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Performance sensitivity of executive pay: the role of ownership structure, board leadership structure and board characteristics

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ABSTRACT

This study first investigates the effect of firm performance on executive pay in listed firms in Turkey, an emerging market from 2009 to 2013. The results reveal a positive and significant link between firm profitability and executive pay: executive pay is sensitive to performance. The question of whether internal corporate control mechanisms play a significant role in the association between executive pay and firm profitability is revisited. Executive pay is weakly tied to profitability when the ownership concentration is high. We expected that, following the managerial power propositions, leadership duality and board size will weaken performance sensitivity of executive pay, with the impact of board independence on this sensitivity being the opposite. However, it was found that only board leadership duality and board size negatively affect the association between return on equity and executive compensation. This study concludes that the performance sensitivity of pay is weaker when executives have more control over decisions, especially those related to their compensation, and when the board of directors' monitoring effectiveness is relatively low.

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1. Introduction

Executive pay is a critical corporate governance mechanism that monitors, disciplines and motivates the executives of firms. While a significant number of studies have examined the determinants of executive pay (e.g., Barkema & Gomez-Mejia, 1998; Devers, Cannella, Reilly, & Yoder, 2007; Finkelstein, Hambrick, & Cannella, 2009; Gomez-Mejia & Wiseman, 1997; Murphy, 1999; Tosi, Werner, Katz, & Gomez-Mejia, 2000), at present there is neither conclusive empirical evidence nor interdisciplinary consensus about the factors influencing executive pay level, structure and performance sensitivity (Core, Holthausen, & Larcker, 1999). Broadly speaking, two competing models of executive pay exist, based on agency theory and managerial power theory. Optimal contracting, supported by agency theory, suggests that companies utilise executive pay as a mechanism to mitigate agency problems.

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Compensation schemes are designed to provide top managers with incentives to perform, in alignment with the interest of shareholders (Jensen & Murphy, 1990). However, growing academic criticisms over both compensation levels and their sensitivity to firm performance suggest that studies should also take into consideration the conflict of interest of the different parties within the executive compensation process, as well as the agency problem (Zhang, Tang, & Lin, 2016). Managerial power theory (Bebchuk & Fried, 2004), on the other hand, reflects these criticisms and asserts that Chief executive officers (C.E.O.s) and top managers might exercise significant bargaining power over their board, which leads to compensation contracts that are not in the best interests of stockholders. Specifically, this view suggests that top executives of firms may extract economic rents when corporate governance is weak and the executives, or more specifically, C.E.O.s, are highly powerful vis-à-vis the board. A considerable body of evidence basically indicates that pay is higher and performance pay sensitivity is weaker when executives have more controlling power over the boards (Core et al., 1999). The objective of this paper is to explore the executive pay in listed firms from both agency and managerial power perspectives in Turkey. The main focus is on the sensitivity of executive compensation to firm profitability. Most of the empirical literature on executive compensation is based on the U.S. and a few developed countries (Canyon, 2006; Murphy, 1999), with a recent and limited focus on emerging economies (i.e., Bryson, Forth, & Zhou, 2014; Canyon & He, 2011; Firth, Fung, & Rui, 2006; Kato & Long, 2006; Lin, 2005; Slomka-Golebiowska & Urbanek, 2016). These studies have tested some hypotheses and have identified a number of empirical findings. To what extent might we expect this evidence to generalise to Turkey, an emerging market? We suggest that the propositions of existing compensation studies of developed and even emerging countries should be tested for Turkey. This is due to the differences in the nature and extent of governance issues and dissimilarities in corporate ownership structures, market dynamics and institutional environments (Armitage, Hou, Sarkar, & Talaulicar, 2017). Despite some commonalities, Turkey as an emerging economy exhibits important diversity (Meyer & Peng, 2016). The performance of a system of corporate governance diverges significantly, based on institutional dynamics at the country level (Aguilera & Cuervo-Cazurra, 2009; Kumar & Zattoni, 2016b; LaPorta, Lopez-de-Silanes, & Shleifer, 1999). Therefore, we also intend to study some firms' mechanisms of internal corporate governance, such as the boards of directors' characteristics and the structure of ownership, in terms of how they influence the link between senior executive pay and firm performance in Turkey. Turkey has a peculiar corporate governance system compared to its European and North American counterparts. The internal governance system in Turkey features the main characteristics of family-based systems. Companies are characterised by highly concentrated ownership, pyramidal-type ownership structures and dominance of business groups. There is a lack of dual organic structures of internal corporate governance. On the other hand, volatile and unreliable financial and capital markets, insufficient liquidity to provide external control and weak legal protection for minority shareholders shapes the external corporate governance environment in Turkey (Nilsson, 2007; Oba, Tiğrel, & Şener, 2014; Yamak & Ertuna, 2017).

This paper first reviews the related literature and then develops a number of hypotheses for Turkey. We look at the sensitivity of pay to firm performance, and also examine the impact of ownership structure and board characteristics on the link between firms' performance and executive compensation. A sample of 1167 firms was derived from those listed on the Turkish stock market for the years 2009–2013.

This study makes a valuable contribution to the literature in two ways. First, we fill a gap in the current executive compensation research from the perspective of an emerging country. Responding to the call for investigation on executive pay in emerging countries, we discuss further how empirical regularities identified in different study contexts may be generalised to Turkey. Our study provides significant insights into the compensation literature for international researchers and practitioners from the perspective of emerging countries in general and Turkey in particular. Although Turkey is different in many respects, some of the relationships found in the literature hold validity there, whereas others do not, due to institutional differences. To our knowledge, this study is the first to investigate performance sensitivity of compensation for listed firms in Turkey. Second, we are responding to the need for studies that incorporate both corporate governance and executive compensation research outside corporate governance systems in developed countries. Therefore, we aim to extend the understanding of how corporate governance arrangements differ across developing economies, which is a critical contribution to the literature.

2. Theoretical framework and hypotheses

2.1. Sensitivity of executive compensation to firm performance

Executive compensation is one of the ‘hottest’ and most discussed research areas in the corporate governance literature (Filatotchev & Allcock, 2010). Agency theory proposes that conflicts of interest between stockholders and executives necessitate effective monitoring. It also assumes that executive compensation is one of the major mechanisms that can be adopted to link the interests of shareholders (principals) with those of managers (agents) (Jensen & Murphy, 1990). Researchers focusing on the impact of firms’ outcomes on compensation usually describe pay as a reward for past performance and an ex-ante inducement to retain successful executives (Devers et al., 2007; Gupta & Wowak, 2017). Remuneration packages that link executive pay to firm performance can mitigate or solve the agency conflicts between owners and managers (Chizema, 2010; Hüttenbrink, Oehmichen, Rapp, & Wolff, 2014; Qin, 2012; Tuschke & Sanders, 2003). These can also encourage executives to adopt corporate strategies that maximise value for the firm while limiting risks (Mehran, 1995). The association has been referred to as the sensitivity of executive compensation to firm performance (or pay-performance sensitivity). Several researchers have examined the effects of different financial and operational performance measures on executive compensation and concluded that, as the level of sensitivity of pay to firm performance increases, the alignment between managerial and shareholder interests grows stronger (Aggarwal & Samwick, 1999; Jensen & Murphy, 1990; Murphy, 1999, 2013). However, the great majority of empirical research on firm performance and pay sensitivity has been conducted on large, public firms in developed countries (Colpan & Yoshikawa, 2012; Conyon, 2014; Devers et al., 2007; Gomez-Mejia, 1994; Tosi et al., 2000), and evidence from emerging countries has often been disregarded, with a few exceptions (Bryson et al., 2014; Conyon & He, 2011; Firth et al., 2006; Hearn, Strange, & Piesse, 2017; Kato & Long, 2006; Zhou, Fan, An, & Zhong, 2017). Due to the lack of a clear separation of control and ownership in emerging economies, several scholars argue that agency costs are relatively lower in most cases and pay for performance may not be applicable for the majority of firms in this context (Michiels, Voordeckers, Lybaert, & Steijvers, 2013). However, the recent literature debates that the

main characteristics of emerging countries, such as large ownership concentration, family ownership, owner-management and principal–principal conflicts can generate significant agency conflicts and costs, which are essentially stimulated by limited self-control and altruism (Baixauli-Soler & Sanchez-Marin, 2015; Lubatkin, Schulze, Ling, & Dino, 2005; Schulze, Lubatkin, & Dino, 2003). Hence, we aim to understand the performance sensitivity of executive pay in Turkey, a young market-based economy. We suggest that multifaceted agency problems will lead public firms to benefit from performance-related pay. In line with these assumptions, we propose that:

Hypothesis 1: *Firm performance has a positive and significant impact on executive pay in Turkey.*

However, the results of past research show that the performance sensitivity level of executive pay was found to vary significantly depending on the variables included, the sample and context used and the timeframe examined (Devers et al., 2007). Several studies have argued that institutional, organisational and political aspects such as corporate control, size of the firm, board composition and vigilance, firm risk, managerial discretions and power may play significant roles on the executive pay–firm performance associations (Bebchuk & Fried, 2004; Chizema, 2010; Colpan & Yoshikawa, 2012; Devers et al., 2007; Gomez-Mejia, Larraza-Kintana, & Makri, 2003; Mehran, 1995; Qin, 2012; Tuschke & Sanders, 2003). This should be investigated to further understand why executive pay is more sensitive to firm performance in some cases than in others. Of these factors, in line with the managerial power theory, the present paper focuses on the structure of ownership and the boards of directors' characteristics.

2.2. Ownership structure in Turkey and its effects on the performance sensitivity of executive pay

Both managerial power theory and agency theory consider the firms' ownership structure as a natural mechanism for constraining managerial power (Morck, Shleifer, Vishny, Wolfenzon, & Yeung, 2005; Tosi et al., 2000). The shareholders' monitoring power is dependent essentially on their degree of ownership concentration. For example, in contrast to dispersed shareholders, concentrated ones have relatively larger investment stakes in firms, which makes them more sensitive to the outcomes of their firm. Directors are generally direct representatives of the stockholders and may also have some managerial roles in the company (Baixauli-Soler, Lucas-Perez, Martin-Ugedo, Minguez-Vera, & Sanchez-Marin, 2016). As blockholders often have both the means and motivation to control their executives effectively through informal communication with management, selection of the C.E.O.s and nominating and voting for directors, they can effectively eliminate or mitigate potential executive entrenchment problems (Bebchuk & Fried, 2004; Shleifer & Vishny, 1997; Van Essen, Otten, & Carberry, 2015). As a consequence, in firms with a more concentrated ownership structure, executive pay level was found to be lower but tightly linked to firm performance in developed countries (Core et al., 1999; Gomez-Mejia & Wiseman, 1997; Hoskisson, Castleton, & Withers, 2009; Hüttenbrink et al., 2014; Shleifer & Vishny, 1997; Werner, Tosi, & Gomez-Mejia, 2005) as well as in emerging economies (Bryson et al., 2014; Conyon & He, 2011; Firth et al., 2006; Kato & Long, 2006). Similar to other emerging markets where large blockholders dominate the firms (Claessens, Djankov, & Lang, 2000; LaPorta et al., 1999), Turkish firms' ownership structure is highly concentrated (Demirağ

& Serter, 2003; Orbay & Yurtoğlu, 2006). For example, Yurtoğlu (2000) reported that a clear majority (63%) of public firms held an average of 53.8% of the equity capital and the ownership concentration rate of these firms has continued to increase in the 2000s. The average share of the largest owner was 43.8% in 1999, increasing to 46.2% by 2009 (Yamak & Ertuna, 2012). Blockholders are generally families; they control more than 75% of publicly listed organisations (Uğur & Ararat, 2006; Yurtoğlu, 2000). We, therefore, expect that, in line with the previous research findings, firms with more concentrated ownership structures in Turkey are also more able to monitor executives and restrict their managerial power. As a consequence, their executive pay level will be lower and the link between firm performance and executive pay will be stronger. We thereby propose that:

Hypothesis 2: *Ownership concentration has a positive and significant moderating impact on the link between firm performance and executive pay in Turkey.*

2.3. Board characteristics in Turkey and their effects on the performance sensitivity of executive pay

A board of directors represents a firm's shareholders, and its principle responsibility is to ensure that the firm is managed effectively (Filatotchev & Nakajima, 2010). The boards are critical governance control mechanism, responsible for adopting monitoring systems to guarantee that managerial decisions and actions remain in line with shareholders' interests (Boivie, Bednar, Aguilera, & Andrus, 2016). In addition, this monitoring role gives boards the responsibility to hire the right C.E.O.s and other top executives and fire them, set executive compensation and monitor executives to ensure they do not expropriate shareholders' rents (Lin, 2005). According to agency theory, boards should be able and eager to monitor executives as representatives of shareholders (Conyon, 2006; Yermack, 1996). Managerial power theory, however, challenges this supposition, proposing that board members can be involved in arms-length transactions with the firms' executives and might not always act as self-sacrificing representatives of shareholders (Bebchuk & Fried, 2004). Under certain conditions, there is the possibility that boards are more influenced by the C.E.O. and other executives, having informational advantages. Hence, they lose their power and impartiality to monitor and restrain managerial power, especially when setting remunerations (Zorn, Shropshire, Martin, Combs, & Ketchen, 2017). Ineffective board performance, coupled with managerial entrenchment, can facilitate rent extraction by powerful executives (Kumar & Zattoni, 2016a). Several scholars have found that monitoring effectiveness of the boards reduces C.E.O.s' and executives' influence over pay (Boyd, 1994; Boyd, Haynes, & Zona, 2011; Core et al., 1999; Lo & Wu, 2016). Such strong monitoring leads to a compensation that is tightly associated with firm performance (Bryson et al., 2014; Conyon, 2014). This paper focuses on three characteristics of the boards, which all enable us to envision when directors are more (or less) influenced by top executives and, subsequently, more (or less) able to monitor executives. These three characteristics are *leadership duality*, *board size* and *board independence*. We begin with a brief description of corporate governance principles and boards' characteristics of listed firms in Turkey. We then focus on the implications of these characteristics on executive pay–performance sensitivity.

2.3.1. Board characteristics in Turkey

In the 1980s, Turkey entered a liberalisation era, opening up its economy to global competition after a long period of import-substituting and state-guided industrialisation. This period was followed by some important institutional reforms, such as the adoption of corporate governance principles (C.G.P.) in 2003, very much along the lines promulgated by the O.E.C.D. (Uğur & Ararat, 2006). The Capital Markets Board of Turkey (C.M.B.T.), the securities regulator in Turkey, initially followed a soft law approach; some provisions of the C.G.P. were recommended, but not mandatory for listed firms. The C.M.B.T. suggests that firms should separate their chairperson and C.E.O. roles and have a board composed of at least five members. In Turkey, corporate boards are one-tier structures; with an insider-controlled corporate governance system (Yurtoğlu, 2000) and different people holding the chairperson and C.E.O. positions in the majority of listed companies (Ararat, Black, & Yurtoğlu, 2017; Yamak, Ertuna, & Bolak, 2006). Studies also show that listed companies fulfil C.M.B.T. requirements in terms of the size of the boards: the average number of directors is 8.5 in the Istanbul Stock Exchange's (I.S.E.) 50 index companies in 2010 (Arslantaş & Findıklı, 2010) and 6 in listed non-financial firms in 2014 (Oba et al., 2014). Board size in Turkey seems to change based on the type of industry and ownership structure as well; for example, Selekler and Yıldırım (2009) found that, in the financial sector, the average number of directors in the boardroom is 8.5, but for the manufacturing and service sectors the number changes to 7.7 and 7.2, respectively. The C.M.B.T. mandates that at least one-third of all directors be independent members, a rule that is effective from 2012. Independent members make up 15% of the boardroom in family firms, but 13% for non-family firms, while a large majority of firms in 2010 (74%) did not have any independent directors on their boards (Oba et al., 2014). However, recent studies of listed companies have stated that the ratio of independent directors is progressing and had reached 28.8% by 2015 (Ararat, Alkan, & Aytekin, 2016).

In terms of the impact of *leadership duality*, in which a single individual assumes the responsibilities of both the chairperson and the C.E.O. concurrently, many researchers support the view that dual leadership fundamentally compromises the independence of the boards (Filatotchev & Nakajima, 2010). Agency theory suggests that the centralisation of the leadership authority in one person results with a management domination on the board and negatively affects the performance (Core et al., 1999; Shleifer & Vishny, 1997). Managerial power theory also predicts that leadership duality provides the C.E.O.-chairperson the ability to control the amount and quality of information flowing to directors, creating the possibility of dominating the decision-making process, since he or she would also be responsible for setting the agenda at board meetings. Leadership duality also influences the C.E.O.'s power over the executive pay-setting activities (Bebchuk & Fried, 2004; Finkelstein & D'aveni, 1994; Pearce & Zahra, 1991) leading to executive compensation that is not tightly connected to firm outcomes. It has been found that C.E.O. duality increases the levels of executive pay and also decouples compensation from performance (Boyd et al., 2011; Core et al., 1999; Finkelstein & Boyd, 1998). We expect that, in Turkey, leadership duality has a positive impact on the amount of executive compensation; however, the sensitivity of executive compensation to firm performance will be weaker (Van Essen et al., 2015). We, therefore, hypothesise:

Hypothesis 3: *Leadership duality has a negative and significant moderating impact on the link between firm performance and executive pay in Turkey.*

The *size of the board*—the number of directors sitting on the board of the firm—is another board characteristic that is likely to constrain or enable the monitoring performance of the board as well as managerial power (Van Essen et al., 2015). Although effective supervision and monitoring require the ability to do so, it is also proposed that larger boards need more effort and time to create group cohesion and consensus and may encounter some internal communication and coordination difficulties and, as a consequence, they may not be very effective and vigilant at constraining managerial power (Bebchuk & Fried, 2004; Pearce & Zahra, 1991). Hence, in-group supervising and co-operation difficulties can reduce boards' monitoring effectiveness as the size of the boards is increasing (Lo & Wu, 2016; O'Reilly & Main, 2010; Yermack, 1996). In Turkey, we expect that board size affects positively the amount of the executive compensation; however, the performance sensitivity of executive pay will be weaker in larger boards. We, therefore, hypothesise:

Hypothesis 4: *Board size has a negative and significant moderating impact on the link between firm performance and executive pay in Turkey.*

Last, the composition of the board in terms of the *independence of boards* can also affect boards' monitoring effectiveness as well as managerial power. Members of the boards are accepted as independent directors if they are not current or past managers of the firm and do not have present or future business relationship with or dependence on the firm or C.E.O. (Bebchuk & Fried, 2004). Both agency and managerial power theorists propose that the main responsibility of the independent directors is to supervise executives on behalf of stockholders and that a greater percentage of independent members increases board monitoring effectiveness (Boyd et al., 2011; Pearce & Zahra, 1991). Independent directors, with major incentives to protect their own reputations, are more immune to the influence of executive directors and more focused on improving firm performance, as they are free from conflicts of interest (Dalton, Daily, Ellstrand, & Johnson, 1998). Several scholars have reported that the preponderance of independent directors increases executive pay-performance sensitivity (Boyd, 1994; Conyon & He, 2011; Core et al., 1999; Zhou et al., 2017) while other studies have found that a decrease in the independence level of the board may not lead to excessive executive pay or a decrease in performance sensitivity of pay (Capezio, Shields, & O'Donnell, 2011; Conyon, 2006, 2014). We expect that, in Turkey, in line with managerial power theory expectations, board independence levels, a good corporate governance practice, are negatively related with executive pay levels, and firm performance–executive compensation sensitivity is stronger as the level of board independence increases. We, therefore, hypothesise that:

Hypothesis 5: *Board independence level has a positive and significant moderating impact on the link between firm performance and executive pay in Turkey.*

3. Methods

3.1. Sample and data

In emerging economies such as Turkey, government interventions and policy ambiguities, and institutional transitions create business environments that are highly turbulent and complex. Market turbulence is also set off by financial crises. Although our dataset encompassed a longer period of time, we tested our hypotheses for the years 2009–2013 in order to control for the impact of the financial crisis of 2008. Our sample was composed

of all publicly traded firms (non-financial) on the Borsa Istanbul (B.I.S.T.), the only stock exchange of Turkey, from 2009 to 2013. We excluded financial institutions from the sample as they have different registration systems and accounting regulation. They could, therefore, provide misleading results with regard to the calculation of the performance variables. A total of 1,284 non-financial company-year¹ observations out of 2,059 was selected. One hundred and seventeen companies that are delisted from the B.I.S.T. or started to be traded on the custody market during the study period were excluded from the sample. Therefore, our sample size was reduced to 1167 company-year observations.

The data were manually collected each year for 5 years from secondary sources. The majority of our statistical data came from the Public Disclosure Platform of Turkey (K.A.P.), the most comprehensive database for listed companies in Turkey, with some from the B.I.S.T. database. Data was also supplemented with information retrieved from the annual financial reports of the firms.

3.2. Dependent variable

Executive pay, a dependent variable of the study, refers to the total compensation of the top management team of the firm, including the C.E.O. As there is no legal obligation to disclose individual pay information of top executives in Turkey, companies generally do not report their detailed compensation data. The total disbursements paid to the entire top management teams were used as a proxy for total executive pay. This variable was calculated using data available in the companies' financial report footnotes, with the name 'benefits provided to all top executive'. It comprises the sum of total annual salaries, cash bonuses, and long-term remuneration for the top management team. We took the logarithm of the total executive pay variable to reduce the outlier effect (Conyon, 2006). Log transformation is proposed also to correct for non-normality (Baltagi, 2013).

3.3. Independent variables

3.3.1. Firm performance

The majority of studies analysing firm performance and pay associations prefer to employ R.O.E. or R.O.A. as the measure for performance (Basu, Hwang, Mitsudome, & Weintrop, 2007; Capezio et al., 2011; Finkelstein & Boyd, 1998; Gomez-Mejia et al., 2003; Jensen & Murphy, 1990; Werner et al., 2005). We use an accounting-based measure of profitability, 'return on equity' (income after expenses excluding taxes divided by total equity, R.O.E.) to operationalise firm performance.

3.3.2. Boards' characteristics

Ownership concentration measures large block holders in the company and proxies as the percentage of the company's ownership held by those who own at least 5% of the company's outstanding shares. *Leadership duality* measures whether only one individual holds the chairperson and C.E.O. roles. A dummy variable takes a value of 1 if the C.E.O. and chairperson is the same person and 0 otherwise. *Board size* measures the total number of directors who sit on the board. *Board independence* is operationalised as the ratio of the total number of outside independent directors to the total number of directors.

3.3.3. Control variables

We also aim to control for other variables that might have an impact on dependent and independent variables. *Firm size* has been found to have a large impact on executive pay (Bryson et al., 2014; Conyon, 2014; Tosi et al., 2000). It is assumed that, as firms increase in size, they require more competent and highly paid executives. Several scholars have confirmed this, reporting that bigger firms offer larger compensation packages to their executives (Baker & Hall, 2004; Basu et al., 2007; Gomez-Mejia et al., 2003). We proxy the natural logarithm of the total assets as firm size. *Leverage* of the firm, an indicator of firms' financial structure, is measured as a ratio of total debt to total assets. *Technology intensity* is used to control the possible effects of industries' dissimilarities. We included a dummy variable in the models, coded 1 if the company is in a technology-intensive industry, 0 if it is in a labour-intensive one. Industry and year effects are similarly controlled with dummy variables.

3.4. Model specifications and analysis

The regression model summarised above is used to analyse the effect of firm performance on executive pay. We regress the level of executive pay to firm profitability (R.O.E.) after controlling for industry, firm size and leverage. In order to analyse if ownership concentration, leadership duality, board size and independence have an impact on the performance–remuneration link, we include the main and interactive effects of these variables. The model is:

$$\begin{aligned} \text{Executive pay}_{it} = & \alpha + \beta_1(\text{R.O.E.})_{it} + \beta_2(\text{ownership concentration})_{it} + \beta_3(\text{leadership duality})_{it} \\ & + \beta_4(\text{board size})_{it} + \beta_5(\text{board independence})_{it} + \beta_6(\text{R.O.E.x ownership})_{it} + \beta_7(\text{R.O.E.x duality})_{it} \\ & + \beta_8(\text{R.O.E.x boardsize})_{it} + \beta_9(\text{R.O.E.xb independence})_{it} + \beta_{10}(\text{firm size})_{it} \\ & + \beta_{11}(\text{leverage})_{it} + \beta_{12}(\text{tech. intensity})_{it} + u_{it} \end{aligned}$$

i denoting firms and t denoting time, $i = 1, \dots, N$; $t = 1, \dots, T$

$u_{it} = \mu_i + v_{it}$ where μ_i denotes the *unobservable* individual effect and v_{it} denotes the remainder disturbance.

An unbalanced panel dataset² is used for the regression analysis. Panel data studies assume that firms and executives are heterogeneous. We accept that there are other organisational or individual characteristics affecting executive compensation, which are difficult to measure. By using panel data methodology, we aim to control the risk of obtaining biased results and the heterogeneity of the sample. As a consequence we are able to identify and measure better the effects of variables that are simply not detectable in pure cross-section or pure time-series data (Baltagi, 2013). Fixed-effects generalised least squares panel regression procedures were used to estimate the models. First, a Hausman test (Baltagi, 2013) was conducted to match fixed-effects and random-effects models, and fixed-effects models were chosen. The panel design permits us to explicitly control for unobserved time and firm effects, minimising the likelihood of biased parameter estimates. Second, a 1-year lag between compensation and firm performance variables was included to simplify the causality. Finally, we ran a Durbin-Wu-Hausman test to reduce the potential endogeneity problem, and also tested variance inflation factors (V.I.F.) to check for multicollinearity.

Table 1. Descriptive statistics and correlation coefficients.

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10
1- Executive pay (log)	5.83	0.760	1									
2- R.O.E.	0.323	9.229	0.163**	1								
3- R.O.A.	0.0012	0.3380	0.092**	0.042	1							
4- Own. Concentration	64.43	22.09	0.032	-0.011	0.112**	1						
5- Leadership Duality	0.12	0.323	-0.107**	-0.011	-0.016	-0.109**	1					
6- Board Size	6.48	1.981	0.359**	-0.022	0.111**	0.077**	-0.168**	1				
7- Board Independence	0.148	0.168	0.049	0.006	-0.045	-0.059**	0.001	0.101**	1			
8- Firm Size	19.10	1.76	0.563**	0.034	0.150**	0.135**	-0.187**	0.500**	0.087**	1		
9- Leverage	0.4962	0.5096	0.037	-0.018	-0.105**	-0.029	0.001	-0.092**	0.020	0.059*	1	
10- Tech. Intensity	0.20	0.403	0.118**	-0.013	-0.013	-0.025	0.055*	0.094**	-0.055*	0.129**	0.005	1

Source: Author.

*Correlation is significant at 0.05 level (2-tailed).

**Correlation is significant at 0.01 level (2-tailed).

Table 2. Results of regression analysis.

Variables	Model 1	Model 2	Model 3
Firm Size	0.506***	0.502***	0.513***
Leverage	0.027	0.028	0.016
Technology Intensity	-0.006	0.058**	0.056**
Ownership concentration	-0.044 [†]	-0.044 [†]	-0.050**
Leadership duality	-0.026 [†]	-0.023 [†]	-0.032 [†]
Board size	0.118***	0.111***	0.115***
Board independence	0.020	0.009	0.010
R.O.E.	0.147***	0.110 [†]	
R.O.A.			0.260**
R.O.E.xOwnership		-0.051 [†]	-0.172***
R.O.E.xDuality		-0.059**	-0.044 [†]
R.O.E.xBoardsize		-0.079	-0.140
R.O.E.xB.Independence		-0.140	0.059
F_R^2	80.162***	54.988***	51.122***
	0.358	0.358	0.341

Source: Author.

Standardised coefficients are reported.

[†] $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

4. Results

Table 1 illustrates the descriptive statistics and correlation coefficients for all the variables, while Table 2 presents the results of the regression analysis for the models. Model 1 demonstrates the independent and control variable coefficients and their significance, to test their effects on executive pay, while Model 2 adds the interaction with R.O.E., to analyse the impacts of these variables on performance sensitivity of executive pay.

4.1. Performance sensitivity of executive pay

Model 1 in Table 2 details the results of the regression analysis for the sensitivity of executive pay, which relates to the first hypothesis. Firm profitability (R.O.E.) shows a positive impact on executive pay. Firm performance and size are two of the economic determinants of executive compensation. As performance improves and firm size increases, executive pay level also increases. The regression results, as summarised in Table 2, provide support for our first hypothesis. This result also indicates that a 1% change in R.O.E. leads to an increase of approximately 14.7% in the log of total executive pay, when we hold other variables fixed. We conclude that executive pay is sensitive to firm profitability in Turkey.

The findings for control variables are presented in Table 2: Firm size is positively associated to executive pay; however, firm financial leverage and technological intensity do not have significant effects on pay. The results support those of former studies, indicating that the size of the firms is one of the key factors explaining managerial pay, including that of C.E.O.s.

4.2. Firm performance sensitivity of executive pay: moderating effects

In Model 2, as expected, we observed that executive pay decreases when ownership concentration level increases. However, of the corporate governance mechanisms included in the equations as determinants of firm performance, we only found a statistically significant association with executive pay for two variables: leadership duality and board size, both negative. As the board size increases, the board's monitoring effectiveness is weakened

Table 3. Summary of the hypotheses and results.

Variables	Performance–Pay Sensitivity	
	Predicted	Actual
Ownership concentration (H2)	+	–
Leadership duality (H3)	–	–
Board size (H4)	–	–
Board independence (H5)	+	ns

Source: Author.

and executive compensation is substituted for corporate governance voids. We found that duality is negatively related with pay. Our results illustrate that the relationship between the independence level of the board and executive pay is not statistically significant. Model 2 also shows the moderating effect of variables related to corporate governance mechanisms on performance–executive pay relationship. The interaction between executive pay and ownership structure is positive and significant. We hypothesised that the firm performance–executive compensation relationship would be stronger at higher levels of concentrated ownership. In contrast, our results show the opposite, as the share of blockholders increases, firms use performance-sensitive executive pay systems less. This finding does not support Hypothesis 2. Finally, as projected, leadership duality and board size variables negatively moderate the firm performance–executive pay link, supporting Hypotheses 3 and 4. The results show that the firm performance–executive pay relationship is weaker in the presence of larger boards and leadership duality. As expected, we found that, as firms' leadership duality and board size increase, firms prefer executive pay systems that are more dependent on firm performance. For control variables, the only significant interactions were the positive effects of the firm size and technology intensity variable, which suggests that firm size and technology intensity positively affect the performance–pay relationship.

An additional test was made to validate the robustness of our findings (Colpan & Yoshikawa, 2012). R.O.A., an alternative measure of performance, is used instead of R.O.E. in our models. As presented in Model 3 of Table 2, the main effects in the models were qualitatively unchanged, except that ownership concentration revealed a higher statistical significance. Furthermore, additional analyses were conducted using random-effects regressions for all our models. The robustness of our conclusions was confirmed, while the findings for our hypotheses did not change significantly, except that the significance of some interaction terms decreased.

5. Conclusions and discussion

Several theoretical perspectives have generated debate about the determinants of executive compensation over the past decade. Although there have been important theoretical contributions to the current literature from a number of theoretical perspectives, the empirical evidence has been mixed. Our analysis has concentrated on investigating firm-level associations between five measures of firm performance, internal corporate governance mechanisms and the firm performance-pay link from both agency and managerial power theory perspectives. The findings have supported some of our hypotheses and Table 3 summarises our predictions and findings.

In this paper, we first aim to revisit and investigate the effect of firm performance as a determinant on executive pay in Turkey. The results suggest a statistically significant

positive link between firm performance and executive compensation. We can conclude that executive pay is sensitive to firm performance, and listed firms in Turkey have adopted pay systems contingent to firm profitability to mitigate or eliminate potential agency conflicts.

A growing body of research questions whether most recent corporate governance 'best' practices and performance-based executive compensation systems are inevitably the best bundles in all contexts and cases. This paper has also revisited the question of whether the performance sensitivity of executive pay diverges contingent to firms' internal corporate governance mechanisms. In line with agency theory expectations, we assumed that, as a firm's shareholders' power increases, shareholders are more able to monitor their executives and restrict their managerial power, and the executive compensation is strongly linked to firm profitability. However, contrary to our expectations, we found that the concentrated ownership is weakening the pay for performance relationships for top executives in Turkey, thus possibly making such listed firms less vigilant in solving agency problems. This surprising result raises the potential for further investigation.

We also estimated that, following managerial power propositions, leadership duality and board size weaken the firm performance–executive pay link and that the impact of board independence on this link would produce the opposite. Yet, we found that only board leadership duality and board size negatively affect the sensitivity level of pay to R.O.E. Results reveal that board independence does not play a significant moderating role in this relationship. As anticipated, the sensitivity of executive pay to profitability is weaker when executives have more control over decisions, especially ones related to their compensation level, and the board of directors' monitoring effectiveness is relatively low.

6. Limitations and directions for future research

Without a doubt, our analysis has some limitations that prompt us to consider future research directions. The most important limitations are related to data availability. First, our executive compensation data is limited. This does not give us the opportunity to analyse in detail the effects of different determinants of pay on different components of compensation. Second, in line with the literature, we used common indicators as proxies for firms' corporate governance structures. Most research has focused on easily accessible secondary data on ownership structures and formal board characteristics. Although these measures are easier to observe, other variables related to executives' and directors' characteristics and competencies, boards' actual decision-making processes, and executives' influence and power over decision-making might have more validity. Future research in Turkey should combine secondary data with primary data. Third, we only used the ownership concentration rate as a proxy for measuring shareholders' power and influence on executive pay level and found an unexpected effect. However, we concluded that the identity of shareholders could both constrain and enable managerial power and board dynamics. Future research should include variables reflecting the identities of shareholders and differentiate between the effects of, for example, family ownership and foreign or institutional investors on executive pay. Fourth, we have only focused on the 2009–2013 period. We must note that there have been some significant institutional reforms in Turkish corporate law and the corporate governance code. Therefore, there is a need to extend the study period to validate the current results, especially the one related to board independence, to determine whether the relationships that we have found between executive pay, corporate governance mechanisms and firm performance are permanent or temporary.

Notes

1. Total number of listed company between years 2009–2013 in Borsa Istanbul is 2059, 328 firms for 2009, 362 firms for 2010, 405 firms for 2011, 480 firms for 2012 and 484 firms for 2013.
2. In order to estimate the statistical models, we required non-missing data on executive compensation. Due to the fact that some firms join or leave the stock exchanges, we used a model for unbalanced panel datasets.

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