

OWNERSHIP STRUCTURE AND BOARD EFFECTIVENESS AS DETERMINANTS OF TMT COMPENSATION IN SPANISH LISTED FIRMS

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Abstract. This study analyzes the influence of ownership structure and the board of directors on top management team (TMT) pay levels in a sample of Spanish listed firms. When panel data methodology is applied, the results show that TMT pay level is affected by the supervisory effectiveness of the board. This, in turn, is influenced by ownership concentration and the type of major shareholders. When ownership is dispersed, the board is more effective in their supervision and TMT pay level is lower. However, when ownership is concentrated, the quality of supervision and, consequently, TMT pay levels depend upon the type of shareholder that is predominant.

Keywords: Top management team compensation, ownership structure, board effectiveness, Spanish listed firms.

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1. Introduction

Since the first study by Berle and Means (1932), in which the separation of ownership and control was proposed, numerous studies have attempted to analyze the different structures of ownership and what effects they have on the organization. The literature provides information on the influence ownership structure has on different aspects of organizational governance (Shleifer and Vishny 1997; Werner *et al.* 2005), and takes into account such important measures as ownership concentration (Tosi and Gomez-Mejia 1989; Maug 1998), proportion of ownership by the top managers (Boyd 1994; Tosi and Gomez-Mejia 1994), and the presence of institutional investors (David *et al.* 1998; Hartzell and Starks 2003).

Ownership structure may act as a natural control mechanism which can reduce agency problems between owners and top managers and align their interests (Hart 1995). As

such, it constitutes an effective mechanism for top manager supervision and controls their compensation (Jensen and Meckling 1976). However, it is also important to take into account that ownership structure indirectly influences the supervisory effectiveness of the board of directors (Bathala and Rao 1995; Whidbee 1997; Lefort and Urzua 2008) and that top managers' compensation depends on both these mechanisms. Coles *et al.* (2001) indicates that organizations should design their control mechanisms in such a way as to bring about an alignment of interests and thus use specific control mechanisms to overcome or mitigate agency problems that may arise with the use of other such mechanisms. Hence, a high level of control by the owners may lead to a reduction in the power of the board of directors. In turn, this may alter the effectiveness of their supervision and, consequently, the levels of top managers' compensation (Rediker and Seth 1995; Whidbee 1997; Bozec, Y. and Bozec, R. 2007).

The majority of previous studies in this stream either concentrate their analysis on the effects of ownership structure without taking the interrelationships with the board of directors into consideration, or do not produce a clear answer in terms of the consequences these effects have on compensation (Donnelly and Kelly 2005; Werner *et al.* 2005). For example, a number of studies show that when top managers own shares, their interests align with those of other owners (Jurkštienė *et al.* 2008), the board is more effective in its supervisory role, and this brings about a reduction in the top managers' levels of pay (Tosi and Gomez-Mejia 1994; Brick *et al.* 2006). However, other studies show that ownership by top managers produces the opposite effect, increasing their pay levels (Mangel and Singh 1993; Vafeas 2003). As a result, it is not clear whether the presence of institutional investors makes boards more or less effective or how this translates into higher or lower pay levels for top managers (David *et al.* 1998; Hartzell and Starks 2003; Khan *et al.* 2005). There is also the question of whether placing ownership in the hands of investors who have no links to the organization has a positive or negative influence on the board's supervisory effectiveness and whether this produces a rise or fall in top management team (TMT, hereafter) pay levels (Lambert *et al.* 1993; Cyert *et al.* 2002; Ozkan 2007).

A deeper analysis of the influence of ownership structure and board effectiveness on top managers' compensation is needed. Hence, the main objective of the present study lies in testing Spanish listed firms to see whether the ownership structure influences the board's supervisory effectiveness, and whether the joint effect of both internal control mechanisms has an impact on TMT pay level as a whole.

Spanish listed firms are attractive for several reasons. The recently enacted *Código Unificado de Buen Gobierno* (2006), which is similar to the Cadbury Code (1992) in the UK, requires listed firms to disclose TMT compensation. Spanish corporate governance is characterized by a relatively small stock market and a high level of ownership concentration in the hands of a small number of shareholders (De Miguel *et al.* 2004). In Spain, therefore, the control mechanisms rely either on contractual clauses governing incentives between shareholders and managers or on direct supervision by the board (La Porta *et al.* 1999; De Andres *et al.* 2005). Thus, the importance of ownership structure and board effectiveness in the determination of TMT pay levels is highly significant (Sanchez-Marín *et al.* 2010; Baixauli-Soler and Sanchez-Marín 2011).

The present study highlights the importance of the peculiarities in national systems of corporate governance in determining TMT pay. Compared with other EU countries or Anglo-Saxon countries, Spain represents a completely new and unexplored scenario for testing dynamic relationships and this study will provide new insights into international governance (Firth *et al.* 2007; Lin and Su 2009). More so than in other countries, an understanding of how corporate governance determines TMT pay levels in Spain can contribute to the understanding of the effectiveness of agency control.

The structure of the study is as follows. It begins with a review of the main theoretical positions proposed in previous literature and, based on this, several research hypotheses are put forward. This section is followed by an explanation of the methodology employed and the model proposed. The penultimate section is devoted to explaining the results. Finally, conclusions are drawn and discussed.

2. Theoretical Framework and Research Hypotheses

In order to analyze the influence of ownership structure on the supervisory effectiveness of the board and determine the effect on TMT pay levels, this study sets out two key contexts (Fig. 1): high and low levels of ownership concentration. We examine the different ways in which the significant presence of managers, institutional investors, and external owners in the ownership structure influence the effectiveness of the board and TMT pay levels in situations of high ownership concentration.

There has been extensive discussion as to whether concentrated or dispersed ownership is more conducive to effective governance (Core *et al.* 1999; Cyert *et al.* 2002). While greater concentration can be an obstacle in certain cases, especially for minority interests, it can also allow for the specialization necessary to develop complex organizational structures and distribute the risk appropriately among managers and owners (Melnikas 2005; Firth *et al.* 2007; Tvaronavičienė and Degutis 2007). In both of these cases, the influence of owner concentration on supervisory board effectiveness and, consequently, on TMT pay levels is clear. However, when higher concentrations of ownership exist, the type of owners and the proportion of shares they hold will determine the effectiveness

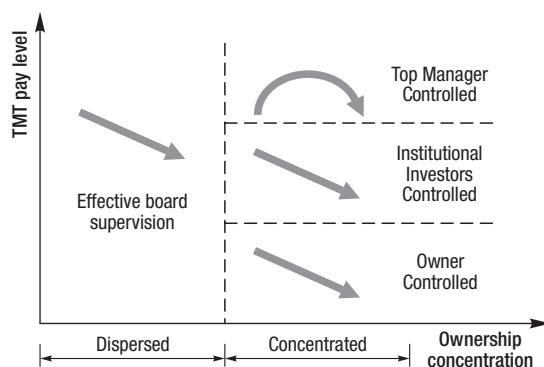


Fig. 1. Ownership structure, supervisory board effectiveness, and TMT pay level

of supervision over the TMT and its pay. In the following paragraphs, we analyze the interactions in the different contexts showed in Fig. 1 and put forward the hypotheses.

A *dispersed structure of ownership* can lead to a lack of incentive for owners to control the activity of top managers, leading to a passive attitude in the defense of their interests (Grossmann and Hart 1980; Maug 1998). The cost of obtaining information means any response by the small shareholder will depend on the potential benefit that be may obtained by their actions (Hart 1995). This produces a double effect upon supervisory effectiveness (Hart 1995): (1) in terms of the votes cast by the shareholders, the ability to control is reduced and more power is delegated to the board of directors who, in turn, delegate to top managers; and (2) the lower level of participation reduces shareholder's motivation to confront the issue of supervision for as long as the dividends continue to be paid.

A passive attitude on the part of minority shareholders and the great difficulty they experience in coordinating their actions result in an ownership structure that cannot act as an effective control mechanism of TMT and its pay (Core *et al.* 1999). In this case, whether any control is exercised over the TMT will depend upon the supervisory effectiveness of the board (Soltane 2009). If the board has relatively few members, includes a significant proportion of external or independent directors, and is truly focused on controlling the activities of the TMT –in terms of the activity of the several committees of which the board is composed–, the interests of the owners and managers can be aligned. This alignment tends to reduce TMT pay levels (Tosi and Gomez-Mejia 1989; Boyd 1994; Conyon and Peck 1998). In Spain, due to the fact that the characteristics of corporate governance indicate a highly limited effectiveness of internal control mechanisms (De Miguel *et al.* 2004), more effective monitoring by the board is expected to cause a greater reduction in TMT pay levels (Sanchez-Marín *et al.* 2010; Baixauli-Soler and Sanchez-Marín 2011). On the basis of these arguments we put forward the following hypothesis.

Hypothesis 1: In a low concentration context, as supervisory board effectiveness increases, TMT pay levels will be lower.

A *concentrated structure of ownership* contributes to the solution of certain agency problems related to conflicts of interest as the majority shareholders have an incentive to collect information and supervise top managers (Werner *et al.* 2005). Thus, when ownership is concentrated in the hands of a few major shareholders, they have greater power to defend the capital invested and are highly motivated to control top managers (Goldberg and Idson 1995; Faccio and Lang 2002) and, in particular, their compensation (Tosi and Gomez-Mejia 1989).

Although these relationships are fairly clear, one of the most important subjects to analyze relates to how the type of ownership concentration influences supervisory board effectiveness. This will depend on whether the majority shareholders –top managers, institutional investors or external owners – (Werner *et al.* 2005) can impose their own interests and the extent to which this will influence board effectiveness and TMT pay levels (Rediker and Seth 1995; Bozec, Y. and Bozec, R. 2007). This is particularly im-

portant in the Spanish context, where, in comparison to traditionally studied countries such as US or UK, a more limited and undeveloped system of corporate governance is in place. We detail these relationships below.

When ownership is concentrated in the hands of *top managers*, divergent effects may be produced. When top managers hold a high proportion of shares, the ‘entrenchment effect’ is produced (Demsetz 1983; Fama and Jensen 1983), whereby top managers acquire enough power to enable them to follow their own objectives whatever the circumstances. They may fall into opportunistic behaviour in conflict with the interests of other owners and even with the firm business interests (Lambert *et al.* 1993; Dhaoui 2008). In this case, the entrenched TMT has a major influence on board decisions, thus reducing their supervisory function (Bathala and Rao 1995; Whidbee 1997) and giving greater discretion to the TMT to set higher pay levels for themselves. However, if the proportion of ownership becomes so high that the TMT effectively become the majority shareholder, the consumption of benefits, including those relating to compensation, is reduced (Lambert *et al.* 1993; Core *et al.* 1999) because their personal benefits depend upon the firm’s performance (Mehran 1995; Agrawal and Knoeber 1996). This produces a ‘convergence effect’, which leads to a moderation of TMT pay. This happens in spite of the fact that supervisory board effectiveness remains low –directors relax their monitoring activity when other control mechanisms are in place– and is due to the policy control exercised by the TMT as majority owners (Donnelly and Kelly 2005).

The particularity of the ownership structure in Spanish listed firms may have a strong influence –both in a positive and a negative sense– on setting TMT pay levels. Firm ownership is much more concentrated in Spanish firms than in those in the US or UK (La Porta *et al.* 1999). De Miguel *et al.* (2004) find that because of ownership concentration, TMTs become more entrenched at higher levels of ownership than their UK and US counterparts. As a result of this, Baixaulli-Soler and Sanchez-Marín (2011) report a high variability in TMT pay levels depending on ownership concentration levels and the effectiveness in board monitoring. These arguments bring us to the following hypothesis:

Hypothesis 2: In high concentration contexts, as the ownership of top managers increases: (a) the supervisory board effectiveness will decrease, leading to a rise in TMT pay levels –entrenchment effect–; (b) the supervisory board effectiveness will decrease, leading to a reduction in TMT pay levels –convergence effect–.

Considering the relationships put forward in the first two hypotheses (see Fig. 2), we can predict a cubic association between TMT pay level and the ownership of the firm which is conditional upon the control exercised by the TMT (Tosi and Gomez-Mejia 1989, 1994). As hypothesis 1 states, when ownership is dispersed, board supervision is more effective and TMT pay levels will be lower. In this case, an ‘alignment effect’ is produced since the low level of shares held by the TMT results in their lacking power and discretion. However, if ownership is concentrated in the hands of top managers –hypothesis 2–, the entrenched TMT dominates the board and, consequently, enjoys more discretion to set higher pay levels (Werner *et al.* 2005). If ownership among TMT increases still further, there will be a convergence with the interests of shareholders and pay levels will decrease again.

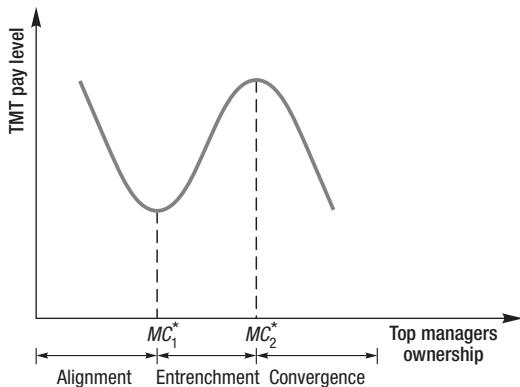


Fig. 2. Relationship between TMT pay level and top managers' ownership

Another notable aspect that influences the supervisory board effectiveness and TMT pay level is the concentration of ownership in the hands of *institutional investors* (David *et al.* 1998; Hartzell and Starks 2003). Institutional investors constitute a organized group –banks, pension funds, insurance companies and investment societies– which characteristically holds a long term portfolio of investments in firms and whose objective is performance maximization (Hartzell and Starks 2003). Institutional investors take the role of traditional owners and exercise stricter control over the TMT through their presence on a more effective board of directors (David *et al.* 1998; Cheng and Firth 2005). As a result they reduce both TMT discretion and possible agency problems (Useem and Gager 1996). Two reasons explain these effects. First, institutional investors have the opportunity to remove incentives for passivity derivated from the possible situation where there are minority shareholders in the firm (Bathala *et al.* 1994). Second, institutional investors have the ability to supervise the TMT directly (Bathala and Rao 1995), promoting an independent and effective board that protects shareholders interests (Li *et al.* 2006) and that consequently moderates TMT pay level.

Finally, when ownership is significantly concentrated in the hands of one of a few *external owners* –or individuals who are not linked to the management of the firm–, they can control strategies and supervise TMT actions, keeping them focused on the firm's objectives (McConnell and Servaes 1990; Donnelly and Kelly 2005). Several studies have identified the existence of a 'substitution effect' when external shareholders increases their ability to control the TMT while reducing supervisory board effectiveness (Rediker and Seth 1995; Bozec and Bozec 2007). If ownership is concentrated in the hands of external owners, supervisory board effectiveness is reduced because the board tends to relax its vigilance when there are other mechanisms in place; in this case the political power of the majority external owners (Donnelly and Kelly 2005). Thus, despite reducing supervisory board effectiveness, the concentration of ownership in the hands of external owners compensates for this by the more direct control that the individuals can exercise over the TMT. This control includes setting TMT pay levels which are effectively moderated. Based on these arguments, we put forward the following hypotheses:

Hypothesis 3: In high concentration contexts, as ownership of institutional investors increases, supervisory board effectiveness will increase, leading to a reduction in TMT pay levels.

Hypothesis 4: In high concentration contexts, as ownership of external owners increases, the supervisory boards effectiveness will decrease, leading to a reduction of TMT pay levels – substitution effect–.

3. Methodology

3.1. Sample and Data

Both the information on corporate governance – boards of directors and ownership structure – and data on TMT compensation from 120 companies that traded continuously over the four years from 2004 to 2007 were taken from the Spanish Security Exchange Comission (CNMV). Additionally, economic and financial information for these firms was collected from the Osiris database (source: Bureau Van Dyck Electronic Publishing).

If we consider all the firms in the sample over the time period, the maximum number of firm-year observations is 480. As not all the information was in the same format or data was missing, some firms were omitted for years where it was not possible to measure the variables concerned. In addition, financial industry firms were removed since they compile their accounts in accordance with different norms. Thus, the final sample consists of a total of 308 firm-year observations.

3.2. Measurement of Variables

TMT pay level. The variable mean value of TMT pay level (TMTPL) is calculated as the total compensation of all top managers, directors or non-directors, divided by the number of those managers (Carpenter and Sanders 2002). As a control variable, we consider a dummy variable to measure duality (DUAL): the variable equals one if a CEO is also the board chair and zero otherwise (Boyd 1994).

Supervisory board effectiveness. Four variables have been employed to measure this concept (Sanchez-Marín et al. 2010): (1) The number of directors (DIR) is measured as the number of non-manager directors on the board. (2) The number of committees appointed by the board of directors (CO) is calculated as the number of committees that the board thought necessary to function properly. (3) The size of the compensation committee (SRC) is the number of members of this committee. Lastly, (4) the number of meetings of the compensation committee (MRC) is directly measured as the number of meetings held.

Ownership structure. Following the literature operationalization (Tosi and Gomez-Mejia 1989; Werner et al. 2005), ownership structure (OW) –and also the control exercised by the various parties–, is measured by means of the percentage of shares held by the largest investor. We classify the firms in the sample as manager controlled when the largest investor is a top manager (DMC), institutional controlled when the largest investor is an institution (DIC) and owner controlled when the largest investor is a private investor (DOC).

Control variables. A number of economic and other contextual factors linked to TMT pay levels have been included as control variables. Apart from duality, the economic factors considered are performance, complexity and firm size (Tosi and Gomez-Mejia 1994; Carpenter and Sanders 2002). Financial return on investment (ROE) is used to measure firm performance; the logarithm of the value of assets (TA) is used to measure firm size; and, finally, complexity of the business is measured using intangible assets as a percentage of total assets (IA).

3.3. Analysis and proposed model

In order to examine the four hypotheses, a model was proposed and estimated using panel data. Panel data methodology makes it possible to conduct a longitudinal study even though the data comes from a small number of transverse samples. This technique allows us to obtain more accurate estimations with less correlation and greater variability (Baltagi 2001). One of the features of panel data analysis is that it allows for the introduction of unobservable heterogeneity between individuals. Hence, we can allow for individual characteristics, such as the top managers' skills or the specific roles required for each firms' activity, that may have an effect on TMT compensation but which are impossible to control for because they are difficult to measure. The unobservable individual differences are represented by the individual effects, η_i , which are introduced into the model, with the error term being the sum of the random disturbance and the individual effects, $\eta_i + v_{it}$. The results may be biased if there is no control for individual heterogeneity.

The model was estimated using the intra-group estimator and generalized least squares. In the intra-group estimation, the variables were standardized in relation to the mean, while in the generalized least squares, the estimation was consistent with the variance-covariance matrix. If the estimations produced by the two methods are not significantly different, the estimations are consistent but only the generalized least squares method is efficient. However, if the estimates are significantly different, only the intra-group estimator is consistent. Hausman's (1978) method compares the two estimations on the null hypothesis that the estimators do not differ significantly. Thus, the intra-group estimations are used when the null hypothesis is rejected and the generalized least squares estimations are used when the null hypothesis is accepted.

The present study distinguishes three patterns of ownership structure which can affect supervisory board effectiveness and TMT pay levels: firms controlled by top managers, firms controlled by institutional investors, and firms controlled by external owners. Thus, the circumstances that influence supervisory board effectiveness and its effect on TMT pay can be represented in a single model which distinguishes the type of owner. This model is presented in detail below.

Supervisory board effectiveness in firms controlled by top managers. For firms controlled by top managers ($DMC = 1$), hypothesis 1 and hypothesis 2 predict a cubic relationship between the pay level and the percentage of the firm owned by top managers (as shown in Fig. 2). To test the hypotheses, the model has to include the following equation:

$$TMTPL_{it} = \beta_1 + [\beta_2 \cdot OW_{it} + \beta_3 \cdot OW_{it}^2 + \beta_4 \cdot OW_{it}^3] DMC_{it} + \dots + \eta_i + v_{it}. \quad (1)$$

The proposed cubic relation has two turning points, a minimum OW_1^* and a maximum OW_2^* , which can be found by differentiating in relation to the ownership of the top managers, and equating to zero. The values of the turning points are given by $(-2\beta_3 \pm \sqrt{4\beta_3^2 - 12\beta_2\beta_4})/6\beta_4$. Given that hypothesis 1 and hypothesis 2 imply that the first value is a minimum and the second a maximum, β_3 and β_4 must have opposite signs, so the second derivative, $2\beta_3 + 6\beta_4 OW$, should be positive for OW_1^* and negative for OW_2^* . Once the coefficients are estimated we can obtain the cut-off levels for managerial ownership by substituting them in $(-2\beta_3 \pm \sqrt{4\beta_3^2 - 12\beta_2\beta_4})/6\beta_4$.

Supervisory board effectiveness in firms controlled by institutional investors. According to hypothesis 3, in firms where institutional investors predominate ($DIC = 1$), the supervisory board effectiveness is greater, the board is strengthened by the substitution effect, thus leading to a reduction in TMT pay levels. Thus, we expected the variable $OW \cdot DIC$ to have a negative effect. The product of the $OW \cdot DIC$ by the board characteristics (BOARD) is introduced to measure the marginal effect that each has on the other.

$$TMTPL_{it} = \beta_1 \cdot BOARD_{it} + [\beta_2 \cdot OW_{it} + \beta_3 \cdot BOARD_{it} \cdot OW_{it}] DIC_{it} + \dots + \eta_i + v_{it}. \quad (2)$$

If we differentiate in relation to $BOARD$, we obtain $\beta_2 + \beta_3 OW \cdot DIC$, which means that β_3 gives an indication of the marginal effect which institutional ownership has on the TMT pay level.

Supervisory board effectiveness in firms controlled by external owners. In firms controlled by outside owners ($DOC = 1$), the owners exercise supervision that substitutes that of the board. Even though their supervision reduces the effectiveness of the board, their interventions are effective in controlling the TMT. In this context, the TMT pay level is reduced because of the improved supervision of the board (hypothesis 1). At the same time, the board can reduce its vigilance, because of the substitution effect related to supervision exercised by the owners (hypothesis 4). Thus, we expected a negative coefficient for $OWN \cdot DOC$ variable. The model also introduces the product $BOARD \cdot OWN \cdot DOC$ to examine the possible marginal effect of the variables on the TMT pay level.

$$TMTPL_{it} = \beta_1 \cdot BOARD_{it} + [\beta_2 \cdot OW_{it} + \beta_3 \cdot BOARD_{it} \cdot OW_{it}] DOC_{it} + \dots + \eta_i + v_{it}. \quad (3)$$

To avoid model misspecification we add equations (1), (2) and (3) into one model and we include the control variables. The model is expressed in the following equation.

$$\begin{aligned} TMTPL_{it} = & \beta_0 + \beta_1 \cdot BOARD_{it} + \\ & [\beta_2 \cdot OW_{it} + \beta_3 \cdot OW_{it}^2 + \beta_4 \cdot OW_{it}^3] DMC_{it} + \\ & [\beta_5 \cdot OW_{it} + \beta_6 \cdot BOARD \cdot OW_{it}] DIC_{it} + \\ & [\beta_7 \cdot OW_{it} + \beta_8 \cdot BOARD \cdot OW_{it}] DOC_{it} + \\ & \beta_9 \cdot ROE_{it} + \beta_{10} \cdot TA_{it} + \beta_{11} \cdot IA_{it} + \beta_{12} \cdot DUAL_{it} + \eta_i + v_{it}. \end{aligned} \quad (4)$$

4. Results

Table 1 presents the descriptive statistics for all the firms in the sample, giving the values for each type of firm according to the ownership structure and the type of largest investor. Table 2 shows the correlations between the variables used in the models. As can be seen, the signs are in accordance with those expected from the theoretical discussion set out above. The biggest correlation is between the four variables: board size (DIR), number of board committees (CO), size of the compensation committee (SRC) and number of meetings (MRC), which measure the supervisory board effectiveness (BOARD). Since their values range from 0.42 to 0.58, we estimate the model with each variable separately to avoid multicollinearity problems.

Table 3 presents results for equation (4) and shows the influence of ownership on supervisory board effectiveness and TMT pay levels. In the first estimation, where the board size is taken into account, as supervisory board effectiveness goes up, TMT pay levels go down, as was suggested in Hypothesis 1, $\beta_1 < 0$. The same result is obtained in the second estimation where the number of committees is considered. In the other estimations, when size of compensation committee or number of meetings is introduced, we observe that the coefficient becomes statistically non-significant. Therefore, unlike board size or the number of committees, compensation committees do not have an effect on TMT pay levels.

Table 1. Descriptive statistics

		TOTAL (N = 308)		Institutional Control (N = 112)		Owner Control (N = 151)		Manager Control (N = 45)	
		Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean	Dev.
PAY LEVEL	TMTPL	872.9	5322.1	424.1	429.4	524.2	1404.8	3160.6	9570.4
BOARD	DIR	8.844	3.646	8.642	3.663	9.145	3.839	8.333	2.828
	CO	2.538	0.955	2.589	0.800	2.576	1.073	2.288	0.869
	SRC	3.279	1.717	3.258	1.637	3.377	1.738	3.000	1.846
	MRC	3.613	3.175	3.517	2.687	3.741	3.437	3.422	3.421
OWNERSHIP	OW	28.58	23.78	21.91	23.08	34.66	24.46	24.81	17.56
CONTROL	ROE	13.70	28.48	10.01	29.65	17.21	24.48	11.06	36.28
	TA	14.07	1.88	13.99	1.858	14.26	1.952	13.61	1.629
	IA	0.096	0.117	0.087	0.120	0.101	0.118	0.101	0.110
	DUAL	0.577	0.494	0.696	0.461	0.456	0.499	0.688	0.468

Note: TMTPL: average pay of TMT (thousands of euros); DIR: number of independent directors; CO: number of committees appointed by board; SRC: size of remuneration committee; MRC: number of meetings of remuneration committee; OWN: percentage of shares owned by the largest investor; ROE: financial return on equity; TA: logarithm of total assets; IA: intangible assets over total assets; DUAL: takes value one if CEO is also the board chair.

Table 2. Correlations between variables used in the models

	TMTPL	DIR	CO	SRC	MRC	OW	ROE	TA	IA	DUAL
TMTPL	1.00									
DIR	-0.04	1.00								
CO	-0.02	0.44	1.00							
SRC	-0.01	0.42	0.58	1.00						
MRC	-0.04	0.43	0.48	0.46	1.00					
OW	0.03	0.01	-0.08	-0.02	0.01	1.00				
ROE	0.01	0.09	0.01	-0.01	-0.08	0.05	1.00			
TA	0.04	0.64	0.53	0.40	0.52	0.01	0.15	1.00		
IA	0.05	0.07	0.20	0.19	0.17	-0.08	0.04	0.16	1.00	
DUAL	0.06	0.01	0.03	-0.02	-0.04	-0.22	0.05	-0.02	0.06	1.00

Note: TMTPL: average pay of TMT (thousands of euros); DIR: number of independent directors; CO: number of committees appointed by board; SRC: size of remuneration committee; MRC: number of meetings of remuneration committee; OWN: percentage of shares owned by the largest investor; ROE: financial return on equity; TA: logarithm of total assets; IA: intangible assets over total assets; DUAL: takes value one if CEO is also the board chair.

The proposed cubic relation between the managerial ownership and TMT pay levels is significant at different levels in the four estimations. Given the values of the estimated coefficients, we obtain the turning points using $(-2\beta_3 \pm \sqrt{4\beta_3^2 - 12\beta_2\beta_4})/6\beta_4$. The values obtained in each estimation are: 1.48 and 23.71 –estimation 1–, 1.62 and 17.75 –estimation 2–, 3.43 and 18.67 –estimation 3–, 1.26 and 19.92 –estimation 4–. These turning points give an estimation of the levels of managerial ownership at which alignment, entrenchment and convergence effects occur.

When the percentage owned by the TMT is below 1.48% –estimation 1–, 1.62% –estimation 2–, 3.43% –estimation 3–, 1.26% –estimation 4– the low concentration of ownership in the hands of the TMT allows an alignment of interests through supervisory board effectiveness (hypothesis 1). In contrast, when the participation of top managers is between 1.48% and 23.71% –estimation 1–, 1.62% and 17.75% –estimation 2–, 3.43% and 18.67% –estimation 3–, or 1.26% and 19.92% –estimation 4– there is an entrenchment effect: the greater concentration of ownership in the hands of top managers leads to a reduction in supervisory board effectiveness and a rise in TMT pay levels (hypothesis 2a). However, ownership participation above 23.71% –estimation 1–, 17.75% –estimation 2–, 18.67% –estimation 3–, or 19.92% –estimation 4– produces a convergence effect because the high concentration of ownership in the hands of top managers aligns their interests with those of the other owners, which in turn lowers TMT pay levels (hypothesis 2b).

As can be seen, where the firm is controlled by institutional investors (DIC = 1), supervisory board effectiveness results in a reduction of TMT pay levels. In this case, the board's control mechanisms are effective, irrespective of ownership concentration,

Table 3. Panel data analysis in the relationship between TMT pay level, supervisory board effectiveness, and ownership concentration

Model		(1)	(2)	(3)	(4)
	Constant	5.008** (2.157)	5.827** (2.463)	5.170** (2.440)	5.168** (2.383)
BOARD	DIR	-0.050* (0.027)			
	CO		-0.059* (0.033)		
	SRC			0.021 (0.015)	
	MRC				-0.039 (0.030)
MANAGER CONTROL (DMC = 1)	OW	-1.437* (0.823)	-1.372* (0.760)	-1.461* (0.861)	-1.191* (0.689)
	OW ²	0.514** (0.250)	0.462** (0.223)	0.252** (0.123)	0.502** (0.264)
	OW ³	-0.014* (0.008)	-0.016* (0.009)	-0.008* (0.004)	-0.016* (0.009)
INSTITUTIONAL CONTROL (DIC = 1)	OW	0.009 (0.019)	0.002 (0.005)	0.001 (0.002)	-0.003 (0.013)
	OW*DIR	-0.001 (0.001)			
	OW*CO		-0.004 (0.012)		
	OW*SRC			-0.004 (0.009)	
	OW*MRC				0.001 (0.001)
OWNER CONTROL (DOC = 1)	OW	-0.067* (0.038)	-0.066* (0.038)	-0.061* (0.036)	-0.050 (0.036)
	OW*DIR	-0.006** (0.003)			
	OW*CO		-0.007** (0.003)		
	OW*SRC			-0.003 (0.002)	
	OW*MRC				-0.001 (0.001)
CONTROL VARIABLES	ROE	0.014 (0.017)	0.010 (0.013)	0.017 (0.023)	0.053 (0.076)
	TA	0.035 (0.115)	0.012 (0.036)	0.030 (0.099)	0.018 (0.058)
	IA	0.126** (0.058)	0.075** (0.037)	0.134** (0.064)	0.068** (0.032)
	DUAL	0.133** (0.059)	0.154** (0.069)	0.163*** (0.061)	0.156** (0.067)
Hausman test		0.533	0.531	0.642	0.129

***, ** and * significant at 1%, 5% and 10% respectively. Hausman is the p-value of the Hausman (1978) comparison test.

thus supporting hypothesis 1. This occurs in much the same way where ownership is dispersed as when it is concentrated in the hands of institutional investors. However, hypothesis 3 must be rejected since the coefficients of the variable institutional ownership by board, β_6 , are not statistically significant. It should be noted that there are no observable effects of institutional ownership on supervisory board effectiveness: as the ownership of institutional investors increases, the board maintains its supervisory effectiveness.

Where the firm is controlled by external owners ($DOC = 1$), coefficient β_7 —ownership by external owners—is negative and significant in estimations 1, 2 and 3. This implies that when ownership is concentrated in the hands of external owners, it produces an additional supervision to that of the board. Hence, as the ownership of external owners increases, this increase will produce a reduction in TMT pay levels. The fact that coefficient β_7 is bigger than β_1 indicates that, as predicted in hypothesis 4, when the concentration of ownership by external owners increases, there is a substitution effect with the board of directors. Furthermore, we can observe that the product of board characteristics and external owners ownership is significant in estimations 1 and 2. This indicates that when the concentration of ownership by external owners increases, there is a positive marginal effect on the actions of the board of directors ($\beta_8 < 0$).

5. Conclusions and discussion

The present study attempts to develop an understanding of the interactive effect of ownership structure and board effectiveness on TMT pay levels in order to examine whether they complement or substitute each other. More specifically, the study examines whether any particular ownership structure in Spanish listed firms can be conducive to an improvement or deterioration in board effectiveness, and how these two internal mechanisms contribute, either positively or negatively, to the appropriate supervision of the TMT and the setting of its compensation levels.

The corporate governance system in Spanish listed firms is characterized by a high concentration of ownership in the hands of a few majority shareholders, with significant cross-holdings between firms, and a moderate involvement of institutional investors (De Miguel *et al.* 2004). This implies a reduced diversity of interests on boards, which in principle could provide a favorable context for high TMT pay in relation to other countries such as US or UK where board monitoring is much more developed (Baixaulli-Soler and Sanchez-Marín 2011).

In general, the results confirm our hypotheses, indicating that when ownership is dispersed, TMT pay level is dependent on supervisory board effectiveness, and when ownership is concentrated, TMT pay level depends upon whether control by the majority owners complements or substitutes the board of directors' monitoring activity. We detail our findings in the following paragraphs.

When ownership is dispersed, the incentives for shareholders to supervise the managers are reduced as they have little power and are poorly motivated, and are likely to be passive when it comes to defending their interests, leaving monitoring responsibilities

to the board of directors (Hart 1995). In these cases, the board are seen to be effective in their supervision and TMT pay levels are lower. As opposed to this, when there is a concentration of ownership, the results indicate that supervisory board effectiveness over TMT and its pay level depends upon the type of owner that predominates (Tosi and Gomez-Mejia 1989).

As we expected, if the firm is controlled by top managers, the extent to which supervisory board effectiveness is affected depends on the percentage of their ownership. When top managers own a small proportion of the firm, there is an alignment of their interests with those of the other owners. Effective board supervision is maintained and TMT pay, which remains at low levels, is moderated. However, if top managers own a greater share of the firm, it produces an entrenchment effect, which gives them greater power and reduces supervisory board effectiveness. This results in TMT having a greater influence over its own pay levels, which tend to be higher. Finally, if top managers own so much of the firm that they become majority shareholders, a convergence effect is produced whereby, in spite of the lack of effective supervision of the board, the interests of top managers coincide with those of other shareholders and TMT pay levels are reduced.

When ownership is concentrated in the hands of individuals who have no other links to the company, supervisory board effectiveness, as expected, decreases. The substitution effect found suggests that an increase in the direct control that these investors have over the TMT will be matched by a reduction in the control exercised by the board of directors. Nevertheless, the overall consequence of this is a reduction in TMT pay levels.

Finally, contrary to what was expected, if institutional shareholders own a significant part of the company, the results indicate that the supervisory board effectiveness does not increase. However, the TMT pay level decreases due to the direct control exerted by institutional investors as a result of the ‘social’ pressures of those investors. This result could be explained by the particularities of Spanish corporate governance (De Miguel *et al.* 2004): institutional investors have members on the board that commonly have direct affiliations with management and who are likely to be more sympathetic to high compensation for the TMT. The moderate involvement of institutional investors implies a reduced diversity of interests on boards and may provide a favorable context for high pay for TMTs (Baixauli-Soler and Sanchez-Marín 2011).

As a whole, our findings show significant relationships that determine TMT pay levels: characterized by high concentration and little legal protection for minority shareholders, the structure of ownership of Spanish listed firms tends to lead to higher TMT pay levels, particularly in firms controlled by top managers and institutional investors. Only external owner controlled firms or firms with dispersed ownership have a more moderate level of compensation for their top managers.

In summary, in line with other recent research (Werner *et al.* 2005; Firth *et al.* 2007), the results of the present study highlight the importance of the peculiarities of national systems of corporate governance in determining TMT pay. In particular, this paper contributes to an understanding of how Spanish corporate governance characteristics give a fundamental importance to board and ownership structures in the determination and

adjustment of TMT pay levels. This influence is even stronger than that found in other Western European countries and North American countries.

As a key moderator of TMT pay levels, future research should study organizational governance in depth, extending the models to other samples and scenarios. Such research will be of importance in order to refine our understanding of the influence of ownership structure and board effectiveness on the design of top managers' compensation. This present paper takes the first step in this direction.

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NUOSAVYBĖS FORMOS IR VALDYBOS EFEKTYVUMĄ LEMIANTYS VEIKSNIAI PASIRINKTOSE ISPAÑIJOS KOMPANIJOSE

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Santrauka

Analizuojama nuosavybės formos struktūros ir valdybos įtaka aukščiausio lygio Ispanijos kompanijų vadovų darbo užmokesčio dydžiui. Tyrimų duomenys parodė, kad aukščiausio lygio vadovų darbo užmokesčio dydis priklauso nuo valdybos kontrolės ir jos efektyvumo įtakos. Tai, žinoma, yra susiję su kompanijos savininko ir pagrindinių akcininkų pozicija. Kai savininko pozicija pasyvi, tuomet valdybos veiksmai kontrolės srityje yra efektyvesni, tačiau aukščiausio lygio vadovų darbo užmokesčio lygis yra gerokai mažesnis. Tačiau kai savininkas tiesiogiai dalyvauja kompanijos veikloje ir prisideda prie jos valdymo, tuomet kontrolės kokybė ir aukščiausio lygio vadovų darbo užmokesčio lygis priklauso nuo akcininko pozicijos.

Reikšminiai žodžiai: aukščiausio lygio vadovai, nuosavybės forma, valdybos efektyvumas, pasirinktos Ispanijos kompanijos.

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