Changes in top management team strategies caused by the external financial environment

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Abstract

Purpose – The purpose of this paper is to analyse whether the onset of the financial crisis caused changes in the influence of top management team (TMT) on corporate results.

Design/methodology/approach – The sample is comprised of the list of S&P 500 Index firms between 2002 and 2008. The study uses a longitudinal panel methodology applying a two-step GMM estimator system. This approach addresses potential unobserved heterogeneity, simultaneity, and dynamic endogeneity.

Findings – The primary results reveal that the onset of the financial crisis stimulated those TMTs with large teams and a high frequency of meetings to improve corporate performance, without leading to a reduction in corporate risk taking.

Originality/value – This study reveals that different environmental conditions call for different behaviour from TMTs to fulfil their responsibilities. This study also suggests changes in normative and voluntary guidelines for improving the quality of the TMT's work.

Keywords Performance, Change, Financial crisis, External environment, Corporate risk taking, Top management team (TMT)

Paper type Research paper

Introduction

The global financial crisis has reactivated the debate regarding the effectiveness of the top management team (TMT) in formulating corporate strategies to achieve positive outcomes. Despite the relevance of the concept "TMT effectiveness" in the current context, the definition of the "TMT" differs widely between studies (Nielsen, 2010), and the meaning of "effectiveness" in organisational literature is unclear (Petrovic, 2008). Certain authors (e.g. Finkelstein and Hambrick, 1996; Pettigrew, 1992) frequently define "TMT" using terms such as "managerial elites", "those who occupy formally defined positions of authority", or "the group of most influential executives at the apex of an organization". Consistent with these definitions and using that of Ferrero-Ferrero *et al.* (2015), in this study, the term "TMT" refers to the board of directors, as this governing body is ultimately responsible for an organisation's strategic leadership. Moreover, using the definition of Petrovic (2008), "TMT effectiveness" is the ability of the team to fulfil and perform its roles effectively.

The basic role of the TMT is associated with active participation in the formulation of corporate strategy. This role is related to corporate performance and risk taking, as the TMT should develop a corporate strategy that maximises the economic value

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of the firm (De Andres and Vallelado, 2008) while considering various risk factors and avoiding excessive risks (Pathan, 2009). Therefore, a TMT that performs its tasks effectively has a positive impact on corporate results, i.e., corporate performance should be improved and risks should be avoided.

Another current question is how to determine the factors that can affect TMT effectiveness. Empirical studies have examined the impact of team structure and composition using a proxy of TMT effectiveness, namely, corporate performance (e.g. De Andres and Vallelado, 2008). In line with this traditional approach, this study investigates several team characteristics as factors that can affect the effectiveness of a TMT: composition, size, and activity. The first reason for using these variables is related to their direct link with the international codes of good corporate governance and regulations' primary recommendations for boards. As Roberts *et al.* (2005) state, these codes are expected to lend legitimacy to corporations. The second reason for using these variables is that they are directly observable and homogeneously measured across different companies, and it is thus a simple task to make comparisons and extract results.

Despite a substantial body of empirical research regarding the relationship between TMT characteristics and effectiveness, the results to date are inconclusive. These inconclusive results could be attributed to the one-dimensional perspective theoretically adopted by research which overlooks the contextual factors affecting the behaviour of the TMT and the causes of these behaviours (Filatotchev and Boyd, 2009; Hillman *et al.*, 2009). In this regard, research is still needed to explore the role of environment and strategic leadership in an organisational decline context (Abebe, 2010, 2012).

According to Haspeslagh (2010), the most important current external factor that can affect TMT behaviour is the turbulent economic environment resulting from the global financial crisis. The recent global financial crisis has its roots in factors connected to weaknesses in corporate governance, several factors of which are related to leadership weaknesses. In this regard, various studies have examined the ineffective role of the board of directors, because in certain boards, outside directors were not able to form objective and independent judgments on management decisions. As a result, these directors were unable to challenge the executive directors (COM, 2010). This leadership weakness could be related to such factors as lack of expertise, time commitment, or inactivity.

This paper specifically investigates aspects of leadership weaknesses in the recent global financial crisis that could affect TMT behaviour. The idea that changes in the macroeconomic context may affect the nature and value of contributions made by a TMT to corporate results led to the research question:

RQ1. Has the onset of the most recent financial crisis caused changes in the influence of the TMT on corporate results in terms of corporate performance and corporate risk taking?

The paper is expected to contribute to changes in corporate leadership and TMT behaviour following the recent global financial crisis. Another novelty of this paper is related to the introduction of the corporate risk-taking variable into the analysis, as the great majority of previous empirical papers in this field have investigated corporate performance without introducing risk variables. In terms of methodology, the use of a longitudinal panel study – firms listed on the S&P 500 Index over the period of 2002-2008 – and a generalised method of moments (GMM) estimator to address endogeneity problems could improve the results presented in previous studies.

This paper is divided into six sections. A review of the theoretical framework follows this introduction. The third section includes information on the sample, variables, and methodology used in estimating the model. The fourth section presents the findings and empirical analysis. Theoretical and practical implications, as well as limitations and future research, are presented in the fifth section. The final section summarises the findings and presents the paper's conclusions.

Theoretical framework

Traditionally, when examining the role of board of directors, literature on TMT has focused on agency theory as the main theoretical perspective (Roberts *et al.*, 2005). According to agency theory (Fama and Jensen, 1983; Jensen and Meckling, 1976), it is assumed that agents are opportunistic; therefore, there is a conflict between the interests of a firm's owners and its management when ownership and control are separated. As an alternative approach, the stewardship theory (Davis *et al.*, 1997; Donaldson and Davis, 1991) is predicated on managers as "stewards" who sincerely wish to act on behalf of the shareholders. However, the resource dependence theory (Pfeffer, 1972; Pfeffer and Salancik, 1978) recognises the corporation as an open system that is dependent on external contingencies. This theory states that external factors influence organisational behaviour, and the TMT act to reduce environmental uncertainty and dependence on resources (Pfeffer, 1972).

All of these organisational theories are one-dimensionally focused; thus, the use of a single theory constrains the explanation of the complex nature of TMT behaviour and the relationship with corporate results. Lynall *et al.* (2003) agree with this line of thinking, suggesting that it is not necessary to choose one theoretical framework over another, but rather identify under which conditions each theoretical view is most applicable. In this regard, the resource dependence theory can help to introduce an important debate regarding the relationship between environmental and TMT characteristics because environmental changes may reflect new TMT needs (Hillman *et al.*, 2009). Miller-Millesen (2003) argues that when the environment is stable, and the corporation is not responding to a crisis, the need for external information should be lower than in an unstable environment. Consequently, because the board is viewed as a body that links the corporation with its environment (Hillman *et al.*, 2009), in unstable environments, resource dependence theory becomes more relevant than stewardship theory. In this context, resource dependence theory could help explain how corporations reduce uncertainties.

The primary focus of this research is to analyse changes, resulting from the onset of the 2007 financial crisis, that influenced the effect of TMT characteristics on corporate results, namely, corporate performance and corporate risk taking. To explore this objective empirically, this study develops six hypotheses based on the resource dependence theory. The developed hypotheses assume that during a recession, those TMTs with a high level of links to the external environment (a higher percentage of outside directors, a larger TMT, and a higher frequency of meetings) lead to improvement in corporate performance and reduction in uncertainties. The study selects S&P 500 companies over the period of 2002 -2008; that period corresponds with the most recent expansion business cycle (2002-2007) and with the most recent contraction cycle (2008). This sample is selected with the aim of capturing any changes in the TMT with respect to corporate results, corresponding to the beginning of the crisis and the unstable economic environment resulting from the credit crunch, bank failures, and the continuous decline in stock exchange prices during 2008 (Francis *et al.*, 2012).

Focusing on corporate composition, outside directors who are prestigious in their professions and communities can be providers of timely information for executives. Therefore, outside directors can be used to manage environmental contingencies. Consistent with this argument, Daily (1996) finds evidence that firms with a higher proportion of outside directors are more likely to emerge from difficult situations successfully.

Therefore, the following theoretical hypotheses are proposed:

H1a. In a recession (unstable environment), compared to a period of expansion (stable environment), a higher percentage of outside directors leads to a higher level of performance.

H1b. In a recession, compared to a period of expansion, a higher percentage of outside directors leads to lower levels of risk taking.

The number of directors is another factor that can affect TMT behaviour and, consequently, corporate performance. However, there are mixed views on how board size impacts corporate performance (Coles *et al.*, 2008; Conyon and Peck, 1998; Guest, 2009; Klein, 2002; Yermack, 1996). On the one hand, a small board is more effective because of the high coordination costs and free rider problems associated with large boards (Jensen, 1993). On the other hand, a larger board may reduce CEO domination and increase the collection of expertise and resources accessible to a firm (Klein, 2002). Resource dependence theory is consistent with the latter view. This theory argues that a larger TMT brings greater opportunity for more links to the external environment, especially in unstable economic periods; hence, access to resources that may improve corporate performance and reduce uncertainty (Pfeffer, 1972).

Consequently, the following hypotheses are presented:

H2a. In a recession, compared to a period of expansion, a larger TMT leads to a higher level of performance.

H2b. In a recession, compared to a period of expansion, a larger TMT leads to a lower level of corporate risk taking.

A significant number of studies (Jackling and Johl, 2009; Vafeas, 1999) use the frequency of meetings as a measure of TMT activity because meeting frequency is closely related to the efforts made by directors to improve the management of the firm. The resource dependence theory states that TMT meetings may be an important resource to link the external environment with company governance. Therefore, the frequency of TMT meetings may improve corporate performance (Jackling and Johl, 2009) and help control risky decisions, manage external contingencies, and seize available opportunities. Jensen (1993) also suggests that the TMT seems to be relatively inactive in stable environments and states that a TMT increases its activity to symbolise a response to poor performance. Vafeas (1999) highlights that there are costs related to TMT meetings, such as managerial time, travel expenses, and directors' meeting fees. If the benefits derived from meetings exceed costs, the frequency of TMT meetings could positively affect corporate performance and corporate risk taking; otherwise, the number of meetings could be negatively related to corporate performance.

Accordingly, the following hypotheses are expected:

H3a. In a recession, compared with a period of expansion, a higher frequency of TMT meetings leads to higher levels of performance.

H3b. In a recession, compared with a period of expansion, a higher frequency of TMT meetings leads to a lower level of corporate risk taking.

Data and methodology

Sample

The primary objective of this study is to examine the changes in the impact of TMT characteristics on corporate variables due to the onset of the 2007 financial crisis, which caused the most recent recessionary period. To analyse these changes the sample period spans from 2002 to 2008, considering the most recent periods of growth and recession. According to the National Bureau of Economic Research (NBER), the most recent economic expansion ended in December 2007. This expansionary period began in November 2001 after the brief recession that followed the collapse of the speculative dot-com bubble and the 11 September attacks. Moreover, the beginning of the time period is marked by the passing of the Sarbanes-Oxley Act, which represents an important attempt to enhance corporate governance as a response of the previous corporate scandals. The most recent economic recession began in December 2007; the NBER announced that this business cycle ended in June 2009[1]. In accordance with Grove *et al.* (2011), Essen *et al.* (2013), and Yunlu and Murphy (2012) and the fact that corporate governance data are published annually, this study selects 2008 as the recessionary period. Therefore, the sample period from 2002 to 2007 corresponds to the most recent expansion business cycle and 2008 to the most recent contraction cycle.

The sample contains firms listed in Standard and Poor's 500 Index (S&P 500) during the period of 2002-2008. This index represents a high percentage of all US publicly traded companies. In this regard, all the firms examined are affected by the same external factors. Financial, accounting, and ownership data have been extracted from the Thomson One Banker database (Bargeron *et al.*, 2010). The TMT characteristics have been obtained through the annual Spencer Stuart Board Index (De Andres and Vallelado, 2008)[2].

Variables

This study is focused on two key corporate variables: corporate performance and corporate risk taking. In accordance with Cornett *et al.* (2009) and Jackling and Johl (2009), this paper uses an accounting performance measurement as a proxy for the performance variable (PERFORMANCE). Specifically, this paper uses earnings before extraordinary items and after taxes (EBEIAT) to total assets because this ratio reflects corporate performance more faithfully than measurements based on market data (Bhagat and Bolton, 2008; Cornett *et al.*, 2009), as well as measuring the firm's operational efficiency (Díaz-Fernández *et al.*, 2014).

Despite using an accounting measurement for corporate performance in this study, the levels of risk measured by accounting measurements (standard deviation of accounting performance) could be biased by earnings smoothing because low earnings volatility may indicate active earnings smoothing, rather than low real volatility (John *et al.*, 2008). In this regard, an alternative measurement to overcome this limitation is the standard deviation of share returns. As Pathan (2009) states, the latter measurement captures the overall variability in firm share returns and reflects the market's perceptions regarding the risks inherent in a firm's assets, liabilities, and off-balance-sheet positions which managers usually monitor.

Thus, according to Bargeron *et al.* (2010) and Pathan (2009), market perception of corporate risk taking (RISK) is measured as the standard deviation of share returns. Likewise, Cohen *et al.* (2013) note that stock return volatility measures the consequences of changing investing strategies, capturing the consequences of changes in several risky actions such as mergers, R&D investments, and capital expenditures.

Regarding independent variables, the study includes the following: TMT composition, size, and activity. According to De Andres and Vallelado (2008) and Jackling and Johl (2009), TMT composition is measured using the proxy percentage of outside directors (OUTSIDER), which is defined as the number of non-executive directors over the total number of board members. According to De Andres and Vallelado (2008), the number of TMT members is used as a measurement for TMT size (TMT SIZE). Consistent with Vafeas (1999) and Jackling and Johl (2009), the frequency of TMT meetings is the proxy for board activity (TMT MEETINGS), which is measured by the number of meetings held annually by the board of directors. In addition, the models include the interaction variables between the TMT characteristics and the recessionary period (OUTSIDER × CRISIS, TMT SIZE × CRISIS, and TMT MEETINGS × CRISIS), where CRISIS is a dummy variable that equals one when the year falls within the recessionary period. In this way, this research tests if there are differences in the effects of TMT characteristics on corporate variables due to the financial crisis.

In line with previous empirical research (Bhagat and Bolton, 2008; Cornett *et al.*, 2009; De Andres and Vallelado, 2008; Jackling and Johl, 2009; Pathan, 2009), the firm specific variables that could affect the two dependent variables are: the firm's market-to-book ratio that is given as a proxy for growth opportunities (GROWTH); total debt per unit of total assets as a proxy for capital structure (LEVERAGE); the natural log of total assets as an indicator for size (SIZE); a dummy variable as a proxy for chair duality that equals one if the chairman of the board of directors is also an executive officer (CHAIR DUALITY); and the total number of individuals, companies, and banks that own at least five per cent of the company's shares, given as a measurement for ownership (OWNERSHIP). Moreover, dummy variables are considered in order to reflect differences between years (YEAR).

Additionally, the corporate performance Equation (1) includes the ratio of sales to total assets as a measurement of a firm's business (SALES) (Tribo *et al.*, 2007), and the absolute value of discretionary accruals using a modified Jones (2001) model as a proxy of earnings management (EARNINGS_MANAGEMENT) (Cornett *et al.*, 2008). In the corporate risk taking Equation (2), the volume of shares divided by the total number of shares outstanding is used as an indicator for the frequency of trading (FREQUENCY TRADING) (Pathan, 2009). Furthermore, the dependent variable lags by one period to prevent potential endogeneity problems (Tribo *et al.* 2007; Deutsch *et al.* 2011). Given that dependent variables feature high levels of interrelationships, controls are made for this effect. According to previous literature (Andersen, 2008; Bowman, 1980), this study also addresses the possible interrelationships that could exist among the dependent variables used – corporate performance and corporate risk taking.

Empirical models

In line with previous studies (Cornett *et al.*, 2009; De Andres and Vallelado, 2008; Deutsch *et al.*, 2011; Jackling and Johl, 2009; Pathan, 2009; Vafeas, 1999), the empirical models are presented. The first equation contains performance as the dependent

variable, and the second equation corresponds to the regression of corporate risk taking:

$$\begin{aligned} PERFORMANCE_{i,t} = {} & \beta_0 + \beta_1 \cdot RISK_{i,t} + \beta_2 \cdot OUTSIDER_{i,t} \\ & + \beta_3 \cdot OUTSIDER_{i,t} \cdot CRISIS \\ & + \beta_4 \cdot TMT\_SIZE_{i,t} \\ & + \beta_5 \cdot TMT\_SIZE_{i,t} \cdot CRISIS \\ & + \beta_6 \cdot TMT\_MEETINGS_{i,t} \\ & + \beta_7 \cdot TMT\_MEETINGS_{i,t} \cdot CRISIS \\ & + \beta_8 \cdot PERFORMANCE_{i,t-1} \\ & + \beta_9 \cdot EARNINGS\_MANAGEMENT_{i,t} \\ & + \beta_{10} \cdot SALES_{i,t} + \beta_{11} \cdot GROWTH_{i,t} \\ & + \beta_{12} \cdot LEVERAGE_{i,t} \\ & + \beta_{13} \cdot SIZE_{i,t} + \beta_{14} \cdot CHAIR\_DUALITY_{i,t} \\ & + \beta_{15} \cdot OWNERSHIP_{i,t} \\ & + \sum_{J=1}^{6} \lambda_J \cdot YEAR_t \cdot + \eta_i + \upsilon_{it} \end{aligned} \tag{1}$$

$$\begin{aligned} RISK_{i,t} = {} & \beta_0 + \beta_1 \cdot PERFORMANCE_{i,t} + \beta_2 \cdot OUTSIDER_{i,t} \\ & + \beta_3 \cdot OUTSIDER_{i,t} \cdot CRISIS + \beta_4 \cdot TMT\_SIZE_{i,t} \\ & + \beta_5 \cdot TMT\_SIZE_{i,t} \cdot CRISIS + \beta_6 \cdot TMT\_MEETINGS_{i,t} \\ & + \beta_7 \cdot TMT\_MEETINGS_{i,t} \cdot CRISIS + \beta_8 \cdot RISK_{i,t-1} \\ & + \beta_9 \cdot FREQUENCY\_TRADING_{i,t} + \beta_{10} \cdot GROWTH_{i,t} \\ & + \beta_{11} \cdot LEVERAGE_{i,t} + \beta_{12} \cdot SIZE_{i,t} \\ & + \beta_{13} \cdot CHAIR\_DUALITY_{i,t} \\ & + \beta_{14} \cdot OWNERSHIP_{i,t} + \sum_{J=1}^{6} \lambda_J \cdot YEAR_t \cdot + \eta_i + \upsilon_{it} \end{aligned} \tag{2}$$

Estimation method

Previous studies (Cornett *et al.*, 2009; De Andres and Vallelado, 2008; Guest, 2009; Pathan, 2009) argue that corporate variables and TMT characteristics present endogeneity problems. This study applies the instrumental variable approach to eliminate the sources of endogeneity, in particular, the system GMM estimator proposed by Arellano and Bover (1995) and Blundell and Bond (1998). This estimator also addresses the presence of unobserved heterogeneity because it transforms the variables into first differences. Because the estimates are efficient and asymptotically robust in the presence of heteroscedasticity, this estimator has been implemented using a two-step methodology. The standard second-stage error correction proposed by Windmeijer (2005) is also applied.

Empirical results

Table I presents Pearson's pair-wise correlation matrix between the variables of this study. Tables II and III present the estimations of the multivariate analysis. Column (a) of Tables II and III presents the results without including the interaction variable between TMT characteristics and crisis. The effect of this interaction variable is presented in column (e).

Focusing on the effect of outside directors on TMT behaviour, the results indicate that higher proportions of outside directors on boards lead to lower levels of corporate performance ($\beta_3 = -0.07$, $p < 0.05$; in Equation (1)). This effect does not change during the recession, as the coefficient of interaction variable is not statistically significant. This finding does not support *H1a* presented in the theoretical framework, which predicted a greater involvement in strategic decisions by outsiders during stressful economic conditions. A possible explanation of this unexpected result is that some outside directors did not have the sufficient power, objectivity, expertise, or information to properly oversight on management (Ahrens *et al.*, 2011; Coles *et al.*, 2010; Francis *et al.*, 2012; Kirkpatrick, 2009; Yoshikawa *et al.*, 2014).

With regards to *H1b* related to corporate risk taking, the study observed that changes in the effect on risk of the percentage of outside directors depends on the economic context. The coefficient of outside directors is positive and statistically significant for the full sample period ($\beta_3 = 1.84$, $p < 0.05$; in Equation (2)). However, this result is important as it could support *H1b*, despite results that are slightly weak ($\beta_4 = -2.60$, $p < 0.10$; in Equation (2)) when the unstable environment is considered. One reason behind this result may be that a recession is a period in which the quality of corporate governance is likely to attract greater scrutiny (Francis *et al.*, 2012); therefore a higher percentage of outside directors may reflect the perception among financial market actors that firms have stronger corporate governance systems (Westphal and Graebner, 2010), avoiding corporate risks.

Therefore, this study finds that the outside directors negatively impact corporate performance and improve corporate risk taking in a recessionary period, when corporate governance practices are more visible. These findings are consistent with Westphal and Graebner (2010) results, showing that a higher percentage of outside directors may be more useful for explaining how certain corporate stakeholders perceive board of directors than for explaining how boards actually operate.

The results show that the size of a TMT does not affect corporate performance during an economic growth period. However, supporting *H2a*, TMT size becomes an important factor affecting corporate performance in a recession ($\beta_6 = 0.01$, $p < 0.01$; in Equation (1)). Aligned with the resource dependence theory, the results suggest that a larger TMT has more human capital to advise managers, leading to higher levels of corporate performance in a recession. This latter finding is consistent with the results of Essen *et al.* (2013), which found that during a crisis, small board size harms performance. This finding also complements the results found in Coles *et al.* (2008), that complex firms are likely to have greater advising requirements and, therefore, are more likely to benefit from a larger TMT. Thus, it is reasonable to argue that in an unstable environment, i.e., one with higher management complexity, firms have greater advisory needs, and a larger TMT leads to providing better advice and expertise to the board. In addition, members of a large TMT may take considerable effort to solve the economic problems of a firm to retain their posts and reputations.

Regarding risk, this study does not find evidence supporting *H2b* regarding the relationship between TMT size and corporate risk taking when comparing both periods. Therefore, the data does not support the theoretical assumption that a larger

Table I.
Bi-variate correlation matrix

Variable		1	2	3	4	5	6	7	8	9	10	11	12	13
PERFORMANCE	1	1.00												
RISK	2	−0.16***	1.00											
TMT SIZE	3	−0.09***	−0.38***	1.00										
OUTSIDER	4	−0.05**	−0.06**	0.04*	1.00									
TMT MEETINGS	5	−0.17***	0.12***	0.05**	0.12***	1.00								
GROWTH	6	0.07***	−0.02	−0.05*	−0.00	−0.02	1.00							
LEVERAGE	7	−0.08***	−0.12***	0.08***	0.05*	0.04*	−0.00	1.00						
SIZE	8	−0.12***	−0.35***	0.53***	0.16***	0.21***	−0.05**	0.08***	1.00					
CHAIR DUALITY	9	0.03****	−0.17***	0.07***	0.16***	−0.11***	−0.03	0.05**	0.10***	1.00				
OWNERSHIP	10	−0.03	0.07***	−0.06***	−0.02	0.07***	−0.03	0.02	−0.14***	0.01	1.00			
SALES	11	0.06***	−0.32***	0.39***	0.17***	0.09***	−0.01	−0.01	0.77***	0.09***	−0.13***	1.00		
EARNINGS MANAGEMENT	12	−0.43***	0.30***	−0.11***	−0.04*	0.09***	−0.00	−0.07*	−0.13***	−0.05**	0.05**	−0.15***	1.00	
FREQUENCY OF TRADING	13	0.05*	0.17***	−0.07***	0.03	0.02	0.00	−0.04*	−0.01	0.01	0.02	−0.01	0.04*	1.00

Notes: The table shows the Pearson's pair-wise correlation matrix between the variables used in this study. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; ****$p < 0.10$

Explanatory variables	Dependent variable: corporate performance (a)	(b)	(c)	(d)	(e)
RISK	−0.00030	−0.00032	−0.00035	−0.00036	−0.00040
	(0.00055)	(0.00055)	(0.00055)	(0.00053)	(0.00054)
OUTSIDER	−0.06178*	0.07647	−0.06047*	−0.05937****	−0.06560*
	(0.02950)	(0.22447)	(0.02948)	(0.03037)	(0.02846)
$OUTSIDER^2$		−0.08774			
		(0.14445)			
OUTSIDER × CRISIS					−0.00700
					(0.04035)
TMT SIZE	−0.00001	−0.00001	−0.00179	−0.00004	−0.00062
	(0.00120)	(0.00120)	(0.00812)	(0.00120)	(0.00127)
$TMT\ SIZE^2$			0.00007		
			(0.0035)		
TMT SIZE × CRISIS					0.00614**
					(0.00202)
TMT MEETINGS	−0.00135**	−0.00135**	−0.00132**	−0.00250****	−0.00164**
	(0.00050)	(0.00050)	(0.00051)	(0.00132)	(0.00048)
$TMT\ MEETINGS^2$				0.00004	
				(0.00005)	
TMT MEETINGS × CRISIS					0.00178*
					(0.00090)
$PERFORMANCE_{(t-1)}$	0.12285***	0.12296***	0.12261***	0.12181***	0.12167***
	(0.02548)	(0.02530)	(0.02568)	(0.02520)	(0.02433)
EARNINGS MANAGEMENT	−0.52707***	−0.52858***	−0.52865***	−0.52299***	−0.53554***
	(0.10511)	(0.10464)	(0.10528)	(0.10480)	(0.10858)
SALES	0.02962*	0.02973*	0.02896*	0.02880*	0.02648*
	(0.01354)	(0.01345)	(0.01351)	(0.01336)	(0.01247)
MTB	0.00026****	0.00026****	0.00027****	0.00027****	0.00025****
	(0.00016)	(0.00016)	(0.00016)	(0.00016)	(0.00014)
LEVERAGE	−0.00074**	−0.00074**	−0.00072**	−0.00074**	−0.00069**
	(0.00025)	(0.00025)	(0.00024)	(0.00024)	(0.00023)
SIZE	−0.03561**	−0.03560**	−0.03547**	−0.03453**	−0.03330**
	(0.01188)	(0.01181)	(0.01180)	(0.01200)	(0.01122)
DUAL CHAIR	−0.00285	−0.00272	−0.00267	−0.00264	−0.00203
	(0.00198)	(0.00199)	(0.00197)	(0.00197)	(0.00203)
OWNERSHIP	0.00015	0.00016	0.00014	0.00017	0.00019
	(0.00032)	(0.00032)	(0.00032)	(0.00032)	(0.00034)
CONSTANT	0.21677**	0.16231	0.23082**	0.21935**	0.23623**
	(0.07472)	(0.11536)	(0.07808)	(0.07504)	(0.07007)
Year dummies	Included	Included	Included	Included	Included
χ^2-statistics	265.29***	269.02***	265.89***	270.15***	299.62***
χ^2-statistics year dummies	20.50**	20.69***	20.43**	20.17**	21.85***
χ^2-statistics crisis-related variables					11.09*
AR_1	−4.29***	−4.29***	−4.30***	−4.28***	−4.34***
AR_2	0.10	0.09	0.12	0.01	0.13
No. obs.	1,768	1,768	1,768	1,768	1,768

Table II.
Determinants of corporate performance (Equation (1))

Notes: The table reports regression results of corporate performance using the two-step GMM system estimator. Standard errors with the robust adjustment proposed by Windmeijer (2005) are in brackets. The regression also included six dummy variables to reflect differences between years. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; ****$p < 0.10$

Explanatory variables	Dependent variable: corporate risk taking (a)	(b)	(c)	(d)	(e)
PERFORMANCE	−3.15552*	−3.14031*	−3.19293*	−3.11708*	−3.44730*
	(1.26267)	(1.26383)	(1.27402)	(1.25180)	(1.35321)
OUTSIDER	1.91115*	−1.52610	1.73545****	1.91947*	1.83794*
	(0.92989)	(7.00718)	(0.92831)	(0.93489)	(0.90520)
$OUTSIDER^2$		2.21679			
		(4.54897)			
OUTSIDER × CRISIS					−2.59503****
					(0.90520)
TMT SIZE	−0.00870	−0.00846	0.42718	−0.00932	−0.01419
	(0.04174)	(0.04181)	(0.26036)	(0.04221)	(0.04044)
$TMT\ SIZE^2$			−0.01859****		
			(0.01114)		
TMT SIZE × CRISIS					0.07847
					(0.07982)
TMT MEETINGS	0.05281*	0.05303*	0.05312*	0.07718****	0.02431
	(0.02283)	(0.02285)	(0.02325)	(0.04160)	(0.01963)
$TMT\ MEETINGS^2$				−0.00099	
				(0.00132)	
TMT MEETINGS × CRISIS					0.15262**
					(0.05026)
$RISK_{(t-1)}$	0.88184***	0.88230***	0.88144***	0.88144***	0.88506***
	(0.01434)	(0.01451)	(0.01448)	(0.01448)	(0.01397)
FREQUENCY TRADING	0.00001**	0.00001**	0.00001**	0.00001**	0.00001***
	(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00000)
MTB	−0.00244	−0.00247	−0.00265	−0.00238	−0.00249
	(0.00197)	(0.00198)	(0.00203)	(0.00198)	(0.00206)
LEVERAGE	0.01271	0.01277	0.00939	0.01234	0.01249
	(0.00797)	(0.00794)	(0.00769)	(0.00800)	(0.00766)
SIZE	−0.01887	−0.01573	−0.08770	−0.02475	0.05561
	(0.23258)	(0.23308)	(0.23893)	(0.23601)	(0.21958)
DUAL CHAIR	0.04899	0.04612	0.04189	0.04603	0.07029
	(0.07681)	(0.07710)	(0.07626)	(0.07654)	(0.07682)
OWNERSHIP	0.01155	0.01177	0.01176	0.01121	0.01064
	(0.01067)	(0.01075)	(0.01060)	(0.01049)	(0.01079)
CONSTANT	1.57640	2.83446	0.00852	1.53789	1.14046
	(2.42383)	(3.64249)	(2.64022)	(2.45996)	(2.34389)
Year dummies	Included	Included	Included	Included	Included
χ^2-statistics	8955.39***	8919.77***	8916.78***	8953.39***	8741.17***
χ^2-statistics year dummies	538.54***	536.05***	532.61***	533.63***	104.63***
χ^2-statistics crisis-related variables					13.81**
AR_1	−5.39***	−5.39***	−5.44***	−5.36***	−5.43***
AR_2	−0.31	−0.32	−0.26	−0.31	−0.36
No. obs.	2,230	2,230	2,230	2,230	2,230

Notes: The table reports regression results of corporate risk taking using the two-step GMM system estimator. Standard errors with the robust adjustment proposed by Windmeijer (2005) are in brackets. The regression also included six dummy variables to reflect differences between years. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; ****$p < 0.10$

Table III.
Determinants of corporate risk taking (Equation (2))

TMT takes more effort to reach consensus and reduce uncertainty in a recessionary period, as a larger TMT brings greater opportunity for more links to the external environment. This result does not support the results of McNulty *et al.* (2013), which found that, in a crisis period, larger boards are less effective than small boards in maintaining sufficient cash and near cash resources. This difference could be explained by the different proxies used to measure the perception of corporate risk taking between both studies.

The results show important differences in the effectiveness of TMT meetings, depending on the economic environment. The study observes that the frequency of meetings negatively impacts corporate performance during the expansion period ($\beta_7 = -0.002$, $p < 0.01$; in Equation (1)). However, the sign in the relationship is reversed during the recession ($\beta_8 = 0.002$, $p < 0.05$; in Equation (1)). Therefore, a clear change is observed between periods as predicted in *H3a*. This result is consistent with Jensen (1993) and Vafeas (1999), who argue that a TMT operates routinely without a broad-based and rich discussion, and establishes effective strategic management during periods of economic growth, while generating costs for the firm in terms of director meeting fees and travel expenses. In contrast, when performance declines TMT meetings are more active and effective in addressing corporate economic problems. This result is consistent with Francis *et al.* (2012), who found evidence of the positive impact of board meeting frequency on stock performance, suggesting that the board meeting is an important attribute of board efficacy during the financial crisis.

When focusing on *H3b*, this study finds that the frequency of TMT meetings positively impacts corporate risk taking and, therefore the hypothesis is not supported; however, this relationship is only statistically significant during the recession ($\beta_7 = 0.15$, $p < 0.01$; in Equation (2)). One of the possible reasons behind this result is that TMT meetings during a recession are more active regarding the aim of improving performance and are characterised by high levels of cognitive conflict. As McNulty *et al.* (2013) noted, a possible outcome of meeting in a crisis period is that boards are compelled to reduce investment and cut operating expenses in an attempt to improve liquidity. Thus, during these meetings the directors make important decisions that involve changes in the strategy of the firm to improve firm's operational efficiency, decisions that could affect the market's perceptions about the corporate risk taking.

Robustness checks

The robustness of the results has been investigated using different models. Prior studies (De Andres and Vallelado, 2008; Vafeas, 1999) suggest that the effects of TMT composition, size, and activity on corporate economic variables present a trade-off between advantages and disadvantages, and this trade-off could show up as a nonlinear relationship among the variables. Therefore, these potential nonlinear relationships – including the square of the TMT variables – have been considered in the models. The results are reported in columns (b), (c), and (d) of Tables II and III. It is observed that the coefficients of the new variables are not statistically significant, thus the previous models (Equations (1) and (2)) are supported. Additionally, Tables II and III for each regression show χ^2 statistics in for crisis-variables (χ^2-statistics crisis-related variables; in Tables II and III), which indicate that the estimated join coefficients of these variables are significantly different from 0. These tables also show the first- and second-order correlation tests (AR_1 and AR_2, in Tables II and III). The results of the correlation test do not reject the validity of the models.

Discussion and future research

This study has important implications for business practice and public policy, as well as providing evidence of the consequences of the onset of financial crisis on TMT behaviour. For business practice, this study reveals that the environmental conditions call for different behaviour from directors to fulfil their responsibilities. The onset of the financial crisis has stimulated the role of external TMT links, except the outside directors, to improve corporate performance. This finding casts doubt on the effectiveness of outside directors *per se*, without considering their background and their relationships with other governance mechanisms. Scholars should investigate whether those TMTs that have a higher percentage of outside directors who are socially independent from management with a variety of experience and market knowledge, are able to achieve successful results in unstable environments.

For public policy, this study suggests changes in normative and voluntary guidelines for improving good practices in the boardroom. Market actors generally assess the effectiveness of corporate governance by means of good corporate governance practices. However, corporate leaders can adopt organisational characteristics, such as a high percentage of outside directors, to conform to prevailing recommendations that manage stakeholder impressions about the governance of the firms, without causing substantive improvements in the actual governance of the firms (Westphal and Graebner, 2010). In addition, traditional TMT characteristics considered in international initiatives of good corporate governance do not lead to clear reductions in corporate risk taking. Hence, it seems necessary that legislation encourages greater diversity in the board, in terms of specific individual qualities (skill, experience, educational background), and establishes a risk culture to improve the quality of the board's work. Moreover, this study shows that contextual dynamics have influences on the effect of TMT characteristics, which have more evident impact on corporate performance during a recession than an expansionary period. Therefore, as not all outside directors are equally effective, it seems necessary that corporate governance codes provide more accurate recommendations, and a very in-depth analysis of their consequences, taking into account contextual factors.

As in any empirical study, the findings presented are subject to some limitations that open new areas for future research. First, the dependent variables – corporate performance and corporate risk taking – are proxies for the output of TMT effectiveness, i.e., they measure the quality of decision making and monitoring responsibilities developed by the TMT. However, there are other factors that can affect corporate variables, such as know-how and technology. Future studies should use alternative measures, for example, return on capital employed, and more fine-grained measurements of TMT effectiveness, both for group and individual assessments of performance.

Second, corporate risk taking is measured by the volatility of share returns. Although, Pathan (2009) states that this proxy reflects market perceptions on the risks inherent in the management of the firm, there are other measurements, such as beta factor and *z*-scores, that capture corporate risk taking. Future research could complement this study by utilising other measurements of corporate risk taking that capture the different types of risk faced by organisations as well as by including other non-financial risk factors, such as environmental or social dimensions.

Finally, the empirical study is confined to the most recent expansion period (2002-2007) and the most recent recession (2008); and the beginning of the time period is marked by the passing of the Sarbanes-Oxley Act. Larger samples of business cycles are clearly needed to test the robustness of the results. Future research is encouraged on how a financial crisis may influence TMT behaviour to improve the current corporate results.

Conclusions

In the context of an economic crisis, the level of interest of academics and practitioners in understanding how macroeconomic factors can affect TMT behaviour has resurged. The primary purpose of this study is to analyse the impact of the onset of the 2007 financial crisis upon TMT behaviour to achieve positive corporate outcomes. According to resource dependence theory, six hypotheses are proposed which assume that during a recession, those TMT with a high level of links to the external environment (a higher percentage of outside directors, a larger TMT, and a higher frequency of meetings) lead to improvements in corporate performance and a reduction in uncertainties. The hypotheses have been empirically tested using the firms listed on the S&P 500 Index during the period of 2002-2008. In terms of methodology, the two-step system GMM estimator has been used to address the potential unobserved heterogeneity, simultaneity, and dynamic endogeneity.

The main result reveals that during the recessionary period, those TMTs with greater external links associated with the size of the TMT and the frequency of meetings are more proactive in solving the economic problems of the firms than in the expansion period. This result is not supported when the external link variable is the "percentage of outside directors", which suggests that the outside directors may have social ties to management and may not always contribute external expertise. Focusing on corporate risk taking, the findings cannot support that large TMTs and a high frequency of meetings lead to reduced corporate risk taking, however, in the recessionary period, a high percentage of outside directors could be viewed by financial market actors as a sign of a strong corporate governance system, avoiding corporate risks.

In conclusion, this longitudinal study helps to elucidate how the changes in context due to the onset of financial crisis may influence the value of contributions by TMTs on corporate results. This study raises new and interesting research questions regarding the effectiveness of TMTs and the external environment.

Notes

1. The rule for dating recession periods is two consecutive quarters of decline in real GDP. However, this study took the dates provided by NBER (available at: www.nber.org/cycles.html#navDiv=1) as this organisation uses a more precise definition (Cardarelli *et al.*, 2011). According to NBER a recession is: "a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales".
2. TMT data are included in the Spencer Stuart US Board Index Report, which is made available through web site of Spencer Stuart (www.spencerstuart.com/research-and-insight)

References

Abebe, M.A. (2010), "Top team composition and corporate turnaround under environmental stability and turbulence", *Leadership & Organization Development Journal*, Vol. 31 No. 3, pp. 196-212.

Abebe, M.A. (2012), "Executive attention patterns, environmental dynamism and corporate turnaround performance", *Leadership & Organization Development Journal*, Vol. 33 No. 7, pp. 684-701.

Ahrens, T., Filatotchev, I. and Thomsen, S. (2011), "The research frontier in corporate governance", *Journal of Management & Governance*, Vol. 15 No. 3, pp. 311-325.

Andersen, T.J. (2008), "The performance relationship of effective risk management: exploring the firm-specific investment rationale", *Long Range Planning*, Vol. 41 No. 2, pp. 155-176.

Arellano, M. and Bover, S. (1995), "Another look at the instrumental variable estimation of error-component models", *Journal of Econometrics*, Vol. 68 No. 1, pp. 29-51.

Bargeron, L.L., Lehn, K.M. and Zutter, C.J. (2010), "Sarbanes-Oxley and corporate risk-taking", *Journal of Accounting and Economics*, Vol. 49 No. 1, pp. 34-52.

Bhagat, S. and Bolton, B. (2008), "Corporate governance and firm performance", *Journal of Corporate Finance*, Vol. 14 No. 3, pp. 257-273.

Blundell, R. and Bond, S. (1998), "Initial conditions and moment restrictions in dynamic panel data models", *Journal of Econometrics*, Vol. 87 No. 1, pp. 115-143.

Bowman, E.H. (1980), "A risk-return paradox for strategic management", *Sloan Management Review*, Vol. 21 No. 3, pp. 17-31.

Cardarelli, R., Elekdag, S. and Lall, S. (2011), "Financial stress and economic contractions", *Journal of Financial Stability*, Vol. 7 No. 2, pp. 78-97.

Cohen, D.A., Dey, A. and Lys, T.Z. (2013), "Corporate governance reform and executive incentives: implications for investments and risk taking", *Contemporary Accounting Research*, Vol. 30 No. 4, pp. 1296-1332.

Coles, J.L., Daniel, N.D. and Naveen, L. (2008), "Boards: does one size fit all?", *Journal of Financial Economics*, Vol. 87 No. 2, pp. 329-356.

Coles, J.L., Daniel, N.D. and Naveen, L. (2010), "Co-opted boards", working paper, Temple University, Philadelphia, PA.

COM (2010), "Corporate governance in financial institutitons: lessons to be drawn from the current financial crisis, best practices", Accompanying document to the Green Paper Corporate governance in financial institutions and remuneration policies, 284, European Commission, Brussels, 2 June.

Conyon, M.J. and Peck, S.I. (1998), "Board size and corporate performance: evidence from European countries", *The European Journal of Finance*, Vol. 4 No. 3, pp. 291-304.

Cornett, M.M., Marcus, A.J. and Tehranian, H. (2008), "Corporate governance and pay-for-performance: the impact of earnings management", *Journal of Financial Economics*, Vol. 87 No. 2, pp. 357-373.

Cornett, M.M., McNutt, J.J. and Tehranian, H. (2009), "Corporate governance and earnings management at large US bank holding companies", *Journal of Corporate Finance*, Vol. 15 No. 4, pp. 412-430.

Daily, C.M. (1996), "Governance patterns in bankruptcy reorganizations", *Strategic Management Journal*, Vol. 17 No. 5, pp. 355-375.

Davis, J.H., Schoorman, F.D. and Donaldson, L. (1997), "Towards a stewardship theory of management", *Academy of Management Review*, Vol. 22 No. 1, pp. 20-47.

De Andres, P. and Vallelado, E. (2008), "Corporate governance in banking: the role of the board of directors", *Journal of Banking and Finance*, Vol. 32 No. 12, pp. 2570-2580.

Deutsch, Y., Keil, T. and Laamanen, T. (2011), "A dual agency view of board compensation: the joint effects of outsider director and CEO stock options on firm risk", *Strategic Management Journal*, Vol. 32 No. 2, pp. 212-227.

Díaz-Fernández, M.C., González-Rodríguez, M.R. and Pawlak, M. (2014), "Top management demographic characteristics and company performance", *Industrial Management & Data Systems*, Vol. 114 No. 3, pp. 365-386.

Donaldson, I. and Davis, J. (1991), "Stewardship theory or agency theory: CEO governnace and shareholder returns", *Australian Journal of Management*, Vol. 16 No. 1, pp. 49-64.

Essen, M., Engelen, P.J. and Carney, M. (2013), "Does 'good' corporate governance help in a crisis? The impact of country and firm level governance mechanisms in the European financial crisis", *Corporate Governance: An International Review*, Vol. 21 No. 3, pp. 201-224.

Fama, E.F. and Jensen, M.C. (1983), "Separation of ownership and control", *Journal of Law and Economics*, Vol. 26 No. 2, pp. 301-325.

Ferrero-Ferrero, I., Fernández-Izquierdo, M.Á. and Muñoz-Torres, M.J. (2015), "Integrating sustainability into corporate governance: an empirical study on board diversity", *Corporate Social Responsibility and Environmental Management*, Vol. 22 No. 4, pp. 193-207.

Filatotchev, I. and Boyd, B. (2009), "Taking stock of corporate governance research while looking to the future", *Corporate Governance: An International Review*, Vol. 17 No. 3, pp. 257-265.

Finkelstein, S. and Hambrick, D.C. (1996), *Strategic Leadership: Top Executives and their Effects on Organizations*, West Publishing, St Paul, MN.

Francis, B.B., Hasan, I. and Wu, Q. (2012), "Do corporate boards matter during the current financial crisis?", *Review of Financial Economics*, Vol. 21 No. 2, pp. 39-52.

Grove, H., Patelli, L., Victoravich, L.M. and Xu, P.T. (2011), "Corporate governance and performance in the wake of the financial crisis: evidence from US commercial banks", *Corporate Governance: An International Review*, Vol. 19 No. 5, pp. 418-436.

Guest, P.M. (2009), "The impact of board size on firm performance: evidence from the UK", *The European Journal of Finance*, Vol. 15 No. 4, pp. 385-404.

Haspeslagh, P. (2010), "Corporate governance and the current crisis", *Corporate Governance*, Vol. 10 No. 4, pp. 375-377.

Hillman, A.J., Withers, M.C. and Collins, B.J. (2009), "Resource dependence theory: a review", *Journal of Management*, Vol. 35 No. 6, pp. 1404-1427.

Jackling, B. and Johl, S. (2009), "Board structure and firm performance: evidence from india's top companies", *Corporate Governance: An International Review*, Vol. 17 No. 4, pp. 492-509.

Jensen, M.C. (1993), "The modern industrial revolution, exit, and the failure of internal control systems", *Journal of Finance*, Vol. 48 No. 3, pp. 831-880.

Jensen, M.C. and Meckling, W.H. (1976), "Theory of the firm: managerial behaviour, agency costs and ownership structure", *Journal of Financial Economics*, Vol. 3 No. 4, pp. 305-360.

John, K., Litov, L. and Yeung, B. (2008), "Corporate governance and risk-taking", *The Journal of Finance*, Vol. 63 No. 4, pp. 1679-1728.

Jones, J. (1991), "Earnings management during import relief investigations", *Journal of Accounting Research*, Vol. 29, Autumn, pp. 193-228.

Kirkpatrick, G. (2009), "The corporate governance lessons from the financial crisis", *OECD Journal: Financial Market Trends* Vol. 1.

Klein, A. (2002), "Audit committee, board of director characteristics and earnings management", *Journal of Accounting and Economics*, Vol. 33 No. 3, pp. 375-400.

Lynall, M.D., Golden B.R. and Hillman, A.J. (2003), "Board composition from adolescence to maturity: a multitheoretic view", *The Academy of Management Review*, Vol. 28 No. 3, pp. 416-431.

McNulty, T., Florackis, C. and Ormrod, P. (2013), "Boards of directors and financial risk during the credit crisis", *Corporate Governance: An International Review*, Vol. 21 No. 1, pp. 58-78.

Miller-Millesen, J.L. (2003), "Understanding the behavior of nonprofit boards of directors: a theory-based approach", *Nonprofit and Voluntary Sector Quarterly*, Vol. 32 No. 4, pp. 521-547.

Nielsen, S. (2010), "Top management team diversity: a review of theories and methodologies", *International Journal of Management Reviews*, Vol. 12 No. 3, pp. 301-316.

Pathan, S. (2009), "Strong boards, CEO power and bank risk-taking", *Journal of Banking and Finance*, Vol. 33 No. 7, pp. 1340-1350.

Petrovic, J. (2008), "Unlocking the role of a board director: a review of the literature", *Management Decision*, Vol. 46 No. 9, pp. 1373-1392.

Pettigrew, A. (1992), "On studying managerial elites", *Strategic Management Journal*, Vol. 13 No. S2, pp. 163-182.

Pfeffer, J. (1972), "Size and composition of corporate boards of directors: the organization and its environment", *Administrative Science Quarterly*, Vol. 17 No. 2, pp. 218-228.

Pfeffer, J. and Salancik, G. (1978), *The External Control of Organisations: A Resource-Dependence Perspective*, Harper and Row, New York, NY.

Roberts, J., McNulty, T. and Stiles, P. (2005), "Beyond agency conceptions of the work of the non-executive director: creating accountability in the boardroom", *British Journal of Management*, Vol. 16 No. S1, pp. 5-26.

Tribo, J.A., Berrone, P. and Surroca, J. (2007), "Do the type and number of blockholders influence RandD investments? New evidence from Spain", *Corporate Governance: An International Review*, Vol. 15 No. 5, pp. 828-842.

Vafeas, N. (1999), "Board meeting frequency and firm performance", *Journal of Financial Economics*, Vol. 53 No. 1, pp. 113-142.

Westphal, J.D. and Graebner, M.E. (2010), "A matter of appearances: how corporate leaders manage the impressions of financial analysts about the conduct of their boards", *Academy of Management Journal*, Vol. 53 No. 1, pp. 15-44.

Windmeijer, F. (2005), "A finite sample correction for the variance of linear efficient two-step GMM estimators", *Journal of Econometrics*, Vol. 126 No. 1, pp. 25-51.

Yermack, D. (1996), "Higher market valuation of companies with a small board of directors", *Journal of Financial Economics*, Vol. 40 No. 2, pp. 185-221.

Yoshikawa, T., Zhu, H. and Wang, P. (2014), "National governance system, corporate ownership, and roles of outside directors: a corporate governance bundle perspective", *Corporate Governance: An International Review*, Vol. 22 No. 3, pp. 252-265.

Yunlu, D.G. and Murphy, D.D. (2012), "R&D intensity and economic recession investigating the moderating role of ceo characteristics", *Journal of Leadership & Organizational Studies*, Vol. 19 No. 3, pp. 284-293.

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