TMT pay dispersion and firm performance: the moderating role of organizational governance effectiveness

GREGORIO SANCHEZ-MARIN AND J. SAMUEL BAIXAULI-SOLER

Abstract

This study supports tournament theory in relation to high levels of organizational hierarchies, indicating that the job complexity facing the top management team supposes that pay dispersion positively influences firm performance. Examining a sample of 709 firm-year observations of Spanish listed companies spanning the period 2004–2012, our results indicate that the association between firm performance and top management team pay dispersion is conditional on the effectiveness of corporate governance. High top management team pay dispersion is associated with better performance in owner-controlled firms, where more effective monitoring is exerted by the board of directors.

Keywords: compensation dispersion, top management team, tournament theory, governance effectiveness, firm performance

INTRODUCTION

Shaw, Gupta, and Delery note that 'an organization's compensation system is arguably the most significant human resource management system for effective strategy implementation' (2002: 491). Pay structures are crucial for strategy implementation and, ultimately, firm performance. Pay dispersion through the hierarchical structure of firms has received much attention in management research, focusing primarily on vertical dispersion, or the difference in pay from the chief executive officers (CEO) down the organizational hierarchy and between executive levels (Siegel & Hambrick, 2005). The top management team (TMT) is the unit of analysis for examining pay dispersion in this study. Carpenter and Sanders (2002) recognize the importance of the TMT stating that 'although CEO pay exhibited a positive relationship with performance, such a relationship was mediated or increased by the stronger positive effects of TMT pay.' Shifting the research focus to the TMT creates new possibilities for increasing the understanding of the effects of the entire structure of top managers' rewards in organizations (Henderson & Fredrickson, 2001). Thus, studies subsequently expanded their scope and concluded that pay–performance sensitivity increases with the span of authority and that higher-rank managers have a greater proportion of compensation in pay packages than do lower-ranked executives (Aggarwal & Samwick, 2003).

Does pay dispersion in the TMT lead to better performance? Tournament theory posits that pay dispersion is a useful motivator of work behaviors and encourages the necessary level of competition

Department of Management and Finance, University of Murcia, Murcia, Spain
Corresponding author: gresanma@um.es

among employees to make them achieve higher levels of both rank and pay (Lazear & Rosen, 1981). When greater rewards are provided for high performers, tournament theory suggests that improved effort and performance can be attained (Lambert, Larcker, & Weigelt, 1993). Alternatively, researchers using equity and social comparison theories (Adams, 1965; Deutsch, 1985) argue that, because of work interdependence, co-operation is needed among employees. When pay is dispersed, employees may perceive inequity, which in turn spawns competitive–destructive behaviors (Levine, 1991).

Supporting evidence for the effects of pay dispersion on firm performance is limited from both theoretical perspectives. From the tournament perspective, Becker and Huselid (1992), Main, O'Reilly, and Wade (1993), Eriksson (1999), and Lee, Lev, and Yeo (2008) report that firm performance is positively associated with TMT pay dispersion. However, Conyon, Peck, and Sadler (2001) find no tournament evidence that larger TMT pay dispersion is positively associated with improved performance of the firm. From an equity perspective, although some studies (Pfeffer & Langton, 1993; Siegel & Hambrick, 2005; Ensley, Pearson, & Sardeshmukh, 2007; Fredrickson, Davis-Blake, & Sanders, 2010) report that pay dispersion – both between managers and employees and within the TMT – causes a lack of cohesion, which negatively affects firm performance, Hibbs and Locking (2000) state that compression of pay diminishes output and productivity. In response to these mixed results, some authors (Shaw, Gupta, & Delery, 2002; Lin, Yeh, & Shih, 2013) find that TMT pay dispersion–firm performance relationships are industry and task interdependent specific: low levels of R&D intensity or interdependent jobs increase the sensitivity of firm performance to enlarged TMT pay dispersion.

Despite a growing body of research, our knowledge of the issue remains woefully limited (for an excellent review, see Gupta, Conroy, & Delery, 2012). It should be noted that the main contradictions come from studies conducted in countries other than the United States, which indicates the importance of an institutional context. Thus, it is essential to consider the environment of TMT compensation in order to identify the effects of hierarchical wage structures on firm performance (Bloom & Michel, 2002; Ding, Akhtar, & Ge, 2009; Lin, Yeh, & Shih, 2013). In that sense, the use of tournament incentives associated with individual and business performance levels causes greater pay differences between top managers. It is associated with better firm performance when it supports high agency conflicts related to executive discretion, which in turn is related to the firm and institutional contexts (Lee, Lev, & Yeo, 2008). Spanish listed firms provide a very interesting setting for examining the role of TMT pay dispersion in firm performance (Baixauli-Soler & Sanchez-Marin, 2011, 2015; Sanchez-Marin & Baixauli-Soler, 2014). The great complexity of Spanish listed firms on which TMT performs its jobs with high level of discretion and uncertainty, together with a corporate governance system characterized by the slight use of monitoring mechanisms, provide, taking into account previous literature (i.e., Main, O'Reilly, & Wade, 1993; Lee, Lev, & Yeo, 2008), a simultaneous contradictory scenario to test the expected link between TMT pay dispersion and firm performance.

This study contributes to research into top managers' compensation in several ways. Primarily, it provides comprehensive and new contextual evidence about the consequences of managerial compensation dispersion, contributing to recent research that focuses on TMT compensation rather than restricting attention to the CEO (Carpenter & Sanders, 2002; Fredrickson, Davis-Blake, & Sanders, 2010). This paper also extends the literature on the interaction between corporate governance and the structure of managerial compensation. We show the effects of improved governance structures (related to board monitoring and ownership structure) on TMT pay dispersion and its association with firm performance. We investigate whether corporate governance and managerial pay dispersion are complementary and mutually enhancing mechanisms for strengthening firm performance (Chen, Ezzamel, & Cai, 2011; Lin, Yeh, & Shih, 2013). In the more general context, we provide evidence of how managerial pay dispersion can potentially mitigate agency conflicts in firms that are more difficult to monitor (Lee, Lev, & Yeo, 2008).

The paper is organized as follows. First, we discuss previous related research and present our hypotheses. Second, we describe the sample and research methods. Third, we present the results. Finally, we present our conclusions and discuss the study.

THEORETICAL FRAMEWORK AND HYPOTHESES

TMT pay dispersion and firm performance

Tournament theory (Lazear & Rosen, 1981; Lazear, 1989) stipulates that large pay differentials provide strong incentives to top managers, leading to greater effort and improved firm performance. In brief, tournament theory is based on the following three main principles (Conyon, Peck, & Sadler, 2001): (1) that managers vying for the top positions can be viewed as competing in a tournament, (2) that prizes are fixed in advance and tournament participants expend effort to increase the likelihood of winning a prize, and (3) that what matters is not the absolute level of performance, but how well one does in relation to other competitors.

Concerning the first and second principles, tournament theory advances the idea that wide pay differences are more appropriate when employee contributions are critical and affect firm performance more directly, as well as where promotion opportunities are limited (Lazear & Rosen, 1981). Tournament model proposes that when many positions exist in a company, and when one employee is promoted to a new position, the compensation will keep increasing. When a winner is promoted for outstanding performance, he/she will keep competing with others at that level to obtain another promotion opportunity. The value of success includes both the compensation resulting from obtaining the next position, and also a chance for promotion to another even higher position with higher compensation (Main, O'Reilly, & Wade, 1993; Eriksson, 1999). Therefore, tournament theory predicts that compensation will increase as a function of increasing hierarchy level. The more influence a hierarchy level has on the success of a company, the larger the pay differential from the next level will be. This is especially true when it comes to a large compensation differential among managerial levels (Lambert, Larcker, & Weigelt, 1993). There is a need to use large prizes to further motivate managers to expend more effort. Thus, the compensation spread across hierarchical levels, with large prizes at the top, provides extra incentives to participate in the managerial tournament and exert considerable efforts to win the top prize, creating a positive pay–performance link at an organizational level and motivating higher future performance (Lambert, Larcker, & Weigelt, 1993; Eriksson, 1999).

Concerning the second principle, because employees are in competition with one another for the prize of higher pay at higher organizational levels, relative rather than absolute performance is the relevant measure (Conyon, Peck, & Sadler, 2001; Lee, Lev, & Yeo, 2008). The relative nature of the competition posed by the tournament model – i.e., to decide whether an employee is more efficient than another – is especially useful if the organization wants to minimize the costs of supervision, as relative judgments about performance require less information than absolute judgments (Lazear, 1999; Lin, Yeh, & Shih, 2013). Based on this premise, Henderson and Fredrickson (2001) argue that, because supervision of a TMT is difficult and costly, a large pay gap in the core management circle motivates managers and discourages shirking. They posit that the results achieved under such a contest mechanism will allow optimal allocation of social resources within a firm and enhance firm performance.

Although tournament theory provides a solid theoretical foundation for explaining pay differentials, empirical evidence about the influence of pay dispersion on firm performance fails to provide consistent support for the theory. For example, in sport settings, although a strong relationship has been reported between performance and pay dispersion in individual sports – i.e., NASCAR, PGA Tour (Ehrenberg & Bognanno, 1990a, 1990b; Becker & Huselid, 1992) – no evidence has been

found of a link between pay dispersion and organizational performance on team sports – i.e., Major League Baseball – where the results of the team depends on co-operation (Bloom, 1999). Nevertheless, because sports organizations represent a very special case (Gerhart & Rynes, 2003), several authors have tried to find support for the tournament model in a business setting. For example, Main, O'Reilly, and Wade (1993) found that increasing pay gaps between different managerial levels has a stimulating effect on the competition between executives. Eriksson (1999) reported similar findings that an increase in the bonus gap between the president and vice presidents is positively related to firm performance. Lee, Lev, and Yeo (2008) found that firm performance is positively associated with the dispersion of management compensation. They also report that the positive association between firm performance and pay dispersion is stronger in firms with high agency conflicts related to managerial discretion. On the negative side, however, O'Reilly, Main, and Crystal (1988) do not find support for the tournament theory, reporting that variation in top managers' compensation is not associated with enhanced firm performance. Conyon, Peck, and Sadler (2001) found that a significant distance between CEO compensation and other members of the TMT results in worse firm performance. In addition, Ding, Akhtar, and Ge (2009) found a partially negative influence on firm performance when there is higher intra-hierarchy pay dispersion between top managers.

These disagreements should be added to those provided by researchers from social psychology and organizational behavior, who support equity theory and social comparison theories (Adams, 1965; Deutsch, 1985), and consequently argue for less pay dispersion. When work requires a high degree of task interdependence, co-operation is needed among the team to foster communication and share ideas. Highly dispersed compensation causes perceived inequities in organizations and leads to increased rates of turnover, absenteeism, and labor disputes, causing a decrease in performance. Cowherd and Levine (1992) found that greater pay differences between managers and employees are clearly associated with lower levels of quality and firm performance. Moreover, Pfeffer and Langton (1993) found that when pay dispersion is greater among university professors, they are less satisfied and tend to collaborate less, thus lowering their level of productivity. Both Siegel and Hambrick (2005) and Ensley, Pearson, and Sardeshmukh (2007) found that pay dispersion within the TMT is detrimental to team dynamics, causing conflict and a lack of cohesion and negatively affecting firm performance. Fredrickson, Davis-Blake, and Sanders (2010) reported that high levels of pay dispersion among members of the TMT will lead to lower levels of cohesion, more competitive behaviors, and less co-operation, ultimately undermining firm performance. However, Hibbs and Locking (2000), arguing against the predictions of equity theory, stated that compression of TMT pay depresses performance, pointing out that reduction of pay differentials within a firm did not contribute positively to aggregate output and productivity growth. In addition, Gupta, Conroy, and Delery (2012) reported that equity and social comparison theories are particularly difficult to use in vertical pay variation because of the sensitivity to the nuances of input/outcome ratios computed within and between jobs.

Therefore, the empirical evidence for tournament theory concerning the impact of TMT pay dispersion on firm performance seems to be inconclusive: competition increases the effort to perform, but it also fosters risk-taking and aggressive behaviors (Becker & Huselid, 1992; Fredrickson, Davis-Blake, & Sanders, 2010). In this sense, Brown, Sturman, and Simmering (2003) affirmed that, although high pay dispersions can be negatively associated with organizational and individual performance, extremely egalitarian compensation can have undesirable effects in terms of discouraging competition. In response to these mixed results, some authors (Shaw, Gupta, & Delery, 2002; Siegel & Hambrick, 2005; Yang & Klaas, 2011; Lin, Yeh, & Shih, 2013) have related their evidence about the tournament phenomenon to peculiarities of specific work settings. They found that TMT pay dispersion–firm performance relationships are industry and tasks interdependent specific. For example, for firms with low levels of R&D intensity or jobs with low levels of task interdependence, tournament theory works well, and firms are encouraged to increase TMT pay dispersion in order to improve firm performance.

Taking into account all the above-mentioned arguments, two reasons led us to propose, in the context of TMT of large companies, such as Spanish listed firms, a positive association of TMT pay dispersion with firm performance. First, the tournament model predicts a higher pay gap when employees expect to receive a big bonus from winning a competition, because that bonus will stimulate employees to work harder. Those who perform better will be promoted, with an opportunity to compete for an even higher bonus (Chen et al., 2011; Lin, Yeh, & Shih, 2013). The motivation to compete is greater as the prize is higher and the number of contestants is fewer, as is the case for managerial positions in large companies, where some studies found that this additional effort is positively related to firm performance (Main, O'Reilly, & Wade, 1993; Eriksson, 1999). As Main, O'Reilly, and Wade explain, 'at the top of the company interdependence is important, but the nature of the agents who find themselves there is so hawkish that it is unlikely to be moderated by any amount of wage compression' (1993: 623). That is, given the highly competitive nature of managerial positions in large companies, pay dispersion can be the most motivating instrument for the TMT, contributing positively to firm performance. Second, it is important to consider that, in the context of TMT of large companies, the motivational benefits from larger pay dispersion usually exceed the costs of envy and dysfunctional behavior associated with this compensation. In fact, Lazear (1999) and Bloom and Michel (2002) demonstrated the effectiveness of tournament incentives in top positions, where it is difficult to evaluate absolute performance. In addition, Lambert et al. (2003) supported the use of pay dispersion as an instrument that mitigates agency conflicts between top managers and shareholders. In this regard, Lee, Lev, and Yeo (2008) also found that the positive association between firm performance and pay dispersion is stronger in firms with high agency costs related to managerial discretion. Ultimately, Lin, Yeh, and Shih (2013) reported that top managers' pay differentials have a significant positive relationship only when considering a company's relative performance.

Thus, based on these arguments, and considering top managers' job complexity in Spanish listed companies, we believe that TMT pay dispersion will have a positive relationship with firm performance. The size and intricacy of Spanish listed firms (in that way, e.g., the top 10 Spanish listed corporations are currently included in the Fortune 500 list of the largest companies in the world: Banco Santander, Telefónica, Repsol YPF, BBVA, Iberdrola, Cepsa, ACS, Mapfre Group, Gas Natural Fenosa, and FCC) ensure, on the one hand, that top management operates in a very competitive environment in which tournament incentives motivate the TMT and, on the other, that there is a supervisory context that is complex enough to support the use of tournament incentives. As we define TMT in those companies to include all top managers who are responsible for strategy formulation, the high level of discretion and uncertainty they face (Finkelstein & Boyd, 1998; Bloom & Michel, 2002) mean that greater TMT pay dispersion increases the returns for higher performance, creating a positive pay–performance link:

Hypothesis 1: TMT pay dispersion is positively associated with firm performance.

Governance effectiveness and TMT pay dispersion

Corporate governance structures are likely to affect the association between firm performance and pay dispersion. Lee, Lev, and Yeo (2008) argue that the dysfunctional effects of large pay dispersion among TMT may be mitigated by independent board members monitoring managerial activities and by effective monitoring of managerial performance by means of ownership structure involving active and independent majority shareholders. Previous studies (Mehran, 1995; Hartzell & Starks, 2003; Ryan & Wiggins, 2004; Lee, Lev, & Yeo, 2008) support that compensation contracts complement other corporate governance mechanisms, such as board of directors and ownership structure, in reducing agency conflicts, indicating the moderating role of corporate governance in the relationship between TMT pay dispersion and firm performance.

In relation to the causal relationships between TMT compensation, governance, and firm performance, the literature can be divided into the following two groups (see Devers, Cannella, Reilly, & Yoder, 2007 for an in-depth review): those examining the role of governance structures – as a moderating variable – on the performance-to-pay relationship (Conyon & Peck, 1998; Hartell & Starks, 2003; Lee, Lev, & Yeo, 2008); and those analyzing the effects of governance-related factors – as a criterion variable – on top managers' pay (Daily, Johnson, Ellstrand, & Dalton, 1998; David, Kochhar, & Levitas, 1998; Deutsch, 2005). As Coles, Daniel, and Naveen (2006) conclude, the causation is likely to run in both directions. That is, these parallel and relatively interdependent segments of the literature suggest that firm performance is jointly determined by governance characteristics of the firms and top managers' compensation. Recognizing this matter, our analysis tries to capture the effect of TMT pay dispersion on firm performance using governance as a mediator variable (Lee, Lev, & Yeo, 2008).

Reflecting the balance between the preferences of owners and managers, ownership structure is the first natural mechanism for monitoring top managers (Demsetz, 1983; Morck et al., 1988; Morck, Wolfenzon, & Yeung, 2005). Ownership structure affects the criteria used by boards to determine compensation and TMT pay dispersion. Empirical studies generally find that tournament incentive alignment at the top is the lowest when ownership concentration is low (Tosi & Gomez-Mejia, 1989; Hambrick & Finkelstein, 1995). As Werner, Tosi, and Gomez-Mejia state 'it appears that when upper management pay-setting discretion is not constrained by major shareholders, executives reduce their risk by decoupling pay from performance and instead link their pay to criteria they can easily control' (2005: 377). Evidences of these relationships can be found in several studies. For example, Hartzell and Starks (2003) reported that external majority shareholders and institutional investors are positively related to the performance sensitivity of managerial compensation. In addition, Lee, Lev, and Yeo (2008) found that firms with CEOs who do not have a significant stake in the ownership of the firm have a stronger positive association between firm performance and pay dispersion. Thus, the type of owner and structure of ownership tend to complement compensation systems, in combination with monitoring, to mitigate agency problems between shareholders and managers.

Considering that these relationships mainly depend on the particular context of corporate governance, Spanish listed firms may provide an interesting scenario for testing the tournament effect on TMT compensation. Ownership is much more concentrated in Spanish firms than in US or UK firms (La Porta, Lopez-de-Silanes, & Shleifer, 1999). de Miguel, Pindado, and de la Torre (2004) found that ownership concentration has a non-linear effect on the value of Spanish firms, because rent expropriation occurs at very high levels. Because the TMT is more entrenched at higher ownership levels, Romero and Valle (2001) report that it may have the power to negotiate higher levels of fixed pay, and, consequently, they present less TMT pay dispersion. Sanchez-Marin, Baixauli-Soler, and Lucas-Perez (2011) analyzed the influence of ownership structure on TMT compensation in Spanish listed firms. Their results showed that high concentrations of ownership and high levels of cross-holdings undermine the board's supervisory effectiveness, which explains the high levels of fixed compensation that top managers receive.

However, only a few studies have taken into account the different ways that the type of controlling shareholder can determine the effectiveness of TMT monitoring and the design of their compensation. The highly concentrated ownership structures of Spanish listed companies reflect ambivalence between internal and external control (Leech & Manjon, 2002). In that vein, Baixauli-Soler and Sanchez-Marin (2011, 2015) described two types of firms, owner controlled and manager controlled, with different consequences for the relationships between TMT pay dispersion and firm performance, depending on rent expropriation difficulties (Shleifer & Vishny, 1997). Owner-controlled firms will be more willing to invest in efficient organizational governance mechanisms and accept the threat this practice poses to their financial well-being. External controlling shareholders, usually occupying seats on the board, have

both the incentive and the power to exercise active executive monitoring (Core, Holthausen, & Larcker, 1999; Conyon & He, 2011). In this context, the TMT face tighter supervision, resulting in a compensation design strongly linked to firm performance. Thus, TMT pay dispersion is likely to be higher because the closer link to firm performance is a way to monitor top managers and limit their discretion. Conversely, in the case of owner-managed firms, an inversed relationship between ownership of top managers and the effectiveness of monitoring exists (Morck, Wolfenzon, & Yeung, 2005). The controlling shareholders, serving as 'entrenched' top managers, with sufficient ownership to control the board, expropriate more of the firm's wealth (Mehran, 1995; Almazan & Suarez, 2003). Monitoring, whether through the board or directly through controlling shareholders, is most unlikely to be effective, and therefore TMT compensation tends to be high and not linked to company performance (Conyon & He, 2011), producing low levels of TMT pay dispersion.

Taking these arguments into account, we hypothesize that TMT pay dispersion is more strongly associated with performance in owner-controlled Spanish companies than in owner-managed companies:

> Hypothesis 2: The positive association between TMT pay dispersion and firm performance is stronger in owner-controlled firms than in owner-managed firms.

Boards of directors, as a main mechanism for monitoring top managers, are essential in order to improve the alignment of the interests of owners and managers, especially by means of the design of compensation linked to firm performance (Hermalin & Weisbach, 2003). This supervision will depend on the independence of the board of directors, which is usually determined by its structure and composition. Mehran (1995) reports, e.g., that firms with a large number of independent directors make more extensive use of equity-based compensation. Similarly, Ryan and Wiggins (2004) find that firms with entrenched CEOs and CEOs who also chair the board provide managers with less equity-based pay. These results suggest that powerful CEOs use their positions to reduce board monitoring and at the same time make their own compensation less sensitive to firm performance. Lee, Lev, and Yeo (2008) found that the positive association between firm performance and pay dispersion is stronger for firms with more effective board monitoring. Specifically, they report that firms with a high proportion of independent directors on the board and with CEOs who are not chair of the board have a stronger positive association between firm performance and pay dispersion.

However, these relationships depend on the institutional characteristics of corporate governance systems. The non-market-oriented system of corporate governance of Spanish listed firms relies more on direct contractual relationships between top managers and owners, which mainly take place through the board (de Miguel, Pindado, & de la Torre, 2004; Baixauli-Soler & Sanchez-Marin, 2011). Thus, the board of directors is the fundamental instrument in constraining managerial discretion and in setting TMT compensation, the practice where the monitoring function is perhaps most visible (Conyon & Peck, 1998; Core, Holthausen, & Larcker, 1999). Furthermore, Spanish listed firms operate a one-tier board system, consisting of a main board of directors, in which all the members are in charge of the management and supervision of the company (Salas, 2002). Traditionally, this board structure, together with the high ownership concentration in the hands of a few controlling shareholders, has facilitated the multiple 'director–manager' roles on boards, producing a low level of independence and monitoring effectiveness (Baixauli-Soler & Sanchez-Marin, 2011). It is, therefore, no wonder that, despite the Código Unificado de Bueno Gobierno (Unified Code of Good Governance) (2006), which embodies a similar philosophy to the Cadbury Code (1992) and required firms to add independent directors to the board, Spanish listed firms merely meet the minimum requirements (De Andres, Azofra, & Lopez, 2005).

For these reasons, studies linking board characteristics with TMT compensation have obtained poor results in terms of effectiveness of monitoring. Some authors find that additional independent directors are not related to variable compensation of the TMT (Crespi & Gispert, 2003; Sanchez-Marin, Baixauli-Soler, & Lucas-Perez, 2010), as compensation committees are unable to reduce the compensation level of top managers (Baixauli-Soler & Sanchez-Marin, 2015). Other research evidence suggests that CEOs who chair the board, which is a common practice in Spain, reduce supervisory effectiveness, producing higher levels of fixed and total pay for executives (Alvarez & Neira, 1999). Summarizing these evidences, Baixuali-Soler and Sanchez-Marin (2011) note that board characteristics do little to moderate the capacity to adjust TMT compensation to changes in the economic and financial conditions of companies. They conclude that the high level of dependence of boards on majority owners explains the absence of a link between executive compensation and firm performance.

Consistent with the arguments presented to support the second hypothesis, we expect that the board characteristics related to monitoring effectiveness – board size (BS), board composition (BC), and duality – depend on the type of ownership structure of the company. Thus, when the firm is owner controlled, the presence on the board of external majority shareholders unrelated to management produces a substitution effect, influencing positively the monitoring of TMT, as such shareholders will not allow rent extraction through compensation (Rediker and Seth, 1995; Bozec and Bozec, 2007). By way of contrast, when a firm is manager controlled, compensation is one of the main forms of rent extraction (Werner, Tosi, & Gomez-Mejia, 2005). In that case, majority shareholders – usually adopting the role of top managers as well – will try to decrease the monitoring effectiveness of the board, and will try to establish a compliant board in order to legitimize their compensation. Thus, given the evidence that the structure of compensation contracts complements boards monitoring in mitigating agency conflicts (Lee, Lev, & Yeo, 2008; Chen et al., 2011), we predict that TMT pay dispersion is strongly associated with firm performance only when boards exert effective monitoring, which takes places only in owner-controlled firms:

> Hypothesis 3: The association between TMT pay dispersion and firm performance in owner-controlled firms is positively moderated by the board characteristics, indicative of monitoring effectiveness. This association will be more positive when boards present (a) a greater number of directors; (b) a more proportion of independent directors; and (c) a less presence of duality.

METHODS

Data

Our analysis focuses on listed companies that publish corporate governance reports. The main source of information was the Comisión Nacional del Mercado de Valores (Spanish Securities and Exchange Commission), which annually publishes the corporate governance reports of listed companies and their financial statements. The information on TMT compensation and governance structure (ownership and board) comes from the firm's corporate governance reports, whereas information on firm performance comes from the financial statements.

The firms making up the sample were 91 non-financial, listed Spanish companies. The data analyzed covered the period from 2004 to 2012. This period began in 2004, because this was the first year that the Spanish Securities and Exchange Commission published corporate governance reports for most of the listed companies. Despite the greater specificity of the governance recommendations in the codes, the debate on the need for regulation of corporate governance is still very much alive. Aguilera and Cuervo-Cazurra (2009) expressed their concerns about the weak monitoring and enforcement mechanisms of the corporate governance codes. These authors indicate that performance appears to excuse non-compliance, raising doubt as to whether compliance necessarily leads to firm effectiveness.

In addition, Cuervo (2002) proposed that, for countries characterized by a large shareholder-oriented system, like Spain, it is necessary to expand formal market control mechanisms to compensate for deficiencies in the legal system, rather than developing codes of good governance. Therefore, we argue that excluding firms on the basis of availability of a corporate governance report does not introduce a significant bias into our study.

The final sample provided a total of 709 firm-year observations. Table 1 reports the firms by industry and shows their distribution and characteristics. As can be seen, the manufacturing sector is the main sector followed by services and transportation, communications, electric, gas, and sanitary services. Performance measures and firm characteristics vary depending on the industry specificity. Therefore, we use industry-relative ratio (IRR) of performance measures (dependent variables) in order to take into account industry and to normalize the different measures.

Variables

Firm performance

We used three measures of firm performance. First, the industry relative ratio of return on assets (IRR_ROA), computing ROA as the ratio of net income to the book value of the firm's total assets, and obtaining the IRR using the mean industry ROA. Second, as compensation contracts use earnings-based incentives, we compute the industry-relative ratio of growth of earnings per share, or EPS (IRR_EPS). Third, Tobin's Q in order to consider the unrealized gains and losses (Yemark, 1996; Himmelberg, Hubbard, & Palia, 1999; Lee, Lev, & Yeo, 2008). Tobin's Q is measured as the market value of common equity plus book value of liabilities, divided by the book value of total assets of the firm at the end of the fiscal year. This measure not only indicates the efficiency with which a firm uses its current assets but also takes into account the effects of financial decisions on capital structure (Finkelstein & Boyd, 1998). We compute the industry-relative ratio of Tobin's Q (IRR_TOBINQ).

TMT pay dispersion

We were unable to measure TMT dispersion by means of the Gini coefficient, as individual-level compensation data were not available. Consequently, we considered two levels, hierarchically differentiated in the TMT, following Siegel and Hambrick (2005) criteria: director managers – that include the CEO and the top managers with a seat in the board of directors – and non-director managers – that include the rest of top managers of the TMT. Thus, this source of vertical pay variation concerns compensation differentials across these two types of top managers (Siegel & Hambrick, 2005) who are usually attributable to variations in skill, effort, responsibility, and working conditions, as well as to the differences in the labor markets for their jobs, applying tournament theory as a base for analysis (Gupta, Conroy, & Delery, 2012). Thus, following Chen, Ezzamel, and Cai (2011) and Lin and Lu (2009), we estimate the mean of director managers' compensation (INSC) and the mean of non-director managers' compensation (NDMC), including all components (e.g., equity-based compensation and pension payments). Then, we estimate TMT pay dispersion (TMTPD) as $TMTPD = log(INSC) - log(NDMC)$. In that vein, our measure of TMT pay dispersion as a range is similar to those of Eriksson (1999) and Shaw, Gupta, and Delery (2002) measures, indicating that as TMT pay dispersion increases, compensation gap will be higher between the director manager and non-director manager levels.

Board characteristics

Board characteristics can proxy board monitoring effectiveness through the following three variables: (1) BS, which is measured by the number of directors on the board. Yermack (1996) points out that the relationship between BS and monitoring effectiveness, starting from a low level of directors – as is

TABLE 1. SUMMARY OF SAMPLE CHARACTERISTICS BY INDUSTRY

Industries	N	TOBINQ	EPS	ROA	Ln(TA)	DIV	VOL	COMP	LEV	OCF	INV
Agriculture, forestry, and fishing	9	0.92	0.59	0.03	14.07	1.01	0.28	0.04	0.48	0.03	0.04
Mining	27	0.65	0.75	−0.07	12.98	1.24	0.38	0.02	0.39	0.10	0.03
Construction	108	0.83	0.26	0.05	15.57	1.64	0.37	0.09	0.59	0.06	0.01
Manufacturing	258	0.64	0.84	0.03	13.05	1.58	0.41	0.12	0.40	0.15	0.01
Transportation, communications, electric, gas, and sanitary service	127	0.68	0.88	0.05	15.02	1.29	0.42	0.12	0.42	0.07	0.04
Wholesale trade	45	0.42	0.77	0.08	12.00	1.52	0.31	0.08	0.30	0.37	0.01
Retail trade	9	0.65	0.07	0.01	14.70	1.16	0.56	0.05	0.38	0.13	0.01
Services	126	0.64	0.22	0.03	13.20	1.14	0.48	0.16	0.48	0.08	0.02

Note: COMP = complexity; DIV = diversification; EPS = earning per share; INV = firm investment; LEV = leverage; Ln(TA) = logarithm of total asset; OCF = operating cash flow; ROA = return on asset; TOBINQ = Tobin's Q; VOL = volatility.

TABLE 2. DESCRIPTIVE STATISTICS AND CORRELATIONS OF THE POOL OF FIRMS INCLUDED IN THE SAMPLE FROM 2004 TO 2012

	Mean	SD	1	2	3	4	5	6	7
1. IRR_TOBINQ	1.00	0.65	1.00						
2. IRR_EPS	1.00	4.21	0.33	1.00					
3. IRR_ROA	1.00	3.72	0.48	0.75	1.00				
4. TMTPD	0.74	1.06	0.19	0.18	0.15	1.00			
5. BS	11.08	3.67	0.13	0.05	0.09	0.07	1.00		
6. BC	0.34	0.26	0.07	0.04	− 0.05	0.16	0.15	1.00	
7. DUAL	0.57	0.49	0.14	0.06	− 0.01	− 0.02	0.08	− 0.14	1.00
8. INSOW	11.06	20.93	0.01	− 0.08	− 0.03	− 0.01	− 0.08	− 0.13	0.07
9. H	0.30	0.38	0.10	0.12	0.08	0.14	0.08	− 0.07	− 0.21
10. SIZE	13.73	1.89	0.36	0.22	0.13	0.21	0.38	0.15	0.16
11. COMP	0.11	0.19	0.02	− 0.07	− 0.04	0.14	0.13	− 0.07	− 0.12
12. DIV	1.42	0.93	0.09	0.11	0.03	0.05	0.20	− 0.05	0.19
13. VOL	0.41	0.19	0.20	− 0.04	− 0.05	− 0.09	− 0.03	− 0.04	− 0.05
14. LEV	0.44	0.20	0.24	− 0.07	0.03	0.06	0.05	− 0.07	0.02
15. OCF	0.11	0.16	0.14	0.10	0.12	0.03	− 0.02	− 0.04	0.06
16. INV	0.02	0.01	0.03	0.05	0.02	− 0.04	− 0.01	0.05	0.06

	8	9	10	11	12	13	14	15	16
8. INSOW	1.00								
9. H	− 0.08	1.00							
10. SIZE	− 0.07	0.25	10.00						
11. COMP	− 0.10	0.10	0.09	1.00					
12. DIV	− 0.08	− 0.03	0.13	0.02	1.00				
13. VOL	0.09	0.01	− 0.08	0.11	− 0.07	1.00			
14. LEV	0.04	0.10	0.15	0.02	0.09	0.19	1.00		
15. OCF	0.06	− 0.03	0.12	− 0.04	− 0.12	0.14	0.17	1.00	
16. INV	0.09	0.06	− 0.09	0.12	0.08	0.07	− 0.11	0.15	1.00

Note: Correlations >0.11 are significant at $p < .05$, and correlations exceeding 0.15 are significant at $p < .01$.

the case of our sample, which shows an average of 11.08 directors in the board (see Table 2) – is positive: as the board of directors grows in size, supervision of top managers increases, resulting in an alignment of interests. Evidences indicate that only when the number of directors exceeds 20, the trend is the opposite. (2) BC, which is measured by the proportion of independent directors over total directors (Conyon & Peck, 1998). The literature mainly provides evidence that a greater proportion of independent directors will lead to the board being more effective in supervision (Fama & Jensen, 1983). The main reason behind this is that independent directors are more objective in monitoring top managers' behaviors. And (3) Duality (DUAL) is a dummy variable coded as 1 when the same individual is both CEO and the chairman of the board (Boyd, 1995). Jensen (1993) is uncomfortable with the dual structure – one person for the two roles of CEO and chairman – arguing that it would compromise the ability of the board to monitor the TMT behaviors with enough objectivity.

Ownership structure
We measured type of control by classifying firms in terms of the type of control exerted by majority owners. Firms can be classified following the measures proposed by Tosi and Gomez-Mejia (1994) and Werner, Tosi, and Gomez-Mejia (2005), as owner controlled (OC), owner managed (OM), or manager controlled (MC). If any single individual or institution outside the firm owns 5% or more of

the company's stock, the classification is OC. Otherwise, the firm is OM if any individual within the firm (e.g., the TMT) owns 5% or more of the company's stock. The classification is MC otherwise. As a consequence of the high level of ownership concentration in Spanish firms, almost all companies are OC or OM. In fact, only eight firms are MC, and, therefore, we do not consider them following the recommendation of Werner, Tosi, and Gomez-Mejia (2005). Consequently, to test Hypothesis 2, we split the sample into OC firms and OM firms.

Control variables

A number of contextual factors linked to firm performance, TMT compensation, and governance effectiveness are included as control variables. In line with Carpenter and Sanders (2002), we included the main firm variables considered firm performance determinants in the literature: firm size (SIZE), which is expected to be related positively with performance; business complexity (COMP), which is expected to be related positively with performance as it is a measure of prospective wealth; diversification (DIV), which is expected to be related negatively with performance as it is a way to reduce firm risk; return volatility (VOL), operating cash flow return (OCF), firm leverage (LEV), and the firm investment rate (INV), which are expected to be related positively with firm performance. The logarithm of the value of assets and the logarithm of the number of employees are used to measure firm size. Business complexity is measured using intangible assets as a percentage of total assets. Company diversification is measured as the number of four-digit SIC codes. Return volatility is obtained as the annualized standard deviation of the daily stock price of the firm during the previous year. Operating cash flow is measured as sales minus cost of goods sold and selling and administrative expenses plus depreciation. Firm leverage is measured as the ratio of debt to total assets. Finally, firm investment rate is measured by the ratio of capital expenditures to the capital stock.

In addition, following Himmelberg, Hubbard, and Palia (1999), we include managerial ownership and ownership concentration as performance determinants. We consider insider equity ownership (INSOW) measured as the percentage of shares held by director managers (Mehran, 1995). High level of top managers' equity ownership increases the expected agency conflicts of managerial entrenchment and monitoring is more difficult. Okzan and Okzan (2004) shows, however, that managerial incentive alignment effects dominate at low levels of top managers' equity ownership, as in the case of our sample, in which director managers hold an average of 11.06% of company ownership (see Table 2). Furthermore, we measure ownership concentration using the Herfindahl index for the largest owners recorded (Bushee, 1998). The Herfindahl index (H) is the sum of the squares of the market shares of the largest shareholders expressed as fractions, and ranges from 0 to 1, moving from dispersed ownership to concentrated ownership. An increase in the Herfindahl index indicates an increase in the power of large shareholders.

Model specification

The study involved using a panel data method in the analysis. This method examines the dynamics of cross-sectional populations and facilitates improvements in the econometric specifications and the parameter estimation by providing more information, more variability, less collinearity among the variables, and more efficiency than other methods (Baltagi, 2001). The panel method takes into account the fact that companies and managers are heterogeneous. Features that are difficult to measure, such as experience, prestige, and personal skills, which can affect TMT compensation, may bias the model's results if they are ignored. Thus, the panel included an individual effect, η_i, to control for unobservable heterogeneity, so that the error term was $\eta_i + \upsilon_{it}$, where υ_{it} is a random disturbance.

To test Hypothesis 1, the models included TMT pay dispersion. According to the literature reviewed, the model represented in Equation 1 explains firm performance (IRR_TOBINQ, IRR_EPS,

and IRR_ROA) by taking into account control variables, which reflect company features linked to performance and compensation.

$$PERFORMANCE_{it} = \beta_1 \cdot TMTPD_{it-1} + \beta_2 \cdot SIZE_{it} + \beta_3 \cdot COMP_{it}$$

$$+ \beta_4 \cdot DIV_{it} + \beta_5 \cdot VOL_{it} + + \beta_6 \cdot LEV_{it} + \beta_7 \cdot OCF_{it}$$

$$+ \beta_8 \cdot INV_{it} + \beta_9 \cdot INSOW_{it} + \beta_{10} \cdot H_{it} + \eta_{it} + \upsilon_{it} \qquad (1)$$

We also used Equation (1) to test Hypothesis 2, which predicts a stronger positive relationship between TMT pay dispersion and firm performance in OC firms than in OM firms. In that case, we split the sample into 371 firm-year observations from 45 OC firms and 282 firm-year observations from 38 OM firms, comparing differences in the models through the Chow test.

Finally, Equation (2) includes the individual effects of board characteristics related with the effectiveness of monitoring – BS, BC, and duality – and the marginal effect that TMT pay dispersion has on firm performance through these board characteristics. Thus, in Equation (2), we included the product of board characteristics and TMT pay dispersion to test Hypothesis 3.

$$PERFORMANCE_{it} = \beta_1 \cdot TMTPD_{it-1} + \beta_2 \cdot BS_{it} + \beta_3 \cdot BC_{it} + \beta_4 \cdot DUAL_{it}$$

$$+ \beta_5 \cdot BS_{it} \cdot TMTPD_{it-1} + \beta_6 \cdot BC_{it} \cdot TMTPD_{it-1}$$

$$+ \beta_7 \cdot DUAL_{it} \cdot TMTPD_{it-1} + \beta_8 \cdot SIZE_{it} + \beta_9 \cdot COMP_{it}$$

$$+ \beta_{10} \cdot DIV_{it} + \beta_{11} \cdot VOL_{it} + \beta_{12} \cdot LEV_{it} + \beta_{13} \cdot OCF_{it}$$

$$+ \beta_{14} \cdot INV_{it} + \beta_{15} \cdot INSOW_{it} + \beta_{16} \cdot H_{it} + \eta_{it} + \upsilon_{it} \qquad (2)$$

We estimated all the equations while taking into account the fact that the endogeneity problem may be serious in these models; TMT pay dispersion is expected to be related with firm performance and, at the same time, firm performance with TMT pay dispersion. Ordinary least squares, within-groups or first-differenced ordinary least squares estimators, are inconsistent when regressors are not exogenous (within-groups or generalized least squares) and the Hausman test is not valid. Thus, the way to estimate models is to find instrument variables for endogenous variables. The basic first-differenced two-stage least squares for the panel data model proposed by Anderson and Hsiao (1981) are only consistent for large panels. We use generalized method of moments (GMM) or first-differenced GMM estimator proposed by Arellano and Bond (1991). It starts by transforming all regressors, by differencing, and uses the GMM. It is an estimator designed for situations with independent variables that are not strictly exogenous. Accordingly, with first-differenced GMM, we use the lags of independent variables as instruments. A crucial assumption for the validity of GMM is that the instruments are exogenous. To minimize possible problems of endogeneity, all independent variables are lagged 1 year with respect to the dependent variable before using them as instruments. The Hansen (1982) test statistic for over-identifying restriction is used to test the validity of instruments.

RESULTS

Table 1 contains a description of data based on industry composition and firm characteristics by industry (number of companies, Tobin's Q, ROA, EPS, total assets, diversification, volatility, complexity, leverage, operating cash flow, and firm investment). Industry effects are important, as there are large differences in performance and in other firm characteristics – volatility ranges from 56 to 28% and ROA ranges from –7 to 8%. As a consequence, the models included industry dummy variables to

TABLE 3. EFFECTS OF TOP MANAGEMENT TEAM PAY DISPERSION ON FIRM PERFORMANCE

Variables	Model (I): IRR_TOBINQ	Model (II): IRR_EPS	Model (III): IRR_ROA
$TMTPD_{t-1}$	0.201 (0.071)**	0.406 (0.046)**	0.193 (0.106)
SIZE	0.113 (0.011)**	0.054 (0.015)**	0.060 (0.005)**
COMP	− 0.037 (0.036)	0.065 (0.048)	− 0.017 (0.018)
DIV	− 0.068 (0.065)	− 0.529 (0.397)	− 0.032 (0.017)
VOL	− 0.017 (0.003)**	0.025 (0.058)	0.003 (0.001)
LEV	0.010 (0.016)**	0.118 (0.011)**	0.061 (0.015)**
OCF	0.350 (0.071)**	0.856 (0.265)**	0.389 (0.135)**
INV	0.002 (0.001)	0.002 (0.004)	0.003 (0.003)
INSOW	− 0.013 (0.031)	0.003 (0.041)	0.002 (0.001)
H	0.603 (0.504)	− 0.381 (0.303)	0.050 (0.062)
Diagnostic tests			
M_2 p-value	.149	.143	.360
Hansen p-value	.983	.909	.971

Notes: Standard errors are in parentheses.
**$p < .01$.

control for this effect. In addition, we take into account the possible effects of the changes in general economic conditions by including year dummies.

Table 2 reports descriptive statistics and correlations between the variables used in this study. The value for Tobin's Q, EPS, and ROA average was 1 (because they are IRRs) and TMT pay dispersion was 0.74. The correlation of performance measures with TMT pay dispersion ranges from 0.19 to 0.15, which reflects a positive relationship. Board characteristics of the sample were as follows: average number of board members, 11.08; average percentage of independent directors on the board, 34%; and average duality, 57%. Control variables related to firm performance determinants included in all the models were as follows: average size as total assets, €918 millions; average R&D activity as a percentage of intangible assets, 11%; average diversification as the number of four-digit SIC codes, 1.42; average volatility as the standard deviation of stock return, 41%; average firm leverage, 44%; average operating cash flow return, 11%; average firm investment, 2%; average proportion of director managers' ownership, 11.06%; and ownership concentration average, 0.30.

The highest correlation between independent variables in Table 2 is 0.38, and it represents the link between BS and firm size measured by total assets. For the other independent variables, correlations are lower. Nevertheless, we calculated the variance inflation factor to quantify the severity of multi-collinearity of all independent variables used. The biggest value is 3.8 for firm size and the other variables have a variance inflation factor value <2.5. Taking into account that the conventional cut-off for variance inflation factor index is 10 (Hair, Black, Babin, & Anderson, 2010), correlations are within acceptable limits and multi-collinearity is not a problem.

Table 3 reports the results of the three models used to test Hypotheses 1. The models in Table 3 show the basic relationship between firm performance and TMT pay dispersion including control variables. As expected, firm size, firm leverage, and operating cash flow return are significant in determining firm performance. They show positive relationships when they are significant. Diversification is negatively related with firm performance when it is significant. Volatility is positive in determining ROA but negative for Tobin's Q, but the coefficient values do not have economic significance. TMT pay dispersion has a positive and significant impact on firm performance, providing support for Hypothesis 1. The level of significance is lower when we consider ROA as a performance measure.

Table 4 shows the results for Hypothesis 2, classifying companies as OC or OM. The Chow test determines whether coefficients in the models have different impacts on firm performance. The null hypothesis is rejected on the grounds of the Chow test, which reflects the fact that coefficients in the models are not equal and the independent variables do not have the same impact on firm performance. Table 4 exhibits report differences in the significance level of TMT pay dispersion, which is significant at the 1% level in Model I (Tobin's Q) and II (EPS) for OC firms and not significant in Model III, whereas it is not significant in Model I, II, and III for OM firms. Therefore, results in Model I and II support Hypothesis 2, which predicts that the positive association between TMT pay dispersion and firm performance is stronger in OC firms than in OM firms, as a consequence of more effective monitoring. In addition, there are differences in the impact of control variables. Size, leverage, and operating cash flow are positive and significant in all models except for Model I for OM firms. Moreover, volatility is significant in Model I for OC and OM firms, complexity is significant in Model II for OM firms, and diversification is significant in Model III for OC firms.

Regarding OC firms, Model I in Table 5 incorporates governance variables related to board monitoring effectiveness as main effects and Model II includes their marginal effects on performance through TMT pay dispersion. In Model I, only BC has a significant impact on ROA. The relationship is positive, which indicates that an increase in the proportion of independent directors increases firm performance. Control variables, firm size, leverage, and operating cash flow remain positive and significant in all models. The main effect of TMT pay dispersion remains positive in determining firm performance in Models I and II through Tobin's Q and EPS. These results also contribute to the robustness in supporting Hypothesis 1.

Model II introduces the product of TMT pay dispersion and board characteristics in Table 5, in order to measure the marginal effect of the board on TMT pay dispersion, as indicated in Hypothesis 3. The results confirm Hypotheses 3b and 3c, showing that BC and duality are significant, which reflects a differential effect of TMT pay dispersion on firm performance depending on these two board characteristics. Specifically, the products of TMT pay dispersion with the proportion of independent directors are significantly positive in all models, whereas duality is significantly negative in all models at lower levels of significance. These results should be interpreted as meaning that an increase in the proportion of independent directors is associated with an increase in monitoring effectiveness as well as the lack of duality. Therefore, considering the marginal effects on TMT pay dispersion observed in Model II, we can confirm Hypotheses 3b and 3c, because the most positive association between TMT pay dispersion and firm performance is observed in firms with more intensive monitoring by the board, both in terms of a more proportion of independent directors as well as in firms without duality.

To evaluate the economic significance of the marginal effects of TMT pay dispersion through BC and the lack of duality, we have evaluated the change in the IRR produced by these variables. Figure 1 shows the change in the IRR to different proportions of independent directors, when there is no duality. As the consequence of the TMT pay dispersion, the industry relative ratio Tobin's Q could increase up to 15% and the EPS up to 37% with the proportion of independent directors.

CONCLUSIONS AND DISCUSSION

Questions concerning top managers' compensation and their degree of effectiveness from a pay dispersion viewpoint has led to numerous controversies and contradictions (Conyon, Peck, & Sadler, 2001; Shaw, Gupta, & Delery, 2002; Fredrickson, Davis-Blake, & Sanders, 2010; Gupta, Conroy, & Delery, 2012). This article analyzes the effects generated by these compensation differences among TMT of Spanish listed firms by using empirical data in a panel model for the period 2004–2009. The models examine the relationship between TMT pay dispersion and firm performance, considering the moderating influence of organizational governance. This paper contributes to the literature by

TMT pay dispersion and firm performance

TABLE 4. EFFECTS OF TOP MANAGEMENT TEAM PAY DISPERSION ON FIRM PERFORMANCE DEPENDING ON THE TYPE OF CONTROL

	Model (I): IRR_TOBINQ		Model (II): IRR_EPS		Model (III): IRR_ROA	
	OC	OM	OC	OM	OC	OM
$TMTPD_{t-1}$	0.490 (0.124)**	−0.210 (0.187)	0.509 (0.032)**	0.207 (0.156)	0.180 (0.139)	0.105 (0.118)
SIZE	0.088 (0.016)**	0.129 (0.031)**	0.047 (0.017)**	0.042 (0.019)**	0.064 (0.018)**	0.073 (0.026)**
COMP	−0.048 (0.055)	−0.020 (0.043)	−0.075 (0.130)	0.217 (0.051)**	0.036 (0.048)	−0.041 (0.033)
DIV	−0.081 (0.068)	−0.051 (0.044)	−0.548 (0.410)	−0.519 (0.437)	−0.110 (0.029)**	0.030 (0.025)
VOL	−0.019 (0.004)**	−0.017 (0.006)**	−0.071 (0.101)	0.160 (0.120)	0.005 (0.003)	0.004 (0.004)
LEV	0.071 (0.023)**	−0.047 (0.035)	0.121 (0.020)**	0.116 (0.019)**	0.065 (0.020)**	0.059 (0.016)**
OCF	0.361 (0.081)**	0.346 (0.062)**	1.004 (0.306)**	0.801 (0.288)**	0.385 (0.134)**	0.390 (0.138)**
INV	0.002 (0.002)	0.003 (0.004)	−0.001 (0.002)	0.003 (0.003)	0.004 (0.004)	0.003 (0.004)
INSOW	0.021 (0.034)	−0.017 (0.020)	0.003 (0.040)	0.004 (0.038)	0.002 (0.002)	0.002 (0.002)
H	0.701 (0.588)	0.517 (0.429)	−0.503 (0.355)	−0.301 (0.408)	0.060 (0.064)	0.044 (0.058)
Diagnostic tests						
M_2 p-value	.737	.532	.346	.274	.618	.465
Hansen p-value	.990	.891	.991	.930	.998	.920
Chow test	–	0.702	–	0.602	–	0.201

Notes: Standard errors are in parentheses.
**p < .01.

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TABLE 5. EFFECTS OF TOP MANAGEMENT TEAM PAY DISPERSION AND BOARD CHARACTERISTICS ON FIRM PERFORMANCE IN OWNER-CONTROLLED FIRMS

	IRR_TOBINQ		IRR_EPS		IRR_ROA	
	(I)	(II)	(I)	(II)	(I)	(II)
$TMTPD_{t-1}$	0.298 (0.110)***	0.270 (0.098)***	0.494 (0.058)***	0.302 (0.062)***	0.181 (0.141)	0.172 (0.144)
BS	0.014 (0.025)	0.016 (0.021)	0.026 (0.037)	−0.031 (0.032)	−0.072 (0.052)	−0.066 (0.057)
BC	0.071 (0.041)*	0.074 (0.052)	0.339 (0.260)	0.371 (0.283)	3.042 (0.880)***	2.707 (0.904)***
DUAL	−0.012 (0.022)	−0.011 (0.018)	−0.507 (0.312)	−0.568 (0.394)	0.218 (0.252)	0.209 (0.277)
TMTPD·BS		0.001 (0.002)		0.014 (0.025)		−0.032 (0.046)
TMTPD·BC		0.042 (0.011)***		0.112 (0.025)***		1.509 (0.250)***
TMTPD·DUAL		−0.013 (0.006)**		−0.002 (0.001)*		−0.064 (0.036)*
SIZE	0.085 (0.014)***	0.084 (0.012)***	0.049 (0.019)***	0.045 (0.018)***	0.061 (0.019)***	0.063 (0.020)***
COMP	−0.047 (0.053)	−0.050 (0.056)	−0.068 (0.142)	−0.052 (0.150)	0.041 (0.062)	0.039 (0.057)
DIV	−0.080 (0.067)	−0.083 (0.070)	−0.502 (0.408)	−0.511 (0.412)	−0.115 (0.030)***	−0.112 (0.026)***
VOL	−0.020 (0.009)**	−0.013 (0.008)	−0.083 (0.108)	−0.079 (0.093)	0.005 (0.003)	0.004 (0.003)
LEV	0.084 (0.021)***	0.081 (0.020)***	0.118 (0.023)***	0.110 (0.026)***	0.062 (0.019)***	0.060 (0.023)***
OCF	0.364 (0.088)***	0.358 (0.079)***	0.985 (0.316)***	0.978 (0.322)***	0.388 (0.132)***	0.381 (0.129)***
INV	0.002 (0.003)	−0.001 (0.002)	0.001 (0.002)	−0.002 (0.002)	0.004 (0.005)	0.004 (0.004)
INSOW	0.019 (0.032)	−0.020 (0.016)	0.001 (0.031)	−0.002 (0.026)	−0.001 (0.002)	0.003 (0.002)
H	0.662 (0.510)	0.591 (0.498)	−0.511 (0.361)	−0.598 (0.581)	0.075 (0.059)	0.069 (0.061)
Diagnostic tests						
M_2 p-value	.146	.141	.218	.261	.190	.246
Hansen p-value	.750	.904	.952	.981	.812	.993

Notes: Standard errors are in parentheses.
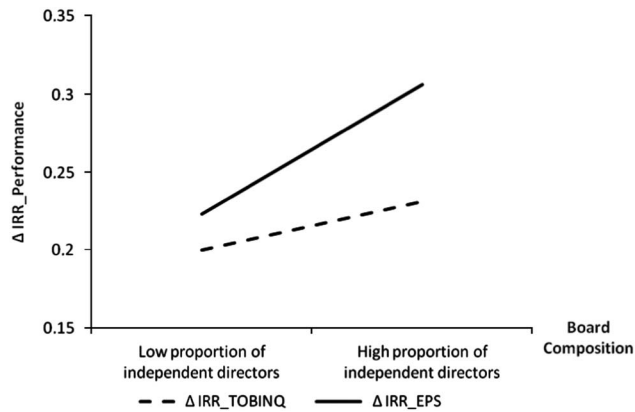***p < .01; **p < .05; *p < .1.

FIGURE 1. MARGINAL EFFECTS OF TOP MANAGEMENT TEAM PAY DISPERSION AND BOARD COMPOSITION ON FIRM PERFORMANCE

providing new evidence about the consequences of TMT compensation dispersion and its interactions with corporate governance structure in the Spanish context, where board monitoring and ownership structure have different characteristics from those in other European and Anglo-Saxon countries (La Porta, Lopez-de-Silanes, & Shleifer, 1999; Baixauli-Soler & Sanchez-Marin, 2011). In addition, this article gives support to the complementarities between corporate governance and TMT pay dispersion as monitoring mechanisms for improving performance in complex firms that are more difficult to monitor (Lee, Lev, & Yeo, 2008; Chen, Ezzamel, & Cai, 2011). In what follows, we detail all these contributions.

Primarily, the study supports the tournament theory (Lazear & Rosen, 1981; Lazear, 1989) in the case of the highest levels of organizational hierarchies, suggesting that the job complexity of the TMT in large listed companies means that pay dispersion positively influences firm performance. We corroborate the conclusions of Eriksson (1999) and Main, O'Reilly, and Wade (1993) about the nature of high competition in managerial positions, especially in large companies such as Spanish listed firms, where compensation dispersion between director managers and non-director managers has been revealed as one of the most important motivating instruments for the TMT, contributing positively to firm performance. We also provide evidence of how managerial pay dispersion potentially mitigates agency conflicts in complex firms that are more difficult to monitor. Considering the high level of discretion, uncertainty, and complexity that Spanish TMTs have to deal with in their executive activities, we found that relative performance is an appropriate monitoring mechanism that is favorable to the use of tournament incentives (Bloom & Michel, 2002; Lin, Yeh, & Shih, 2013).

This finding supports the notion that in firms with activities that are difficult for shareholders to monitor, greater pay dispersion mitigates some of the managers–shareholders agency conflicts by motivating top managers to improve firm performance. Therefore, equity and social comparison theories do not apply in the case of top managers of listed Spanish companies. According to our results, compressed pay differentials among director managers and non-director managers inside the TMT do not generate the expected performance increases through the motivational effects of co-operation and teamwork. Two arguments can explain these results. First, given that Spanish top managers of listed companies are special employees in a context extremely competitive, it seems that the main motivation is more associated with the related prize to promotion, as indicated by some studies in the tournament theory (Main, O'Reilly, & Wade, 1993; Lee, Lev, & Yeo, 2008) and, in that way, recent evidences in Spain indicate that listed companies recognize that TMT position by means of high levels of compensation (Gutierrez & Saez, 2012; Baixauli-Soler & Sanchez-Marin, 2015). Second, among these

Spanish top managers, it is common to find a TMT with an educational and experience background strongly linked to the Anglo-Saxon companies' culture, in which individual differences in top managers' compensation are a central way of signaling, being a better motivator than equal treatments in pay (Baixauli-Soler & Sanchez-Marin, 2011; Sanchez-Marin & Baixauli-Soler, 2014). However, it should be noted that these results may be, and probably are, very different if we descend into other hierarchical levels of the company – i.e., middle managers and technical or operational employees.

Our analysis also indicates that the association between firm performance and TMT pay dispersion is conditional on organizational governance effectiveness (Lee, Lev, & Yeo, 2008). High pay dispersion is associated with better performance in firms with more effective governance systems, which, in the context of Spanish firms, is primarily determined by the ownership structure. We found two main scenarios, depending on the type of controlling shareholder, the supervisory effectiveness of the board and, therefore, the relationship between TMT pay dispersion and firm performance vary (Baixauli-Soler & Sanchez-Marin, 2015). In general, the positive link between TMT pay dispersion and firm performance is stronger in OC firms than in OM firms, as a consequence of the more effective monitoring. The more the shares are held by an external shareholder, the greater the alignment of TMT compensation with firm performance, decreasing opportunistic practices of rent expropriation. In addition, these are firms with high proportion of independent directors and with less presence of duality that also guarantee a more objective and effective monitoring exerted by the board of directors (Lambert, Larcker, & Weigelt, 1993; Morck, Wolfenzon, & Yeung, 2005; Conyon & He, 2011). Conversely, TMT compensation monitoring when the company is controlled by internal majority shareholders is less effective, both from the viewpoint of the ownership – as an indirect supervision mechanism – and from the perspective of the board – as a direct supervision mechanism.

Therefore, considering the context of Spanish TMTs, we found that the motivational benefits from larger pay dispersion exceed the costs from envy and dysfunctional behavior associated with larger compensation dispersion. Moreover, we affirm that organizational governance and managerial pay dispersion are complementary and mutually enhancing mechanisms for strengthening firm performance only in the context of OC Spanish listed firms. The extensive use of tournament incentives associated, in general, with individual and business performance levels causes greater pay differences between TMT and, in the end, is associated with better firm performance when it supports high agency conflicts related to managerial discretion. Thus, our results corroborate the complementary roles of compensation contracts and corporate governance in the alignment of interests (Mehran 1995; Hartzell & Starks, 2003), supporting the idea that board characteristics and the ownership structure of the Spanish listed firms have a great influence on the effectiveness of supervision of top managers, and therefore on the design of appropriate compensation packages (Lee, Lev, & Yeo, 2008).

Previous research in Spain (Crespi & Gispert, 2003) has indicated that the lack of governance effectiveness in Spanish firms may explain the high levels of TMT pay, the low dispersion of compensation, and, in general, the lack of connection with firm performance. However, our results highlight that a specific group of Spanish companies, the OC firms, do incorporate effective systems of organizational governance, through some aspects of both the board of directors and ownership structure (Baixauli-Soler & Sanchez-Marin, 2015; Sanchez-Marin & Baixauli-Soler, 2014), which generate beneficial effects in terms of firm performance from the more dispersed TMT pay schemes. Conversely, in MC firms, the high ownership concentrations in the hands of top managers, who easily 'entrench' themselves, give them a great degree of discretion to override the board of directors and establish higher pay levels for themselves. Given the multiple cross-holdings existing in this group of firms (Salas, 2002; de Miguel, Pindado, & de la Torre, 2004), board independence may be called into question because of the multiple problems of agency they face (Rajan, 1992). As a result, TMT pay is not affected by firm performance and remains compressed – with small dispersion – affecting the alignment of interests of minority owners.

Therefore, to overcome these issues, in terms of compensation linked to performance, Spanish companies – especially OM firms – must work in two directions. First, it is necessary to encourage market discipline to promote better functioning of external governance mechanisms (e.g., the market for corporate control), taking action to improve the protection of property rights of minority shareholders (Gutierrez & Saez, 2012). Second, it is essential to foster greater transparency and disclosure in corporate governance reports, especially in relation to the compensation policies of top managers, facilitating the creation of trust and legitimacy while discouraging inappropriate and possibly selfish behavior (Baixauli-Soler & Sanchez-Marin, 2015). In that sense, regulatory and legislative initiatives seem indispensable. In addition to the Código Unificado de Buen Gobierno (2006), in recent years there have been several Government Laws in this arena, ranging from the protection of minority shareholders by means of deregulation of voting right pacts to the obligation to publish individualized compensation reports of the TMT, explaining it in terms of added value to the company. It remains to be seen whether these initiatives are enough to create appropriate mechanisms for an adequate TMT pay-for-performance link.

Finally, this study has some limitations. First, following Eriksson (1999) and Shaw, Gupta, and Delery (2002), we have used a range as a measure of TMT pay dispersion, but it would also be possible to use other measures of pay dispersion such as coefficient of variation or the Gini index (Bloom, 1999), although this was impossible as we had no access to pay-level data. Second, the impact of TMT pay dispersion might depend on other variables such as, e.g., task interdependence, the nature of goals, and environmental uncertainty (Finkelstein & Boyd, 1998; Carpenter & Sanders, 2002), but we did not include these measures because of the difficulty of gathering this information in the context of large listed companies at the level of top managers. Finally, our study included only listed firms and top managers; however, considering the importance of the non-listed companies and non-managerial employees, future studies should also include them in order to analyze in a deeper way the nature of the relationships among pay dispersion, organizational governance, and firm performance

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