Capital structure, managerial ownership and firm performance: evidence from Egypt

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Abstract This paper focuses on an important issue, which has generally received less attention in corporate governance literature, being the effect of managerial ownership on the relationship between debt and firm performance. By employing a sample of Egyptian listed firms, the generalized least squares method, as a panel data technique, is used to examine the joint effect of debt and managerial ownership on various measures of firm performance (i.e., Tobin's q and ROA). The results reveal that managerial ownership moderates the relationship between debt and firm performance, with the relationship being negative (positive) in presence (absence) of managerial ownership concentration. The implication of this finding is that the optimal capital structure is more likely to be contingent on contextual variables as well as the roles, power, and stakes of key internal and external actors. Put simply, the effectiveness of one corporate governance mechanism (i.e., debt) is more likely to be contingent on the effect of other existed corporate governance mechanisms, and hence, there is not one best arrangement of either capital structure or ownership structure, but different arrangements are not equally good.

Keywords Capital structure · Corporate governance · Egyptian firms · Firm performance · Managerial ownership · Panel data

1 Introduction

Since the influential paper of Modigliani and Miller (1958) that argued for debt irrelevance proposition, researchers have suggested various theoretical perceptions to articulate the relationship between capital structure and firm performance.

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Drawing on asymmetric information and signaling theorems, some authors argued that asymmetric information between insiders (managers and owners) and lenders leads to imperfect pricing of loans (Stiglitz and Weiss 1981), and debt, in this context, is considered as a proper signal of a good-quality firm (Ross 1977). Thus, the relationship between debt and firm performance, under this premise, is argued to be positive. The positive correlation between debt and firm performance is also justified by other scholars who explored agency theory (Jensen and Meckling 1976). The underlying theme of this assertion is that debt is an effective control mechanism that can be used not only to diminish available "free-cash flow" (Jensen 1986), but also to avert personal costs of bankruptcy (Grossman and Hart 1982). However, other researchers have argued for a negative relationship between debt policy and firm performance as a result of disagreement in interests between shareholders and lenders (Jensen and Meckling 1976).

In this context, shareholders are more likely to choose alternatives that maximize their benefits at the expense of lenders, even if these alternatives do not necessary maximize firm's value (Weill 2008). Therefore, insiders may either refuse to invest in low-risk projects (i.e., underinvestment problem) (Myers 1977), or prefer to invest in risky projects (i.e., overinvestment problem) (Jensen 1986). In a similar vein, empirical studies have presented mixed and somewhat inclusive evidence regarding this relationship (Majumdar and Chhibber 1999; Berger and Bonaccorsi di Patti 2006).

Rigorous examination of agency and signaling theorems, as well as mixed conclusions of prior work verifies that both theories represent two extreme viewpoints. Notwithstanding both theories have different perspectives in shedding light on the link between owners, managers and lenders, they have depicted any of these links as a monotonic relationship that works in a space. The implication of this presupposition is that a certain capital structure, and hence a debt level, is always preferred regardless of concurrent structural and institutional variables. However, this assumption is an unrealistic view as "there is much that needs to be done, both in terms of empirical research as the quality of international databases increases, and in developing theoretical models that provide a more direct link between profitability and capital structure choice" (Booth et al. 2001, p. 119).

As a result, this paper argues that context, actors and structure will best explain mixed results in the effect of debt on firm performance. In other words, the effectiveness of one corporate governance mechanism (i.e., debt) is more likely to be contingent on the effect of others existed corporate governance mechanisms (Zajac and Westphal 1994; Rediker and Seth 1995; La Rocca 2007; Le and O'Brien 2010). This is more likely to happen as firms often develop their corporate governance systems to minimize their total cost, as one weak governance mechanism in one area will be offset by a strong one in another area (Donnelly and Kelly 2005; Elsayed 2011). For instance, "while debt and state ownership each has a negative impact on firm performance when used in isolation, their interaction has a positive impact on firm performance" (Le and O'Brien 2010, p. 1297). The implication of this theme is that existing theories might need to be considered as complementary perspectives, and rather mutually exclusive theories, each of which

portrays a part of the entire picture. This argument is tested in this paper empirically by employing a sample of Egyptian listed firms.

This paper adds to existing literature by providing empirical evidence regarding the influence of debt and managerial ownership, as corporate governance mechanisms, on firm performance in Egypt as an emerging market. This is likely to enhance theoretical advances by determining whether conclusions that are observed and derived from developed countries can be generalized to other developing settings.

The remainder of this research is organized as follows. The second part is dedicated to presenting theoretical as well as empirical evidence regarding the relationship between debt and firm performance. The third part is devoted to developing the main testable hypotheses in this study. Sample and variable measurements are found in the fourth part. Empirical findings are presented in the fifth part. Conclusions and discussion are presented in the final part.

2 Theoretical and empirical background

Determining the optimal capital structure is always believed to be a bewildering matter in corporate finance. The underlying theme is that the ability of the firm to exploit an appropriate capital structure is likely to result in a sustainable competitive advantage (Barton and Gordon 1988). To verify this premise, researchers have sought to investigate the association between various characteristics at firm and industry levels (Marsh 1982; Kester 1986; Titman and Wessels 1988; Michaelas et al. 1999), and various capital structure arrangements. In this context, one stream of research has focused on examining the relationship between debt policy and firm performance. Increasing of mean debt level across firms and the expected role that debt level can play not only in converging (or diverging) interests between managers and investors, but also in maximizing shareholder wealth (Kinsman and Newman 1999), are examples of the reasons that are often presented in the literature to justify the importance of studying this relationship.

However, "theoretical literature provides opposing arguments with respect to the relationship between leverage and corporate performance. Whereas theories based on signaling and the agency costs resulting from the conflicts of interest shareholders-managers provide arguments in favor of a positive relationship, the research analyzing the agency costs from the diverging interests between shareholders and debtholders suggests a negative relationship" (Weill 2008, p. 254).

Likewise, empirical studies that examined the relationship between debt and firm performance come to competing conclusions. While some studies (e.g., Taub 1975; Roden and Lewellen 1995; Champion 1999; Ghosh et al. 2000; Hadlock and James 2002; Berger and Bonaccorsi di Patti 2006) supported the positive correlation between debt policy and firm performance, other studies (e.g., Kester 1986; Friend and Lang 1988; Titman and Wessels 1988; Rajan and Zingales 1995; Fama and French 1998; Kinsman and Newman 1999; Majumdar and Chhibber 1999; Spiess and Affleak-Graves 1999; Wald 1999; Gleason et al. 2000; Simerly and Li 2000; Booth et al. 2001; Singh and Faircloth 2005; Margaritis and Psillaki 2010, Lingesiya

and Premkanth 2011) argued that debt tends to inferior firm performance. Yet, other studies (e.g., Philips and Sipahioglu (2004)) conclude that debt has no impact on firm performance.

Contrary to previous work, the underlying theme of this study is that the relationship between capital structure and firm permanence is likely to be moderated by existed managerial ownership. This is more likely to be accepted as the role of debt in corporate governance depends on how governance is exercised (e.g., on the structure of corporate ownership and control) (La Rocca 2007; Faccio et al. 2001). Furthermore, the effectiveness of corporate governance structure needs to be assessed altogether as the effect of one mechanism can depend upon others (Hardwick et al. 2011). If the previous argument holds true, it will be more reasonable to assert that the relationship between debt and firm performance is not a monotonic relationship. Rather, the outcome of this relationship most likely to differ from one institutional setting to another. Preceding argument will be tested empirically in this paper using a sample of Egyptian listed firms. Doing so not only helps to better understand the comparative capital structure debate, but it also can enhance capital structure practices and choices in Egypt as an emerging market. This is also important because "although some of the insights from modern finance theory are portable across countries, much remains to be done to understand the impact of different institutional features on capital structure choices" (Booth et al. 2001, p. 87). Thus, presenting evidence from other less developed contexts is more likely to develop existing theories of capital structure, as it may not be applicable to generalize conclusions from prior studies on other firms that work in "different legal and cultural environments" (Eisenberg et al. 1998, p. 36).

3 Hypothesis development

Separation of ownership and management in modern corporations has led to a divergence in the interests of internal and external stakeholders. In this regard, debt and managerial ownership are argued to be effective governance mechanisms to converge these interests. Specifically, debt can play an important role in reducing agency conflicts as it obligates the firm to make periodic payments for principal and interest, and hence reduces the managers' ability to manipulate firm's cash flow and to engage in non-optimal projects (Bathala et al. 1994).

However, "firms' capital structure decisions are not only a function of their own characteristics but also the result of legal and financial market development in which they operate" (Cotei et al. 2011, p. 715), the effectiveness of debt as a corporate governance mechanism varies between strong and weak regimes (Le and O'Brien 2010). Specifically, debt is used extensively as an expropriation mechanism, rather as a control mechanism, in corporations with concentrated ownership and control (Prowse 1999; Faccio et al. 2001; De Jong 2002; Harvey et al. 2004; Day and Taylor, 2004; Driffield et al. 2005; Tian 2005). This is because increasing of the debt ratio increases the insiders' voting power, which, in turn, increases the possibility of expropriation (Harris and Raviv 1991; Stulz 1990; Sarkar and Sarkar 2008). This is also more likely to happen in emerging and transition economies that

are normally characterized by excessive agency problem and less sufficient good corporate governance practices (Faccio et al. 2001; Harvey et al. 2004; Day and Taylor 2004; Driffield et al. 2005; Sarkar and Sarkar 2008).

On the other hand, increasing ownership by managers forces them to bear the wealth consequences of their decisions, and results in a better alignment of the interests between managers and internal and external stakeholders (Bathala et al. 1994; Faleye 2007). Thus, according to "*alignment hypothesis*", managers, by owning shares in the companies they run, will have the incentive to invest in projects that have an expected positive net value (Jensen and Meckling 1976).

Nevertheless, by increasing his stake in the firm, the manager may entrench himself and overwhelm other minority shareholders and pursue his own goals (Shleifer and Vishny 1989; Stulz 1990). Accordingly, the premise of "*entrenchment hypothesis*" is that the managers may increase their ownership stakes in order to boost their voting power, implement decisions that optimize their own interests, and weaken the monitoring power of internal as well as external stakeholders (Fama and Jensen 1983; Lasfer 2006).

The trade-off between agency costs of debt and managerial ownership is expected to lead to use of an optimal amount of both of them. This because firms not only develop their corporate governance systems to minimize total cost, but also offset a weak governance mechanism in one area by a strong one in another area (Bathala et al. 1994; Donnelly and Kelly, 2005). Thus, managerial ownership and debt have a strong relationship (Florackis and Ozkan 2009), and this relationship is likely to moderate the effect of debt on firm performance. However, this moderation effect can be in either way, depending on contextual variables, as "internal and external coalitions interact with each other to influence the firm's conduct" (Chaganti and Damanpour 1991, p. 479). For instance, in civil law contexts, and particularly French civil law counties, which "have both the weakest investor protection and least developed capital markets" (La Porta et al. 1997, p. 1149), managerial ownership is likely to be considered as an important governance mechanism, from the creditors' perspective, to offset this flaw as well as the less-developed formal corporate governance systems. This is because managers are more informed than outsiders, and hence managerial ownership is considered as a strong signal about the quality of the firm, which in turn, reduces information asymmetries (Leland and Pyle 1977). Consequently, it is expected to find that creditors are willing to offer a lower cost of debt finance to firms with highly concentrated managerial ownership.

However, concentrated managerial ownership may also moderate the relationship between debt and firm performance but in an opposite way. This is because "firms with concentrated ownership will prefer to use more debt than firms with dispersed ownership because their controlling shareholders will be reluctant to dilute their ownership stakes by issuing equity. Moreover, managers of firms with more dispersed ownership have a larger effect on their firms' decisions and may be reluctant to issue debt which raises the risk of financial distress (in which case they may bear a personal disutility)" (Bortolotti et al. 2007, p. 14). Likewise, concentration of managerial ownership may have some effects on loan availability and credit terms (Niskanen and Niskanen 2010).

In sum, preceding discussion indicates that while debt and managerial ownership each, when used in separation, can be good or bad for firm performance, their interaction may have different consequences on firm performance. If this argument stands valid, two alternative hypotheses, which one holds is a matter of empirical analysis, can be derived as follows:

H1 Managerial ownership is expected to moderate the relationship between debt and firm performance, with the relationship being negative (positive) in presence (absence) of managerial ownership concentration.

H2 Managerial ownership is expected to moderate the relationship between debt and firm performance, with the relationship being positive (negative) in presence (absence) of managerial ownership concentration.

4 Sample and measurement of variables

Although the Egyptian corporate law system is basically affected by French civil law, various thoughts of the common law system are well-known in the capital market and central depository laws. Legislation that regulates the Egyptian capital market has recently been reformed, partially to increase disclosure and corporate governance requirements for quoted firms. In addition, various schemes have been implemented to improve corporate governance practices in Egypt such as the completing of a joint project between the World Bank and the Ministry of Foreign Trade in 2001 to benchmark corporate governance practices in Egypt against corporate governance principles of the Organization of Economic Co-operation and Development (OECD), and publishing the Egyptian Institute of Directors in 2005 the corporate governance code that can be adopted by the Egyptian firms.

The Egyptian market concentration is moderate with market capitalization of the top 10 listed companies accounting for just under one-half of the total market capitalization and turnover value of just over 40 % (MENA-OECD 2010). Many Egyptian companies are held by relatively few shareholders and the ownership of most companies remains concentrated (ROSC 2009). For instance, the mean proportion of the shares held by blockholders in Egypt is 58 percent (Bolbol et al. 2004). "In its response to the questionnaire, the CMA [Capital Market Authority] has estimated that families own 30 %, individuals 15 %, institutional investors 25 %, and foreign investors 25 %" (MENA-OECD 2010, p. 8). The dominant institutional investors in Egypt are domestic banks and mutual funds. Public and private pension funds invest only a fraction of their assets in equities. Of the 50 most active companies on the stock exchange, 25 are privatized companies where the state retains its stake through a holding company structure (Shamseldin 2006). "Approximately two-thirds of EGX (Egyptian Exchange) share trading is done by retail and one-third by institutional investors" (ROSC 2009, p. 6). In a recent study, Elsayed and Wahba (2013) pointed out that the ownership structure of the top 10 listed (25 most active) companies on EGX are as follows: managerial ownership 21.92 % (15.69 %), institutional ownership 34.12 % (39.02 %), foreign ownership 13.77 % (12.95 %), and state-holding ownership 23.59 % (21.45 %).

The sample of the current study comes from the lists of the most 50 active firms published by Egyptian Exchange (EGX) that were published in July 2011 to cover the last three financial years from 2008 to 2010. De facto, data after 2010 have not been included because of the occurrence of the Egyptian revolution in January 2011, which, in turn, may lead to different conclusions. Firms that belonged to financial industries are excluded from these lists as they are subject to unique governmental regulations and their operations are quite different. The needed data were found to be available for 40 firms covering 11 different industrial sectors. Table 1 presents the distribution of firms according to their industrial sectors.

It may be argued that a sample size of 40 firms may limit the representativeness of the sample and generalizability of the findings. On reflection, different tests were conducted to evaluate the internal and external validity of the sample. First, the sample not only represents 18.9 % of the total listed firms in 2010 (the total number of listed firms in the EGX is 212 firms in 2010), but also includes those firms that constitute the main index of the Egyptian Exchange (EGX30). Thus, the proportion of the sample size to the overall population is comparable to previous research in the Egyptian context (see, for example, Wahba 2008a). Second, the average of the total market capitalization during 2008-2010 for all companies listed in the EGX, as well as for those firms constituting the sample, is computed. The average for all listed firms was LE 487.13 billion and reached LE 216.14 billion for the sample. Given that the sample accounted for 44.3 percent of the total market capitalization of the entire market during 2008–2010, it can be argued that sample does represent the population (i.e., all firms listed in the Egyptian Exchange). This is also comparable with prior work such as Abdel Shahid (2001) who used a sample that consists of the 90 most active firms in the Egyptian context. Abdel Shahid revealed that the sample represents 44 percent of the total market capitalization and is accounted for 87 percent of the total deals. Third, Kruskal–Wallis test was conducted to determine if there is a significant amount of variation among the industrial sectors. According to

Table 1 Distribution of the sample according to industrial sectors	Sector	Firms (2008–2010)	
		N	%
	Basic resources	1	3
	Chemicals	1	3
	Construction and building materials	6	15
	Food and beverage	4	10
	Household goods and textiles	3	8
	Industrial services, products and cars	6	15
	Leisure and entertainment	2	5
	Media	1	3
	Real estates	12	30
	Telecommunication	3	8
	Utilities	2	5
		40	100

results that are reported in Table 2, the χ^2-statistic is significant in all cases. For instance, Tobin's q and return on assets have a χ^2-statistic of 19.12 and 24.84 ($p < 0.01$), respectively. Moreover, managerial ownership as well as debt has a χ^2-statistic of 36.31 and 30.92 ($p < 0.001$), correspondingly. Fourth, the key variables in the sample were compared with variables' means that are reported in prior work to check for external validity. For instance, the T-statistic for the difference between managerial ownership in this study and what is reported in Morck et al. (1988) is -1.274 ($p = 0.2050$). In addition, comparing return on assets and debt with those of Margaritis and Psillaki (2010) yield T-statistics of 0.8743 ($p = 0.3838$) and -1.7866 ($p = 0.0766$), respectively. These findings give supportive evidence for applicability of the current sample.

Firm performance (FIN) represents the key dependent variable in this study. There is a wide literature on the appropriate measurement of performance and this literature has led to little consensus on the best approach to take. For example, Weill (2008), p. 251 examined various studies in this context and found that "different conclusions can result from the differences in performance measures". Thus, two alternative measures of performance are considered in this study: market-based (e.g., Tobin's q ratio) and profitability-based measures. This is because, Martin (1993), p. 516, for example, recommends that "q and profitability measures should be regarded as complements rather than substitutes. Both contain information about market power, and there is no compelling reason to think that either type of measure dominates the other". Tobin's q is the ratio of the firm market value to the replacement cost of its assets (Lindenberg and Ross 1981). In an equilibrium situation the q ratio has a value of unity. If q is greater than this, investment is stimulated. On the other hand, if it is below unity the implication is that there is low incentive to invest (Kim et al. 1993). Following some researchers, such as Barnhart and Rosenstein (1998) and (Wahba 2008a), the Chung and Pruitt's (1994) simple approximation to the Lindenberg and Ross formulation, presented by Lee and Tompkins (1999), is employed. Other commonly used profitability-based measures of firm performance are return on assets, return on equity, return on sales, and return

Table 2 Kruskal-Wallis rank test of variables across industrial sectors

Variables	χ^2
Q	19.12*
ROA	24.84*
DEB	30.93**
OWN	36.31**
SIZ	23.84*
AGE	36.66**
INS	24.37*
PRV	42.94**
HOL	37.47**
LIQ	26.07*
TAN	70.34**

Q Tobin's q, ROA return on assets, DEB total debt ratio, OWN managerial ownership, SIZ firm size (log of total assets), AGE firm age, INS institutional ownership, PRV private ownership, HOL state ownership, LIQ liquidity ratio, TAN tangible assets

* $p < 0.01$; ** $p < 0.001$

on investments. However, return on assets has been chosen in this study as it reflects operating results rather than decisions of capital structure (Schmalensee 1989). Return on assets is computed by dividing firm profits after taxes by its total assets (Margaritis and Psillaki 2010).

Capital structure is the independent variable in this study. Following previous work (see, for example, Gleason et al. 2000; Lehmann et al. 2004; Weill 2008; Margaritis and Psillaki 2010; Ferri and Jones 2012), total debt ratio (DEB) is employed to express capital structure and measured by the outcome of dividing total debt by total assets. Managerial ownership (OWN), as a moderating variable, is measured by the ratio between shares held by management and total number of shares (Morck et al. 1988; Faleye 2007; Wahba and Elsayed 2010). Following prior work (see, for example, Morck et al. 1988; Short and Keasey 1999), managerial entrenchment (i.e., high managerial ownership) is proxied by managerial ownership concentration at 5 % or above. Thus, managerial entrenchment is expressed by a dummy variable that takes the value of one if managerial ownership ratio is 5 % or above, and zero otherwise.

Models of analysis include different variables to avoid model misspecification problem. Firm size (SIZ) is a relevant variable that could affect firm performance (Su et al. 2011). Large firms are likely to have more resources and that enhances a firm's ability to possess and process information, which in turn gives the firm more competitive advantages (Wahba 2008b). Firm size is expressed by total assets (Michaelas et al. 1999). The natural logarithm is used to transform total assets, as the Shapiro–Wilk W test for normality is significant (0.521, $p < 0.001$). Firm age (AGE) is controlled for to reflect organizational complexity, as organizational characteristics, variables, and priorities vary with the firm life cycle stage (Quinn and Cameron 1983). Firm age is represented by the time period from the incorporation date to the year of analysis (Michaelas et al. 1999).

The effect of other types of ownership is also controlled for (Salancik and Pfeffer 1980; Chaganti and Damanpour 1991). Specifically, institutional ownership (INS), private shareholding (PRV), and state holding ownership (HOL) are captured based on the proportion of each stake in the total equity, respectively. Liquidity (LIQ) is measured by the ratio of current assets to current liabilities (Lappalainen and Niskanen 2012). The ratio of net fixed assets to total assets is included as a control variable to account for tangibility of assets (TAN) (Weill 2008). Industry effect (SEC) is expressed by inclusion of dummy variables using the two-digit standard industrial classification code to capture the expected differences between industries in managing their performance (Wahba 2010). Descriptive statistics of the variables explained above are presented in Table 3 and correlation coefficients are exhibited in Table 4.

5 Empirical analysis

The two alternate hypotheses in this study were tested by using the following model of analysis:

Table 3 Descriptive statistics

Variables	Mean	Median	SD
Q	4.381	2.748	4.74
ROA (%)	7.752	5.447	9.355
DEB (%)	45.496	31.234	76.025
OWN (%)	8.522	0.315	17.86
SIZ	13.850	13.565	1.991
AGE	33.4	26.5	25.757
INS (%)	24.497	20.635	23.800
PRV (%)	48.076	45.70	24.078
HOL (%)	10.937	0	22.100
LIQ	4.126	1.959	8.607
TAN (%)	29.425	22.527	38.026

Q Tobin's q, *ROA* return on assets, *DEB* total debt ratio, *OWN* managerial ownership, *SIZ* firm size (log of total assets), *AGE* firm age, *INS* institutional ownership, *PRV* private ownership, *HOL* state ownership, *LIQ* liquidity ratio, *TAN* tangible assets

$$FIN_{it} = \alpha + b_1 DEB_{it} + b_2 OWN_{it} + b_3 DEB_{it} \times OWN_{it} + b_4 SIZ_{it} + b_5 AGE_{it}$$
$$+ b_6 INS_{it} + b_7 PRV_{it} + b_8 HOL_{it} + b_9 LIQ_{it} + b_{10} TAN_{it} + b_{11} SIC_i + \mu_i + v_{it}$$

where, (α) is a constant, (b_1:b_{11}) are the parameters for the explanatory variables. The subscript (i) refers to the firm number and the subscript (t) denotes the time period. (μ_i) is the unobservable individual heterogeneity, and (v_{it}) is the remainder disturbance or the usual disturbance in the regression model that varies with individual units and time.

Expected endogeneity between firm performance, capital structure and managerial ownership represents a crucial matter that should be checked out before estimating firm performance. This is because estimating firm performance, capital structure, or managerial ownership individually, in the presence of endogeneity effect, leads to biased and inconsistent estimates as a result of the expected correlation between the error term and endogenous variable. The implication of this is that the estimates will not approach their true values in the population with increasing the sample size (Maddala 2001). Consequently, the Hausman test for endogeneity (as explained in Gujarati 2003) was conducted to check for possible endogeneity between financial performance and either capital structure or managerial ownership. In fact, the Hausman test shows no sign for possible endogeneity as the *F* test for the predicted values of capital structure and managerial ownership are not significant when they are included as explanatory variables in either Tobin's q model or ROA model.

The above stated model of analysis was estimated using panel data regression. By employing panel date analysis, researchers will be able to control for unobservable firm-specific effects, and consequently, a much more powerful evidence base can be obtained (Baltagi 1995).The *F*-test (Baltagi 1995) and the Breusch and Pagan (1980) Lagrange Multiplier test (B–P) were performed to decide between pooled regression and the alternatives of panel data (i.e., fixed and random effects, respectively). According to the results that are reported under model 1 and model 3 in Table 5, both tests are significant (when financial performance is measured by

Table 4 Correlation coefficients

	Q	ROA	DEB	OWN	SIZ	AGE	INS	PRV	HOL	LIQ	TAN
Q	1										
ROA	0.22*	1									
DEB	0.21*	0.68***	1								
OWN	-0.06	0.08	-0.10	1							
SIZ	-0.11	-0.01	-0.03	-0.01	1						
AGE	-0.07	0.18*	0.26**	-0.05	-0.36***	1					
INS	-0.07	0.03	-0.03	-0.05	0.12	-0.25**	1				
PRV	0.05	-0.29**	-0.10	-0.30***	-0.27**	0.19*	-0.42***	1			
HOL	0.03	0.28**	0.26**	-0.17*	0.17	0.18*	-0.25**	0.37***	1		
LIQ	0.01	-0.09	-0.12	-0.09	-0.18*	0.15	-0.01	0.17	-0.05	1	
TAN	-0.03	0.01	-0.07	-0.01	0.14	-0.15	0.05	-0.02	-0.05	-0.06	1

Q Tobin's q, *ROA* return on assets, *DEB* total debt ratio, *OWN* managerial ownership, *SIZ* firm size (log of total assets), *AGE* firm age, *INS* institutional ownership, *PRV* private ownership, *HOL* state ownership, *LIQ* liquidity ratio, *TAN* tangible assets

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

either Tobin's q or ROA). The implication of these results is that the fixed effects model and the random effects model are preferred to the pooled model. Thus, the Hausman (1978) specification test was conducted to decide between the fixed effect model and the random effect model. The Hausman test, as reported in Table 5, is 9.20, 6.76 ($p > 0.10$) for Tobin's q and ROA, respectively. This implies that the random effects model is preferred to the fixed effects model, under any case (Baltagi 1995; Greene 2003).

Table 5 The impact of managerial ownership on the relationship between capital structure and firm performance using GLS-panel data analysis

Dependent variable: financial performance	Tobin's q		ROA	
	Model 1 Unrestricted model	Model 2 Restricted model	Model 3 Unrestricted model	Model 4 Restricted model
DEB	1.951***	1.818**	0.086***	0.083***
	(0.567)	(0.575)	(0.006)	(0.007)
OWN	4.604**	1.801	0.059***	0.013
	(1.602)	(1.048)	(0.018)	(0.012)
DEB × OWN	−7.209*		−0.118***	
	(3.167)		(0.035)	
SIZ	−0.295	−0.336	−0.00001	−0.0007
	(0.241)	(0.245)	(0.003)	(0.003)
AGE	−0.030	−0.040	0.0006**	0.0004
	(0.021)	(0.021)	(0.0002)	(0.003)
INS	0.002	−0.007	−0.0002	−0.0004
	(0.028)	(0.028)	(0.0003)	(0.0003)
PRV	0.033	0.028	−0.0008**	−0.0009**
	(0.028)	(0.028)	(0.0003)	(0.0003)
HOL	0.024	0.015	−0.0002	−0.0004
	(0.037)	(0.038)	(0.0004)	(0.0004)
LIQ	0.048	0.052	−0.0004	−0.0004
	(0.049)	(0.038)	(0.0006)	(0.0006)
TAN	−1.095	−0.897	0.019	0.023
	(1.303)	(1.328)	(0.014)	(0.015)
Industry Effects (F-test)	15.55	11.58	96.93***	80.85***
Wald (χ^2)	35.30*	28.86*	307.13***	287.53***
F-test	6.50*		2.37***	
B–P LM test	42.60***		9.66**	
Hausman test	9.20		6.76	
Heteroscedasticity	1.6e^{+06}***		9.5e^{+30}***	
Serial correlation	3.81*		13.78**	
AIC	712.60	715.67	−344.89	−336.50
BIC	770.79	771.09	−286.71	−281.08
LR-test (χ^2)		5.07*		10.40**

Table 5 continued

Dependent variable: financial performance	Tobin's q		ROA	
	Model 1 Unrestricted model	Model 2 Restricted model	Model 3 Unrestricted model	Model 4 Restricted model
Observations	118			

Figures in brackets are standard errors robust to heteroscedasticity

F test provides a test of the pooled OLS model against the fixed effects model based on the OLS residuals

B–P LM test is the Breusch and Pagan (1980)'s Lagrange Multiplier statistic that provides a test of the pooled OLS model against the random effects model based on the OLS residuals

Hausman is the Hausman (1978) specification test for fixed effects over random effects

Wald is the Wald test (χ^2) for model goodness-of-fit

Heteroscedasticity is the modified Wald statistic for group-wise heteroscedasticity (Greene 2003)

Serial correlation is the Wooldridge test for autocorrelation in panel-data models (Wooldridge 2002)

AIC & BIC are the standard information criteria for model selection, as a lower number denotes a better-specified model (Greene 2003)

LR test for nested model is the likelihood ratio test of each of restricted models against the unrestricted model

Q Tobin's q, *ROA* return on assets, *DEB* total debt ratio, *OWN* managerial ownership, *SIZ* firm size (log of total assets), *AGE* firm age, *INS* institutional ownership, *PRV* private ownership, *HOL* state ownership, *LIQ* liquidity ratio, *TAN* tangible assets

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Heteroscedasticity and serial correlation are two serious problems that can affect the estimate of random effects model. The presence of these problems means that the standard errors associated with each regression coefficient will not be correct (Gujarati 2003). Therefore, the modified Wald test (Greene 2003), and the Wooldridge test (Wooldridge 2002) were performed to check for heteroscedasticity and serial correlation, respectively, and results are reported in Table 5. The results show that heteroscedasticity and serial correlation are present in the Tobin's q model as well as ROA model. Therefore, the generalized least squares (GLS) method was employed to correct for heteroscedasticity and serial correlation in both models (Hausman 1978).

The influence of interaction between capital structure and managerial ownership on Tobin's q was estimated and results are reported under Mode1 (unrestricted model) in Table 5. The results demonstrate that, while debt ratio affects Tobin's q negatively when managerial ownership is concentrated (-7.209, $p < 0.05$), it has exerted a positive effect on Tobin's q ratio (1.951, $p < 0.001$) when managerial ownership is not concentrated.

Furthermore, a nested model is also considered to check for the validity of the model of analysis (results are also reported in Table 5 under Model 2). This nested model excludes the interaction term between total debt ratio and managerial ownership. The likelihood ratio (LR) test of the nested model against the unrestricted model was computed. The LR-test was significant (5.07, $p < 0.05$), which means that interaction term cannot be safely dropped. Further evidence

comes from calculating the standard information criteria: the Akaike information criterion (AIC) and Bayesian Information Criterion (BIC) (also reported in Table 5). Noting that for both AIC and BIC, a lower figure denotes a better specified model (Greene 2003), both criteria signify that the Model 1 (unrestricted model) is superior to the nested model (Model 2) with AIC of 712.60 and BIC of 770.79.

Further analysis was performed by using ROA as a proxy for firm performance and results are also included in Table 5 under Model 3 and Model 4. In fact, results of ROA confirmed the findings of Tobin's q model. Primarily, the results showed that while debt ratio affects ROA negatively when managerial ownership is concentrated (-0.118, $p < 0.001$), it has exerted a positive effect on ROA (0.086, $p < 0.001$) when managerial ownership is less than the managerial ownership concentration threshold. A restricted model that dropped interaction term between total debt ratio and managerial ownership is also considered (see Model 4). The LR test of the restricted model against the unrestricted model was significant (10.40, $p < 0.01$), which means that interaction term between total debt ratio and managerial ownership seems to add value in explaining firm performance. This conclusion is confirmed by calculating the standard information criteria (AIC and BIC). Both criteria again validating that Model 3 (unrestricted model) is superior to Model 4 (restricted model) with AIC of -344.89 and BIC of -286.08.

In general, results of Tobin's q model as well as ROA model give strong supportive evidence for the applicability of the first hypothesis in this study. Specially, they demonstrated that managerial ownership moderates the relationship between capital structure and firm performance, with the relationship being negative (positive) in the presence (absence) of managerial ownership concentration. Moreover, control variables are not significant under any case, except for firm age and private ownership.

6 Conclusions and discussion

Determining the optimal capital structure is always believed to be a bewildering matter in corporate finance. The underlying theme is that the ability of the firm to exploit an appropriate capital structure is likely to result in a sustainable competitive advantage (Barton and Gordon 1988). To verify this premise, researchers have sought to investigate the association between various characteristics at firm and industry levels (Marsh 1982; Kester 1986; Titman and Wessels 1988; Michaelas et al. 1999), and various capital structure arrangements. In this context, one stream of research has focused on examining the relationship between debt policy and financial performance. However, researchers, by drawing on either agency theory or signaling theory, provide competing conclusions regarding the impact of debt policy on financial performance.

In contrast to prior work, this study provides new evidence regarding the impact of managerial ownership on the outcome of the relationship between capital structure and firm performance. Panel data analysis, using a sample of Egyptian listed firms demonstrated that managerial ownership moderates the relationship between debt and firm performance, with the relationship being negative (positive)

in firms that have (have not) managerial ownership concretion. The implication of this finding is that the optimal capital structure is more likely to be contingent on contextual variables as well as the roles, power, and stakes of key internal and external actors. Put simply, the effectiveness of one corporate governance mechanism (i.e., debt) is more likely to be contingent on the effect of other existed corporate governance mechanisms, and hence, there is not one best arrangement of either capital structure or ownership structure, but different arrangements are not equally good. This is consistent with the finding of Cotei et al. (2011), p. 733, who found that "a firm's valuation is significantly influenced not only by the firm's attributes but also by the legal and financial systems in which it operates".

To check the rigor of this paper's conclusion, regression model was re-estimated by including both managerial ownership and its squared value (Short and Keasey 1999) as considerable research (see, for example, McConnell and Servaes 1995; Short and Keasey 1999) pointed out that managerial ownership and firm performance may have a curvilinear relationship. In fact, adding the squared value of managerial ownership to the models of analysis did not alter the key findings reported in this paper. For instance, regression results showed that managerial ownership's squared value is not significant whether Tobin's q (0.003, $p = 0.863$), or ROA (0.00002, $p = 0.192$) is used to measure firm performance. More evidence was gained by computing the T test on the equality of firm performance within the high and low managerial ownership two subsamples, as explained above. The T-statistic was not significant when either Tobin's q (-0.05, $p = 0.955$), or ROA (0.495, $p = 0.621$) is employed as a proxy for firm performance.

In fact, the results of this paper are consistent with the argument of La Rocca (2007) and assure that searching for one single optimal debt policy and try to establish a link between this policy and firm performance is likely to result in spurious conclusions. Because this logic in research, indeed, discards the idea that debt is a dynamic rather than a static construct that is more likely to change not only in space but also in time. Put another way, from a theoretical as well as empirical viewpoint, this construct is time, industry (Van der Wijst and Thurik 1993; Michaelas et al. 1999), and country (Booth et al. 2001; Weill 2008) dependent. For instance, although the overall level of leverage may remain fairly stable over time, the relative importance of the various components of debt may change significantly (Bevan and Danbolt 2000).

Thus, the positive and significant association between debt and financial performance when managerial ownership concentration is not existed can be explained in two different ways. First, it can be considered as supportive evidence for the argument that capital structure is often designed to convey valuable information to lenders (Leland and Pyle 1977), and debt is often regarded as an appropriate signal of a good-quality firm (Ross 1977). This assertion is relevant in contexts that are characterized by asymmetric information problem, as a result of quality inconsistency of financial statements (Pettit and Singer, 1985; Michaelas, et al. 1999). Second, it might be consistent with the theme of agency theory (Jensen and Meckling 1976), which argues that relying on debt to finance projects is considered as an effective control mechanism that is often used to evade personal

costs of bankruptcy (Grossman and Hart 1982), and reduce available "free-cash flow" (Jensen 1986).

On the other hand, the negative and significant association between debt and firm performance when managerial ownership is concentrated can be explained on the basis of divergence in interests between shareholders and lenders (Jensen and Meckling 1976), which, in turn, induces shareholders to weight alternatives that maximize their benefits at the expense of lenders, even though these alternatives do not necessary maximize firm value (Weill 2008). This implies that shareholders may either prefer to invest in risky projects (i.e., overinvestment problem) (Jensen 1986), or refuse to invest in low-risk projects (i.e., underinvestment problem) (Myers 1977).

One more interesting issue that merits more discussion is whether managerial ownership has only a moderating effect on the relationship between capital structure and firm performance or it may also have a mediating effect. To explore this concern, the Baron and Kenny (1986) regression approach was employed, while taking into consideration the recent critique and modifications suggested by Zhao et al. (2010). Following Baron and Kenny (1986), testing for mediation effect has been done in three steps: first, managerial ownership, as a suggested mediator variable, was regressed on debt as well as other control variables. Second, firm performance, expressed by ROA, was regressed on debt as well as other control variables. Third, firm performance was regressed on debt and managerial ownership, taking into account the effect of control variables. Baron and Kenny explained that the independent variable (i.e., debt) in the first two models is expected to show a statistical significance, while the third model is expected to show significance of the mediator variable (i.e., managerial ownership) and the insignificance of the independent variable (i.e., debt). However, Zhao et al. (2010) pointed out that to demonstrate mediation "all that matters is that the indirect effect is significant" (Zhao et al. 2010, p. 204). Empirical analysis showed that debt, as an independent variable, does not affect the managerial ownership ($\beta = -0.108$, $p = 0.428$). When debt and managerial ownership, as well as control variables, are included, it is found that debt has a significant direct effect ($\beta = 0.083$, $p < 0.001$), while managerial ownership has insignificant coefficient ($\beta = 0.013$, $p > 0.10$) on firm performance. Thus, the indirect effect is -0.0014 (-0.108×0.013). The conservative Sobel-Goodman test for indirect effect showed that the effect of debt on firm performance through its indirect effect via managerial ownership is insignificant ($Z = -0.561$, $p = 0.575$). According to Zhao et al. (2010), these results suggest direct-only non-mediation, because indirect effect is insignificant but direct effect is significant. For reasons of space, these results are not reported here, but are available from the authors on request.

The findings of this paper have some implications for practitioners. The results challenge the argument that financial leverage is a key determinant of firm failure (e.g., Keasey and Watson 1987). Rather, managers and practitioners need to widen their perception to recognize that the optimal capital structure is a multidimensional, dependent, and dynamic decision that differs with various characteristics of the firm, as well as contextual variables. Accordingly, for those who are interested in maximizing their firm's value, this though is likely to guide them in selecting

and executing the proper debt structure, and hence, the right capital structure. Furthermore, the significant effect of some firm's characteristics (e.g., size and age) indicates that managers are required to consider the firm life cycle stage in their financial decisions. This is an important issue as "debt is shown to be fundamental to business activities in the early stages, representing the first choice. By contrast, in the maturity stage, firms re-balance their capital structure, gradually substituting debt for internal capital" (La Rocca et al. 2011, p. 107).

The findings of this study offer various directions for future research. Since this is the first study, to the best of my knowledge, that examines the moderating effect of managerial ownership on the relationship between debt policy and firm performance in the Egyptian context, comparative future research is invited to explore how the role of country's regulations and credit classification may affect the outcome of this relationship.

In fact, although the effect of board characteristics (board size, leadership structure, and nonexecutive members) is extensively studied in corporate governance literature (see for example, Faleye 2007; Di Pietra et al. 2008; Sofia and Vafeas 2010; Elsayed 2011), its role on the relationship between debt policy and firm performance is still far from the focus of current research. Thus, researchers in the future are recommended to consider this issue, especially in small and medium size firms, as it is not an easy task to convince an owner of a small or medium size firm to step aside and to let someone else manages his money. In addition, since ownership identity plays an important role in the relationship between ownership structure and firm value (Pedersen and Thomsen 2003), future studies are invited to test whether the results that are reported here vary with ownership Identity.

References

Abdel Shahid, S. (2001). Corporate governance is becoming a global pursuit: What could be done in Egypt? Working paper (SSRN: Social Science Research Network). doi:10.2139/ssrn.286875.

Baltagi, B. H. (1995). *Econometric analysis of panel data*. New York: Wiley.

Barnhart, S., & Rosenstein, S. (1998). Board composition, managerial ownership, and firm performance: An empirical analysis. *The Financial Review, 33*, 1–16.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182.

Barton, S., & Gordon, P. (1988). Corporate strategy capital structure. *Strategic Management Journal, 9*(6), 623–632.

Bathala, C., Moon, K., & Rao, R. (1994). Managerial ownership, debt policy, and the impact of institutional holdings: An agency perspective. *Financial Management, 23*(3), 38–50.

Berger, A., & Bonaccorsi di Patti, E. (2006). Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry. *Journal of Banking & Finance, 30*, 1065–1102.

Bevan, A., & Danbolt, J. (2000). *Dynamics in determinants of capital structure in the UK capital structure dynamics*. Working paper no. 2000-9 (SSRN: http://ssrn.com/abstract=233551). Accessed 9 Nov 2011.

Bolbol, A., Fatheldin, A., & Omran, N. (2004). Ownership structure, firm performance, and corporate governance: Evidence from selected Arab countries. ERF Conference Paper No. 112004001 (http://www.sml.hw.ac.uk/ms75/group%20papers/G4_111.pdf).

Booth, L., Aivazian, V., Demirguc-Kunt, A., & Maksimovic, V. (2001). Capital structure in developing countries. *Journal of Finance, 56*(1), 87–130.

Bortolotti, B., Cambini, C., Rondi, L., & Spiegel, Y. (2007). *Capital structure and regulation: does ownership matter.* Working paper (SSRN: http://ssrn.com/abstract=1022342). Accessed 10 Dec 2011.

Breusch, S., & Pagan, R. (1980). The Lagrange multiplier test and its applications to model specification in econometrics. *Review of Economic Studies, 47*(1), 239–253.

Chaganti, R., & Damanpour, F. (1991). Institutional ownership, capital structure, and firm performance. *Strategic Management Journal, 12*(7), 479–491.

Champion, D. (1999). Finance: The joy of leverage. *Harvard Business Review, 77*(4), 9–22.

Chung, K., & Pruitt, S. (1994). A simple approximation of Tobin's q. *Financial Management, 23*, 70–74.

Cotei, C., Farhat, J., & Abugri, B. (2011). Testing trade-off and pecking order model of capital structure: Does legal system matter? *Managerial Finance, 37*(8), 715–735.

Day, J., & Taylor, P. (2004). Institutional change and debt-based corporate governance: A comparative analysis of four transition economies. *Journal of Management and Governance, 8*(1), 73–115.

De Jong, A. (2002). The disciplining role of leverage in Dutch firms. *European Finance Review, 6*(1), 31–62.

Di Pietra, R., Grambovas, C., Raonic, V., & Riccaboni, A. (2008). The effects of board size and 'busy' directors on the market value of Italian companies. *Journal of Management and Governance, 12*, 73–91.

Donnelly, R., & Kelly, P. (2005). Ownership and board structures in Irish PLCs. *European Management Journal, 23*(6), 730–740.

Driffield, N., Mahambare, V., & Pal, A. (2005). *How does ownership structure affect capital structure and firm performance? Recent evidence from east Asia.* Working paper, Brunel University. (http://v-scheiner.brunel.ac.uk/bitstream/2438/1022/1/0623.pdf). Accessed 20 Oct 2011.

Eisenberg, T., Sundgren, S., & Wells, M. (1998). Larger board size and decreasing firm value in small firms. *Journal of Financial Economics, 48*, 35–54.

Elsayed, K. (2011). Board size and corporate finance: The missing role of board leadership structure. *Journal of Management and Governance, 15*, 415–446.

Elsayed, K., & Wahba, H. (2013). Reinvestigating the relationship between ownership structure and inventory management: A corporate governance perspective. *International Journal of Production Economics, 143*, 207–218.

Faccio, M., Lang, L.H.P., & Young, L. (2001). Debt and corporate governance. Working paper, (ftp://ns1.ystp.ac.ir/YSTP/1/1/ROOT/DATA/PDF/unclassified/FACCIO_PAPER_DEBT.PDF). Accessed 15 Oct 2011.

Faleye, O. (2007). Does one hat fit all? The case of corporate leadership structure. *Journal of Management and Governance, 11*(3), 239–259.

Fama, E., & French, K. (1998). Taxes, financing decisions, and firm value. *Journal of Finance, 53*(3), 819–843.

Fama, E., & Jensen, C. (1983). Separation of ownership and control. *Journal of Law Economics, 26*(2), 301–325.

Ferri, M., & Jones, W. (2012). Determinants of financial structure: A new methodological approach. *Journal of Finance, 34*(3), 631–644.

Florackis, C., & Ozkan, A. (2009). Managerial incentives and corporate leverage: Evidence from the United Kingdom. *Accounting and Finance, 49*(3), 531–553.

Friend, I., & Lang, L. (1988). An empirical test of the impact of managerial self-interest on corporate capital structure. *Journal of Finance, 43*(2), 271–281.

Ghosh, C., Nag, R., & Sirmans, C. (2000). The pricing of seasoned equity offerings: Evidence from REITs. *Real Estate Economics, 28*(3), 363–384.

Gleason, K., Mathur, L., & Mathur, I. (2000). The interrelationship between culture, capital structure, and performance: Evidence from European retailers. *Journal of Business Research, 50*(2), 185–191.

Greene, W. (2003). *Econometric analysis.* New Jersey: Prentice-Hall International, Inc.

Grossman, S. J., & Hart, O. H. (1982). Corporate financial structure and managerial incentives. In J. McCall (Ed.), *The economics of information and uncertainty* (pp. 107–140). Chicago: University of Chicago Press.

Gujarati, D. (2003). *Basic econometrics*. New York: McGraw-Hill.

Hadlock, C. J., & James, C. M. (2002). Do banks provide financial slack? *Journal of Finance, 57*(3), 1383–1419.

Hardwick, P., Adams, M., & Zou, H. (2011). Board characteristics and profit efficiency and corporate governance in the United Kingdom life insurance industry. *Journal of Business Finance and Accounting, 38*(7–8), 987–1015.

Harris, M., & Raviv, A. (1991). The theory of capital structure. *Journal of Finance, 46*(1), 297–355.

Harvey, C. R., Lins, K. V., & Roper, A. H. (2004). The effect of capital structure when expected agency costs are extreme. *Journal of Financial Economics, 74*(1), 3–30.

Hausman, A. (1978). Specification tests in econometrics. *Econometrica, 46*(6), 1251–1271.

Jensen, M. (1986). The agency costs of free cash flow, corporate finance and takeovers. *American Economic Review, 76*, 323–329.

Jensen, M., & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305–360.

Keasey, K., & Watson, R. (1987). Non-financial symptoms and the prediction of small company failure: A test of Argenti's hypotheses. *Journal of Business Finance and Accounting, 14*(3), 335–354.

Kester, W. C. (1986). Capital and ownership structure: a comparison of united states and Japanese manufacturing corporations. *Financial Management, 15*, 5–16.

Kim, K., Henderson, G., & Garrison, S. (1993). Examination of Tobin's *q* for takeover firms. *Quarterly Journal of Business and Economics, 32*(1), 3–26.

Kinsman, M., & Newman, J. (1999). *Debt level and firm performance: an empirical evaluation*. Paper presented at 28th Annual Meeting of the Western Decision Science Institute, Puerto Vallarta.

McConnell, J., & Servaes, H. (1995). Equity ownership and the two faces of debt. *Journal of Financial Economics, 39*(1), 131–157.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1997). Legal determinants of external finance. *Journal of Finance, 52*(3), 1131–1150.

La Rocca, M. (2007). The influence of corporate governance on the relation between capital structure and firm value. *Corporate governance, 7*(3), 312–325.

La Rocca, M., La Rocca, T., & Cariola, A. (2011). Capital structure decisions during a firm's life cycle. *Small Business Economics, 37*, 107–130.

Lappalainen, J., & Niskanen, M. (2012). Financial performance of SMEs: Impact of ownership structure and board composition. *Management Research Review, 35*(11), 1088–1108.

Lasfer, M. (2006). The interrelationship between managerial ownership and board structure. *Journal of Business Finance and Accounting, 33*, 1006–1033.

Le, T. V., & O'Brien, J. P. (2010). Can two wrongs make a right? State ownership and debt in a transition economy. *Journal of Management Studies, 47*(7), 1297–1316.

Lee, D., & Tompkins, J. (1999). A modified version of the Lewellen and Badrinath measure of Tobin's *q*. *Financial Management, 28*(1), 20–31.

Lehmann, E., Warning, S., & Weigand, J. (2004). Governance structure, multidimensional efficiency and firm profitability. *Journal of Management and Governance, 8*(3), 279–304.

Leland, H., & Pyle, D. H. (1977). Informational asymmetries, financial structure, and financial intermediation. *Journal of Finance, 32*(2), 371–387.

Lindenberg, E., & Ross, S. (1981). Tobin's q ratio and industrial organization. *Journal of Business, 54*, 1–32.

Lingesiya, Y., & Premkanth, P. (2011). *Impact of capital structure on financial performance: a study on listed manufacturing companies in Sri Lanka*. Proceedings of the 8th International Conference on Business Management, Faculty of Management Studies and Commerce, University of Sri Jayewardenepura.

Maddala, S. (2001). *Introduction to econometrics* (3rd ed.). Chichester: Wiley.

Majumdar, S., & Chhibber, P. (1999). Capital structure and performance: Evidence from a transition economy on an aspect of corporate governance. *Public Choice, 98*, 287–305.

Margaritis, D., & Psillaki, M. (2010). Capital structure, equity ownership and firm performance. *Journal of Banking & Finance, 34*(3), 621–632.

Marsh, P. (1982). The choice between equity and debt: An empirical study. *Journal of Finance, 37*(1), 121–144.

Martin, S. (1993). *Advanced industrial economics*. UK: Blackwell.

MENA-OECD. (2010). Business climate development strategy: Phase 1 policy assessment. http://www.oecd.org/investment/privatesectordevelopment/46359082.pdf.

Michaelas, N., Chittenden, F., & Putziouris, P. (1999). Financial policy and capital structure choice in UK SMEs: Empirical evidence from company panel data. *Small Business Economics, 12*, 113–130.

Modigliani, F., & Miller, M. (1958). The cost of capital, corporation finance and the theory of investment. *American Economic Review, 48*, 261–297.

Morck, R., Shleifer, A., & Vishny, R. (1988). Management ownership and market valuation: An empirical Analysis. *Journal of Financial Economics, 20*, 293–315.

Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics, 5*, 147–175.

Niskanen, M., & Niskanen, J. (2010). Small business borrowing and the owner–manager agency costs: Evidence on Finnish data. *Journal of Small Business Management, 48*(1), 16–31.

Pedersen, T., & Thomsen, S. (2003). Ownership structure and value of the largest European firms: The importance of ownership identity. *Journal of Management and Governance, 7*, 27–55.

Pettit, R., & Singer, R. (1985). Small business finance: A research agenda. *Financial Management, 14*(3), 47–60.

Philips, P., & Sipahioglu, M. (2004). Performance implications of capital structure: Evidence from quoted UK organizations with hotel interests. *The Service Industries Journal, 24*(5), 31–51.

Prowse, S. (1999). *Corporate governance: Emerging issues and lessons from East Asia*. Working paper, The World Bank, (http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.194.4707&rep=rep1&type=pdf). Accessed 3 Nov 2011.

Quinn, R., & Cameron, K. (1983). Organizational life cycle and shifting criteria of effectiveness: Some preliminary evidence. *Management Science, 29*, 33–51.

Rajan, R., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *Journal of Finance, 50*(5), 1421–1460.

Rediker, K. J., & Seth, A. (1995). Boards of directors and substitution effects of alternative governance mechanisms. *Strategic Management Journal, 16*(2), 88–99.

Roden, D., & Lewellen, W. (1995). Corporate capital structure decisions: Evidence from leveraged buyouts. *Financial Management, 24*(2), 76–87.

ROSC. (2009). Corporate governance country assessment. World Bank-IMF (http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/06/15/000386194_20110615031336/Rendered/PDF/625420WP0P114000Box0361486B0PUBLIC0.pdf).

Ross, S. (1977). The determination of financial structure: The incentive-signalling approach. *The Bell Journal of Economics, 8*(1), 23–40.

Salancik, G. R., & Pfeffer, J. (1980). Effects of ownership and performance on executive tenure in US corporations. *Academy of Management Journal, 23*(4), 653–664.

Sarkar, J., & Sarkar, S. (2008). Debt and corporate governance in emerging economies: Evidence from India. *Economics of Transition, 16*(2), 293–334.

Schmalensee, R. (1989). Inter-industry studies of structure and performance. In R. Schmalensee & R. Willig (Eds.), *Handbook of industrial organization* (pp. 951–1009). Amsterdam: Elsevier.

Shamseldin, A. (2006). Strengthening corporate social responsibility in the MENA region: case study of Egypt. The World Bank Group, The Fifth MENA Development Forum, April 5-9, Beirut, Lebanon. (http://info.worldbank.org/etools/mdfdb/docs/WP_UJRC6.pdf).

Shleifer, A., & Vishny, R. (1989). Management entrenchment: The case of manager-specific investments. *Journal of Financial Economics, 25*, 123–139.

Short, H., & Keasey, K. (1999). Managerial ownership and the performance of firms: Evidence from the UK. *Journal of Corporate Finance, 5*, 79–101.

Simerly, R., & Li, M. (2000). Environmental dynamism, financial leverage and performance: A theoretical integration and an empirical test. *Strategic Management Journal, 21*(1), 31–49.

Singh, M., & Faircloth, S. (2005). The impact of corporate debt on long term investment and firm performance. *Applied Economics, 37*(8), 875–883.

Sofia, L., & Vafeas, N. (2010). The relation between board size and firm performance in firms with a history of poor operating performance. *Journal of Management and Governance, 14*(1), 61–85.

Spiess, D., & Affleck-Graves, J. (1999). The long-run performance of stock returns following debt offerings. *Journal of Financial Economics, 54*(1), 45–73.

Stiglitz, J., & Weiss, A. (1981). Credit rationing in markets with imperfect information. *American Economic Review, 71*(3), 393–410.

Stulz, R. (1990). Managerial discretion and optimal financing policies. *Journal of Financial Economics, 26*(1), 3–27.

Su, Z., Xie, E., & Li, Y. (2011). Entrepreneurial orientation and firm performance in new ventures and established firms. *Journal of Small Business Management, 49*(4), 558–577.

Taub, A. (1975). Determinants of firm's capital structure. *Review of Economics and Statistics, 57*, 410–416.

Tian, L. (2005). *Bank lending, corporate governance, and government ownership in China.* Working Paper, Guanghua School of Management, Peking University, Beijing, China (http://211.167.92.69/cicf2005/paper/20050129102155.PDF). Accessed 18 Oct 2011.

Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. *Journal of Finance, 43*(1), 1–19.

Van der Wijst, N., & Thurik, R. (1993). Determinants of small firm debt ratios: An analysis of retail panel data. *Small Business Economics, 5*(1), 55–65.

Wahba, H. (2008a). Does the market value corporate environmental responsibility: An empirical examination. *Corporate Social Responsibility and Environmental Management, 15*(2), 89–99.

Wahba, H. (2008b). Exploring the moderating effect of financial performance on the relationship between corporate environmental responsibility and institutional investors: Some Egyptian evidence. *Corporate Social Responsibility and Environmental Management, 15*(6), 361–371.

Wahba, H. (2010). How do institutional shareholders manipulate corporate environmental strategy to protect their equity value? A study of the adoption of ISO 14001 by Egyptian firms. *Business Strategy and the Environment, 19*(8), 495–511.

Wahba, H., & Elsayed, K. (2010). Firm complexity and corporate board size: Testing the moderating effect of board leadership structure. *Corporate Ownership and Control, 7*(4), 317–330.

Wald, J. (1999). How firm characteristics affect capital structure: An international comparison. *Journal of Financial Research, 22*(2), 161–187.

Weill, L. (2008). Leverage and corporate performance: Does institutional environment matter? *Small Business Economics, 30*, 251–265.

Wooldridge, M. (2002). *Econometric analysis of cross section and panel data*. Cambridge, MA: MIT Press.

Zajac, E. J., & Westphal, J. D. (1994). The costs and benefits of managerial incentives and monitoring in large US corporations: When is more not better? *Strategic Management Journal, 15*(1), 121–141.

Zhao, X., Lynch, J., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research, 37*, 197–206.

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