CHANGES IN THE INFLUENCE OF BOARD CHARACTERISTICS ON CORPORATE RESULTS DUE TO THE RECENT GLOBAL FINANCIAL CRISIS[♣]

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ABSTRACT

The main purpose of this study is to analyse the changes caused by the global financial crisis on the influence of board characteristics on corporate results, in terms of corporate performance, corporate risk-taking, and earnings management. Sample comprises S&P 500 listed firms during 2002-2008. This study reveals that the environmental conditions call for different behaviour from directors to fulfil their responsibilities and suggests changes in normative and voluntary guidelines for improving good practices in the boardroom.

Keywords: Global Financial Crisis, Corporate Governance, Board of Directors, Board Behaviour, Corporate Performance.

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1. INTRODUCTION

Research on the role of board of directors as a key corporate governance mechanism has attracted the attention of scholars and practitioners in recent years. The recent global financial crisis has reactivated the debate about the effectiveness of the board of directors as a safeguard for the interests of shareholders. However, despite the relevance of the concept 'board effectiveness' in the current context its meaning is unclear in corporate governance literature (Petrovic, 2008). In this study, following among others Payne et al. (2009) and Petrovic (2008), board effectiveness is defined as the ability of the board to fulfil and perform its roles effectively.

Two basic roles for the board of directors are generally accepted in the literature (Linck et al., 2008; Pathan and Skully, 2010): a strategic role and a monitoring role. The strategic board role is associated with the active participation of directors in the formulation of corporate strategy (Sundaramurthy and Lewis, 2003). This role is related to corporate performance and risk-taking, since the board of directors should help to develop a corporate strategy that maximises the economic value of the firm (De Andres and Vallelado, 2008; Payne, et al., 2009), while considering various risk factors and avoiding excessive risks (OECD, 2009; Pathan, 2009). The monitoring role of the board means controlling managerial decisions and limiting undesirable managerial behaviour (Fama and Jensen, 1983), thereby ensuring that the business is run in the best interests of shareholders.

Another current question concerning the board of directors is to determine the factors that can affect board effectiveness (Minichilli, et al., 2009; Payne, et al., 2009; Petrovic, 2008). Empirical studies have focused on examining the impact of board structure and composition on a proxy of board effectiveness, namely, corporate performance (Dalton et al. 1998; Dalton et al., 1999, De Andres et al. 2005; De Andres and Vallelado, 2008). There is also a recent stream of literature that emphasises social and psychological factors as key attributes of board effectiveness, such as the background diversity, cognitive conflicts and skill of directors (Minichilli et al., 2009; Minichilli et al., 2011; Payne et al. 2009; Roberts et al. 2005).

Following the traditional approach, this study is focused on several board characteristics as factors that can affect the effectiveness of a board: composition, size, and activity. The first reason for using these variables is related to their direct link with the main recommendations for boards in the international codes of good corporate governance and regulations (Dey, 2010). As Roberts et al. (2005) highlight, these standards are expected to lend legitimacy to corporations. The second reason is that these variables are directly observable and homogenously measured across different companies, and so it is a simple task to make comparisons and extract results.

Despite a substantial body of empirical research regarding the relationship between board characteristics and effectiveness, the results to date are inconclusive. Some authors (Filatotchev and Boyd, 2009; Hillman et al., 2009) explain these inconclusive results due to the one-dimensional perspective theoretically adopted by this research, which overlooks the contextual factors affecting the behaviour of the board of directors and their causes. According to Haspeslagh (2010) the most important current external factor that can affect board behaviour is the turbulent economic environment due to the global financial crisis.

This paper specifically investigates aspects of corporate governance linked to board weaknesses of the recent global financial crisis that could affect board behaviour. The idea that changes in macroeconomic context may affect the nature and value of contributions made by boards of directors to corporate results has motivated our research question: has the most recent global financial crisis caused changes in the influence of board structure characteristics in corporate results, in terms of corporate performance, corporate risk-taking and earnings management?

The paper is expected to contribute to the theoretical and empirical understanding of corporate governance related to the recent global financial crisis and board behaviour. Another novelty of this paper is related to the introduction in the analysis of the corporate risk-taking variable, since the great majority of previous empirical papers in this field have focused on corporate performance without introducing risk variables. In terms of methodology, our use of a longitudinal panel study – S&P 500 index listed firms over the period 2002-2008 – improves previous research results based on cross-sectional studies. In

addition, the applied two-step GMM estimator system addresses the potential unobserved heterogeneity, simultaneity, and dynamic endogeneity.

This paper is divided into six sections. After this introduction, a review of the theoretical framework is provided. 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 and concludes the paper.

2. THEORETICAL FRAMEWORK

Previous studies have traditionally adopted the agency theory (Fama and Jensen, 1983; Jensen and Meckling, 1976). However, several authors (Aguilera and Jackson, 2003; Filatotchev et al., 2008) have remarked on the inability of this theory to explain the context dependence of board of directors and its underlying decision-making responsibility. For this reason, a growing number of studies suggest that the agency framework should be used in conjunction with complementary theories (Daily et al., 2003; Filatotchev and Brian, 2009; Huse, 2005; Roberts et al., 2005), such as stewardship (Davis et al., 1997; Donaldson and Davis, 1991) and resource dependence theories (Pfeffer, 1972; Pfeffer and Salancik, 1978).

Donaldson and Davis (1991) highlight that agency theory and stewardship theory may be valid for some phenomena but invalid for others. Lynall et al. (2003) suggest that it is not necessary to choose one theoretical framework over another, but rather, identify under which conditions each theoretical view is most applicable. The resource dependence theory can help to introduce an important debate about the relationship between environmental and board characteristics, since board changes reflect new environmental needs (Hillman et al., 2000; Hillman et al., 2009).

The research question in this paper is to analyse the changes due to the most recent global financial crisis on the influence of board characteristics on corporate results, in terms of

corporate performance, corporate risk-taking, and earnings management. To empirically test this question, nine hypotheses, presented in relative terms, have been developed on the effect of board characteristics for each corporate result. The resource dependence theory enables the effect of external economic environments on these basic board roles to be taken into account. Thus, the changes in the relationships among different economic contexts are predicted according to the applicability of the resource dependence theory.

2.1. STRATEGIC BOARD ROLE: CORPORATE PERFORMANCE AND CORPORATE RISK-TAKING

The relationship between board characteristics and corporate performance or corporate risk-taking has been widely examined in the corporate governance literature (Bargeron et al. 2010; Cheng, 2008; Dalton et al., 1998; De Andres and Vallelado, 2008; Jackling and Johl, 2009; Nicholson and Kiel, 2007; Pathan, 2009; Petrovic, 2008; Vafeas, 1999).

Based on the strategic board role, 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, in unstable environments, resource dependence theory becomes more relevant than in stable environments, since the board is viewed as a body that links the corporation with its environment and resource dependence theory could help explain how corporations reduce uncertainties (Hillman et al., 2009).

Focusing on corporate composition, the resource dependence theory suggests that outside directors who are prestigious in their professions and communities can be providers of timely information for executives. Muth and Donaldson (1998) suggest that 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 successfully emerge from difficult situations.

Therefore, the following theoretical hypotheses are proposed:

Hypothesis 1a: In a recession period (unstable environment), a higher percentage of outside directors leads to a higher level of performance, as compared with an expansion period (stable environment).

Hypothesis 1b: In a recession period (unstable environment), a higher percentage of outside directors leads to lower levels of risk-taking, as compared with an expansion period (stable environment).

The number of directors is another factor that can affect the behaviour of a board (Dalton et al., 1999; Cheng, 2008). The resource dependence theory argues that larger boards bring greater opportunity for more links to the external environment, especially in unstable economic periods, and hence access to resources that may improve corporate performance and reduce uncertainty (Korac-Kakabadse et al., 2001; Pfeffer, 1972; 1973; Provan, 1980; Siciliano, 1996; Zahra and Pearce, 1989).

Consequently, the following hypotheses are presented:

Hypothesis 2a: In a recession period (unstable environment), a larger board leads to a higher level of performance, as compared with an expansion period (stable environment).

Hypothesis 2b: In a recession period (unstable environment), a larger board leads to a lower level of corporate risk-taking, as compared with an expansion period (stable environment).

A significant number of studies (Jackling and Johl, 2009; Vafeas, 1999; Xie et al. 2003) use the frequency of board meeting as a measure of board activity, since it is closely related to the efforts made by directors to improve the management of the firm. Theoretically, board meetings may be an important resource to link the external environment with the governance of the company, and therefore the frequency of board 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 boards seem to be relatively inactive in stable environments and remark that boards increase their activity in order to symbolise a response to poor performance.

Thus, the following hypotheses are expected:

Hypothesis 3a: In a recession period (unstable environment), a higher frequency of board meetings leads to higher levels of performance, as compared with an expansion period (stable environment).

Hypothesis 3b: In a recession period (unstable environment), a higher frequency of board meetings leads to a lower level of corporate risk-taking, as compared with an expansion period (stable environment).

2.2. MONITORING BOARD ROLE: EARNINGS MANAGEMENT

Numerous studies have analysed, from theoretical and empirical perspectives, the relationship between board characteristics and earnings management (Beasley, 1996; Bugshan, 2005; García-Meca and Sánchez-Ballesta, 2009; Klein, 2002; Xie et al. 2003).

There are not current developments in resource dependence theory that can support the existence of changes due to macroeconomic variables – such as the recent economic recession – on the influence of board characteristics on earnings management. Dechow, Ge, and Schrand (2010) remark that they only found a paper (Liu and Ryan, 2006) that primarily examines macroeconomic factors (e.g. business cycle) as a determinant of earnings quality. Liu and Ryan (2006) only focus on the banking industry and remark that the asymmetry detected in their results may be firm-specific or industry-level rather than a macroeconomic phenomenon. Dechow, et al. (2010) do not find any studies that hypothesise macroeconomic conditions as a determinant for earnings quality and suggest this topic as an opportunity for future research.

To our knowledge, there are no empirical papers that test the relationship between board characteristics and earnings management at a multi-industry level and under different macroeconomic conditions. Consequently, the following hypotheses are developed in the context of the inexistence of theoretical or empirical results that support differences in the relationship between the board characteristics and earnings management under various economic contexts:

Hypothesis 1c: In a recession period (unstable environment), there are no differences in the impact of the percentage of outside directors on earnings management as compared with an expansion period (stable environment).

Hypothesis 2c: In a recession period (unstable environment), there are no differences in the impact of board size on earnings management as compared with an expansion period (stable environment).

Hypothesis 3c: In a recession period (unstable environment), there are no differences in the impact of the frequency of meetings on earnings management as compared with an expansion period (stable environment).

3. DATA AND METHODOLOGY

3.1. SAMPLE

The main objective of this study is to examine the changes in the impact of board characteristics on corporate variables due to the most recent global financial crisis. As a consequence of it was the most recent recession period. Therefore, to analyse these changes the sample period spans from 2002 to 2008, taking into account the most recent periods of growth and recession according to the National Bureau of Economic Research (NBER). Therefore, the sample period from 2002 to 2007 corresponds with the most recent expansion business cycle and 2008 with the most recent contraction cycle.

The sample contains firms listed in Standard and Poor's 500 Index (S&P 500) during the period 2002-2008. This index represents a high percentage of all U.S. publicly traded companies and it is usually considered the benchmark for U.S. equity performance (Rai and Bhanumurthy, 2004). In addition, all the firms examined are affected by the same external corporate governance mechanisms such as legislation or historical and cultural factors, making them homogeneous in terms of the corporate governance environment.

Financial, accounting, and ownership data has been extracted from the Thompson One Banker database. The board characteristics have been obtained through the annual Spencer Stuart Board Index. The sample is an unbalanced panel of 3448 firm-year observations. Nonetheless, the information of board characteristics is fully available only for 2651 firm-year observations, thus, it considerably reduces the final sample. With the aim of applying the system-GMM methodology, a balanced panel is required in the estimations, which differs depending on the available number of observations that fulfil all the variables used in each model.

3.2. VARIABLES

Table 1 reports descriptive statistics on the variables used in the empirical analysis.

Insert table 1 about here

Dependent variables

This study is focused on three key corporate variables: namely, corporate performance, corporate risk-taking, and earnings management.

Following Cornett et al. (2009), Muth and Donaldson (1998), and Jackling and Johl (2009), this paper uses an accounting performance measurement as a proxy for the performance variable (PERFORMANCE), specifically, earnings before extraordinary items and after taxes to total assets (EBEIAT), since this ratio reflects corporate performance more faithfully than measurements based on market data. In this regard, several authors (Bhagat and Bolton, 2008; Conett et al. 2009) argue that this accounting measurement is more focused on current performance and is not susceptible to investor anticipation since the EBEIAT is not tied to share prices.

Despite using an accounting measurement for corporate performance in this study, the levels of risk measured by accounting measurements could be biased by earnings smoothing, since low earnings volatility may indicate active earnings smoothing rather than low real volatility (John et al., 2008). Thus, according to Bergeron et al. (2010), Anderson

and Fraser (2000), Pathan (2009), and Leaven and Levine (2009) corporate risk-taking (RISK) is measured as the standard deviation of share returns. As Pathan (2009) remarks, this measurement captures the overall variability in firm share returns and reflects the market's perceptions about the risks inherent in a firm's assets, liabilities, and off-balance-sheet positions, and this is the risk that managers usually monitor.

With respect to earnings management, there are several ways to calculate a proxy of managerial opportunism; however, the modified version of the Jones model proposed by Dechow et al. (1995) has been widely used in the literature (Bartov et al., 2001; Cornett et al., 2008). Following Cornett, et al. (2008) and Klein (2002), in this study earnings management (EARNINGS MANAGEMENT) has been approximated by the absolute value of discretionary accruals using a modified Jones model.

Independent variables

Regarding board characteristics, the study focuses on the following: board composition, board size, and board activity.

According to De Andres and Vallelado (2008) and Jackling and Johl (2009), board 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.

Following De Andres and Vallelado (2008) and Muth and Donaldson (1998) the number of board members is used as a measurement for board size (BOARD SIZE).

Consistent with Vafeas (1999), Xie et al. (2003) and Jackling and Johl (2009), the frequency of board meetings is the proxy of board activity (BOARD MEETINGS), which is measured through the number of meetings held annually by the board of directors.

In addition, we include the interaction variables between the board characteristics and crisis (OUTSIDER*CRISIS, BOARD SIZE*CRISIS, and BOARD MEETINGS*CRISIS), where CRISIS is a dummy variable which is equal to one when the year falls in the recession period. As Aguinis and Gottfredson (2010) argue, the interaction effects state the direction or strength of the relationship depends upon other factors. Thus, using interaction effects,

this research tests whether there are differences in the effects of board characteristics on corporate variables due to the recent global financial crisis.

Control variables

In this study, following previous empirical research (Bhagat and Bolton, 2008; Bargeron et al., 2010; Cornett et al., 2009; De Andres and Vallelado, 2008; Hu and Izumida, 2008; Jackling and Johl, 2009; Pathan, 2009), the firm specific variables that could affect the three 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 percent of the company's shares are given as a measurement for ownership (OWNERSHIP). Moreover, dummy variables are considered 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) (De Andres, Azofra and Lopez, 2005; Tribo et al., 2007); 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); and in the earnings management equation (3) the cash earnings net of capital expenditure and total dividends paid to total assets is used as a proxy of free cash flow (FREE CASH FLOW) (Chung et al., 2005; Gul and Tsui, 2001).

Furthermore, the dependent variable is lagged one period to prevent potential endogeneity problems (Tribo et al. 2007; Deutsch et al. 2010), and given that dependent variables feature high levels of interrelationships, controls are made for this effect. Previous literature has been considered to control these possible effects. Scholars from a variety of disciplines have explored the relationship between performance and risk (Bowman, 1980; Fama and French, 1992; Sharpe, 1964), and earnings management and corporate performance

(Cornett et al, 2009; Gul and Tsui, 2001), thus, these relationship are considered in equations (1), (2), and (3).

3.3. EMPIRICAL MODELS

The main specification is aimed to test changes in the effect of board characteristics on corporate variables due to the global financial crisis.

The first equation contains performance as the dependent variable. Previous studies show that board characteristics may affect corporate performance (Cornett et al. 2009; De Andres et al., 2005; De Andres and Vallelado, 2008; Jackling and Johl, 2009; Vafeas, 1999).

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

The second equation corresponds to the regression of corporate risk-taking. Pathan (2009) establishes a relationship between strong boards (i.e. small board size and more outside directors) and corporate risk-taking. Bargeron et al. (2010) examines the effect of outsiders on corporate risk-taking after SOX. Deutsch et al. (2010) consider that outside directors can affect corporate risk-taking. Although, to our knowledge, there are no empirical papers that directly include board activity in the equation of corporate risk-taking. In this work, board activity is considered as another variable that may determine board effectiveness and, therefore, it may also affect corporate risk-taking.

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

The third equation is conducted on the determinants of earnings management. Following Cornett et al. (2008), Karamanou and Vafeas (2005) and Xie et al. (2003), it is expected that board composition, board size, and board activity are related to the monitoring board role.

$$\begin{aligned} EARNINGS\_MANAGEMENT_{i,t} = {} & \beta_0 + \beta_1 \cdot PERFORMANCE_{i,t} + \beta_2 \cdot RISK_{i,t} + \beta_3 \cdot OUTSIDER_{i,t} \\ & + \beta_4 \cdot OUTSIDER_{i,t} \cdot CRISIS + \beta_5 \cdot BOARD\_SIZE_{i,t} \\ & + \beta_6 \cdot BOARD\_SIZE_{i,t} \cdot CRISIS + \beta_7 \cdot BOARD\_MEETINGS_{i,t} \\ & + \beta_8 \cdot BOARD\_MEETINGS_{i,t} \cdot CRISIS + \beta_9 \cdot EARNINGS\_MANAGEMENT_{i,t-1} \\ & + \beta_{10} \cdot FREE\_CASH\_FLOW_{i,t} + \beta_{11} \cdot GROWTH_{i,t} + \beta_{12} \cdot LEVERAGE_{i,t} + \beta_{13} \cdot SIZE_{i,t} \\ & + \beta_{14} \cdot CHAIR\_DUALITY_{i,t} + \beta_{15} \cdot OWNERSHIP_{i,t} + \sum_{J=1}^{6} \lambda_J \cdot YEAR_t \cdot + \eta_i + \upsilon_{it} \end{aligned} \quad (3)$$

Estimation method

Given the feature of the data (cross-sectional and time-series data) we use the panel data methodology. In this case, we have to consider the existence of latent unobservable effects specific to each firm (η_i). Previous studies (Cornett et al. 2009; De Andres and Vallelado, 2008; Pathan, 2009; Pathan and Skully, 2010) argue that variables used in this research present endogeneity problems. Wooldridge (2002) suggests that the general approach for estimating models that present problems of endogeneity is the use of instruments. In this regard, an instrumental variable approach is applied to address the endogenity problem; in particular, the system-GMM estimator proposed by Arellano and Bover (1995) and Blundell and Bond (1998). This estimator has been implemented using a two-step methodology, since the estimates are efficient and asymptotically robust in the presence of heteroscedasticity. The standard second-stage error correction proposed by Windmeijer (2005) is also applied.

4. EMPIRICAL RESULTS

Tables 5, 6, and 7 present regression results for corporate performance (equation 1), corporate risk-taking (equation 2) and earnings management (equation 3) as a function of board characteristics and other control variables. Column (a) of Tables 2, 3, and 4 presents

the results without including the interaction variable between board characteristics and crisis. The effect of this interaction variable is presented in column (e).

Insert table 2 about here

Insert table 3 about here

Insert table 4 about here

4.1. STRATEGIC BOARD ROLE: CORPORATE PERFORMANCE AND CORPORATE RISK-TAKING.

Focusing on the effect of outside directors on board behaviour, the results indicate that higher proportions of outside directors on boards lead to lower levels of corporate performance (β_3 = -0.07, p < 0.05; in equation 1), however, this effect does not change during the recession period, since the coefficient of interaction variable is not statistically significant. This finding does not support hypothesis 1a presented in the theoretical framework, which predicted a greater involvement in strategic decisions by outsiders during stressful economic conditions.

With regards to the second hypothesis 1b related to corporate risk-taking, we observe 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 (β_3 = 1.84, p < 0.05; in equation 2), however, although the results are slightly weak (β_4 = -2.60, p < 0.10; in equation 2) when we consider an unstable environment, this result is important as it could support hypothesis 1b (a higher percentage of outside directors leads to lower levels of corporate risk-taking as compared with an expansion period). One reason behind this result may be that in a recession, outside directors can be providers of timely information that helps executives be more sensitive to regulatory compliance and so avoid any default by being more conservative and prudent.

The results show that the number of directors on a board does not affect corporate performance during the economic growth period. However, supporting hypothesis 2a, board size becomes an important factor affecting corporate performance in a recession (β_6 = 0.01, $p < 0.01$; in Equation 1). In this regard, the members of large boards make a considerable effort to solve the economic problems of a firm in order to keep their posts and reputations. Aligned with our multitheoretic approach, in a recession period, resource dependence theory suggests that larger boards have more human capital to advise managers, leading to higher levels of corporate performance.

Regarding risk, we do not find evidence supporting hypothesis 2b about the relationship between board size and corporate risk-taking when comparing both periods. Therefore, our data does not support the theoretical assumption that larger boards make more effort to reach consensus and reduce uncertainty in a recession period, since larger boards bring greater opportunity for more links to the external environment.

The results show important differences in the effectiveness of board meetings depending on the economic environment. We observe that the frequency of meetings negatively impacts on corporate performance during the expansion period (β_7 = -0.002, $p < 0.01$; in equation 1). However, the sign of the relationship is reversed during the recession (β_8 = 0.002, $p < 0.05$; in equation 1). Therefore, a clear change is observed between periods as predicted in hypothesis 3a. This result is consistent with Jensen (1993) and Vafeas (1999), who argue that boards operate routinely and do little to discuss and establish an 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, board meetings are more active and effective in facing corporate economic problems.

When focusing on hypothesis 3b, we find that the frequency of board meetings positively impacts on corporate risk-taking and, therefore the hypothesis is not supported; however, this relationship is only statistically significant during the recession (β_7 = 0.15, $p < 0.01$; in equation 2). One of the possible reasons behind this result could be that board meetings during a recession are more active with the aim of improving performance. Thus, during

these meetings the directors make important decisions that involve changes in the strategy of the firm in order to find new procedures and markets to improve performance.

4.2. MONITORING BOARD ROLE: EARNINGS MANAGEMENT.

The results support hypothesis 1c, since it is found evidence of not significant change due to the global financial crisis in the influence that higher proportions of outside directors have on earnings management. Higher proportions of outside directors improve the objective judgement of the board and negatively impact on managerial opportunism, although this relationship is weakly supported (β_3 = -0.06, $p < 0.10$; in equation 3).

To examine the eighth hypothesis (Hypotesis 2c), the relationship between board size and earnings management has been analysed. There is no evidence to support this hypothesis, since in unstable period larger boards lead to higher levels of earnings management (β_6 = 0.004, $p < 0.01$; in equation 3). One possible explanation is that in a recession directors of large boards may focus their attention on the strategic board role to solve poor performance and present better company results in order to maintain their positions – meanwhile overlooking other important responsability such as monitoring managerial opportunism.

Hypothesis 3c is supported by the results and these indicate that the effect of the frequency of meetings on earnings management is negative and significant (β_7 = -0.001, $p < 0.05$; in equation 3) and does not show significative differences due to the introduction of a recession period in the analysis. The results show that frequent board meetings actively monitor managerial behaviour.

4.3. ROBUSTNESS CHECKS

The robustness of the results has been investigated using different models. Prior studies (Muth and Donaldson, 1998; De Andres and Vallelado, 2008; Vafeas, 1999) suggest that the effects of board composition, board size, and board activity on corporate economic variables present a trade-off between advantages and disadvantages. De Andres and Vallelado (2008) suggest that this trade-off could show up a nonlinear relationship among

the variables. Therefore, these potential nonlinear relationships – including the square of the board variables – have been considered on the models. The results are reported in columns (b), (c) and (d) of Tables 2, 3 and 4. It is observed that the coefficients of the new variables are not statistically significant, thus the previous models (equations 1-3) are supported.

Additionally, Tables 2, 3 and 4 show the joint statistical significance of the crisis-related variables that control the effect of the recession period for each regression. Thus, the results support the idea that board effectiveness depends on the economic environment. Focusing on the autocorrelation test, the null hypothesis that errors are not second-order serial autocorrelations cannot be rejected. Consequently, these results do not reject the validity of the empirical study.

5. DISCUSSION AND FUTURE RESEARCH

5.1. IMPLICATIONS FOR THEORY

Prior literature has put much emphasis on explaining how board characteristics can affect firm performance (Dalton et al., 1998; De Andres and Vallelado, 2008; Jackling and Johl, 2009), as well as earnings management (García-Meca and Sánchez-Ballesta, 2009; Klein, 2002; Xie et al. 2003). However, the regulation initiatives and good corporate governance codes, such as the SOX and OCDE principles, have stressed management responsibility for establishing and maintaining adequate internal controls in order to avoid excessive risk. In this regard, this research also contributes to the existing corporate governance literature by examining how corporate risk-taking is theoretically and empirically affected by board characteristics.

Board effectiveness influences multiple corporate variables and at the same time these are interrelated. Additionally, the corporation is an open system, dependent on contingencies in the external environment (Hillman et al., 2009; Pye and Pettigrew, 2005). In this sense, the study also analyses the board of directors from an open and dynamic perspective. In

particular, the study states that different macroeconomic contexts may affect the nature and value of the contribution made by boards of directors to the results of a firm. We believe that this study helps establish a new theoretical approach that is much closer to the true conduct and real behaviour of boards of directors.

5.2. IMPLICATIONS FOR PRACTICE

The results have important implications for business practice and public policy, as well as adding evidence of the consequences of the last financial crisis on the behaviour of boards of directors. For business practice, this study reveals that the environmental conditions call for different behaviour from directors to fulfil their responsibilities. After the global financial crisis, large boards and board activity have stimulated boards to solve the economic problems of firms. In a recession it seems that large boards aim at maintaining their posts by focusing attention on the strategic board role, solving problems of poor performance. Meanwhile, other important responsabilities such as monitoring managerial opportunism are overlooked. However, in all economic contexts, the effect of outside directors may lead to worsen performance and limit managerial opportunism.

For public policy, this study suggests changes in normative and voluntary guidelines for improving good practices in the boardroom. This study shows that traditional board characteristics considered in international initiatives of good corporate governance do not lead to reductions in corporate risk-taking in economic growth period. Hence, it seems necessary, that legislation encourages greater diversity in the board, in terms of specific individual qualities (skill, experience, educational background), and establishing a risk culture to improve the quality of the board's work.

Additionally, investors take compliance with the provisions of a corporate code of governance as a reference. Therefore, these codes should use other board provisions to better reflect an integrated view of the effectiveness of board of directors, as well as considering the external context of the firm. However, a full understanding and practical evaluation of board effectiveness is a task for future research.

5.3. LIMITATIONS AND FUTURE RESEARCH

As in any empirical study, the findings presented are subject to some limitations that open new areas for future research. Firstly, the dependent variables – corporate performance, corporate risk-taking and corporate earnings – are proxies for the output of board effectiveness, i.e. they measure the quality of decision-making and monitoring responsabilities developed by the board. However, although board effectiveness is a key issue for the success of the corporation, there are other factors that can affect corporate variables, such as know-how and technology. Future studies should use more fine-grained measurements of board effectiveness, both for group and individual assessments of performance.

Secondly, the corporate governance codes providing recommendations for structural elements of boards (Payne et al. 2009), however, one stream of the literature (Minichilli et al., 2009; Payne et al. 2009; Roberts et al. 2005) emphasises other predictors (such as skills, experience, or background diversity) that better describe efforts by the directors. An important line of future research is to examine in more detail the individual directors and board characteristics and how these characteristics can help boards fulfil their tasks successfully, as well as analysing relationships on specialised committees.

Finally, the empirical study is confined to the most recent expansion period (2002-2007) and the most recent recession (2008). Larger samples of business cycle are clearly needed to test the robustness of the results. Future research is encouraged on how the most recent financial crisis may influence board behaviour in order to improve the current corporate results.

6. CONCLUSION

In the context of the recent financial crisis, the interest of academics and practitioners in understanding how macroeconomic factors can affect the behaviour of directors when fulfilling their responsibilities has resurged. The main purpose of this study is to analyse the changes caused by the recent global financial crisis on the influence of board characteristics

on corporate results, in terms of corporate performance, corporate risk-taking, and earnings management.

Using the firms listed on the S&P 500 index over the period 2002-2008, the hypotheses proposed have been empirically tested. In terms of methodology, the Arellano and Bover (1995) and Blundell and Bond (1998) two-step system GMM estimator has been used to address the potential unobserved heterogeneity, simultaneity, and dynamic endogeneity.

The main results reveal that during economic growth period, high percentages of outside directors and frequency of board meetings may lead to a trade-off in the board roles – strategic and monitoring -, worsening corporate performance and limiting the discretional behaviour of executives. However, after the global financial crisis, boards became more active in solving the economic problems of firms, and in large boards the trade-off is in the opposite direction than in economic growth period. During the recession it seems that large boards focus their attention on their strategic role, and aim to solve poor performance in order to maintain the position of the directors. At the same time, these directors may overlook other important responsabilities such as monitoring managerial opportunism.

Focusing on corporate risk-taking, the findings cannot support that large boards and high frequency of meetings do not lead to reduce corporate risk-taking, however, in the recession period a high percentage of outside directors seems to lead to lower levels of corporate risk taking as compared with an expansion period. Thus, outside directors seem to be providers of timely information that helps executives be more sensitive to regulatory compliance and so seek to avoid any default by acting conservatively and prudently.

In conclusion, this longitudinal study offers insights about how the changes in context due to the most recent global financial crisis may influence the value of contributions by board of directors on corporate results. This study opens a broad range of interesting research questions regarding the effectiveness of boards of directors before and after a financial crisis.

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TABLES

Table 1. Descriptive statistics

PROXY (VARAIABLE)	Obs.	Mean	S.D.	25th P.	50th P.	75th P.	Skw.	Kurt.
EBEIAT/A (PERFORMANCE)	3448	0.06	0.11	0.02	0.05	0.10	-10.42	231.41
ABSOLUTE % VALUE OF DISCRETIONARY (EARNINGS MANAGEMENT)	2836	0.04	0.06	0.01	0.03	0.05	5.94	58.32
S.D. STOCK RETURN (RISK)	3049	0.28	0.10	0.20	0.25	0.33	1.21	4.46
BOARD SIZE (BOARD SIZE)	2663	10.83	2.45	9.00	11.00	12.00	0.84	6.22
% OUTISDE DIRECTORS (OUTISDER)	2651	0.81	0.10	0.75	0.83	0.90	-1.12	4.23
NUMBER BOARD MEETINGS (BOARD MEETINGS)	2663	8.27	3.58	6.00	7.00	10.00	2.47	15.38
MARKET TO BOOK VALUE (GROWTH)	3369	0.04	0.12	0.02	0.03	0.04	5.80	407.11
DEBT/A (LEVERAGE)	3441	0.24	0.19	0.11	0.22	0.35	2.44	32.08
LN(TOTAL ASSET) (SIZE)	3448	9.19	1.46	8.12	9.08	10.12	0.47	3.75
CHAIR DUALITY DUMMY (CHAIR DUALITY)	3346	0.64	0.48	0.00	1.00	1.00	-0.57	1.33
NUMBER OWNERS 5% (OWNERSHIP)	3232	4.42	2.98	2.00	4.00	6.00	1.05	5.00
LN (SALES) (SALES)	3467	8.70	1.36	7.80	8.69	9.55	-0.37	5.70
CASH EARNINGS NET/A (FREE CASH FLOW)	3425	0.17	1.96	0.00	0.04	0.10	9.46	325.31
VOLUMEN SHARES/NUMBER SHARES (FREQUENCY OF TRADING)	3197	95812	169059	33278	57344	100964	9.30	127.70

The table shows the descriptive statistics of the data included in the unbalanced panel. We calculate all values from the firms listed in S&P 500 Index from 2002 to 2008. Source: Thompson One Baker database and Spencer Stuart Board Index.

Table 2.Determinants of Corporate Performance (equation 1)

EXPLANATORY VARIABLES	DEPENDENT VARIABLE: CORPORATE PERFORMANCE				
	(a)	(b)	(c)	(d)	(e)
EARNINGS MANAGEMENT	-0.52707***	-0.52858***	-0.52865***	-0.52299***	-0.53554***
	(0.10511)	(0.10464)	(0.10528)	(0.10480)	(0.10858)
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)
BOARD SIZE	-0.00001	-0.00001	-0.00179	-0.00004	-0.00062
	(0.00120)	(0.00120)	(0.00812)	(0.00120)	(0.00127)
BOARD SIZE ^{2}			0.00007		
			(0.0035)		
BOARD SIZE *CRISIS					0.00614**
					(0.00202)
BOARD MEETINGS	-0.00135**	-0.00135**	-0.00132**	-0.00250†	-0.00164**
	(0.00050)	(0.00050)	(0.00051)	(0.00132)	(0.00048)
BOARD MEETINGS^2				0.00004	
				(0.00005)	
BOARD 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)
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
X^2- statistics	265.29***	269.02***	265.89***	270.15***	299.62***
X^2- statistics year dummies	20.50**	20.69***	20.43**	20.17**	21.85***
X^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
N. obs.	1768	1768	1768	1768	1768

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. † p<0.10; *p<0.05; **p<0.01; ***p<0.001

Table 3.Determinants of Corporate Risk-taking (equation 2)

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)
BOARD SIZE	-0.00870	-0.00846	0.42718	-0.00932	-0.01419
	(0.04174)	(0.04181)	(0.26036)	(0.04221)	(0.04044)
$BOARD\ SIZE^2$			-0.01859†		
			(0.01114)		
BOARD SIZE *CRISIS					0.07847
					(0.07982)
BOARD MEETINGS	0.05281*	0.05303*	0.05312*	0.07718†	0.02431
	(0.02283)	(0.02285)	(0.02325)	(0.04160)	(0.01963)
$BOARD\ MEETINGS^2$				-0.00099	
				(0.00132)	
BOARD 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
X^2- statistics	8955.39***	8919.77***	8916.78***	8953.39***	8741.17***
X^2- statistics year dummies	538.54***	536.05***	532.61***	533.63***	104.63***
X^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
N. obs.	2230	2230	2230	2230	2230

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. † p<0.10; *p<0.05; **p<0.01; ***p<0.001

Table 4.Determinants of Earnings Management (equation 3)

EXPLANATORY VARIABLES	DEPENDENT VARIABLE: EARNINGS MANAGEMENT				
	(a)	(b)	(c)	(d)	(e)
PERFORMANCE	-0.49189***	-0.49162***	-0.49117***	-0.49003***	-0.49712***
	(0.06503)	(0.06466)	(0.06487)	(0.06423)	(0.06628)
RISK	0.00025	0.00025	0.00022	0.00023	0.00017
	(0.00041)	(0.00041)	(0.00042)	(0.00041)	(0.00040)
OUTSIDER	-0.04131	-0.01244	-0.03977	-0.03960	-0.05754†
	(0.03015)	(0.24549)	(0.03070)	(0.02891)	(0.03462)
$OUTSIDER^2$		-0.01822			
		(0.15246)			
OUTSIDER *CRISIS					0.03977
					(0.03327)
BOARD SIZE	-0.00079	-0.00079	-0.00119	-0.00067	-0.00114
	(0.00088)	(0.00088)	(0.00816)	(0.00087)	(0.00098)
BOARD SIZE ^{2}			0.00002		
			(0.00036)		
BOARD SIZE *CRISIS					0.00385**
					(0.00145)
BOARD MEETINGS	-0.00099†	-0.00098†	-0.00100†	0.00098	-0.00112*
	(0.00059)	(0.00059)	(0.00059)	(0.00102)	(0.00052)
$BOARD\ MEETINGS^2$				-0.00008†	
				(0.00004)	
BOARD MEETINGS *CRISIS					0.00126
					(0.00091)
EARNINGS MANAGEMENT $_{(t-1)}$	0.02808	0.02793	0.02850	0.02810	0.03004
	(0.02548)	(0.03466)	(0.03478)	(0.03512)	(0.03456)
FREE CASH FLOW	-0.00175*	-0.00175*	-0.00174*	-0.00181*	-0.00180*
	(0.00076)	(0.00076)	(0.00077)	(0.00077)	(0.00082)
MTB	0.00007†	0.00007†	0.00008†	0.00008†	0.00008*
	(0.00004)	(0.00004)	(0.00004)	(0.00004)	(0.00004)
LEVERAGE	-0.00035*	-0.00035*	-0.00035*	-0.00037*	-0.00029†
	(0.00017)	(0.00017)	(0.00017)	(0.00016)	(0.00016)
SIZE	-0.00651	-0.00639	-0.00660	-0.00712	-0.00774
	(0.00902)	(0.00914)	(0.00921)	(0.00861)	(0.01029)
DUAL CHAIR	-0.00019	-0.00020	-0.00014	-0.00023	-0.00022
	(0.00137)	(0.00138)	(0.00137)	(0.00137)	(0.00153)
OWNERSHIP	0.00012	0.00012	0.00012	0.00014	0.00012
	(0.00032)	(0.00031)	(0.00032)	(0.00033)	(0.00029)
CONSTANT	0.16995*	0.15784	0.17257†	0.16388*	0.20013*
	(0.07520)	(0.12650)	(0.10232)	(0.07492)	(0.08145)
Year Dummies	Included	Included	Included	Included	Included
X^2- statistics	204.19***	210.82***	201.94***	211.46***	229.11***
X^2- statistics year dummies	6.12	5.99	5.85	6.00	16.39**
X^2- statistics crisis-related variables					11.17*
AR_1	-3.00**	-3.00**	-3.01**	-2.97**	-3.03**
AR_2	-0.95	-0.95	-0.95	-0.64	-0.95
N. obs.	1759	1759	1759	1759	1759

The table reports regression results of earnings management using the two-step GMM system estimator. Standard errors with the robust adjustment proposed by Windmeijer (2005) are in brackets. † p<0.10; *p<0.05; **p<0.01; ***p<0.001