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Capital structure and managerial ownership: Evidence from Pakistan

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This paper aims to investigate how managerial equity ownership affects the capital structure choice (debt-equity ratio) of non-financial firms listed on the Karachi Stock Exchange in Pakistan between 2008 and 2012. Earlier studies on Pakistan have explored the impact of ownership structure on firm performance. This study extends the literature by exploring the relationship of ownership structure, especially managerial ownership, on capital structure. Our results show an inverted U-shaped relationship between managerial equity ownership and leveraging. At a low level of managerial ownership, it is positively related to debt-equity ratio, assuming that managers use more debt, possibly seeking for higher returns on equity or higher stock price by leveraging. An inverted U-shaped relationship suggests that leveraging would be diminished after the point where managers become major residual claimants by owning a certain amount of equity ownership. Managerial opportunism may explain this tendency, though the causal relationship requires further discussion.

JEL Classifications: G32

Keywords: Capital structure; managerial ownership; leverage; Pakistan

Introduction

Modigliani and Miller's (1958) Irrelevance Theorem on capital structure (hereafter referred to as the MM Theorem) states that the choice between debt and equity has no material effects on a firm's value; when capital markets are perfect, (i.e. no taxes, no bankruptcy costs, no agency costs, and no asymmetric information etc.). In response to criticism on their initial work, Modigliani and Miller (1963) proposed that a firm should use maximum debt in their capital structure to avail tax advantages associated with the use of debt. Since then, many studies coming from different approaches have been done to prove how the firm's financial performance is affected by its financing structure. However, few studies have tried to explore the impact of ownership structure on capital structure (see, Whaba, 2013; Hasan and Butt, 2009; Ruan et al. 2007; Brailsford et al. 2002; Short et al. 2002; Berger et al.1997).

Therefore, the analysis of the consequences of the separation of ownership and control has been one of the major subjects of research in corporate finance and corporate governance. In the theory of modern corporations, the principal-agent problem arises when those who own physical assets must rely on others to make use of them. For instance, firms are not run directly by shareholders (principal) but by managers (agents). A shareholder's primary concern is to maximize the return on their investment by delegating control of their investment to professional managers (Berle and Means, 1932). However,

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due to higher monitoring, contractual and information collecting costs, or higher transactions costs, principal can only exercise limited control over agents.

In theory, shareholders have the incentive to monitor managers, because the proper monitoring of managers brings them higher residuals in the form of higher dividends. This insight from Alchian and Demsetz (1972) is a development of their explanation of the emergence of the capitalist firm as a solution to the "*shirking*". This problem arises due to the moral hazard problem of teamwork in a context of asymmetries of information, where each team member (player) has an incentive to *shirk*. The solutions presented in literature are (i) a monitor, (ii) incentives for the monitor to monitor efficiently, which can be achieved by making the monitor the *residual claimant*. The shareholders are the true *residual claimants* but they have to delegate the monitoring task to managers whose incentives are attenuated. In other words, if the managers are given the equity ownership (i.e. to become the residual claimants), how can their incentives be maintained or strengthened by sharing the residuals?

Despite important discussions in the literature (see Jensen and Meckling, 1976; Fama and Jensen, 1983) little has been done to adequately shed analytical light on how managerial equity ownership would affect capital structure decisions. Jensen and Meckling (1976) in their seminal work were the first to evaluate ownership and capital structure under an agency theory framework. Hart (1995, pp.147) explains that "why agency theory perspective is important, and in particular, why the conflict of interest between a company's managers and its investors is crucial for an understanding of capital structure." Therefore, this study aims to contribute to the argument on the consequences of the separation of ownership and control, in particular, the significance of managerial equity ownership on firms' capital structure choices.

Several prominent researchers have explored the optimal choices for capital structure in relation to ownership structure under the agency theory framework. Many researchers follow Jensen and Meckling (1976) by using agency theory to argue that managers do not always choose capital structures with value maximizing levels of debt. Managers appear to entrench themselves against internal and external corporate governance mechanisms. Berger et al. (1997) define entrenchment as the extent to which managers fail to experience discipline from governance and control mechanisms. They also conclude that entrenched managers have discretion over firms' leverage choices. They can use this discretion to protect their vested interests and unproductive benefits.

Most of the existing literature investigates the behavior of firms in developed economies that have similar institutional settings, developed capital markets, and effective regulatory and legal frameworks. From in the context of developing economies, La Porta et al. (1998) highlighted that developing economies have weak institutional settings, weak legal and regulatory frameworks, and less developed capital markets, especially equity markets. Based on these factors, emerging markets are more prone to principal-agent conflicts due to the absence of good corporate governance mechanisms and weak legal protection systems. The complexity and ambiguity in developing countries have also been highlighted by Booth et al. (2001). They state that the distinction between direct and indirect financing is complicated in developing economies due to extensive government ownership and financial regulation. In particular, the control of prices in security markets and the credit support to selected sectors by governments both significantly influence corporate financing patterns.

These findings lead to the argument that developing economies have certain drawbacks and other unique characteristics in contrast to developed economies. However, little research on developing economies particularly considering the above mentioned arguments and lack of consensus on developed economies highlighted the need for further research. This study aims to contribute to this argument by exploring the financing behavior of firms in Pakistan from the perspective of agency theory, and by attempting to evaluate the impact of managerial equity ownership on choices of firm capital structure. Additionally, in terms of the firm specific and country specific factors highlighted by Jong

et al. (2008), Booth et al. (2001), Demirguc-Kunt and Maksimovic (1999), and La Porta et al. (1998), no prior empirical evidence examined the relationship between ownership and capital structure in the case of Pakistan. Therefore, this study will fill the research gap by exploring the aforementioned relationship as well. In practice, it should help corporate managers choose appropriate governance structures and value-maximizing capital structures. Moreover, it may lend a hand to the development of debt and equity markets, which will ultimately contribute to economic growth. Furthermore, the findings of this study can help both local and foreign investors to efficiently allocate their investments, by aiding in the understanding of firms specific and country specific factors of Pakistan. The rest of paper includes the literature review, description of data, variables and research method specifications, empirical findings, and discussions respectively. The final section provides the conclusion.

Literature review

The debate on capital structure was initiated by Modigliani and Miller (1958) and (1963) proposing the irrelevance of debt and the usage of debt respectively for financing firms' investments. Further work by Miller (1977) introduces corporate taxes, personal taxes on capital gains, and personal taxes on interest incomes, while DeAngelo and Masulis (1980) introduces non-interest, tax exempted expenses like depreciation and investment credit taxes as non-debt tax shields. Further theoretical development includes Trade-off Theory, which emphasizes trade-off between tax benefits of debt to debt related probable financial distress. Further contributions by Myers and Majluf (1984) and Myers (1984) put forward the Pecking Order Theory, which suggests that in order to minimize information asymmetries, managers should follow a specific order, such as first utilizing internally available sources (retained earnings), then following with external financing, debt, and equity respectively.

Since the issue of separation of ownership and control in modern corporations was highlighted by Berle and Means (1932) there has been extensive literature made available on it. Jensen and Meckling (1976) while extending the work of Coase, Alchian and Demsetz, and others on property rights, state how specification of individual rights to determine economic efficiency by giving incentives to the participants in any organization. These rights can generally be specified through negotiation and implicit and explicit contracting. They also argue that managers may not behave vigilantly in order to maximize the shareholders' interest and wealth.

As a solution they propose that an increase in managerial equity ownership can increase the alignment of managers' interests with shareholders. Fama and Jensen (1983) and also Demsetz (1983) argue that managerial equity ownership may inversely affect agency problems, such as managerial opportunism. Jensen (1986) expresses the principal-agent relationship as "a relation fraught with conflicting interests" and states that managers have incentives to grow the firm beyond its optimal size. As the size of a firm increases it also increases the resources under the manager's control that may give them more power. Leveraging can increase the short-sighted profitability of the firm, which may in turn increase the reward and compensation for managers. This may accordingly provide managers with more power and control, possibly resulting in the misuse of firm resources.

Recent studies, including Brailsford et al. (2002); Berger et al. (1997) and Barton and Gordon (1988), attempted to investigate the variations of capital structure due to changes in managerial ownership. Brailsford et al. (2002) states that under the managerial perspective capital structure decisions are not only based on internal and external contextual factors which impact on the basic concern of risk and control, but the values, goals, preferences, and desires of managers are also important inputs to financing decisions. As a residual claimants, managers may maintain a high level of debt in order to inflate their equity voting power or may maintain a low level of debt in order to avoid the monitoring by creditors and the like.

Under the agency theory framework, shareholders and managers are the key decision makers. Jensen and Meckling (1976), while addressing the principal-agent conflict that rises due to the separation of ownership and control in relation to agency costs, argued that there is an increase in the alignment of managers' interests to shareholders with an increase in managerial equity ownership. Similarly, Fama and Jensen (1983) proposed stock options or other market based compensation to minimize the shareholders and managers conflicts.

In existing literature several empirical studies have explored the relationship of ownership structure to firm performance, such as Chen et al. (2003), McConnell and Servaes (1990), Morck et al. (1988), and Demsetz and Lehn (1985). Few studies, however, have explored the relationship between ownership structure and firm capital structure. At the very least a consensus has not yet been reached as evidenced by the various studies (see e.g., Ruan et al., 2011; Brailsford et al., 2002; Short et al., 2002; Berger et al., 1997; Firth, 1995; Bathala et al., 1994; Jensen et al., 1992; Friend and Lang, 1988; and Kim and Sorenson, 1986).

Capital structure and managerial ownership

The center focus of strategic corporate finance is the selection of optimal capital structure, for example value enhancing levels of debt and equity levels with minimum optimal costs of capital for real investment. Various corporate finance theories have been developed to achieve the optimal capital structure with a relative emphasis on financing sources. The core theories are trade-off theory (Kraus and Litzenberger, 1973), pecking order theory (Myers, 1984; Myers and Majluf, 1984), market timing theory (Baker and Wurgler, 2002), and the free cash flow hypothesis. According to Myers (2001), there is no universal theory of debt-equity choice and no reason to have one. However, there do exist theories for optimal capital structure with relative emphasis on taxes (trade-off theory), differences in information (pecking order theory), and agency costs (free cash flow theory).

On the other hand Jensen and Meckling (1976) thoroughly explained the separation of ownership and control by examining the various agency related costs related to corporate ownership (shareholders) and corporate control (managers) in modern corporations. They define agency costs as “*the monitoring expenditures by the principal (owners), the bonding expenditures by the agent (managers), and the residual loss*” in modern corporations. They also explain that managers' opportunistic behavior may discourage potential investors. These potential investors may perceive that the management could use corporate funds for their own perks and privileges with no regard for their investors. Jensen and Meckling (1976) also conclude that the increase in managerial equity ownership transfers the control from external shareholders to internal managers, which can raise the issue of managerial entrenchment as well.

In principal-agent relationships, the role of “information asymmetries” is critical. The primary objective of the interest alignment hypothesis of Jensen and Meckling (1976) is to minimize the conflict that arises from information asymmetry between the principal and agent. This phenomenon in corporate finance has been further elaborated on by Myers (1984) and Myers and Majluf (1984) in pecking order theory for optimal capital structure. The managers, who control the firm on behalf of its shareholders, have more accurate and timely information related to the firm. Therefore, pecking order theory suggests that managers follow an order in their financing decisions, such as to first use internally available funds (retained earnings), then issue debt, and finally issue the equity. This can reduce various agency conflicts between owners and managers. Using the free available cash for real investments reduces the availability of cash under the manager's discretion and prevents them from shirking. Issuance of debt can be seen in Grossmann and Hart (1982) as a *monitoring* tool. Another argument by La Porta et al. (2000) concludes that change in the capital structure of the firms changes the allocation of power between the “insiders” and “outside” investors, which ultimately changes the firm's investment policy.

Jensen and Meckling (1976) explain the following agency costs associated with debt: the

opportunity costs caused by the impact of debt on the investment decisions of firm, the monitoring and bonding expenditures, and the bankruptcy and reorganization costs. Therefore they conclude that “at high level of managerial ownership there are incentives to decrease the debt levels.” This is partly because managers as owners come to avoid potential financial distress and dislike the ad hoc monitoring by creditors. For development of financial markets in developing countries, the main devices which discipline management to provide it with incentives are the composition of equity ownership, the market for corporate control, the role of the board of directors of the firm, its capital structure, and the compensation of managers (Demirgüç-Kunt and Levine, 2001, p.160).

Grossman and Hart (1982) point out that the usage of debt by leveraging can increase the market value of firm. The concerns for debt managers include how to contribute to the earnings by minimizing funding costs while maintaining adequate levels of liquidity enough to meet obligatory payments. In addition, they point out that if debt managers hold the equity share, they would do their best to prevent the firm from bankruptcy and work in the best interest of shareholders while securing their own job and related benefits. In the absence of debt, there would be no pressure by creditors' monitoring and no threat of bankruptcy. In this case, there would be no threat posed to the manager's job and related benefits. Ironically, this situation may spoil managers to free-ride on their internally-vested individual interest, losing incentives to maximize the returns for all the shareholders. These arguments nullify the MM irrelevance proposition which is based on perfect capital markets with zero agency cost; in reality no agency and other related cost cannot be assumed.

In order to explain the rationale behind debt, Ross (1977) develops a signaling model. He points out that a firm's performance and asset quality are better known to managers than to the market. Therefore, the managers' funding decision to issue debt or equity can be treated as a signal of the firm's value to the market. The issuance of debt sends a signal to the market that management of the firm is confident that they will generate enough cash in future to meet the future debt interest payments. According to Grossman and Hart (1982) managers of almost zero debt firms have no strong incentives to maximize the profit, partly because there would be less pressure from creditor monitoring and potential bankruptcy. Consequently, bad managers in such firms cannot be penalized; low profit will accordingly result in a low market value for the firm. In this case, managers without equity ownership in the firm will have no incentive to work for the interest of shareholders. However, hostile takeover threat may force bad managers to earn some profit for the firm to protect their own job related interests.

As a whole, empirical results in earlier studies show mixed results on the relationship of managerial ownership to leverage in perspective of firms capital structure. The study by Wahaba (2013) found a negative relationship between managerial ownership and capital structure in Egyptian listed firms. Ruan et al. (2011) studied Chinese private firms and explored the non-linear relation between managerial ownership and capital structure. Specifically they stated that if managerial ownership (MO) is more than 18% or less than 46%, it shows a positive relationship to debt-equity. On the other hand if MO less than 18% or greater than 46%, the relationship is negative. Similarly, Brailsford et al. (2002) found a non-linear relationship in Australian firms endorsing the “Interest Convergence Hypothesis” and the “Managerial Entrenchment Hypothesis”. In the Short et al. (2002) study on UK firms, the team found a positive significant relationship between corporate debt and managerial ownership. However, firms with larger external shareholders negate this positive relationship. The Firth (1995), Bathala et al. (1994), and Friend and Lang (1988) studies included US firms' data in their research. They reported a negative relationship between insider ownership and debt. In contrast, the studies on US firms done by Berger et al. (1997) and Kim and Sorensen (1986) reported a positive relationship.

In the existing literature, studies on both developed and developing economies reported mixed findings on the relationship between managerial ownership and firm debt ratio,

which is used as a proxy for capital structure in most empirical analyses. In several studies, at low levels managerial equity ownership is positively related to a firm's debt. If managerial equity ownership increases, it shows negative relationship to a firm's debt. This phenomenon appears due to managerial intention to avoid bankruptcy risks and extra monitoring by creditors.

We wish to emphasize that there is no *a priori* and clear-cut causal relationship between the managerial equity ownership, as incentives to reduce the shirking problem and to choose a value maximizing capital structure, and firm debt. Table 1 shows how different combinations of effective power of control by shareholders with different levels of managerial equity ownership can result in different outcomes. For instance, even in situations where managerial equity ownership is at low levels, if the effective power of control by shareholders is reasonably strong, shareholders (quadrant I) as well as managers (quadrant II) may possibly seek for higher returns on equity (ROE) or higher stock price. This can be achieved through leveraging (we name it as "type I managerial opportunism" in the case of quadrant II), although the potential shirking problem would be less problematic. If the effective power of control by shareholders is weak (quadrant IV), it is possible that good managers would seek for a better mix of funding by increasing equity finance to lower the funding cost (ensuring job positions and higher salaries). Even in the similar situation where managerial equity ownership is at high levels, if the effective power of control by shareholders is weak (quadrant III), as discussed by Jensen and Meckling (1976) and Grossman and Hart (1982), managers are able to become a free-loaders on internally-vested interest. This consequently reduces the pressure of creditors' monitoring to protect their individual benefits (we name it as "type-II managerial opportunism").

TABLE 1. RELATIONSHIP BETWEEN MANAGERS AND SHAREHOLDERS
WITH DIFFERENT SHAREHOLDING PATTERNS

		Incentives to managers	
		Managerial equity ownership (including stock option) (Strong incentives)	The other (including few incentives) (Weaker Incentives)
Effective power of control by shareholders	Reasonably Strong	II. Possibly in the short run the debt is increasing if the shareholders (including managers holding equity shares) seek for higher residuals by leveraging (type I managerial opportunism). But in the long run, they may seek a sound mix of capital structure to avoid the bankruptcy.	I. Possibly in the short run the debt is increasing if the shareholders seek for higher residuals (dividends) by increasing profit through leveraging. Fewer incentives in managers for improving their operation (shirking problem).
	Weak (Costly monitoring)	III. Initially, more incentives in managers for seek higher residuals because they also become the residual claimant. But it is possible that they come to free-ride on the internally-vested interest, reducing the debt financing to lower the pressure of creditors' monitoring (type II managerial opportunism).	IV. Possibly, shirking problem may severely occur. On the other hand, it is possible that good managers would seek for a better mix of capital structure by encouraging equity finance to reduce the funding cost.

Notes: Alternative incentives, for instance, incentive payment schemes or a market in managers can be devised to reduce, although not entirely eliminate - the shirking problem.

We gathered empirical cases to explain how positively or negatively managerial equity ownership affects the relationship with leverage and how different levels of managerial equity ownership would encourage or discourage a different mix of financing. In this study, we used data from Pakistani non-financial listed firms as a unique case of a developing economy where the agency cost is considered extremely high due to an underdeveloped capital market and a weak regulatory framework. In the following section,

we drew our data from Pakistani non-financial firms listed on Karachi Stock Exchange.

Data, variables, and research methods

Data

This study aims to empirically explore whether managerial equity ownership influence the financing behavior of non-financial firms listed on the Karachi Stock Exchange Pakistan from 2008 to 2012. Financial firms are excluded from this analysis due to the fact that their decisions are subjected to various regulations. The final sample includes data from 122 firms over the period of five years. Firms included in the sample belong to different industrial groups such as cement, chemical, engineering, fuel and energy, paper and board, sugar, textile, and others.

Variables

The basic selection and description of variables presented in Table 2 follows the existing literature for a meaningful comparison with earlier empirical studies.

TABLE 2. LIST OF VARIABLES

Variables	Definition
<i>Dependent variables</i>	
Debt-equity ratio (D / E_{it})	Ratio of book value of debt to market value of equity
<i>Explanatory variables</i>	
Managerial-equity ownership (MEO_{it})	Percentage of shares owned by executives and non-executive directors
Square of Managerial-equity ownership (MEO^2_{it})	Square of Percentage of shares owned by executives and non-executive directors
<i>Control variables</i>	
Firm Size ($SIZE_{it}$)	Natural logarithm of assets
Free cash flow (FCF_{it})	Operating income before tax plus depreciation and amortization less taxes and dividends paid
Growth ($GROW_{it}$)	Ratio of market price per share to book value per share. Market price per share is computed by taking the sum of high and low price share divided by 2
Non debt tax shield ($NDTS_{it}$)	Ratio of depreciation to total assets
Dividend (DIV_{it})	Dividend per share

According to Brailsford et al. (2002) a firm's capital structure is not solely dependent on the allocation of equity ownership, as there do exist other factors that influence the firm's choices of financing. Similarly, we use size ($SIZE$) to control for risk based on the assumption that larger firms are likely to be more credible, have low risk of bankruptcy, and can afford to access more debt. Secondly, several studies such as Kim and Sorensen (1986) and others suggest that a firm's growth opportunities ($GROW$), are a good proxy for the agency costs of debt. They suggest that the tendency to invest sub-optimally to expropriate wealth from a firm's debt holders is likely to be higher for firms in growing industries.

In addition, this can be considered as an indicator of firms' success and profitability as well. Free-cash flow (FCF) is used to control for agency costs, though the argument of free cash flow is more complicated than originally suggested by Jensen (1986). However, one possibility is that higher FCF indicates higher credibility of the firm or vice versa with lower FCF. Or debt can relieve the free cash flow problem in firms under the assumption that extra monitoring by creditors can prevent managers from shirking. Finally, non-debt tax shield ($NDTS$) and dividend (DIV) are used for the effects of taxes.

TABLE 3. DESCRIPTIVE STATISTICS

Variable	Obs.	Mean	Std. Dev.	Minimum	Maximum
DE_{it}	610	0.9853	0.5192	0.0020	1.9977
MEO_{it}	610	0.2697	0.2694	0	0.9544
$(MEO)_{it}^2$	610	0.1452	0.2034	0	0.9110
$SIZE_{it}$	610	15.11	1.3689	11.9743	19.6395
FCF_{it}	610	1083021	4823246	-82922255	73409663
$GROW_{it}$	610	1.1779	1.50002	-8.6999	17.5107
$NDTS_{it}$	610	0.03479	0.0482	0	0.8228
DIV_{it}	610	4.2515	11.5778	0	173.4976

Note: DE_{it} = debt to equity ratio; MEO_{it} = Managerial equity ownership; $(MEO)_{it}^2$ = Square of managerial equity ownership; $SIZE_{it}$ = Firm size; FCF_{it} = Free cash flow; $GROW_{it}$ = Growth; $NDTS_{it}$ = Non-debt tax shield; DIV_{it} = Dividend.

TABLE 4. CORRELATION OF VARIABLES

Variable	DE_{it}	MEO_{it}	$(MEO)_{it}^2$	$SIZE_{it}$	FCF_{it}	$GROW_{it}$	$NDTS_{it}$	DIV_{it}
DE_{it}	1							
MEO_{it}	0.23***	1						
$(MEO)_{it}^2$	0.20***	0.95***	1					
$SIZE_{it}$	-0.08**	-0.28***	-0.22***	1				
FCF_{it}	-0.15***	-0.12***	-0.08***	0.43***	1			
$GROW_{it}$	-0.10**	-0.22***	-0.18***	0.03	0.12***	1		
$NDTS_{it}$	0.09**	0.13***	0.10**	-0.13***	-0.01	0.03	1	
DIV_{it}	-0.13***	0.17***	-0.13***	0.15***	0.33***	0.04	-0.04	1

Note: DE_{it} = debt to equity ratio; MEO_{it} = Managerial equity ownership; $(MEO)_{it}^2$ = Square of managerial equity ownership; $SIZE_{it}$ = Firm size; FCF_{it} = Free cash flow; $GROW_{it}$ = Growth; $NDTS_{it}$ = Non-debt tax shield; DIV_{it} = Dividend.

***, **, * - significant at 1%, 5% and 10% level respectively.

Descriptive statistics of the dependent and explanatory variables used in this study are presented in Table 3, which indicates that the average value of debt-equity ratio is near to 1. On average 27% of outstanding shares are owned by executives and non-executive directors. The average age of the companies used in the sample is around 15 years. Average dividend per share is 4.25 PKR. Moreover, Table 4 presents the pairwise correlation matrix of the variables used in studies. It indicates that cross correlation for variables is small, thus the possibility of the existence of a multi-collinearity problem is negligible. As we assumed that ownership structure dynamics influence the capital structure among other various factors, similarly the opposite can also happened under the concept of endogeneity. This study like most of the studies doesn't explain the case causality and directional relationship between various factors and cannot easily establish one (see Cho 1998 and Brailsford et al. 2002).

Research method

On the basis of the above noted literature, we hypothesize that the capital structure is significantly affected by the managerial equity ownership due to the quality of information that managers possess compared to external shareholders. In theoretical framework Jensen and Meckling (1976) proposed "interest alignment hypothesis" to minimize principal-agent conflicts in the agency theory framework. Myers (1984); Myers and Majluf (1984) proposed Pecking Order Theory to minimize the asymmetries of information for firm's financing choices. It is assumed that Pakistani firms are more prone to principal-agent conflicts, as highlighted by La Porta et al. (1998) that firms in developing countries

are exposed to more agency conflicts due to weak institutional and legal frameworks. Therefore, this study empirically examines the impact of managerial equity ownership and its significance on capital structure choices in Pakistani non-financially listed firms.

To examine the relationship with the dependent variable (leverage), explanatory variables, (proportion of managerial equity) and control variables, this study employed a fixed effects method to estimate the impact of managerial equity ownership on debt-equity ratio. To prevent a potential case of heteroskedasticity in our sample we used White's (1980) white-coefficient covariance. Similar to the description, the fixed estimation model is given below

$$DE_{it} = \alpha_0 + \beta_0 MEO_{it} + \beta_1 (MEO)^2_{it} + \beta_2 FCF_{it} + \beta_3 SIZE_{it} + \beta_4 GROW_{it} + \beta_5 NDTS_{it} + \beta_6 DIV_{it} + \epsilon_{it} \dots \dots \dots (1)$$

Where *i* stands for cross-sectional unit and *t* stands for time, ϵ_{it} is the random error term for *i*th firm at time *t*.

Results and discussion

Based on the above estimation the followings are the empirical results of this study. Most of the coefficients in our model are significant at a 1% level except the coefficient of size. The overall model is significant and explained 42% of the variation in the dependent variable due to explanatory variables included in the model.

Empirical results

The regression results of explanatory variables using the fixed effects models are presented in Table 5. The fixed effect has the ability to control all the stable characteristics of each variable used in study eliminates the potential large sources of bias.

TABLE 5. THE EFFECT OF EXPLANATORY VARIABLES ON DEBT TO EQUITY RATIO (*D / E_{it}*) USING THE FIXED EFFECTS ESTIMATION MODEL

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	0.8629	0.6743	1.2797	0.2012
<i>MEO_{it}</i>	1.2779	0.4654	2.7454	0.0063
<i>(MEO)²_{it}</i>	-1.3914	0.4722	-2.9461	0.0034
<i>SIZE_{it}</i>	-0.0038	0.0399	-0.0963	0.9233
<i>FCF_{it}</i>	-1.24E-08	5.73E-09	-2.1602	0.0312
<i>GROW_{it}</i>	0.0387	0.0084	4.5969	0.0000
<i>NDTS_{it}</i>	0.7150	0.2161	3.3079	0.0010
<i>DIV_{it}</i>	-0.0045	0.0005	-8.8763	0.0000

Notes: R2 =0.5410; Mean dependent variable = 0.9851; Adjusted R2 = 0.4184; S.E of regression = 0.3960; F-statistic = 4.4130; Prob. (F-statistic) = 0.0000

Discussion

The regression results presented in Table 5 indicate that managerial equity ownership is positively related to the debt equity ratio. Alternatively, the square of managerial equity ownership (higher managerial ownership) is negatively related to the debt equity ratio. The variation in the positive or negative relationship indicates an inverse U shape relationship between leverage and managerial equity ownership. This is because the debt-equity ratio increases by increasing the proportion managerial equity ownership at certain levels and then decreases as the proportion of managerial equity ownership increase. Leverage shows a positive and significant relationship to managerial equity ownership. However, there

exists a negative and significant relationship between leverage and increasing managerial equity ownership seen in the square of managerial equity ownership (MEO)². This shows that the alignment of managerial interest with other shareholders through equity ownership does affect the firm's financing structure by choosing different level of debt. These findings endorse the alignment of the interest hypothesis of Jensen and Meckling (1976) and managerial entrenchment of Fama and Jensen (1983).

As managerial ownership increases from certain levels, entrenchment effects set in and possibly result in causing type-II managerial opportunism (see Table 1) that would lower the debt ratio. Higher equity ownership gives managers more control, voting power, and access to more reliable information. Under these conditions managers select the debt level that protects their self-interest, not the optimal level of debt for the other shareholders. The negative relationship between certain levels of higher managerial equity ownership and leverage may indicate that managers with more control, decision, and information may take advantage of the weaker or ineffective monitoring by creditors. These findings apart from agency theory, also endorse the argument proposed in the pecking order theory by Myers (1984) and Myers and Majluf (1984), particularly the role of information quality between inside managers and external shareholders. Our findings are consistent with the earlier empirical findings like Ruan et al. (2011), Short et al. (2002), Berger et al. (1997), and Kim and Sorensen (1986). Moreover, our results are contradictory to the findings of Hasan and Butt (2009), which explored the positive impact of managerial ownership on leverage within 58 firms from 2002 to 2005.

Free cash flow (FCF) shows a negatively significant relationship with leverage, it is in line with the pecking order theory, which suggests that it is more beneficial to use the internal available cash than to raise capital from outside sources. Growth (*GROW*) has a positive significant relationship with leverage, which supports the pecking order theory. Non-debt tax shields (NDTS) illustrate a positively significant relationship. This finding is contrary to the findings of DeAngelo and Masulis (1980). However, our findings are in line with Barkat and Rao (2012), who suggest that "non-debt tax shield is a positive and significant determinant of capital structure in non-taxed economies." This may be the case in Pakistan, as a developing economy with a weak tax recovery system. Dividend per share (*DIV*) is significant but shows a negative relationship.

Conclusion

This paper attempts to investigate whether firm financing decisions are affected by managerial equity ownership. Our results suggest that managerial equity ownership has a significant impact on a firm's capital structure. Hence, the findings of this study partly support the hypothesis of Jensen and Meckling (1976), which state that managerial equity ownership can be used to solve the agency conflict. It also supports the pecking order theory hypothesis in the context of information asymmetry and its impact on control and decision making agency conflicts. Therefore, we can argue that managers, interest, goals, desires, and information are also important factors that may influence the firm's financing decisions.

On the other hand, this study finds an inverted U shape relationship between leverage and managerial equity ownership. At low level of managerial ownership, our results are in contrast of Hasan and Butt (2009) that reports negative relationship between managerial ownership and leverage. This indicates that at low levels of managerial ownership, managers use more debt, possibly seeking for higher returns on equity or higher stock price by leveraging (type I managerial opportunism). An inverted U-shaped relationship suggests that leveraging would be diminished after the point where managers become major residual claimants by owning a certain amount of equity ownership. Type II managerial opportunism may explain the tendency where more managers would have more incentives to protect their internally-vested interest, for this purpose, they would reduce the debt to lower the pressure of creditor monitoring. However, as we see in table

1, there is no prior, clear-cut causal relationship between managerial equity ownership and capital structure. Each firm must have its own determinant for choosing a particular mix of funding, while the effective power of control by shareholders (as well as by creditors) may vary in firms. In spite of this, the above regression suggests the *general* trend of an inverted U-shape relationship between debt-equity ratio and managerial equity ownership in Pakistani non-financial listed firms.

In general, the result shows that managerial ownership tends to encourage leveraging. This phenomenon predicts the exploitation of minorities or other external stakeholders and signals a less prudent corporate governance mechanism. This supports the stance of La Porta et al. (1998) in their study on weak investor protection and less-developed institutional settings in case of developing economies.

Though it entails further studies, a particular general institutional framework such as the weak regulatory framework in Pakistan may create the general trend of an inverted U-shape relationship which suggests an ill-incentive of causing managerial opportunism under the weak effective power of control by shareholders. Hence, the weak shareholders control and ill-incentives further contribute to extra monitoring or other agency costs. We have to interpret the result taking the specificities of the Pakistani financial context into consideration.

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