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Does board structure affect financial distress? A study with reference to family firms in Lebanon

Abstract

This study offers to regulators and practitioners evidence on the role of the board of directors' composition in the financial distress of family businesses in an emerging economy such as Lebanon. The paper examines the role of outside directors, insiders' equity ownership, and CEO-board chair duality on the financial distress of non-listed family-owned firms. Between the periods of 2007-2010, the authors investigate 276 firms that were equally divided between a control and an experimental group, using a multiple logistic regression between a proxy ratio of financial distress and three exogenous variables of corporate governance. Empirical results based on a longitudinal sample indicate that (1) the presence of outside directors on the board of directors has no effect on financial distress; and (2) insiders' equity ownership reduces the likelihood of financial distress; whereas, (3) the CEO-board chair duality increases the probability of financial distress of Lebanese family businesses. The findings may well urge Lebanese investors and regulators towards a selective implementation of governance practices, to enhance the performance of one of the pillar of the Lebanese economy. The replacement of an inside director by an outsider will not increase the chance of survival of family-owned firms. In contrast, equity ownership held by insiders and the separation of the CEO-Chairperson position can be used as a tool to reduce agency costs, and as a result, enhance the financial performance.

Keywords: corporate governance, financial distress, board of directors, family businesses.
JEL Classification: G30, G32.

Introduction

According to Anderson and Reeb (2003) family businesses are described as firms that are managed or controlled by founding families. They operate in a broad range of industries and they represent a major form of organizations (La Porta et al., 1999; Faccio and Lang, 2002; Anderson and Reeb, 2003). The role of family businesses is essential in spurring economic development and growth through creating jobs and increasing wealth (Kelly et al., 2000; Astrachan et al., 2003). Thus, the survival and progress of family firms are crucial in an emerging economy like Lebanon where this form of organization dominates (IIF, 2005).

However, family businesses are complex entities in which the roles of family, management, and ownership are often confused (Lievens, 2006). They represent specific organizations requiring specific governance (Nordqvist and Melin, 2002). Catry and Buff (1996) consider that the family business is torn between the logic of family functioning and that of the firm. Family acts on an emotional basis by bringing together all of its members and by protecting them; whereas, the firm should operate according to economic basis, with the aim to maximize its stakeholders' values. Upon the balance between the needs of the family and the objectives of maximizing profits depends the survival and development of family businesses. Hence, family members and considerations undoubtedly influence the course of business and that of the board of directors. Besides, corporate governance literature assigns to the board of directors a central role in the internal governance and the performance of the firm (Johnson et al., 1996; Forbes and Milliken, 1999).

Yet, poor governance and agency problems are among the reasons for financial distress that spoiled several companies in different industries and countries across the planet. Agency problems could result from the separation of ownership and management and/or from the conflict between controlling family and non-controlling minority shareholders (Villalonga and Amit, 2006; Miller et al., 2007). Several researchers have examined how the interaction between the family and the firm interests solves or intensifies the agency problems reported in the non-family business (Chrisman et al., 2004; Zahra, 2005; Anderson and Reeb, 2003). But agency costs resulting from the separation of ownership and control are reduced in small family businesses where founding family members are directly involved in managerial and monitoring activities (McConaughy et al., 2001). In parallel, Braun and Sharma (2007) argue that, in small family firms, the agency costs do not arise from managerial opportunism due to the absence of a separation of ownership and control in family firm. Insider owners may reduce further owner-operator agency issues as the convergence of interest increases firm performance. However, owners' equity possession in family businesses tends to be considerable and concentrated. This concentration in turn may expropriate firm wealth and generate high free-rider problem (Anderson and Reeb, 2003; Lefort and Urzua, 2008). Often controlling

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shareholders abuse their power to profit from firms activities on the detriment of non-controlling minority interests (La Porta et al., 1999; Villalonga and Amit, 2006). As a result, the benefits derived from the agency agreement between owners and operators could be reversed and other type of costs could be generated (Schulze et al., 2001; Lefort and Urzua, 2008). The presence of outside members on the board is another alternative to reduce the risk of expropriation of minority wealth and avoids the declining profits of the firm (Anderson and Reeb, 2004; Gabrielson and Huse, 2005). Looking at the issue through an agency theory perspective, family firm researchers argue that family ownership creates organizational cultures of altruism, loyalty, commitment, family ties, and stability. These cultures in turn reduce the incentives for the dual CEO-Chairperson to be individually opportunistic, encouraging a focus on the long-term interests of the business and its shareholders (Fama and Jensen, 1985). Therefore, managers of family firms are long term oriented and unlikely to make short-term strategic decisions. However, the combination of the CEO and Chairperson in one position increases the agency cost related to minority shareholders. As such, this combination represents an important hurdle to monitoring check in situations where the interests of controlling family dominate that of the non-controlling minority shareholders (Braun and Sharma, 2007).

Since researchers are inconclusive about the utility of agency theory in the context of a family firm (Westhead and Howorth, 2006), we seek to participate in this debate by bridging the gap between agency theory and practice in Lebanese non-listed family firms. We aim to analyze the specific context of family business and its governance characteristics and more specifically its board of directors' composition. We attempt to associate three elements of corporate governance effects with the firm's financial performance: (1) outside directors' presence on the board: (2) insiders equity holding; (3) CEO-board chair duality. Our findings are significant because these factors used previously to explain outcomes are used in this study to predict financial distress in family businesses. Therefore, if certain of these governance elements are proved to be statistically significant, they could be used as a warning signal for a possible case of financial distress.

The Lebanese context is unique and should be of great interest to researchers because of its cultural and religious diversity. Moreover, the concept of truly independent boards has not yet been adopted in Lebanon. This doesn't appear to differ from other areas of the world, as Jensen (1993) and Rechner and Dalton (1991) highlight this problem in the US firms. However, existing studies do not provide the necessary insights to understand governance issues in the Lebanese context. Examining these issues in an emerging economy such as Lebanon brings a major interest to researchers, especially the governance impact on the probability of financial distress. Furthermore, governance mechanisms in family businesses, such as board independence, can be used as major tools to fight corruption activities that firms may get involved into. According to the Corruption Perception Index for 2011, Transparency International ranked Lebanon in the 134th place among 183 countries worldwide and the 13th among 17 countries in the Middle East and North African (MENA) region.

The mix of leveraging and turmoil in MENA countries accentuated the growing concerns of failures in family businesses. Accordingly, investors, financial analysts, and accounting professionals are constantly trying to find warning signs of financial distress. It is important to examine the governance structure of small businesses in the Arab context, especially through studying the decline of family businesses that are barely hit by the financial crisis, through the sharp decline in demand for their products and funding difficulties. The relatively large number of family businesses in Lebanon and their contribution to economic growth, through the engine of economic development and job creation, deserve special attention.

Many empirical studies are conducted in the context of large family businesses and listed companies, whereas most of the family firms are small and medium non-listed firms (Johannisson and Huse, 2000). Recently, the composition of the board of directors in small and medium firms, as an important governance variable, draws a lot of attention (Johannisson and Huse, 2000; Heuvel et al., 2006). Yet the researches are debatable and considered in their early stages (Forbes and Milliken, 1999; Hermalin and Weisbach, 2003; Gabrielsson and Huse, 2005). In particular, Braun and Sharma (2007) conclude that additional dimensions to that of the CEO-duality such as board composition will allow for deeper understanding of the governance structures that influence the performance of family firms. With a few empirical investigations, Lebanon provides a unique living laboratory to offer regulators and practitioners some evidence on board's composition role in the failure of family businesses.

Our basic empirical results indicate that the presence of outside directors is not critical in an emerging market that lack sufficient liquidity. Insider ownership decreases the likelihood of financial distress; whereas, CEO duality increases the probability of financial distress in family firms.

The remainder of this paper is organized as follows. Section 1 presents the research background. Section 2 reviews the literature and displays the research hypotheses. Section 3 discusses the research methodology, data collection, and descriptive statistics. Section 4 displays the research results and analysis. The final section addresses the conclusion and the limitations of the study.

1. Analytical framework

1.1. Research context. Located in the growing and lucrative marketplace of the MENA region, Lebanon has been considered a vibrant market economy since ancient times. The Lebanese, also called the Phoenicians, were the first to start trade and commercial transactions. The country is well known for its marketing prowess and its educated and talented population. Before the 1970s, Lebanon was a commercial center for the entire Middle East and its per capita income was similar to that of Southern Europe (Fahed-Sreih, 2006). However, a twenty-year civil war had undermined Lebanese economic expansion and slashed its GNP output by half. After the war ended in 1991, Lebanon's main growth sectors were tourism and banking. Israeli occupation from 1978 to 2000 and Syrian occupation from 1978 to spring 2005 have left the country with massive political and financial problems to solve, including physical and social infrastructural reconstruction. Besides, phenomenal economic growth in the past few years in the MENA region has led to a sizeable increase in the number of unlisted companies, particularly family owned organizations. More than anywhere else in the world, family businesses, rather than being a money-generating activity or a market-driven pursuit, are a way to enhance a family's social standing (Fahed-Sreih, 2006). Managing a business in Arab countries relates to the socio-economic and cultural backgrounds of these families (Ali, 1993).

The majority of firms in Lebanon are small and medium firms employing less than 150 employees. Almost 60% of the firms are corporations. Only 50% of the entrepreneurs indicated they had initiated their firms, while approximately one-third inherited their businesses. Over 50% of the family businesses have more than one family investor, while 70% are employing at least one family member. Historically, family firms have relied heavily on retained earnings to fund growth and expansion (IIF, 2005). The predominant culture of family ownership of businesses does not support the development of the financial market. Total market capitalization of 16 companies listed on the Beirut Stock Exchange (BSE) stood at $12 billion at the end of November 2011, about 32 percent of estimated nominal GDP, which is small relative to the regional average of 72 percent of nominal GDP.

1.2. Lebanon's corporate governance. Despite joint efforts between the private and public sectors to develop and implement corporate governance in Lebanon, it still lags behind developed countries (IIF, 2005). Existing legal and regulatory requirements necessitate many important corporate governance protection codes, especially with respect to the composition and operation of the board of directors. The Commercial Code, specifically Article 153, does not provide for the separation of the roles of the chairman of the board from those of the general manager; the chairman of the board is responsible for executing the duties of the general manager unless he/she appoints one on his/her behalf. The Code only requires boards to have a minimum of three directors, and fails to provide adequate protection of shareholders' rights or equitable treatment. Families control a majority of Lebanese companies, either through complex pyramid structures or through ownership of a majority of outstanding voting shares (IIF, 2005). Pyramid structures allow families to gain control of a number of holding companies and subsidiaries, through ownership of a small equity percentage in each business.

2. Hypotheses development

Adam Smith's (1776), consideration of the ineffectiveness of companies whose management was assigned to a non-owner, constituted the origin of the concept of improving corporate performance by implementing modern corporate governance principles. Later, Berle and Means (1932) founded the agency theory (Cheffins and Bank, 2009), and showed that conflicts of interest between managers and shareholders are accentuated by the separation of ownership and control. In periods of turmoil, organizations often engage in a mechanistic shift, from which centralization of authority is the most widely recognized outcome (Daily and Dalton, 1994). This outcome is applicable to the agency problem, where applications for the relationship between governance structure and financial distress have been identified.

It may be a characteristic of firms in persistent financial distress to have weak corporate governance, measured by board composition and structure.

2.1. Review of financial distress. According to finance literature the key factor in identifying insolvent firms is their inability to meet their debt obligations. For Baldwin and Scott (1983, p. 505) "…when a firm's business deteriorates to the point where it cannot meet its financial obligations, the firm is said to have entered the state of financial

distress. The first signals of distress are usually violations of debt covenants coupled with the omission or reduction of dividends". Whitaker (1999) defines entry into financial distress as the first year in which cash flows are less than current maturities' long-term debt. Wruck (1990) argues that firms enter financial distress states as the result of economic distress, decline in financial performance, and poor management. Although the correlation between corporate governance and the firm's financial performance is not entirely clear, it is common practice for firms to establish a board of directors to constantly monitor activities and to protect the shareholders' interests (Kosnik, 1990).

2.2. Hypotheses development. Baysinger and Butler (1985) indicate that the board composition influences financial performance. Moreover, Judge and Zeithaml (1992) argue that boards are not involved in the process of decision making when there are a high proportion of insiders. Inside directors in fact, may not monitor effectively the CEO as they are usually aligned with him. In these cases, top management is dominating the board of directors, and that causes collusion and transfer of stockholders wealth (Fama, 1980). Such passive role of reviewing management and strategic planning engaged by an insider-dominated board can adversely alter the firm's financial performance (Agrawal and Knoeber, 1996; Baysinger and Butler, 1985). For Bonn et al. (2004) and Fama (1980) outside directors can serve better the interests of shareholders because they are financially independent. In parallel, several empirical studies argue that a high number of outside directors can produce better performance (Barnhart and Rosenstein, 1998; Daily and Dalton, 1992). For Pfeffer (1972), the boards of declining firms have a high percentage of insider directors. This means that financial distress could be due to an insider-dominated board. However, it is also unclear whether the arguments made for stock companies can simply be applied to family firms, which have a unique governance structure. Contrary to large firms, researchers on family businesses are not unanimous on the need for adopting an outside director. Brunninge and Nordqvist (2001) find that the presence of outside directors makes the board more active in term of the number of meetings. However, agency theorists show that the contribution of outside directors is the reduction of asymmetric information between the different branches of the family or between family and important external stakeholders. This is explained by the existence of networks of communication between the directors that are member of the family and the rest of the family, something that facilitates the flow of information and aligns the interests within the firm. Klein et al. (2005) reveal a negative relationship between board independence and financial performance of family businesses. They conclude that family businesses are penalized by the fact that they have an independent board of management. Conversely, Angelo and De Angelo (2000) and Anderson and Reeb (2004) suggest that the appointment of outside directors in family firms is a safeguard for minority shareholders to the extent that this mechanism may make governance control more effective and that could minimize the possibilities of expropriation of minority interests. Based on the framework that insider-dominated board may be a potential explanation of distress in Lebanon, we formulate the first hypothesis.

Hypothesis 1: The presence of outside directors in the board is negatively correlated with the probability of financial distress.

Taking an agency perspective, family ownership tends to create natural alignments of interest between the firm, its staff, and shareholders because family members often serve as the firm's senior managers. Managers of family firms tend to stay in their jobs for longer periods of time than managers of non-family businesses. Thus, insider ownership is very influential for the firm's financial performance (Jensen and Meckling, 1976). Inside owners of the firm dedicate their efforts to the optimization of the shareholders' value, as they are part of the firm shareholders. According to Chen et al. (2003) insider ownership is positively linked to firm performance in Japanese firms. Davies et al. (2005), Beiner et al. (2006), Kaserer and Moldenhauer (2008), Becker-Blease and Irani (2008) also find that insider ownership is positively related to the firm's value, and that could lead to a better financial performance and a less chance of financial distress. Gilson (1990) consider that the modifications in the board composition and the inside equity ownership could affect the odds of financial distress. When firms are performing well, insiders may increase their equity holdings and vice versa. However, the amount of equity ownership possessed by insiders is more important than the number of people that have equity ownership. A firm where equity ownership of insiders is 1% would have different influence compared to another firm where equity ownership is 55%. To captures this difference, we measure the percentage of insider ownership. Consequently, we formulate the second hypothesis.

Hypothesis 2: The percentage of insider ownership is negatively associated with the probability of financial distress.

Agency theorist Rechner and Dalton (1991) indicate that firms whose CEO's and chairman's position are

combined, underperform firms where the CEO's and the chairman's positions are separated (measured by ROE, ROI, and profit margin). The dual combination of the CEO's and board chairman's position in one person is a weak form of separation between personal and shareholder interests that could ease control system and adversely affect the financial performance of the firm (Jensen, 1993). Dual CEOs can increase the agency cost by abusing their power, at the expenses of the firm and shareholders, and hold back board's ability to monitor management (Jensen, 1993; Elloumi and Gueyie, 2001). Accordingly, Daily and Dalton (1994) argue that duality adversely affect family firm efficiency cost and profitability. Conversely, Donaldson and Davis (1991) empirically show that the duality may influence the internal control system of family firms in such a way to increase their financial performance (measured by ROE). Conversely, Brickley et al. (1997) argue that CEO duality is not associated with inferior firm performance. Such inconsistencies in empirical results cannot help to draw conclusions on the Lebanese family context where an investigation is needed to associate the relationship between duality and financial distress. Rechner and Dalton (1991) study a random sample of Fortune 500 firms. While this sample undoubtedly includes some family firms (around 30%) and the findings may provide some insight into our understanding of duality, it does not take the unique nature of the family firm into account. The association between duality and financial performance may not hold in family firms, as CEO duality may facilitate the dominance controlling shareholders' interests over that of minority shareholders (La Porta et al., 1999; Villalonga and Amit, 2006; Braun and Sharma, 2007). The duality gives CEO more opportunities to make decisions according to self-interest or entrenchment-seeking purpose, or he or she may undertake perquisite consumption. As a result, most of Lebanese firms could face negative operating income due to inappropriate extortion of the firm's funds for personal and family use. Accordingly, our third hypothesis takes the following form.

Hypothesis 3: A family firm with dual CEO-board chairperson is positively correlated with the probability of financial distress.

3. Research method

To examine our three hypotheses, we gathered our sample data for the period from 2007 to 2010 using two methods, an in-depth analysis of the financial ratios of the studied firms and a closed-ended questionnaire addressed to the firms' decision makers. The questionnaires, aimed to investigate the variables of corporate governance, are conducted face to face with the firms' managers who submit their responses to our surveyors who fill out the questionnaire consisting of a series of check boxes.

3.1. Data collection. When a person or a family holds a minimum of 50% of firm equity and there are family relationships between this shareholder and directors, we classify this firm as a family business (Westhead and Howorth, 2006). We used the database of the Commercial Register supplemented by that of the Ministry of Finance. Non-listed firms are obligated by the law to disclose corporate charters along with information related to equity holders, their aggregate holdings, and shareholder meetings, to the Commercial Register. Also, they are required by law to disclose financial statements to the Ministry of Finance. We used the annual report as the main source of information. From the annual reports we collected data that include: the financial statements (which incorporate EBITDA and interest expenses among other data), lists of major shareholders and the equity structure of shareholders, profiles of directors. Further investigation concerning the independence of board members and the CEO-duality were conducted by phones meetings with the firms' management.

3.2. Empirical methodology. To test our hypotheses, we conducted a matched-pairs research design as used in pervious empirical studies (McConaughy et al., 2001; Miller et al., 2007). At the first stage, we have been able to identify 310 firms that fell into that status. After eliminating the firms that were taken over or liquidated, we obtained the experimental group composed of 138 financially distressed firms. Next, we constructed our control group that consists of 138 healthy firms, by pairing each financially distressed firm with a healthy one of the same size and in the same sector. As a result, Table 1 presents our sample of 276 Lebanese family firms, classified in 18 industry sectors.

Table 1. Sample classification by industry sectors

Sector	Initial number	Distressed firms	Non-distressed firms
Agriculture	25	7	7
Chemical products	8	3	3
Construction materials manufacture	12	4	4
Cosmetics	10	5	5
Distribution	29	12	12

Table 1 (cont.). Sample classification by industry sectors

Sector	Initial number	Distressed firms	Non-distressed firms
Electrical equipment & supplies	9	3	3
Financial services	29	14	14
Food industry	23	16	16
Hospitality industry	25	18	18
Jewelry	14	9	9
Media & telecommunications	16	5	5
Pharmaceutical industry	9	3	3
Private contracting industry	14	3	3
Publicity & advertisement	10	4	4
Publishing & printing industry	12	5	5
Services	35	16	16
Textile industry	18	7	7
Tourism & leisure	12	4	4
Total	310	138	138

We have verified that healthy firms did not experience any financial distress situation during the elaboration of this study, by simply examining their coverage ratio for the studied period. We analyzed basic ratios and run selected regressions to examine family firms in Lebanon. As in the model of Simpson and Gleason (1999), we employed a multiple logistic regression analysis to evaluate the probability of financial distress. We restricted the observed outcome to four values: 1 = no risk of financial distress, 2 = little risk of financial distress, 3 = some risk of financial distress, and 4 = strong risk of financial distress. The multiple logistic regression produces a formula that predicts the probability of the occurrence of financial distress as a function of several independent variables. The probability is modeled as follows:

$$Logit\,(P_2 + P_3 + P_4) = \frac{1}{(1 + e^{-y})},$$

where $y = b_0 + b_1$ *Outside Directors* $+ b_2$ *Insiders' Ownership* $+ b_3$ *Duality* $+ b_4$ *Leverage* $+ b_5$ *Firm Size* $+ b_6$ *Economic Growth* $+ b_7 \sum b_m$ *Industry Sector Dummies* $+ \varepsilon_i$, where P represents the probability of financial distress; b_0 denotes the intercept; b_1 through b_7 are the parameters to be estimated; and finally, ε_i is the error term.

3.3. Dependent variable. The endogenous variable consists of the firm probability of financial distress. To proxy financial distressed firms, we apply the coverage ratio (Net Income/Interest Expenses) used by Asquith et al. (1994). A firm is considered to be financially distressed if its coverage ratio is below 0.8 for any given year.

3.4. Independent variables. The exogenous variables that consist of the presence of outside directors, proportion of insider ownership, and CEO duality are defined as follows:

- *Outside directors*. A proxy for the presence of outside directors on the board; it equals one if outside directors exists in the Board and zero otherwise. We define outside directors as those with neither current (prior) employment ties to the firm, nor significant business/family ties (Ward and Handy, 1988).
- *Insiders' ownership*. It is the sum of the total number of common shares owned by insider directors, including the CEO, divided by the total shares outstanding for each firm-year observation (Anderson and Reeb, 2003; Villalonga and Amit, 2006).
- *Duality*. A proxy for CEO-chairperson duality role. This dummy variable takes the value of one if duality exists, and zero otherwise.

3.5. Control variables. We control variables that could influence the association between financial performance in firms and the composition of the board, regardless of corporate governance mechanisms. These exogenous variables are as follows:

- *Leverage*. Is the capital structure measure, calculated as the long-term debt to assets ratio.
- *Firm size*. Is a dummy variable that aims to control the effects of the firm size on performance (Anderson and Reeb, 2003). This variable is measured by the total numbers of firm employees and takes the value of one if it represents a medium firm (employing more than 50 persons) and zero otherwise.
- *Economic growth*. This variable assesses the impact of the local economic output, measured by the Gross Domestic Product (GDP) growth rate, on the financial performance of family firms.
- *Industry sector*. This variable represents 18 industry sector dummies that are classified according to the data shown in Table 1. It controls the influence of variation in firm performance across industries such as competitive intensity and economies of scale (McWilliams and Siegel, 2000).

Besides the variable that represents the percentage of insiders' ownership, we have encoded all exogenous variables as dichotomous variables. In logistic regression models, this increases the likelihood of events, allows for easy interpretation of the results, and increases the stability and significance power of the coefficients estimated. The coefficients of the logistic regression are estimated using the maximum likelihood method. To estimate the *p*-values, we opted for the likelihood ratio method and not the popular Wald chi-square method, which could produce inaccurate results with small sample sizes.

3.6. Data summary statistics. Table 2 exhibits the descriptive statistics for each variable in the data sample. On average the percentage of outside directors in Lebanese family firms is only 9.00%. Whereas, on average, insiders own 68.75% of the firm. Similarly, the sample includes 70.00% CEOs who are also Chairperson of the board.

Table 2. Descriptive statistics of the main variables in the sample data

Variable	Minimum	Maximum	Mean	SD
Outside directors	0.00	1.00	0.09	0.03
Insiders' ownership	0.00	100.00	68.75	0.27
Duality	0.00	1.00	0.70	0.12
Leverage	1.92	5.22	2.12	0.34
Firm size	18.00	152.00	57.00	0.08
Industry sector	0.00	1.00	0.07	0.23
Economic growth	0.05	0.09	0.08	0.02

In a multiple regression, the assumption of independence between exogenous variables is a prerequisite. Table 3 reveals that the correlation between the variables does not violate the assumption of independence. Moreover, Table 4 represents the outputs of the mean and variance equality tests between the control and the experimental groups. Results show that there is a statistically significant difference between the means and the variances of the two groups.

Table 3. Correlation matrix

	Outside directors	*Insiders' ownership*	*Duality*	*Leverage*	*Firm size*	*Industry sector*	GDP growth rate
Outside directors	1.00						
Insiders' ownership	0.21	1.00					
Duality	0.14	-0.12	1.00				
Leverage	0.31	-0.09	0.05	1.00			
Firm size	0.39	0.23	0.05	0.27	1.00		
Industry sector	0.14	0.11	0.09	0.39	0.30	1.00	
Economic growth	0.07	0.03	0.05	0.21	0.05	0.21	1.00

Table 4. Tests for equality of means and variance

Governance variables	Mean difference	*t*-statistics	Variance difference	*t*-statistics
Outside directors	0.14***	2.07	0.09	0.14
Insiders' ownership	1.83**	1.85	1.02**	1.78
Duality	-1.08***	-2.21	0.72***	-1.98

Note: *, **, *** indicate statistical significance at $p = 0.10$, $p = 0.05$ and $p = 0.01$ levels, respectively.

4. Empirical results

To measure the effects on the endogenous variable, we have removed, one by one, the three exogenous variables with the lowest *t*-statistic value in each step of the estimation, to end up with the best adequate model. In Table 5, the relationship between the independent variables and the probability of financial distress (P_2, P_3, P_4) illustrates that a positive coefficient implies that the exogenous variable increases the probability of financial distress, while a negative coefficient decreases the same probability.

Table 5. Logistic regression of firm performance, outside directors, insiders' ownership, and duality

Intercept	[0.07]*** (2.30)
Outside directors	[0.04] (0.98)
Insiders' ownership	[-0.05]*** (2.91)
Leverage	[0.12]*** (5.31)
Duality	[0.08]*** (3.15)
Firm size	[0.07] (1.24)

Table 5 (cont.). Logistic regression of firm performance, outside directors, insiders' ownership, and duality

Industry sector	[0.08] (1.33)
Economic growth	[0.03] (0.84)
McFadden R^2	0.72
Log likelihood	395.34
Likelihood ratio statistic *p*-value	0.00***
Hosmer-Lemeshow statistic *p*-value	0.00***
Andrews statistic *p*-value	0.02**

Note: *, **, *** indicate statistical significance at $p = 0.10$, $p = 0.05$ and $p = 0.01$ levels, respectively. Regression coefficient are reported in brackets, while *T*-statistics are reported in parentheses. The log likelihood is the maximized value of the log likelihood function; the likelihood ratio statistic *p*-value is the probability value of the log likelihood ratio and it is used to test the overall significance of the model. McFadden R^2 is the likelihood ratio index that measure the explanatory power of the estimated models, it is similar to the R^2 reported in linear regression models; the *p*-values of Hosmer-Lemeshow and Andrews's statistics measure the model fitting.

The results of the logistic regression presented in Table 5 revealed that two out of the three coefficients of governance variables in the model are significant. Thus, hypothesis 2 and 3 are confirmed; whereas hypothesis 1 is not supported.

The presence of outside directors does not affect the probability of financial distress in Lebanese family firms, but the relation is positive as predicted. This finding concurs with that of Anderson and Reeb (2004) and Gabrielson and Huse (2005) who studied firms and found a positive relation between the proportion of outside directors and firm performance. However, a 1% increase in the percentage of insider ownership will decrease the probability of financial distress by around 0.05%. This result coincides with previous empirical literature on the alignments of interests between principal and agent (Jensen and Meckling, 1976; Chen et al., 2003; Davies et al., 2005; Beiner et al., 2006; Kaserer and Moldenhauer, 2008; Becker-Blease and Irani, 2008). Conversely, a 1% rise in CEO-duality will intensify the probability of financial distress by around 0.08%. This negative association between duality and performance coincides with the results of Jensen (1993) and Elloumi and Gueyie (2001), but differs from that of Brickley et al. (1997). The effect of the leverage is significant, while the firm's size, industry sector, and economic growth turn out to be insignificant to our results.

Hermalian and Weisbach (2003) referred to the problem of endogeneity presented by the board composition's dependence upon firm performance. However, Bhagat and Black (2002) argue that as the board composition typically changes over time, the problem of endogeneity is not serious. Moreover, the robustness of explanation of the estimated model was verified by solid statistics derived from McFadden R^2, log likelihood, and likelihood ratio numbers. To test the goodness-of-fit of the model, the *p*-values of Hosmer-Lemeshow and Andrews's statistics provided evidence that the model is specified correctly.

Concluding remarks

Family firms predominate in many sectors and economies. Mixed results from different studies have arisen on the relationship between the financial performance of family firms and the composition of their boards of directors. Particularly in Lebanon where influential families control the ownership of most businesses, this relationship is somewhat ambiguous. In this context, this study intended to analyze the contribution of some governance characteristics in the financial distress that the Lebanese businesses have recently experienced.

After controlling for endogeneity, and using a sample of 276 Lebanese non-listed family firms, composed of 138 financially distressed firms (the experimental group) and 138 healthy ones (the control group), we have conducted a multiple logistic regression between the probability of financial distress and three characteristics of board structure. First, the presence of outside directors has proven to be insignificant to the probability of financial distress. One explanation of such result could be that outside directors in family businesses lack real power and do not contribute to firm's strategy due to their friendship or professional ties with the owners and management (Brunninge et al., 2007). Second, the endogenous role of insiders' ownership in the probability of financial distress turned out to be negative and significant. This finding concurs with the predictions of the convergence of interests between owners and managers in the model of Jensen and Meckling (1976). Third, the CEO duality increased the probability of failures in Lebanese family firms. Firms CEOs who are also Chairmen of the Board exploit their powers resulting from this duality to pursue their personal interests in a manner that adversely affect the financial performance of family businesses.

However, we pointed out that our results should be cautiously interpreted beyond the context provided in this study. Although a logistic regression increases the likelihood of events, facilitates the interpretation, and increases the stability of the estimated model, it can underestimate the probability of the realization of events because some of the dependent variables are dichotomous. Obviously, including additional governance variables into our model could affect our findings. As a result, this study is a small step toward a better understanding of the dimensions of corporate governance's roles in the financial performance of family businesses within an emerging economy.

In the context of integration of Middle Eastern markets with the developed ones, family businesses that apply corporate governance principles could enhance their odds of survival. In particular, implementing policies to protect minority shareholders interests in family firms can reduce owner-owner agency costs. Furthermore, putting in practice monitoring units and decision rules, through transparency, can enhance the seeking of interests of the company stakeholders'. At the operational level, this can be realized by moving from personal and family relationship governance to a one based on rules.

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