher debt levels such as not deviating much from value maximization goal in order to prevent threats of takeover. Moreover, as the managers are not the family members in stand-alone firms, the external shareholders would have greater incentives and ability to monitor management, thereby reducing managerial self-interests which may otherwise reduce leverage to a sub-optimal level. Under better monitoring mechanism by external shareholders, leading to lower managerial entrenchment, the managers would be encouraged to take risky projects that will lead to value maximization of the firm, because a good corporate monitoring mechanism acts as a risk-sharing device for the human capital of the manager (Litov, 2004). Thus the active monitoring hypothesis also plays a role here (Brailsford et. al., 2002). Following the above arguments we propose the following hypothesis:

Hypothesis 2: In stand-alone firms, with the initial increases in promoter ownership leverage decreases and then leverage increases with further increase in promoter ownership.

The empirical evidence in the literature which considers the effect of managerial ownership on leverage or the effect of controlling shareholders on management incentives with regard to leverage is also mixed. Analysing the impact of ownership on debt levels, Kim and Sorensen (1986) and Agrawal and Mandelkar (1987) find a positive relationship between the two. These findings are consistent with the hypothesis that managerial equity ownership plays a role in reducing agency problems. Wiwattanankantang (1999) also finds a positive relationship between managerial shareholdings and leverage for single-family owned Thai firms. Ellul (2008) also finds a positive relationship between large

shareholders and debt because of the high control motivation of the large shareholders. In contrast, Friend and Lang (1998) find a negative relationship between management ownership and leverage and this result is consistent with the hypothesis that capital structure decisions are at least in part motivated by managerial self-interest. Berger, Ofek and Yermack (1997) find that entrenched CEOs seek to avoid debt which implies that managers will not choose the optimal amount of debt in the absence of any disciplining force. Nyonna (2012) also finds a negative relationship between insider ownership and leverage. On the other hand, Kang and Horowitz (1993) find positive and negative relationships at different switching points respectively, which supports the positive alignment and negative entrenchment effects of managerial ownership as discussed by Morck et. al.(1988). Brailsford et. al. (2002) find evidence of an inverse U-shaped relationship between the managerial ownership and leverage in Australian firms. Marchica (2004), on the contrary, finds a U-shaped relationship between short-term debt and managerial ownership for U.K. firms. We believe that the empirical evidence obtained so far does not exhaust the possibility of further inquiry in the context of a specific country like India.

Methodology

In order to reduce endogeneity-related concerns, we use dynamic panel data (DPD) models (Wintoki et al., 2009). DPD models are particularly useful when the dependent variable depends on its own past realizations (Bond, 2002). Our base model is as follows:

$$LEV_{it} = LEV_{it-1} + \beta PROMSHR_{it} + \delta X_{it} + \alpha_i + \varepsilon_{it} \quad (1)$$

Where firm $i = 1, \dots, N$ and year $t = 1, \dots, T$

In this model X_{it} are the control variables, α_i are the firm fixed effects, and the error term ε_{it} has zero mean constant variance and is uncorrelated across both time and firms. For estimation purposes, we have to remove the firm fixed effects α_{it} from equation (1) by first differencing. Thus we obtain:

$$LEV_{it} - LEV_{it-1} = \gamma (LEV_{it-1} - LEV_{it-2}) + \beta (PROMSHR_{it} - PROMSHR_{it-1}) + \delta (X_{it} - X_{it-1}) + (\varepsilon_{it} - \varepsilon_{it-1}) \quad (2)$$

Alternatively,

$$\Delta LEV_{it} = \gamma \Delta LEV_{it-1} + \beta \Delta PROMSHR_{it} + \delta \Delta X_{it} + \Delta \varepsilon_{it} \quad (3)$$

In equation (3), the variable ΔLEV_{it-1} is correlated with ΔLEV_{it} due to the dynamic nature of the equation. To solve this problem Anderson and Hsiao (1982) proposed to use ΔLEV_{it-2} or LEV_{it-2} as instruments for ΔLEV_{it} . In fact, lagged levels of the endogenous variable LEV_{it} , three or more time periods before, can be used as instruments (Holtz-Eakin et al., 1988).

Arellano and Bond (1991) proposed a method that exploits all possible instruments. Using the Generalized Method of Moments (GMM) they obtained estimates using the moment conditions generated by lagged levels of the dependent variable (LEV_{it-2} , LEV_{it-3} , ...) with ΔLEV_{it} . These are called difference GMM estimators. Furthermore, Arellano-Bover / Blundell-Bond developed another estimator which augments Arellano-Bond by making an additional assumption that first differences of instrumental variables are uncorrelated with the fixed effects. This allows the introduction of additional instruments and improves efficiency (Roodman, 2009). It develops a system of two equations namely, the original equation and the transformed one, and is known as system GMM. In this study we use a linear DPD method based on the Arellano and Bond (1991) and the Arellano and Bover / Blundell Bond (1995, 1998) estimators as well as a system GMM method.

3. Variables

Leverage (LEV): The earlier empirical studies used two measures of leverage as dependent variable, viz. book leverage and market leverage. Book leverage is defined as the book value of total debt divided by the book value of total assets. Market leverage is defined as the book value of total debt divided by the book value of total liabilities plus the market value of total equity. We use two measures of leverage in this study viz., the ratio of total borrowing to asset (LEV1) and the ratio of total liability to sum total of total liability and market value of equity (LEV2). Equity is considered at 365 days average closing price. The first of these two

measures was used in an earlier study on Indian firms by Bhaduri (2002) and Chakraborty (2010) and the second measure was used by Huang and Song (2006).

Promoter ownership (PROMSHR): This variable measures as the share of equity owned by the promoters of Indian firms. Promoters are defined as all individuals and their relatives, corporate bodies/trusts/partnership or any other type of entity that either founded or acquired a controlling stake in the firm concerned, where the ownership stake exceeds that of any external shareholder.

Control Variables

As control variables, we consider profitability, tangibility, size, growth opportunities, non-debt tax shields, uniqueness and free cash flow.

Profitability (PROFIT): The theoretical prediction about the effect of profitability on leverage is ambiguous. According to the pecking order theory, firms use internal sources of financing first and then go for external sources of financing. Firms with higher profitability will prefer internal financing to debt and hence a negative relationship is expected between profitability and leverage. Most empirical studies confirm the pecking order hypothesis (Titman and Wessels, 1988; Rajan and Zingales, 1995; Michaelas et.al., 1999; Booth et.al., 2001 and Chen, 2004). According to the static trade-off theory, more profitable firms are supposed to have more debt-serving capacity and more taxable income to shield. Therefore, according to this theory, when firms make profit they are likely to prefer debt to other sources in order to benefit from the tax shield. Hence a positive relationship is expected between profitability and leverage. We consider as measure of profitability the ratio of profit before interest, tax and depreciation to total assets. This measure was used earlier by Titman and Wessels (1988), Chen (2004) and Michaelas et. al.(1999).

Tangibility (TANGY): According to the agency cost theory, there are incentives for shareholders to invest in a sub-optimal manner due to conflicts between lenders and shareholders. Because of this tendency, lenders will take actions to protect themselves by requiring tangible assets as collateral. Firms with high levels of

tangible assets will be in a position to provide collateral for debts. If the firm defaults on debt, the tangible assets will be seized but the firm will avoid bankruptcy. It is therefore expected that a positive relationship exists between tangibility and leverage. Some studies from the developed countries report a significant positive relationship between tangibility and total debt (Titman and Wessels, 1988; Rajan and Zingales, 1995 among others). However, the findings from the developing countries are mixed. Wiwattanakantang (1999) observes a positive relationship between tangibility and leverage in Thailand but Booth et al. (2001) for ten developing countries and Huang and Song (2006) for China find a negative relationship. Following Huang and Song (2006) and Bevan and Danbolt (2002) we measure tangibility as the ratio between fixed assets and total assets.

Firm Size (SIZE): The effect of firm size on leverage is ambiguous. Rajan and Zingales (1995) argue that larger firms generally disclose more information to outsiders than smaller ones. Larger firms with less asymmetric information problems should tend to have more equity than debt and hence have lower leverage. Therefore, following the pecking order theory of capital structure, it is expected that the size of the firm would be negatively related to leverage. On the other hand, according to the trade-off theory, larger firms tend to be more diversified and thus less prone to bankruptcy. This argument suggests that firm size should be positively related to leverage. A large number of studies find positive relationship between firm sizes and leverage (Booth et.al., 2001; Wiwattanakantang, 1999; Huang and Song, 2006; Rajan and Zingales, 1995 among others). On the other hand, Bevan and Danbolt (2002) observe that firm size is negatively related to short-term debt and positively related to long-term debt. We use natural logarithm of sales as a proxy for the firm size.

Growth opportunities (GROWTH): Firms with higher growth opportunities would need more fund. According to the pecking order theory, there will be stronger preference for external financing, especially for debt. Hence we expect a positive relationship between growth and leverage. On the other hand, as discussed earlier, firms with growth opportunities may invest sub-optimally and therefore creditors will be more reluctant to lend for

longer periods (Myers, 1977). In such a situation the problem can be solved by short-term financing or by convertible bonds (Titman and Wessels, 1988). Therefore, we expect short-term debt to be positively related to growth if growing firms go for short-term financing instead of long-term financing. Rajan and Zingales (1995) and Booth et.al. (2001) find positive relationship between growth and leverage. Following Titman and Wessels (1988) we take the percentage change in total assets as our measure of growth opportunities.

Non-debt tax shields (NDTS): Firms are likely to favour debt because they can benefit from the tax shield due to interest deductibility. Thus we expect a positive relationship between effective tax rate and leverage. However, DeAngelo and Masulis (1980) argue that non-debt tax shields (such as tax deductions for depreciation and investment tax credits) are substitutes for the tax benefits of debt financing and a firm with larger non-debt tax shields is expected to use less debt. Therefore an increase in non-debt tax shield can affect leverage negatively. This relationship is corroborated empirically by Wald (1999), Chaplinsky and Niehaus (1993) and Huang and Song (2006). Following Huang and Song (2006) we use the ratio of depreciation and amortization to total assets as the measure of non-debt tax shields in this study.

Uniqueness (R&D): Titman (1984) argues that a firm's capital structure should depend on the uniqueness of its product. If a firm offers unique products, its customers, workers and suppliers suffer relatively high costs in case of liquidation and hence the costs of bankruptcy increase. Accordingly, the trade-off theory predicts a negative relationship between uniqueness and leverage. We use research and development expenditures over sales as the measure of uniqueness.

Free cash flow(FCF): The free cash flow hypothesis (Jensen, 1986) states that managers endowed with excessive free cash flows will invest sub-optimally rather than paying the free cash flow out to shareholders. Jensen (1986) predicts that firms with excessive free cash flow are likely to have higher leverage. Free cash flow is measured as operating income before tax,

depreciation and amortization after deducting the total tax paid and dividends paid. It is also used as measure of free cash flow in an earlier study by Brailsford et. al., 2002.

4. Data

The sample for India is drawn from PROWESS, a database provided by Centre for Monitoring Indian Economy (CMIE). The sample was chosen for all Indian firms listed in the Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) for the period 2006-2013. We begin our analysis from 2006 as Clause 49 of the Listing Agreements to the Indian stock exchange came into effect from December 31, 2005, which was formulated for the improvement of corporate governance. We, therefore, expect that better reporting on corporate governance will be followed by Indian firms since 2006. We have eliminated those firms for which information on shareholding patterns and other variables are missing. After excluding firms on the above basis, a final sample of 368 firms with 3937 observations is derived. Of these, there are 245 group-affiliated firms and 123 stand-alone firms.

Table 1: Summary Statistics

Variables	Group-affiliated firms				Stand-alone firms			
	Mean	Std. dev.	Min	Max	Mean	Std. dev.	Min	Max
LEV1	0.307	0.226	0	2.456	0.334	0.267	0	2.432
LEV2	3.57e-06	5.05e-06	2.69e-08	0.00005	4.80e-06	9.52e-06	1.11e-07	0.0002
SIZE	8.850	1.514	4.426	15.126	7.356	1.512	2.484	12.814
GROWTH	16.168	30.688	-89.642	456.817	17.548	37.247	-85.178	483.647
R&D	17.228	78.073	0	164.253	6.656	43.602	0	2.432
PROFIT	0.147	0.106	-1.206	1.200	0.137	0.120	-0.471	1.333
TANGY	0.324	0.157	0.0007	0.834	0.323	0.149	0.002	0.902
FCF	26371.19	144639	73.3	3587290	5062.005	19020.83	-4.7	329460
PROMSHR	51.064	14.241	10.67	88.4	50.873	17.098	5.12	98.19

The summary statistics of the variables are presented in Table 1. We find that the two measures of leverage differ sharply over the period 2006-2013 for both group-affiliated and stand-alone firms. Overall stand-alone firms have higher leverage than group-affiliated firms. Group-affiliated firms are larger than stand-alone firms and their R&D expenditures are higher. Free cash flow is also much higher in group-affiliated firms than stand-alone firms. Surprisingly, the two types of firms have approximately the same levels of promoter ownership.

Table 2 reports the correlation coefficient between the variables. The two alternative measures of leverage are not correlated, as

the correlation coefficient is 0.241. Among the explanatory variables, non-debt tax shields (NDTS) is highly correlated with tangibility (correlation coefficient is 0.450). To check if this high correlation coefficient between non-debt tax shields and tangibility would create serious problem of multicollinearity, we conducted the test of variance inflation factor (VIF). VIF tests reveal that the value corresponding to each explanatory variable is much less than 10, which indicates that multicollinearity is not a serious problem here².

Table 2: Correlation Matrix

	LEV1	LEV2	SIZE	GROWTH	R&D	PROFIT	TANG Y	NDTS	FCF	PROMSHR	VIF
LEV1	1.00										1.18
LEV2	0.241	1.00									1.08
SIZE	-0.113	-0.112	1.00								1.26
GROWTH	-0.035	-0.123	0.091	1.00							1.05
R&D	-0.092	-0.078	0.313	0.006	1.00						1.19
PROFIT	-0.276	-0.216	0.189	0.210	0.051	1.00					1.11
TANGY	0.269	0.140	-0.067	-0.038	-0.091	-0.117	1.00				1.28
NDTS	0.217	0.090	-0.074	-0.055	-0.050	-0.034	0.450	1.00			1.26
FCF	-0.049	-0.046	0.344	0.020	0.324	0.035	0.001	-0.004	1.00		1.26
PROMSHR	-0.091	-0.046	-0.111	0.023	-0.093	0.091	-0.017	-0.034	-0.048	1.00	1.03

Table 3: Pattern of Promoter Ownership Over the Years in Sample Firms

Promoter ownership (%)	2006	2007	2008	2009	2010	2011	2012	2013
Mean	50.02	49.88	50.13	51.19	51.24	51.38	51.90	52.22
Std. dev.	15.27	15.17	15.06	14.95	15.28	15.44	15.40	15.36
Minimum	8.78	8.73	8.85	5.30	5.30	5.30	5.30	5.12
Maximum	98.19	98.19	98.19	98.19	98.19	98.19	98.19	98.19

Data relating to the promoter ownership for the period 2006-2013 for India are shown in Table 3. The evidence suggests that promoters hold approximately 50% of the ownership rights in the firms contained in the sample and that this proportion increased slightly over time. The minimum percentage of equity holding by promoters decreased from 8.78% in 2006 to 5.12% in 2013, whereas the maximum percentage of their equity holding (98.19%) remained unchanged.

5. Empirical Results

We tested our hypotheses first for group-affiliated firms using the system GMM approach and the results are reported in Table 4 for both the measures of leverage as dependent variables. For each dependent variable (LEV1 and LEV2) we estimated four models. We carry out two-step GMM estimation, since it is more efficient than one-step estimation. Also, the Sargan over-identifying restriction is heteroscedasticity-consistent only if it is based on the two-step estimation (Arellano and Bond, 1991; Blundell and Bond, 1998). The efficiency of the GMM estimator, however, depends on the assumption that the dependent and other explanatory variables are valid instruments and the error terms do not exhibit serial correlation. To address these issues, Arellano and Bond (1991) proposed three tests. The first is to test the hypothesis that there is no first order serial correlation of the error term. Under the null hypothesis of no serial correlation, the test statistic is distributed as a standard normal. The second is to test that there is no second order serial autocorrelation of the error term, which is distributed as a standard normal under the null hypothesis of no serial correlation. The third is the Sargan test of over-identifying restrictions. This tests the validity of the instruments and is asymptotically distributed as χ^2 under the null of instrument validity.

We observe from Table 4, that the Sargan test reveals the acceptance of the null hypothesis of instruments validity for all the four alternative model specifications both for LEV1 and LEV2. This indicates that it is appropriate to treat firm-specific characteristics as exogenous. The test statistic for first order serial correlation, applied to the differenced residuals, shows that it is significant in all the models, which is expected (Mileva, 2007). On the other hand, the second order serial correlation, which is more important because it detects autocorrelation in levels, is not significant in models 1.3, 2.1 and 2.3 indicating that the models are not misspecified. However, it is significant in other models and hence, raising doubts about their correct specifications.

From Table 4 we find that all models have a good model fit, as indicated by the Wald chi-square statistics. In models 1.2 and

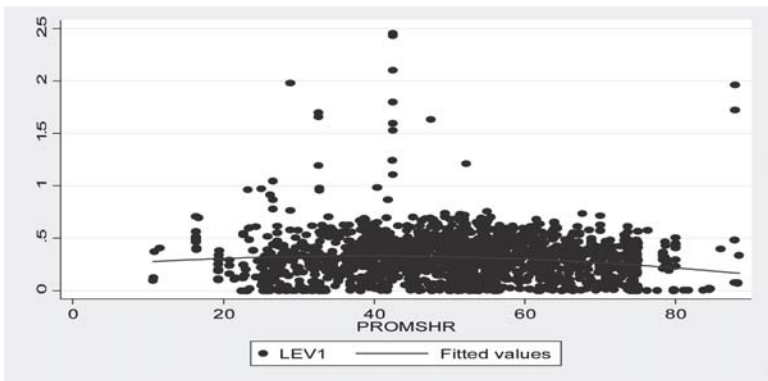
2.2, with LEV1 and LEV2 as dependent variables, we added the linear term of promoter ownership (PROMSHR), our central independent variable of interest. In model 1.2, the coefficient for this variable is statistically insignificant and negative. We then added both the quadratic and the cubic terms of PROMSHR in models 1.3 and 1.4. In model 1.3, the coefficients on PROMSHR and PROMSHR² are positive and negative respectively and are statistically significant. In model 1.3 the inclusion of PROMSHR² increases the model fit considerably. We then added PROMSHR³

Table 4: Results for Dynamic Panel Regressions using LEV1 and LEV2 for Group-affiliated Firms

Variables	1.LEV1				2.LEV2			
	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4
Constant	1.046 (0.355)*	1.123 (0.298)*	0.772 (0.454)** *	1.260 (0.646)**	-0.00001 (6.06e-06)**	-7.29e-06 (8.23e-06)	3.07e-06 (0.00001)	0.00002 (0.00003)
LEV1 _{t-1}	-1.607 (0.349)*	-1.012 (0.437)*	-0.923 (0.406)**	-0.684 (0.351)**				
LEV2 _{t-1}					-0.350 (0.147)*	-0.319 (0.167)**	-0.357 (0.168)**	-0.369 (0.151)*
SIZE	-0.087 (0.037)*	-0.066 (0.027)*	-0.057 (0.057)	-0.050 (0.034)	1.62e-06 (6.06e-07)*	1.59e-06 (6.11e-07)**	1.56e-06 (6.42e-07)*	1.69e-06 (6.11e-07)*
GROWTH	0.0001 (0.0002)	0.0001 (0.0001)	0.0002 (0.0001)	0.0002 (0.0001)	-1.80e-08 (1.08e-08)***	-1.59e-08 (9.69e-09)***	-1.58e-08 (9.43e-09)***	-1.74e-08 (1.00e-08)***
R&D	-9.16e-06 (0.00002)	-3.78e-06 (0.00001)	-3.74e-06 (0.00001)	-2.79e-06 (9.82e-06)	-7.74e-10 (1.63e-10)*	-8.17e-10 (2.59e-10)*	-7.76e-10 (2.28e-10)*	-7.49e-10 (1.98e-10)*
PROFIT	0.509 (0.262)**	0.120 (0.314)	0.128 (0.289)	-0.024 (0.268)	-9.69e-06 (3.90e-06)*	-7.86e-06 (3.62e-06)**	-7.04e-06 (3.69e-06)**	-6.86e-06 (3.61e-06)**
TANGY	0.915 (0.274)*	0.629 (0.249)*	0.627 (0.202)*	0.536 (0.175)*	6.49e-06 (5.04e-06)	9.77e-06 (5.62e-06)***	0.00001 (6.36e-06)***	0.00001 (5.14e-06)**
NDS	4.479 (2.542)** *	2.573 (2.113)	2.108 (1.763)	2.762 (1.706)** *	0.00005 (0.00002)*	0.00004 (0.00004)	0.00004 (0.00004)	0.00004 (0.00003)
FCF	1.30e-07 (1.28e-07)	1.09e-07 (1.25e-07)	1.80e-08 (2.38e-07)	2.72e-08 (1.46e-07)	-6.55e-12 (3.09e-12)**	-7.11e-12 (3.51e-12)**	-6.69e-12 (3.81e-12)***	-6.84e-12 (3.64e-12)***
PROMSHR		-0.005 (0.005)	0.027 (0.009)*	-0.033 (0.031)		-1.07e-07 (1.28e-07)	-6.54e-07 (4.78e-07)	-2.39e-06 (2.02e-06)
PROMSHR ²			-0.015 (0.007)**	0.00006 (0.0007)			6.17e-09 (5.19e-09)	4.78e-08 (4.69e-08)
PROMSHR ³				-4.29e-06 (4.67e-06)				-3.08e-10 (3.41e-10)
AR(1)	2.88*	2.12**	2.20**	2.27**	2.71*	2.63*	2.48**	2.50**
AR(2)	-2.71*	-1.81*	-1.40	-1.71***	-1.54	-1.70***	-1.51	-2.26**
Sargan Test (df)	279.92 (8)	538.49 (9)	785.24 (10)	1242.93 (11)	14441.74 (8)	1463.53 (9)	1496.56 (10)	1385.20 (11)
Wald χ^2 (df)	30.41 (8)	33.03 (9)	38.51 (10)	35.24 (11)	34.28 (8)	24.58 (9)	25.11 (10)	32.90 (11)

in model 1.4 the coefficient of this variable is statistically insignificant and the model fit decreases as compared to the “best” model 1.3. In a system dynamic panel regression, Wald statistics should be used to decide on the selection of the optimal model (Candelon et. al., 2012). Model 1.3 thus constitutes the best representation of the determinants of LEV1 in group-affiliated firms. Therefore, we conclude that relationship between promoter ownership and leverage is inverse U-shaped. The relationship is depicted in Figure 1. The inflexion point for LEV1, is at 50% of

Figure 1: Relationship between Promoter ownership and LEV1 in Group-affiliated Firms



promoter ownership. The argument for such a relationship follows from our review of literature (Jensen and Meckling 1976; Fama and Jensen, 1983; Amihud and Lev, 1981; Friends and Hashbrouck, 1988). According to this literature, there is a substantial presence of family owners in group-affiliated firms and the managers are from within the family. Therefore, with the initial increase in promoter ownership the interests of managers will be aligned with those of external shareholders and managers will use more debt, which in turn will increase the value of their equity holdings. However after reaching the inflexion point, the entrenched managers will use less debt in their capital structure to avoid the risk of losing control by family members on their firms. These results are consistent with the ones by Brailsford et. al. (2002), who found a similar relationship in Australian firms.

In contrast, when LEV2 is used as the measure of leverage, model 2.1, which does not contain promoter ownership, has higher Wald chi-square statistics than any of the models 2.2, 2.3, 2.4 that include the linear, quadratic and cubic terms of the PROMSHR variable. Thus, promoter ownership does not help to predict LEV2 in group-affiliated firms.

We now consider the results of other control variables in models 1.3 and 2.1, which appear to be the best models with respect to the alternative measures of leverage. In model 1.3, the variable TANGY appears to be positively significant. This result supports the trade-off theory which postulates a positive relationship between long-term debt ratio and tangibility. The result implies that the firms with more fixed assets which can be used as collateral have a higher leverage ratio. Similar finding was reported by some earlier studies also (Rajan and Zingales, 1995; Frank and Goyal, 2003; Gaud et. al., 2005). In model 1.3 none of the other control variables have statistically significant effects on leverage. On the other hand, in model 2.1, a large number of control variables have significant effects on leverage. The variable SIZE has a positive significant effect on leverage. This is in line with the arguments provided by the trade-off theory, which suggest that the large firms will be more diversified, probability of bankruptcy will be less and hence they will prefer debt. The variable GROWTH is negatively significant. The inverse relationship supports the view that the cost of financial distress of high growth firms is relatively high, as is the agency cost of debt. Because of the high cost of debt, managers would be reluctant to issue debt, which, in turn, will lead to lower leverage ratio. This finding, therefore, supports the agency cost of debt financing for the Indian firms. The variable R&D is negatively related to leverage and significant at 1 per cent level. Thus it seems that the prediction of the trade-off theory is applicable to Indian firms as well in the line of Titman and Wessels (1988). It suggests that the firms spending more on research and development expenditures are likely to have low debt ratios. The variable PROFIT is negatively significant and confirms the findings of some earlier studies (Ozkan, 2001; Miguel and Pindado, 2001; Frank and Goyal, 2003 ; Gaud et. al., 2005). This finding provides support to the Pecking Order Theory which says that firms prefer internal

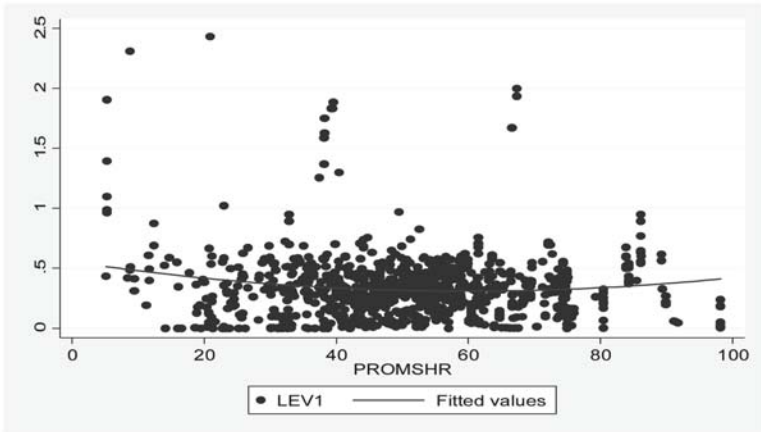
sources to external sources of finance when profits are high. On the other hand, low profit firms use more debt because their internal funds are not sufficient. The variable NDTS is positively significant, which is puzzling because it contradicts the findings from earlier studies by Ozkan (2001), Huang and Song (2006) and Wiwattanakantang (1999). Our finding implies that firms with a high level of non-debt tax shield prefer more debt possibly because they can benefit from tax shield due to interest deductibility. Thus our finding contradicts the trade-off theory which emphasizes the substitution between non-debt and debt tax shields. Although this finding is puzzling it confirms the findings of Delcours (2007) in the context of the emerging Central and Eastern European countries. The variable FCF is negatively significant. Thus it implies that the managers with more free cash flows will invest sub-optimally and hence these firms will prefer less debt in their capital structure.

We then proceed to analyse the relationship between promoter ownership and leverage in stand-alone firms. The results are reported in Table 5. In the controls-only model (1.1) with LEV1 as the dependent variable, growth has positive significant effect and profitability has negative significant effect. We then include the linear, quadratic and cubic values of the promoter ownership variable in models 1.2, 1.3 and 1.4 respectively. The model with highest Wald chi-square statistic is model 1.3. In that model, the linear term of PROMSHR variable has a negative coefficient, and its quadratic term has a positive coefficient. These findings show that LEV1 is a U-shaped function of promoter ownership in stand-alone firms. The relationship is depicted in Figure 2. The inflexion point for LEV1 is at 55% of promoter ownership. The argument for such a relationship follows from alignment hypothesis, entrenchment hypothesis, managerial risk aversion hypothesis and active monitoring hypothesis as discussed in the review of literature. These results are consistent with the ones by Marchica (2005) who observed a similar relationship between managerial ownership and debt in U.K. firms.

Table 5: Results for Dynamic Panel Regressions using LEV1 and LEV2 for Stand-alone Firms

Variables	1.LEV1				2.LEV2			
	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4
Constant	0.369 (0.304)	0.326 (0.360)	0.356 (0.412)	0.297 (0.648)	1.15e-06 (7.19e-06)	2.64e-06 (8.42e-06)	-3.65e-06 (0.00002)	-0.00001 (0.00004)
LEV1 _{t-1}	0.588 (0.386)	0.629 (0.384)***	0.667 (0.338)**	0.673 90.380)***				
LEV2 _{t-1}					1.100 (0.235)*	1.187 (0.217)*	0.997 (0.363)*	1.063 (0.409)*
SIZE	0.0008 (0.027)	-0.003 (0.028)	0.013 (0.024)	0.003 (0.027)	4.33e-07 (9.02e-07)	2.47e-06 (1.65e-06)	2.58e-06 (2.32e-06)	2.17e-06 (2.26e-06)
GROWTH	0.0004 (0.0001)*	0.0004 (0.0002)*	0.0004 (0.0002)*	0.0004 (0.0002)***	5.19e-09 (1.14e-08)	-8.14e-10 (1.02e-08)	-1.90e-10 (1.73e-08)	-6.72e-09 (1.77e-08)
R&D	-0.00002 (0.00003)	-0.00002 (0.00004)	-1.26e-06 (0.00003)	-0.00001 (0.00003)	-7.21e-10 (1.56e-09)	4.44e-09 (4.70e-09)	5.20e-09 (7.71e-09)	3.35e-09 (6.74e-09)
PROFIT	-0.895 (0.172)*	-0.966 (0.233)*	-0.952 (0.227)*	-0.947 (0.248)*	-0.00002 (7.55e-06)**	-0.00001 (6.65e-06)**	-0.00001 (0.00003)	-8.09e-06 (9.96e-06)
TANGY	-0.239 (0.230)	-0.177 (0.286)	-0.264 (0.266)	-0.234 (0.260)	-1.68e-06 (7.39e-06)	-7.92e-06 (7.50e-06)	6.37e-06 (0.00001)	6.80e-06 (0.00001)
NDTS	-1.640 (3.158)	-1.743 (3.482)	-1.683 (0.3433)	-1.951 (3.862)	-0.00003 (0.00002)	0.00003 (0.00003)	-0.00001 (0.00003)	-0.00001 (0.00003)
FCF	4.55e-07 (1.12e-06)	9.07e-07 (2.31e-06)	-3.17e-07 (1.86e-06)	5.85e-07 (2.01e-06)	1.91e-11 (6.33e-11)	-2.12e-10 (1.84e-10)	-2.21e-10 (2.90e-10)	-1.52e-10 (2.57e-10)
PROMSHR		0.0009 (0.004)	-0.024 (0.009)*	-0.001 (0.029)		-2.87e-07 (2.76e-07)	-4.89e-07 (9.93e-07)	3.06e-07 (2.51e-06)
PROMSHR ²			0.068* (0.022)	0.00005 (0.0006)			3.64e-09 (1.02e-08)	-7.87e-09 (4.73e-08)
PROMSHR ³				-4.06e-07 (3.74e-06)				3.49e-11 (2.61e-10)
AR(1)	-1.98***	-1.80***	-2.23**	-2.02 **	-1.95***	-1.84***	-1.94***	-2.15**
AR(2)	-0.11	-0.40	-0.19	-0.26	0.38	0.46	0.60	0.90
Sargan Test (df)	408.77(8)	386.56 (9)	372.68 (10)	375.34 (11)	805.20 (8)	768.64 (9)	637.76 (10)	624.40 (11)
Wald χ^2 (df)	246.54 (8)	157.77 (9)	265.87 (10)	182.30 (11)	53.89 (8)	51.60 (9)	28.34 (10)	13.17 (11)

Figure 2: Relationship between Promoter ownership and LEV1 in Stand-alone Firms



In model 2.1, where LEV2 is the dependent variable, only one control variable is statistically significant namely PROFIT. When promoter ownership is included in model2.2, the coefficient on PROMSHR is negative and significant, however, the inclusion of this variable leads to a reduction in model fit. Furthermore, models 2.3 and 2.4, which include the quadratic and cubic terms of PROMSHR, have lower Wald chi-square statistics than model 2.1. Therefore, promoter ownership does not appear to have a significant effect on LEV2 in stand-alone firms.

Overall, the results presented in Tables 4 and 5 suggest that promoter ownership enhances leverage at first and then decreases, in group-affiliated firms. Thus the relationship between promoter ownership and leverage appears to be inversely U-shaped in group-affiliated firms, in line with Hypothesis 1. In stand-alone firms, the relationship between promoter ownership and leverage is U-shaped, supporting Hypothesis 2. However, we do not find support for these two hypotheses when LEV2 is used as the dependent variable.

6. Conclusion

The objective of this study was to explore the relationship between promoter ownership and capital structure of firms' using a sample of Indian publicly listed firms for the period from 2006 to 2013 , differentiating between group-affiliated and stand-alone firms. Promoter ownership implies a situation where individuals or family members are the majority shareholders and they exercise control over the management of the companies, even if external shareholders are allowed to participate (Balasubramanian and Anand, 2013; Kumar and Singh, 2013). We have tested two hypotheses in this study.

Hypothesis 1 states that the relationship between promoter ownership and leverage is inversely U-shaped in group-affiliated firms. We find support for this hypothesis while using LEV1 as a measure of leverage. The argument for such a relationship is as follows: there is a substantial presence of family owners in group-affiliated firms and the managers are from within the family. Therefore, with the initial increase in promoter ownership the interests of managers will be aligned with those of external shareholders and managers will use more debt, which in turn will increase the value of their equity holdings. However after reaching the inflexion point, the entrenched managers will use less debt in their capital structure to avoid the risk of losing control over their firms by family members. Thus the alignment hypothesis and entrenchment hypothesis play some role here.

According to Hypothesis 2 we expect a U-shaped relationship between promoter ownership and leverage for stand-alone firms. Our results, using LEV1 as the measure of leverage, also support this hypothesis. The argument for such a relationship follows from alignment hypothesis, entrenchment hypothesis, managerial risk aversion hypothesis and active monitoring hypothesis as discussed in the review of literature.

However, neither Hypothesis 1 nor Hypothesis 2 has been supported while using LEV2 as the measure of leverage. We find no relationship between promoter ownership and LEV2 in both group-affiliated and stand-alone firms. Therefore, it follows that the

relationship between promoter ownership and leverage is sensitive to the measure of leverage.

End Notes

1. Indian business groups, referred to as 'Business Houses' date back to the colonial times. About three-fourths of the largest companies in India are family business. There are about 400 business groups in India with variation in size and levels of diversification. For more detailed discussion on the formation and evolution of the Indian business groups see Manos et. al. (2007).
2. Multicollinearity is a serious problem if the value of the variance inflation factor (VIF) is greater than 10 (Nachane, 2006).

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BOOKS

1. *Webs of History: Information, Communication and Technology from Early to Post-colonial India* eds. Amiya Kumar Bagchi, Dipankar Sinha and Barnita Bagchi, New Delhi, Manohar, 2004.
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Development Studies and Progressive Publishers, 2012.

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